

BUREAU OF EDUCATION INDIA

Pamphlet No. 8

Report of the Social Service and Public Administration Committee of the Central Advisory Board of Education in India, 1940, together with the decisions of the Board thereon.



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PREFACE.

At the sixth meeting of the Central Advisory Board of Education held at Madras in January 1941, the Honourable Sir Maurice Gwyer presented the report of the Social Service and Public Administration Committee, of which he was the Chairman. The decisions reached by the Board on the report are set out below

The Board generally accepted the need for an All-India Council of Social Service. Discussion centred mainly on the question of the extent to which such a central institute should or could undertake the training of social workers. The general opinion was that since practically all the subjects covered by the term social service are included in the field of Provincial Administration, it would be impracticable for the training of workers to be carried out on an all-India basis. This practical training would best be done at Provincial centres. While, however, research should be the main function of the Central Institute, its students might be expected in the normal course to return to work in the Provinces and during their time at the Central Institute they would also require facilities for 'field work'. It would not be possible to decide the precise structure of the central organisation recommended by the Committee without more detailed information as to what is being done in the field of social service by various agencies, official and voluntary in various parts of the country.

The Board adopted the Committee's report generally, but decided that before implementing its recommendations Provincial Governments and voluntary agencies of all-India character should be requested to furnish detailed information regarding (i) existing agencies engaged in social service in their areas (including universities), (ii) the scope of their activities, (iii) their relation to one another and the means adopted to co-ordinate their activities. Suggestions should also be invited as to ways and means of consolidating and extending the work of social service generally and particularly among women.

The Chairman announced his intention, should the replies from the Provincial Governments justify it, of calling a conference of representatives of Provincial Governments and voluntary agencies.

The Board had also before it a letter from the Director of the Sir Dorabji Tata Graduate School of Social Work, which is given at the end of the Preface. With regard to this letter the Board considered that until the reports from the Provinces had been received it would not be feasible to consider the claims of any existing institution to be recognised as a central institute. It was, however, decided that in view of the very important work which the Tata Institute is doing in the field of social work it should be included among the agencies which it is proposed to consult in the matter.

COPY OF LETTER DATED THE 28TH DECEMBER 1940, FROM DR. CLIFFORD MANSHARDT, DIRECTOR, THE SIR DORABJI TATA GRADUATE SCHOOL OF SOCIAL WORK, BOMBAY, TO THE EDUCATIONAL COMMISSIONER WITH THE GOVERNMENT OF INDIA.

I am in receipt of the Draft Report of the Social Service and Public Administration Committee of the Central Advisory Board of Education. The principal recommendations of the Committee are :—

- (1) That a centre for social research should be established, preferably in Delhi.
- (2) That the centre should have closely associated with it, if not under the same direction, a training school for social workers.
- (3) That the research institute should be under the direction of an All-India Committee of about 20 members.
- (4) That Government should be asked to bear the recurring cost of the Institute, which would come to about Rs. 75,000—Rs. 1,00,000 annually.
- (5) That there should be provincial training schools working in close co-operation with the central institution.

I have discussed the matter with the Trustees of the Sir Dorabji Tata Graduate School of Social Work and it is our opinion that the Tata School is in a position to co-operate advantageously in this general scheme.

Our position is somewhat as follows :—

- (1) The Tata School has already passed through the throes of organization, is established and has All-India and International connections. The proposed scheme could therefore be put into immediate operation.
- (2) All members of the Tata School Faculty are qualified research workers. By adding an industrial expert and an agricultural expert to the present staff, the School could carry out in a very adequate manner, both teaching and research.

- (3) The Tata School has already the nucleus of a most excellent social science library and new additions are being made constantly.
- (4) The Tata School is affiliated to an excellent functioning Social Settlement, while the city of Bombay offers opportunities unrivalled in India for practical work for students.
- (5) Under this scheme of co-operation with the Tata School, the Government of India's contribution could be almost cut in half. The principal expense would be the salaries of the industrial and agricultural experts, mentioned in (2) above, and stipends for research students deputed to the School.

The contribution of Government would be between Rs. 25,000 and Rs. 50,000 rather than Rs. 75,000 to 1,00,000 mentioned in the Committee Report.

Our Trustees would be prepared to admit Government representatives to the Board of Trustees and to allow an Advisory Committee of 20 members as suggested by the Committee to advise regarding the research activities of the School.

This is of course a skeleton outline and detailed plans would have to be worked out, but I feel that our proposal should at least be communicated to the Central Advisory Board at its Madras meeting in January.

Report of the Social Service and Public Administration Committee of the Central Advisory Board of Education, 1940.

At the fifth annual meeting held in May 1940, the Central Advisory Board of Education considered a communication from Sir Francis Younghusband, Secretary of the Indian Village Welfare Association, Westminster, London, regarding the establishment of a centre or centres in India for study in social service and public administration. As the Board felt that this important problem required thorough investigation, they appointed a Committee to examine the various issues arising in connection with it and to submit a report. The following were appointed members of the Committee which was given power to co-opt:—

1. The Hon'ble Sir Maurice Gwyer, K.C.B., K.C.S.I., Chief Justice of India. *Chairman.*
2. Sir V. T. Krishnamachari, K.C.I.E., Dewan of Baroda.
3. The Right Rev. G. D. Barne, C.I.E., O.B.E., V.D., Bishop of Lahore
4. Rajkumari Amrit Kaur.
5. Dr. R. C. Mazumdar, Ph.D., Vice-Chancellor, Dacca University.
6. Dr. A. F. Rahman, LL.D., B.A. (Oxon.), Member, Federal Public Service Commission.
7. Lala Shri Ram.
8. The Educational Commissioner with the Government of India.

2. In accordance with the powers conferred on the Committee, the following were co-opted as additional members:—

1. Dr. T. E. Gregory, D.Sc., Economic Adviser to the Government of India.
2. Dr. Clifford Manshardt, A.M., D.B., Ph.D., D.D., Director, The Sir Dorabji Tata Graduate School of Social Work, Byculla, Bombay.
3. Mr. R. P. Masani, M.A., J.P., Vice-Chancellor, Bombay University.

3. The Committee, as finally constituted, met in New Delhi on the 15th and 16th November 1940. Sir V. T. Krishnamachari, Rajkumari Amrit Kaur and Dr. Gregory were unable to attend the meeting. Dr. D. M. Sen, M.A., Ph.D., Secretary, Central Advisory Board of Education, was Secretary of the Committee.

4. The agenda and the connected papers circulated to the members are set out in the Annexure

5. In opening the proceedings, the Chairman observed that the memorandum circulated with the agenda indicated most of the points which the Committee were called upon to consider. The first question they had to decide was whether the establishment of a centre or centres was desirable and if so whether it could be regarded as practicable within a reasonable period. After that general point had been settled the Committee would

proceed to define the functions of such a centre or centres, the scope of the subjects to be studied or investigations conducted and the necessary organisation which would be involved.

As a preliminary to their discussion, the Committee asked Dr. Manshardt as Director of The Sir Dorabji Tata Graduate School of Social Work, which is a pioneer institution in this sphere so far as India is concerned, to describe the work which was being done under his guidance. Dr. Manshardt explained in detail the organisation and activities of the Tata School.

6. The Committee felt that as they were required to consider the social services in their relation to public administration rather than public administration so far as it was concerned with social service, their investigation must embrace the activities of voluntary agencies as well as the work of public bodies and government departments. The means of correlation between these two might indeed form the primary subject for exploration and in this connection the experience of European countries and of America might be usefully studied. On the other hand a country so vast in extent as India, with such varying climatic and economic conditions and with so complicated a social structure must present problems which can only be tackled in the light of original research. The Committee, therefore, envisaged the need for a central institution at which the main issues arising in connection with social welfare in the widest sense might receive impartial and scientific examination. The principal function of such an institution would be to study social problems rather than to train social workers but emphasis was laid on the fact that if its researches were to be practical and its influence far-reaching it must be staffed by people with as wide an experience as possible of social service in a concrete form. It was to be expected that the staff and student of such a central institution would be drawn from workers in provincial centres, whether voluntary or professional, and would in due course return to practical work. It would thus be at one and the same time a clearing house of information and ideas, a research bureau, and a kind of staff college for senior social welfare officers. The Committee had before them the constitution and programme of the American Public Welfare Association and felt that these with such modifications as might be needed to meet Indian conditions might be a useful guide in determining the more detailed functions of the institution they have in mind. In order, however, that the institution might be at all times in close touch with practical problems and have some place where actual experiments could be carried out it would be extremely desirable that there should be closely associated with it, if not under the same direction, a training school for social workers. Possibly the social welfare centre which a place of the size and importance of Delhi might be expected to support would serve this object.

7. The Committee recognised that a central institution of the kind outlined above could only be justified if its work were supplemented by and closely linked with that of provincial social service centres directly in contact with local problems. The Committee were glad to note that in addition to the Tata School there are a number of voluntary agencies already engaged in this field, such as the Institute of Rural Reconstruction at Santiniketan, the Co-operative Institute at Gosaba as well as the social service centres run by the Ramkrishna Mission and numerous other missionary agencies. In addition to voluntary effort, Governments, whether Central, Provincial or State, are devoting increasing attention to the

social services and this tendency may be expected to develop rapidly in the near future. There is therefore a promising nucleus of varied activities, the main need of which is consistent stimulus and effective organisation. To provide this a number of provincial centres are required, whose principal object would be to correlate the activities of all social service agencies in their areas. The proposed central institution in its turn would act as a focus for the provincial centres.

8. The Committee do not wish to do more than indicate in the broadest outline the function which in their opinion these provincial centres should fulfil. In order to ensure effective correlation it is important that their management should represent as fully as possible the various organisations at work in the area. In addition to this it will be their business to conduct propaganda and to train or arrange for the training of social service workers. The field to be covered is so large that it is unlikely that any one provincial centre will possess the necessary facilities for training workers in all branches of social welfare. Full use must therefore be made for training purposes of other suitable centres in the area. Similarly in the case of the workers themselves the call for service is so great that there is no possibility of satisfying it solely by means of full-time professionals. A nucleus of these will be essential in every area and their selection and training will be matters of the first importance but they will have to be reinforced by a much larger army of part-time and voluntary workers. The provision of courses for them will be an essential feature of any successful provincial organisation. In particular the Committee felt that it would be extremely desirable that departments of Government which deal with the social services should take steps to see that their officers receive similar training either during their period of probation or subsequently. Teachers and Health officers in particular should be made aware of the wider aspects of a movement with which their own activities are intimately connected. It is an obvious truism that progress in social welfare must very largely depend on a sympathetic attitude on the part of those occupying positions of administrative responsibility.

9. The Committee also considered what direct contribution Universities might be expected to make in this sphere. While they did not regard as practicable the suggestion recently put forward that some personal participation in social service should be made a condition of the award of a degree, they felt that Universities might render help of considerable value both by enlarging the scope of their extra-mural departments and by encouraging students to regard social service as the discharge of an obligation towards the less fortunate sections of the community. The Committee recognised the part played by Universities in the Literacy Movement and were glad to learn that some Universities were already actively interesting themselves in the establishment of University settlements and other forms of social work.

10. In considering the general lines which training for social service should follow the Committee had in mind the fact that the problems of social work in rural areas are distinct from those in cities and that in planning courses a different method of approach would be required in each case. Apart from the need to establish training centres in rural areas as well as towns it is not less essential to ensure that the students in the former are people with a real knowledge of and interest in rural life.

11. The Committee next considered the nature of the machinery which would be required to give effect to the ideas set out in the foregoing paragraphs.

As has already been indicated, they envisaged the need of an All-India body with a central institution under its control at which the main problems could be studied. In addition to research it would be the business of the central body and the central institution to establish and maintain contact with provincial centres which would in turn stimulate and co-ordinate social service activities in their own areas. The Committee felt it was outside their terms of reference to consider in any detail what form or forms of organisation should be adopted so far as provincial or other local areas are concerned. No useful purpose would in any case be served by attempting to prescribe a uniform system. Provided that overlapping and waste of effort are avoided, this is a subject above all others where local conditions must be taken into account and freedom to experiment encouraged.

12. The central body, which might be called the All-India Council of Social Service, and would, as its name indicates, be representative of the whole country, should not in the Committee's opinion be under the direct control of Government. Since, however, it is not reasonable to anticipate that funds sufficient to make it self-supporting will be forthcoming from private benefactions, as in the case of the Association of Public Welfare Administration endowed by the Rockefeller Foundation, and that consequently it will have to depend at any rate in its early stages largely on assistance from Government funds, some public representation will be necessary.

Without wishing to define too rigidly the composition of the Central Council the Committee felt that it should contain a Chairman and 6 members (of whom at least 2 should be women) nominated by Government, one representative of each Province and 2 representatives of Universities nominated by the Inter-University Board. Provision might be made for the representation of those Indian States which are actively interested in this subject through the Government nominees. This would mean a council of about 20 and it was thought that provided the members were persons of influence, carefully selected for their interest in and practical experience of social problems, it should be large enough for its purpose.

13. The Central Research Institute, which would be managed by the Central Council and should be located in Delhi, should have three main departments devoted to the study of Economic, Public Health and Education problems respectively.

In view of the character of the work which it will undertake and in the interests of economy the staff of the Institute need not be a large one. Quality rather than quantity should be the determining factor. The Committee were in agreement that in order to preserve the vitality of the Institute, the Director and Heads of Departments should not be encouraged to remain there indefinitely. Their appointments should be on contract for such a period, e.g., five or seven years, as would enable them to make their influence felt throughout the country as well as to complete any important piece of research which they might be required to undertake. The Institute would also need a Registrar and a Statistician: these might be permanent appointments. The Registrar would act as Secretary to the Council.

14. In conclusion the Committee have felt it desirable to put forward some estimate of the cost of their proposals together with suggestions as to the source or sources from which it might be met. As the success of the scheme will depend to a very great extent on the personality and ability of the Director of the proposed Central Research Institute the Committee consider it necessary to offer a salary that will attract the best men available. As the appointment is to be for a period of 5-7 years and will not be pensionable, the Committee are of opinion that the salary should not be less than Rs. 1,500 per mensem.

It should be possible to obtain men of the requisite calibre as Heads of the three proposed departments for Rs. 500-700 each per mensem and Rs. 750 per mensem should cover the combined salaries of the Registrar and Statistician. Generous allowance should also be made for stipends in the case of research workers of outstanding ability who would otherwise be able to support themselves at the Institute. The Committee do not consider that in the beginning at any rate it would be necessary to incur any serious non-recurring expenditure in connection with this scheme as it should be possible to hire accommodation in Delhi that would house adequately an Institution of the modest size contemplated. When the rent of premises and normal maintenance charges, including clerical staff, are added to the salaries suggested above it would appear that between Rs. 75,000 and Rs. 1 lakh would be needed to meet the annual recurring cost.

The Committee hope that if the scheme succeeds and by its success attracts increased attention to the importance of social welfare work in the interest of the community at large, it will in due course receive a growing measure of financial support both from public bodies and from private benefactors. They also take it for granted that the proposed All-India Council of Social Service and the staff of the Institute will make every effort to build up an endowment fund which will ultimately place the Institute on a self-supporting basis. At the start however they realise that the bulk if not the whole of the expenditure involved will have to be met from public funds and they regard the contribution which this project might make to the general well-being of India as so great that they have no hesitation in recommending the Central Government to accept the whole responsibility for an initial period of 5 years.

MAIN CONCLUSIONS AND RECOMMENDATIONS.

I. (a) That there should be established in India, preferably at Delhi, a centre in which an impartial and thorough examination of the problems connected with the Social Services and Public Administration in its relation to the Social Services, could be carried out.

(b) That for this purpose a central body, to be called the All-India Council of Social Service, should be set up with an Institute for research under its control.

(c) In order that the institution might be at all times in close touch with practical problems and have some place where actual experiments could be carried out it would be extremely desirable that there should be closely associated with it, if not under the same direction, a training school for social workers.

II. That in each province and other large administrative area there should be at least one centre affiliated with the All-India Council the main object of which would be to stimulate and co-ordinate the work of social service agencies, voluntary and official, in the area and to arrange for the training of social workers of all grades.

III. That training in social work should be given to the officials of public departments concerned with the social services as well as to the workers of voluntary bodies.

IV. That every University in India should have a department for extramural work in charge of an officer who has had a thorough training in Social Service.

V. That as most of the India's population is in the rural areas, corresponding importance should be attached to training for service in rural areas persons with a real knowledge of and interest in country life.

VI. That the composition of the proposed All-India Council of Social Service and the staff of the proposed Central Institute and their remuneration should be as set out in paragraphs 11—14 of the report.

VII. That the annual recurring cost of the Central Institute estimated at between Rs. 75,000 and Rs. 1,00,000 should be borne by the Government of India for an initial period of 5 years.

VIII. That every effort should be made to build up an endowment fund which would make the Central Institute self-supporting within a reasonable period.

(Sd.) MAURICE GWYER (CHAIRMAN).

G. D. BARNE.

R. C. MAZUMDAR.

A. F. RAHMAN.

STIRJ RAM.

JOHN SARGENT.

CLIFFORD MANSHARDT.*

R. P. MASANI.

NOTE OF DISSENT BY DR. CLIFFORD MANSHARDT.

I approve of the report except for the first paragraph in Section 13 on page 4. It is quite right that the Committee decided that the Research Institute should have three main departments devoted to the study of Economic, Public Health and Educational problems respectively. I personally, however, do not feel that this division represents in an adequate manner the functions of a Social Research Institute. I feel that the Institute could more profitably devote its attention to:—

- (a) A study of the problems connected with Family and Child Welfare.
 - (b) Economic problems: industrial and Agricultural.
 - (c) Social Pathology—problems arising out of maladjustments between the individual and the social structure, which covers the range of problems such as poverty, unemployment, ill-health, mental deficiency, crime, problems arising out of physical defects, etc.
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APPENDIX.

(a) AGENDA FOR THE MEETING OF THE COMMITTEE APPOINTED BY THE CENTRAL ADVISORY BOARD OF EDUCATION TO EXAMINE THE QUESTION OF ESTABLISHING A CENTRE IN INDIA FOR THE STUDY OF SOCIAL SERVICE AND PUBLIC ADMINISTRATION IN THIS COUNTRY.

1. To consider whether a centre or centres should be established in India in which an impartial and thorough examination of the problems concerned with the social services and public administration in this country could be carried out and by means of which courses of training could be arranged for those engaged or about to be engaged in this work.

2. To consider the desirability of restricting the number of centres to be established and of concentrating attention in the first instance on a single centre which might be established in Delhi.

3. To consider the constitution of the actual organising agency and to what extent it should be representative of the Governments or universities concerned and of appropriate private associations.

4. To consider the question of the incidence of the cost of the scheme, i.e., whether the Government of India and the provinces, which are likely to benefit, should bear in due proportion the cost involved.

5. To consider any other matter connected with the subject that may be brought before the meeting.

(b) MEMORANDUM PLACED BEFORE THE CENTRAL ADVISORY BOARD OF EDUCATION IN INDIA AT ITS MEETING HELD IN MAY 1940, REGARDING THE ESTABLISHMENT OF A CENTRE FOR STUDY IN SOCIAL SERVICE AND PUBLIC ADMINISTRATION.

In February 1937, Sir Francis Younghusband, Chairman of the Indian Village Welfare Association, Westminster, forwarded, on behalf of his Association, a draft scheme for the establishment of a centre in India for study in social service and public administration and requested the Government of India—

- (a) to place the scheme before the Central Advisory Board of Education in India; and
- (b) if the Board commends the scheme, to assist in carrying out the project.

A copy of his letter together with the draft scheme is appended for the information of the Board. The main proposals are:—

- (i) That a centre or centres should be established in India in which an impartial and thorough examination of the problems concerned with the social services could be carried out and by means of which courses of training could be arranged for those engaged, or about to be engaged, in this work in its many aspects;
- (ii) That though the centres might be under the ægis of a university or universities, the actual organising agency should be representative of the Government, of the university or universities concerned, and of appropriate private associations;

- (iii) That there should not be more than 3 social service centres and in the first instance attention should be concentrated on a single centre which might be established in Delhi; and
- (iv) That the Government of India and the Provinces, which are likely to benefit, should bear in due proportion the cost of the scheme.

2. The Adult Education Committee of the Central Advisory Board of Education, which met in July 1939, also suggested that social science should be taught in all universities and that it should be treated from the practical point of view and not academically; for instance, no student should be eligible for a degree or diploma unless he had satisfactorily completed an allotted task as a social worker.

3. Training in social service and public administration for those who wish to qualify themselves for the nation-building tasks is undoubtedly not only desirable but also essential. At present, there is no centre in India where such a training is imparted.

4. The matter is placed before the Central Advisory Board of Education for their consideration.

COPY OF A LETTER DATED THE 17TH FEBRUARY, 1937, FROM THE CHAIRMAN OF THE INDIAN VILLAGE WELFARE ASSOCIATION, WESTMINSTER, TO THE SECRETARY TO THE GOVERNMENT OF INDIA, DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

I am hopeful that the activities of the Indian Village Welfare Association, of which I have had the privilege of being Chairman since the date of its inception in 1931, have already been brought to the notice of the Government of India.

The objects of the Association are briefly—

- (a) the collection and dissemination of information regarding rural activities in India;
- (b) the furtherance of schemes and experiments for the promotion of rural welfare; and
- (c) the holding of schools and other educational activities for arousing interest in the needs of rural India.

2. I would draw attention to certain measures which the Association, in spite of its limited resources, has attempted to carry out by disseminating valuable information and by its educational activities.

In the former direction, I would refer to the leaflets which have been broadcasted in India on the subject of Child marriage; and, in particular, to a small pamphlet "Rural Welfare in India", by Mr. C. P. Strickland, which has been widely distributed in India and other countries. I have reason to hope that these and other publications of the Association have proved of value to the progress of rural reform.

In the latter direction, I would refer to the Eastern School, which is organised every year by the Association, and is attended by I. C. S. probationers and by others engaged in, or intending to engage in, rural work in India. The Association has been successful in enlisting the co-operation of men admirably qualified to afford stimulating advice, based upon long experience, to those who may be expected to take a leading part in rural activities in the future.

3. I hasten to add that, in these and other activities, the Association has worked in the closest co-operation with successive Secretaries of State and High Commissioners for India, and I gladly take this opportunity of recording the gratitude of myself and of the Association for the sympathy and help which have been given ungrudgingly from these quarters.

4. During the last year, many members of the Association and others interested in our work from varying aspects, discussed with me informally and from time to time the possible extension of these activities and, in particular, whether something on the lines which we have been attempting in England could not be developed in India.

I therefore invited members of the Association, together with others connected with similar Associations, to attend a meeting held at the Caxton Hall on October 15th, 1936, with Sir George Anderson in the Chair. A wide and influential response was given to my invitation; and the discussion at the meeting indicated a very widespread appreciation of the urgent need for promoting wider and more practical facilities for study and training in the problems of public administration in India, especially in relation to the social services.

5. General unanimity having thus been established, it was decided that a representation should be sent to the Government of India on the subject, in which the general principles of this development should be defined. It was also felt that, though it might be inadvisable to go into detail and to recommend a definite scheme, it was none the less advisable to provide a clear indication of what was in the minds of those attending the meeting if only as a suggestion of the kind of work which might be attempted. A Committee was therefore appointed to prepare an outline of a scheme in accordance with the general sense of the meeting. I myself attended the final meeting of this Committee, as also did Mr. F. W. H. Smith of the India Office.

6. The report of the Committee was presented to a further general meeting, which I summoned on February 9th, 1937.

7. A unanimous desire of the meeting was expressed that I should address the Government of India in the terms of this letter, and that I should make the request that this important matter should be placed before the Central Advisory Board of Education. Such procedure appeared to the meeting to be appropriate in that, it is understood, the Board includes representatives not only of provincial governments but also of Indian universities and of the Central Legislature.

8. I myself concur wholeheartedly with the opinions strongly expressed at both meetings that, especially in view of the new Constitution which is shortly to be put into operation in India and of the increasing and welcome importance now attached to the task of rural reform and to social problems, a Centre or Centres should be established in India, in which an impartial and thorough examination of problems concerned with the social services could be carried out and by means of which courses of training could be arranged for those engaged, or about to be engaged, in this work in its many aspects.

9. Our discussions and deliberations have been much facilitated by the presence and co-operation of Mr. C. M. Lloyd and Miss Eckhard of the London School of Economics and Sociology. We realise that what has been accomplished so successfully by this institution in the United Kingdom

may not be altogether suited to Indian conditions; at the same time it is felt widely here that something on similar lines and in a manner suited to the requirements of India is an urgent and imperative need.

Considerable hesitation was, however, expressed at both meetings in recommending the institution of a university department for the purpose. Fear was entertained that, in this event, the study and training would be of too academic a nature and that the interest of universities might tend to flag, especially as both meetings were strongly of opinion that, though in some cases diplomas might be awarded, such examination or tests as might be held should not form part of the normal university courses for a degree.

It was therefore decided to recommend that, though the proposed functions might conveniently be carried out under the aegis of a university or universities, the actual organising agency should be representative of Government, of the university or universities concerned, and of appropriate private associations.

10. A further fear was expressed in this connection that, even if the above recommendation were found to be appropriate, it might impose an additional, though indirect, burden on the responsibilities and resources of universities, and thus there might be a danger of extravagant and unfortunate duplication of effort. My Association and I therefore feel that there should not be more than perhaps three Social Service Centres; and that, indeed, it may be advisable at the outset to concentrate attention on a single such Centre.

The opinion was therefore expressed that Delhi would be the most appropriate Centre, and that participation by the University of Delhi would form a most suitable contribution to be made by that University in the direction of specialised study and research. The additional advantage would be that (it is understood) accommodation might be available either on the old Viceregal estate or in its close vicinity. Delhi is also fortunate in the number of social workers and of men and women, official and non-official, who possess ample experience of the problems of public administration and social service, and whose participation in the work of the proposed Centre would be of the utmost value.

11. Further details of the proposed Centre were discussed both by the general meetings and by the Committee referred to above. It was felt that such details could be defined far more appropriately in India, and especially, it is hoped, by the Central Advisory Board of Education. On the other hand, the opinion was expressed that the results of our deliberations might be of some value in India; they are therefore forwarded in the form of a memorandum attached to this letter.

12. It is but natural that the function of financing the project came under our consideration. It has been difficult to prepare even rough estimates either of revenue or expenditure but I have been requested to express the hope that the Government of India and at least those provincial governments likely to benefit by the acceptance of this proposal will find it possible to assist materially in subsidising a scheme which, in my opinion, will prove of great value to the welfare of India.

I am the more inclined to believe that this recommendation will be found possible by the fact that generous provision has been made by the Government of India in the current year's budget and in that of the preceding year towards the task of rural development. I have been requested

by the Indian Village Welfare Association and by those associated with the present proposals to express our heartfelt appreciation of this outward and visible sign of the importance attached by the Government of India to the cause which my Association is striving to assist. I would suggest, in conclusion, that this generous provision would be even more fruitful of beneficial results, if there were at hand a body of workers, official and non-official, who had received the incentive of experienced training, and were supported by collections and compilations of books and works of reference dealing with the several spheres of activity.

We would be glad to examine this scheme further in any direction you may desire or to answer any question.

INDIAN VILLAGE WELFARE ASSOCIATION.

Draft Proposals for the establishment of a Centre for study in Social Service and Public Administration.

The need and importance of promoting a scientific and impartial study of public administration in India, especially in relation to the social services, has in recent years become increasingly evident. The necessity of training those who are taking, or intend to take, part in these activities is also abundantly clear to all who study the efforts now being made by official and unofficial agencies in the direction of social improvement. Many of those actually engaged in this work possess an imperfect knowledge of the theory and practice that should guide their service; and branches of activity, which are or should be interdependent, often show a distressing lack of co-ordination. The theory and practice of local administration, which is so closely connected with the social services, itself also requires careful examination. The present position in India in this respect is scarcely satisfactory. Local administrators, being often limited in their outlook and experience, not infrequently suffer from a confusion of thought, and tend to take action which may be inimical to progress. The degree of control and co-ordination, which is required by the modern idea of ministerial responsibility, is imperfectly realized in India, and the beneficent results, which should flow from a well ordered administration of the social services by local bodies, are thereby jeopardized.

The Indian Village Welfare Association has for some years interested itself in this question, and has conducted an annual Easter School in England for I. C. S. probationers and other persons who contemplate or are actually engaged in social service work in India. The success of this School has been encouraging and suggests that courses of similar study and training in India, wider in scope and certainly more practical in their nature than is possible for students of Indian conditions in England, are an urgent and imperative need.

The time is opportune for instituting such courses in India, for a new field of national service will be opened to all Indian citizens under the new system of government. Sir Francis Younghusband, Chairman of the Indian Village Welfare Association, therefore called together a group of individuals, some of whom have experience at first hand of official or unofficial work in India, while others have been concerned in the training of adult students for social service in England. The proposals contained in this memorandum are the outcome of the deliberations of this group.

A. The course should aim at providing facilities for the study of the

I. The content of the social services in India in particular and of other countries in a general manner; of the conduct of public administration (including local administration) in the field of the social services; and of the methods of expanding and improving these services.

Further, (1) both rural and urban social services should be included in the course;

(2) on the other hand, general administration (law, revenue, etc.) should be excluded;

(3) the approach to this course of study and training should be practical as well as theoretical. Intimate contact with the actual conditions of Indian life, rural and urban, is imperative.

B. The data and information on which the studies should be based are at present inadequate. The material which exists is not always convenient in form or entirely unbiased. It will be desirable, when the courses have been established, but not as an indispensable preliminary, to arrange that local surveys be conducted by experts. In such surveys university students might take part under guidance, but the close supervision of an expert is always essential.

We have been informed that Professor Mahalanobis, Secretary of the Indian Statistical Institute, would be prepared to render expert guidance on the matter of surveys, on the basis of the experience which he has already gained.

A library containing the most appropriate literature of India and other countries should be liberally equipped, and should include suitable books and other compilations, dealing with the social services.

The most convenient language for the courses will be English, but the possibility of short courses in the vernacular should also be considered.

We consider that the participants should be:—(a) Social workers, men

or women, who desire training for a career of social service or of public administration;

(b) officials (approved by their governments), and non-officials who do not contemplate a full career of social service but who might usefully undergo a period of training either for their own benefit or for that of their employees;

Governments themselves may find it advisable that officers of appropriate departments should attend a course during their period of probation or a few years later;

(c) the general public.

The length of the course that we envisage for the first category might be one year. For the second category the duration would vary from one month to three months or more, as experience might prove desirable. The manner of providing for the general public cannot at present be foreseen; short courses or single lectures would no doubt be attractive.

Women should be admitted equally with men to all the courses.

Although it is hoped that undergraduates of the universities would benefit indirectly from the scheme, the training of undergraduates as such does not fall within the scope of these proposals.

The award of a Diploma may be useful in the case of the first category of participants, but any examination or test which may be imposed should, in our opinion, not form part of any university course for a degree.

Fees should be charged for attendance at all courses.

We consider that (a) though the official and departmental courses, which are at present held in several provinces, are not without profit to those who are instructed in them, their scope and method are not such as to meet the requirements of our scheme, and cannot be so widened as to meet them;

(b) though certain Indian universities have made experiments in the proposed direction, a course conducted entirely by a university tends to be insufficiently practical. It is also conceivable that the interest of a university might flag if, as we recommend, the social service course be not an integral part of university work for a degree;

(c) though such unofficial bodies as the Y. M. C. A. and other societies, whether Indian or non-Indian, including missionary societies have made a valuable contribution towards the desired object, their approach and treatment are of too limited a nature for our purpose.

We consider that social service training of the proposed type is a matter with which governments in India are immediately concerned. Moreover, financial assistance from governments will be required. Though, therefore, the conduct of the courses may conveniently be carried on under the ægis of a university or universities, the actual organising and controlling agency should stand on a broader basis, and might consist of a Committee or Council representative of the governments and universities of the area which the School should serve, together with a substantial un-official representation in order that the spirit of the controlling body should be neither excessively official nor unduly academic.

It is not possible to foresee how many Schools of Social Service and Public Administration will eventually suffice for the needs of India. If the scheme became "provincial", and many universities in India sought forthwith to embark upon such a course, there might be a dangerous duplication of effort, and in consequence a lowering of standards. Our suggestion consequently is that a single School be started experimentally in one centre; and without in any way prejudging the future development of the scheme, we recommend that Delhi be selected in the first place. Generous assistance from the Government of India will be necessary, and it may be hoped that funds will be forthcoming in the same manner as those recently granted for rural reconstruction, or that a portion of these grants may be allotted for our purpose. The Government of India will itself be able to watch and to assist the experiment at Delhi; accommodation for a hostel and lecture-rooms is likely to be available, and there are already at hand, both within and outside the University of Delhi, a number of men and women of experience, whose participation in the work of the proposed Centre would be of great value.

An experienced Director of Studies as Principal of the School will be indispensable. We cannot foresee whether the right individual will be found in India, either within the "beneficent departments" or among academic or social workers, or whether he should be engaged from overseas, where considerable experience of work of this nature has already been gained. In either case we urge that adequate emoluments be granted and

IV. Staff.

we consider that his conditions of service should not be inferior to those of the head of an important College. The Director should be provided with a Librarian and clerical establishment; a building for the residence and teaching of those who take part in the courses will be required; and in addition to the direct instruction to be given by the Principal himself—a sufficient portion of his time must be reserved for his directorial duties—temporary lecturers who will give courses of lectures on technical branches of social work and administration should be seconded from Government service or engaged on suitable terms, wherever they may be found. Funds should be provided to meet the expenses of both official and unofficial lecturers, and to supply suitable honoraria where necessary.

The participants will accompany the Principal or the technical lecturers on visits to places of interest and relevance in connection with their studies, and will pursue their investigations on the spot. We attach the highest importance to this part of our proposals.

Presenting, as we do, only the outline of a scheme, we do not feel it incumbent upon us, nor would it be possible, to estimate the exact cost of our proposals. We have referred to two sources of income, viz., the fees of participants in the courses, and grants from the Government of India. The latter should, if the experiment is to be fully tested, be continued for not less than three years. It appears reasonable that, if the first School be founded in Delhi, grants should be made by the governments of the provinces neighbouring to that centre. Grants might also be expected from the universities in these provinces. In this connection we suggest that if the grants of the provincial governments are made wholly or in part through the Rural Development Board or similar body which is engaged in the promotion of rural welfare in each province, a valuable link will be forged, and the practical studies of those who take part in the course will be facilitated.

In conclusion, we beg the Government of India—

- (1) to place our memorandum before the Central Advisory Education Board, in order to obtain their opinion; and
- (2) if the Board commends our proposals, to assist in carrying out this project, which we believe to be of the highest importance to India under her reformed constitution.

(c) EXTRACT FROM PARA. 10 OF THE PROCEEDINGS OF THE FIFTH MEETING OF THE CENTRAL ADVISORY BOARD OF EDUCATION.

In 1937, Sir Francis Younghusband, Chairman of the Indian Village Welfare Association, Westminster, forwarded, on behalf of his Association, a draft scheme for the establishment of a centre in India for study in social service and public administration and requested the Government of India:—

- (a) to place the scheme before the Central Advisory Board of Education in India; and
- (b) if the Board commends the scheme, to assist in carrying out the project.

The main proposals are:

- (i) That a centre or centres should be established in India in which an impartial and thorough examination of the problem concerned with the social services could be carried out and

by means of which courses of training could be arranged for those engaged, or about to be engaged, in this work in its many aspects;

- (ii) That though the centres might be under the ægis of a university or universities, the actual organising agency should be representative of the Government, of the university or universities concerned and of appropriate private associations;
- (iii) That there should not be more than 3 social service centres and in the first instance attention should be concentrated on a single centre which might be established in Delhi; and
- (iv) That the Government of India and the Provinces, which are likely to benefit, should bear, in due proportion the cost of the scheme.

After careful consideration the Board decided that a committee consisting of the following members, with powers to co-opt, be appointed to examine the issues arising from the proposed scheme and report to the Board:—

1. The Hon'ble Sir Maurice Gwyer, K.C.B., K.C.S.I., Chief Justice of India. *Chairman.*
2. Sir V. T. Krishnamachari, K.C.I.E., Dewan of Baroda.
3. The Right Revd. G. D. Barne, C.I.E., O.B.E., V.D., Bishop of Lahore.
4. Rajkumari Amrit Kaur.
5. Dr. R. C. Mazumdar, Ph.D., Vice-Chancellor, Dacca University.
6. Dr. A. F. Rahman, LL.D., B.A. (Oxon.), Member, Federal Public Service Commission.
7. Lala Shri Ram.
8. The Educational Commissioner with the Government of India.

(d) NOTE BY MR. S. D. MATHUR, EXECUTIVE OFFICER, MUNICIPAL BOARD, AGRA.

The utility of a centre for the introduction of practical education as against the present day academical education cannot be questioned. The absence of such an institution in India is largely responsible for the turn-out of incapable and unpractical staff in various departments of administration. The University education is limited mostly to the theoretical courses. The practical side is totally neglected. The result is that people have to go to foreign countries for training in practical side of education. Foreign education has, no doubt, its own value and no educated Indian will grudge the acquisition of foreign education by his country-men where they take advantage of a broader out-look and return with advanced views. But it is not within the province of the majority of my country-men to take that step.

It cannot be denied that want of practical education has been one of the causes of the failure of services in India on a large scale. The Universities turn out inefficient material. The products of these Universities are physically and mentally bankrupt to take up responsible jobs in the practical field of day-to-day administration and to adopt themselves to changing circumstances. A student of politics knows well what was done

6. Relation of statutory to voluntary work.
7. Individualisation, *e.g.*,
 - (a) Mental Health and Mental Deficiency work;
 - (b) Child Guidance Clinics, etc., and Delinquency;
 - (c) Unemployment and "Maladjustment"; Residual Problems.

C.—CERTIFICATE OF TRAINING FOR SOCIAL WORK.

This course will consist of (1) three Terms' work at the Centre under supervisors approved by the Committee for social studies; and (2) either (a) a period of supervised practical work in connection with some approved organisation or organisations for social or industrial work, or (b) an inquiry into some problems of rural or urban conditions of administration in a selected district with a report thereon.

- (e) AN ANSWER TO THE QUESTION "SHOULD SOME FORM OF SOCIAL SERVICE BE MADE COMPULSORY FOR ALL STUDENTS AT SOME STAGE OF THEIR SCHOOL OR UNIVERSITY COURSE?"

The following scheme is put forward on behalf of the Indian Public Schools Conference.

To prevent this note becoming too long, the reasons for some of the proposals are either omitted or only hinted at. The authors are prepared of course to give their reasons at length later on, if required.

The scheme is as follows:—

1. A period of three months continuous compulsory social service should be required of every undergraduate in India.

2. No undergraduate should be allowed to take his degree without a certificate that he has satisfactorily performed this service for this period.

3. It will help this scheme if all B.A. and other degree courses extend over at least three years; if Matric courses are lengthened by one year; if Intermediate courses are abolished; and if undergraduates are not admitted to degree courses before their 17th birthday.

4. The social service should be performed in 'winter camps' situated at convenient places in each University area. It is not at all necessary for the same places to be selected every year. Therefore the accommodation provided should be cheap and temporary, (*e.g.*, tents or huts) and the life in them should be organized much as it is in a University Training Corps.

5. These camps should be opened annually for three months during the period November to March when the weather is cool.

6. Undergraduates should normally attend during their first academic year; but those taking a course lasting more than three years may more conveniently be sent to camp in a later year. Those prevented by unavoidable causes from attending in the year in which they were due to attend must attend in the next year.

7. It is thought to be possible for undergraduates who have attended a winter camp to make up some of the lectures which they have missed by decreasing the length of the summer vacation which precedes or follows their winter camp. Be that practicable or not, the authors consider that it ought to be possible to help on every undergraduate with part of his studies in the camps themselves by means of evening lectures.

8. The camps should be staffed by:—

- (a) Government or State officials of the various nation-building departments who should plan direct and supervise all the manual work done. They will be paid by Governments or States as usual. No special allowances are needed for them.
- (b) College teachers, who will be drawing their usual College salaries while in camp. We feel it to be not too much to call on Colleges to spare some teachers for these camps as each College will also be sending many undergraduates. They should assist in maintaining discipline and in the camp routine organization and recreation and should help in all field work which can be correlated with University studies. They may be able also to give some evening lectures in the camps.

(One member of the Conference has also suggested obtaining the services of some one very well qualified to act as camp commandant with his own Staff. There are several ideas about the selection of this important person. One is that he should be an Army officer with a few N. C. O.'s, seconded for three months. If he were, all undergraduates who belonged to the University Training Corps might do some of their annual training in the camp. Another is that he should be a well known social worker or doctor who brought with him some voluntary workers to help. It seems very desirable that those people who act as camp commandants are normally employed as such year after year.

Enough first class people might be found (only one for each camp) who were willing to come for nothing or with free board and lodging only in order to perform an important piece of social service. If however they had to be paid, the cost should fall on both the Government or State and the University in the area of which the camp was situated in some agreed proportion.)

9. Undergraduates should be transported to and from the camp and fed and lodged in it without cost to them but should receive no pay.

These charges and all charges connected with the running of the camp should be borne in full by the Government or State in the area of which the camp is situated. As against this the Government or State would be getting some free labour for three months.

The camps should be run very simply and great efforts should be made to avoid having to employ a single paid servant.

10. The work done in a camp should be of three kinds—

- (a) camp duties of all kinds;
- (b) coolie work;
- (c) field work which, while sometimes involving manual work, should also demand skill and which should so far as possible be correlated with some University study.

Work (a) may have to be done by each undergraduate, for, say, one week during which he will do nothing else.

Examples:—

cooking, cleaning, sanitation.

Work (b) should normally be done by everyone not employed on *work (a)* for half of each working day. Raw undergraduates would not have the strength to do work of this kind for longer hours. It would be chosen and supervised by Government officials. Examples:—anti-erosion work, digging of canals, deepening of tanks, road building.

Work (c) should occupy the other half of each working day. Undergraduates should as far as possible be employed on work related to their studies, e.g.—

Medical students—village clinics,

Agricultural students—agriculture and afforestation,

Economics students—village surveys,

B.T. students—village schools,

Geography students—map making and local geography and so on.

But there would be some students who could not be fitted in so easily. They would have to take on literacy, sanitation and other campaigns in nearby villages and to lecture villagers at bazars and elsewhere. The probability of finding sufficient work of type (c) should be an important consideration when choosing the site of a camp. If the commandant of a camp were an army officer, University training corps parades might count as work of type (c). Also an advanced course of first aid or life-saving. A good deal more thought is required about work of type (c).

11. An undergraduate considered unfit by the camp doctor for work of type (b) should be kept fully employed on work of types (a) and (c).

12. This scheme has been framed for male undergraduates only. But there seem to be no insuperable reasons against holding camps for women students also and many in favour of them. Of course they would differ on many details but the main objects to be secured in both camps would be same. These are:—

(a) to kill the present aversion to manual work by urbanized students;

(b) to foster a spirit of self-help;

(c) to develop physical fitness and endurance through manual work;

(d) to interest students in rural life by bringing them into touch with it;

(e) to show many of them the practical value of their academic studies;

(f) to get useful work done in the countryside;

(g) to advertise and help on the work of rural reconstruction;

(h) to produce a new generation of adults who will do more even than this for village life.

LIST OF PUBLICATIONS OF THE BUREAU OF
EDUCATION IN INDIA

Serial No.	Name of Publications	Year of Publication
1	Report on Vocational Education in India (Delhi, the Punjab and the United Provinces) (E.H.L.—34).	1937
2*	Report of the Women's education committee on primary education of girls in India—1936.	1937
3*	Report of the Women's education committee of Central Advisory Board of Education to consider curriculum of Girls' Primary Schools in India.	1937
4*	Report of the vernacular education committee of the Central Advisory Board of Education appointed to consider certain questions connected with the administration and control of Primary education.	1937
5	Report of the First committee of Central Advisory Board of Education appointed to consider the Wardha Education Scheme (E.H.L. 40).	1938
6	Report of the 2nd Wardha Education committee of the Central Advisory Board of Education (App. IV to 5th meeting proceedings).	1940
7	Report of the Adult Education Committee of the Central Advisory Board of Education, 1939. (E.H.L. 46) (App. III to 5th Meeting proceedings).	1940
8	Report of the Social Service and Public Administration Committee of the Central Advisory Board of Education in India, 1940 together with the decisions of the Board thereon. (E.C. 6).	1941
9†	Report of the Joint Committee appointed by the Central Advisory Board of Health and Central Advisory Board of Education on the Medical Inspection of School Children.	1941
10	Report of the Scientific Terminology Committee of the Central Advisory Board of Education in India, 1940, together with the decisions of the Board thereon. (E.C. 5)	1941
11	Proceedings of the 6th Meeting of the Central Advisory Board of Education held at Madras on 7th and 12th January, 1941. (E.C. 4 VI).	1942
12	Proceedings of the 7th Meeting of the Central Advisory Board of Education in India held at Hyderabad, Deccan on 14th and 15th January, 1942. (E.C. 4 VII).	1942
13	Report of the School Building Committee. (E.C. 8).	1942
14	Report of the Uniform Braille Code Committee. (E.C. 7).	1942
15	Report of the Examination Committee, 1942. (E.C. 12).	1942
16	Report of the Expert Committee on a Uniform Braille Code for India with the Braille charts printed in India Alphabets 1942.	1941
17	Proceedings of the 8th Meeting of the Central Advisory Board of Education held at Lucknow. (E.C. 4 VIII).	1943
18	Report of the Joint Committee of the Central Advisory Board of Education and the Inter-University Board appointed to investigate the question of the relation of the school leaving certificate Examination to the Matriculation Examination, 1942. (E.C. 9).	1943
19	Report of the Committee of the Central Advisory Board of Education on the Training, Recruitment and Conditions of service of teachers. (E.C. 10).	1943
20	Report of the Committee of the Central Advisory Board of Education appointed to consider the question of the recruitment to the Education Officer, 1942 together with the decisions of the Board thereon. (E.C. 11).	1943
21	Report of the Examination Committee.	1943
22	Proceedings of the 9th and 10th Meetings of the Central Advisory Board of Education in India held in October 1943 and January 1944 respectively. (E.C. 4 IX & X).	1944

Continued on page (ii)

*Not published previously, but proposed to be included in future reprints.

†Published by the Central Advisory Board of Health.

LIST OF PUBLICATIONS OF THE BUREAU OF
EDUCATION IN INDIA—*con.d.*

<i>Serial No.</i>	<i>Name of Publications</i>	<i>Year of Publication</i>
23	Report of the Technical Education Committee 1943. (E.C. 16).	
24	Report of the Text Book Committee, 1943. (E.C. 15).	1944
25	Report of the Examination Committee (Technique of Examinations). 1943. (E.C. 17).	1944
26	Report of the Committee of Central Advisory Board of Education appointed to consider the question of Training, Recruitment and condition of service in Universities, etc., together with the decisions of the Board thereon. (E.C. 22).	1945
27	Report of the Central Advisory Board of Education on Post-War Educational Development in India, 1944. (E.C. 13).	1945
28	Volume containing reports of the Committee of Central Advisory Board of Education. (E.C. 14).	1945
29	Report of the Administration Committee of Central Advisory Board of Education.	1945
30	Proceedings of the 11th Meeting of the Central Advisory Board of Education. (E.C. 4 XI)	1945
31	Report of the Agricultural Education Committee of the Central Advisory Board of Education, 1944. (E.C. 20).	1945
32	Proceedings of the 12th Meeting of the Central Advisory Board of Education held at Mysore in January 1946.	1946
33	Report of the Religious Education Committee of the Central Advisory Board of Education.	1946
34	Development of Higher Technical Institutions in India (Interim Report of Sarkar's Committee).	1946
35	Report of the Committee of the Central Advisory Board of Education on selection of pupils for Higher Education.	1946
36	Report of the Central Advisory Board of Education on conditions of service of teachers.	1946

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GOVERNMENT OF INDIA
CENTRAL ADVISORY BOARD OF HEALTH

REPORT

on

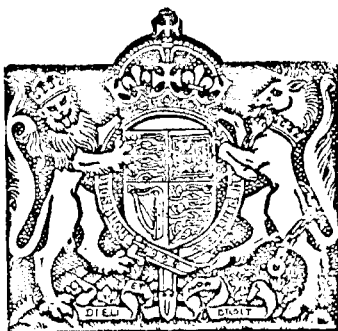
THE MEDICAL INSPECTION OF SCHOOL
CHILDREN AND THE TEACHING OF
HYGIENE IN SCHOOLS

by

The Joint Committee appointed by the Central
Advisory Board of Health and the Central
Advisory Board of Education

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Report of the Joint Committee appointed by the Central Advisory Board of Health and the Central Advisory Board of Education to investigate and Report on the Dual Question of the Medical Inspection of School Children and of the Teaching of Hygiene in Schools.

CHAPTER I.

INTRODUCTION.

The agenda for the third meeting of the Central Advisory Board of Health in July 1940 included the consideration of a memorandum from the Government of the Punjab on the teaching of hygiene in schools, two memoranda from the Governments of Madras and the Punjab on the medical inspection of school children and a combined memorandum on the two subjects by the Educational Commissioner with the Government of India.

The Board considered that, owing to the magnitude and importance of the questions, they required fuller consideration and in a resolution asked the Chairman to appoint a committee to report on the subject. The resolution of the Board is as follows:—

“The Board, having considered the memoranda submitted by the Governments of the Punjab and Madras and by the Educational Commissioner with the Government of India, on ‘the teaching of hygiene in schools’ and on ‘medical inspection of children in schools’, considers that the two subjects are closely related. Systematic attention to the health of children is an essential preliminary to any really remunerative system of instruction, whether it be on hygiene or other subjects in the curriculum. Where the physical condition of the child is unsatisfactory the money spent on educating him is largely wasted. The foregoing involves regular medical examination of school children, the treatment of illness and physical defects and the provision for undernourished children of such food as may be necessary to raise them to an average physical standard. Teaching is not likely to be a success if the general school environment does not conform to reasonable hygienic standards. Information is necessary as to what extent these requirements are met in the different Provinces and how best existing defects may be remedied at the least possible cost.

The Board therefore recommends that the Chairman should appoint a special committee to report on the dual question of the teaching of hygiene in schools, primary as well as secondary, rural as well as urban and of the medical inspection of school children and their treatment and, in the primary stage, also their nutrition.”

At their meeting in January 1941 the Central Advisory Board of Education were informed of the decision of the Central Advisory Board of Health, and they passed the following resolution:—

“The Board considered the memorandum submitted on behalf of the Central Advisory Board of Health as the outcome of the discussion at its third meeting held in Poona in July 1940. The Board noted with satisfaction that their Chairman, who is also the Chairman of the Central Advisory Board of Health, proposed to appoint a Joint Committee to consider the steps which might be taken to improve the physical condition of school children. The Board decided to leave to the Chairman the selection of the educationists to serve on the proposed Joint Committee.”

As a result the Hon'ble Member for Education, Health and Lands, appointed the following Committee:—

1. Major-General Sir Gordon Jolly, K.C.I.E., K.H.P., I.M.S., Director-General, Indian Medical Service.
2. Lieut.-Colonel E. Cotter, I.M.S., Public Health Commissioner with the Government of India.
3. Major-General W. C. Paton, K.H.P., I.M.S., Surgeon-General with the Government of Bengal.
4. Rai Bahadur Dr. A. C. Banerjea, Director of Public Health, United Provinces.
5. Lieut.-Colonel C. M. Ganapathy, C.I.E., I.M.S., late Director of Public Health, Madras.
6. John Sargent, Esq., C.I.E., Educational Commissioner with the Government of India.
7. S. N. Moos, Esq., I.E.S., Director of Public Instruction, Bombay.
8. Dr. W. A. Jenkins, I.E.S., Special Officer in the office of the Director of Public Instruction, Bengal.
9. Pandit Lakshmi Kanta Maitra, M.L.A.

The Committee met in New Delhi on the 3rd and 4th November 1941 under the Chairmanship of the Director-General, Indian Medical Service. All were able to attend with the exception of Pandit Lakshmi Kanta Maitra who was unavoidably prevented from doing so.

Before starting their deliberations the Committee decided to co-opt Dr. Jean Orkney, W.M.S., Director, Maternity and Child Welfare Bureau, Indian Red Cross Society, as a member.

The terms of reference to the Committee were sufficiently wide to include the examination of all those factors which have a bearing on the health of the school child. As health is to be interpreted in a wider sense than that of freedom from disease, the main points for consideration appeared to the Committee to be (1) the medical inspection of school children, (2) the treatment of the defects discovered, (3) the improvement of the nutrition of the pupils, (4) the provision of a reasonable standard of environmental hygiene, (5) the teaching, theoretical and practical, of

the principles of hygienic living, (6) physical education and (7) the development of healthy habits through the medium of corporate activities such as school camps and scout organisations.

In order to obtain information about the extent to which provision now exists in the Provinces and States for these activities, a questionnaire was sent by the Secretary of the Central Advisory Board of Health to Directors of Public Health asking that it should be completed in consultation with Administrative Medical Officers and Directors of Public Instruction. The information received in reply to the questionnaire was available for the members of the Committee before and during their discussions.

HISTORICAL.

As the movement to develop a school medical service in India has been largely influenced by the corresponding work done in England it will not be out of place to give a short account of the development of this service in that country. The foundations of the school health service in England were laid towards the end of the last century by a few local authorities to whom the high mortality rates during childhood had become a matter of concern and uneasiness. The schemes were at first local in nature and limited in scope. Impetus was given to the movement by the outbreak of the South African war. The medical examination of recruits disclosed a high incidence of defects, sufficiently serious to necessitate the rejection of a large number of men as unfit for active service. The publicity given to these findings quickened public consciousness to the necessity for improving the physical fitness of the nation's manhood.

A Royal Commission was appointed in Scotland to consider the question of physical training in schools. The Commission took a wide view of their duties and reported not only on the physical training and physique of the children but also on the unsuitability of many school buildings, the defective hygiene in schools and poor nourishment of the children.

The publication of this report greatly stirred the public mind and resulted in the appointment in England of an Inter-departmental Committee on Physical Deterioration which was soon followed by another Inter-departmental Committee on Medical Inspection and Feeding of Children attending Public Elementary Schools. The recommendations of the latter were published in 1905 and they formed the real starting point for the legislation directed since then towards the improvement of the health and life of the school child.

A big stride forward was taken in 1907 when the Education (Administrative Provision) Act was passed making a system of medical inspection of children in public elementary schools a statutory obligation on every local education authority. In this way a new branch of the national health service was brought into existence. That year also saw the appointment of Sir George Newman as Chief Medical Officer of the Board of Education. He lost no time in drawing up rules for the conduct of medical inspection and these rules were later issued as a memorandum. He also began the publication of reports which were the forerunners of the long series of admirable reports on the health of the school child published annually by the Board of Education. Sir George Newman

undoubtedly gave to medical inspection its breadth of outlook and its conception of the essential unity of the home and school life of the child, and he laid the foundations which have given the school medical services in England the high position which they hold to-day.

The Education Act of 1921 went a step further and made it compulsory for all authorities to make adequate arrangements for the treatment of children attending public elementary schools. It required the Education Committees of Counties and County Boroughs to extend the arrangements for medical inspection of boys and girls up to the age of 18 years attending municipal schools and gave powers to provide for their treatment.

The development of public health services in India has been of more recent origin and Provincial Governments have been largely concerned with the urgent problems of providing medical relief and of controlling the incidence of epidemic diseases which occur on a wide scale.

In the next paragraph a brief account is given of the development of the school medical service in Provinces and in certain States.

In the *N.-W. F. Province* a scheme for the medical inspection of school boys in Peshawar City was started in 1927 and in the succeeding ten years was extended to five other towns. In 1937 the medical inspection of school girls began in Peshawar City and later was extended to certain rural areas. In 1941 owing to the large number of doctors joining up from the Province for service in the Army the scheme has been temporarily discontinued except for school girls in Peshawar City. In *the Punjab* the medical inspection of school children and the inspection of school premises started in 1915 and was at first confined to secondary schools. No arrangements were made for treatment. In 1925 a revised scheme was introduced in five districts, medical inspection and treatment being provided for primary schools and colleges within a radius of three miles from a hospital or dispensary. The inspection was carried out by the hospital staff and the inspection of buildings and premises by the local health officers. In this way the work was divided between the medical and public health departments of the Province. The dual control was found to work unsatisfactorily and the whole scheme was transferred to the Medical Department in 1933. In 1937, there was another change of policy. In the towns in which wholetime health officers were employed the work was handed over to them. In the rural areas it continued to be under the supervision of the Medical Department. All the schemes applied only to school boys; the medical inspection of school girls has been carried out since November 1932 in certain areas under the auspices of the Junior Red Cross. In *Delhi Province* the medical inspection of school boys and girls was started in 1927 with wholetime inspecting staff for the urban, and part-time staff for the rural areas. The part-time services of an oculist and a dentist for New Delhi and the Notified Area were secured in 1937. The scheme is still limited to a certain number of schools in the Province and includes 16 girls' schools in urban areas. In *the United Provinces* a scheme was started in 1919 with the part-time employment of private practitioners and dispensary doctors to do medical inspection. In 1926 the Education Department appointed ten wholetime school medical officers for ten of the larger towns. At the same time municipal and district health officers were being appointed in different areas under

the Public Health Department so that in 1930 there were three separate agencies for school health work, namely (a) local school committees, (b) the Education Department and (c) the Public Health Department. In 1931 the control of the service was brought under the Public Health Department and at present wholtime school medical officers are employed in 13 large towns. The municipal health officers do the work in 21 smaller towns and in 27 still smaller towns the district health officer is the school medical officer. In *Bihar* medical inspection started in 1920 and a school medical officer with an assistant school medical officer was appointed for each division in the Province. A woman doctor was appointed for the whole province. At first the school medical officers were under the Inspectors of Schools, but in 1931 were brought under the control of the Public Health Department and this organisation exists up to now. Medical inspection is limited to high and middle schools in places where high schools already exist. *Orissa* follows the same lines as *Bihar* from which it was separated and has one school medical officer with an assistant medical officer and they work in high and middle schools. In rural areas the part-time services of dispensary doctors are utilised for the medical inspection of middle schools. A limited amount of medical inspection of school girls is done in three towns by women doctors. In *Bengal* a school hygiene branch of the Public Health Department was created in 1920 and inspections were carried out in municipalities where a health officer was employed. In 1928 a scheme for *Calcutta* came into force and three doctors were employed on a part-time basis with the voluntary services of an oculist and a dentist. In 1932, owing to retrenchment, the scheme was drastically reduced. In 1940 additional doctors were sanctioned and the school medical service was placed under the Director of Public Health. In *Bombay* a scheme was started in 1921 but was abandoned in 1922 as a measure of retrenchment. In 1938 the Government introduced physical education as a compulsory subject and required that satisfactory arrangements should be made to examine all pupils at the beginning of each year in order to determine their physical fitness. It is stated that in Government schools medical inspection is carried out by Government medical officers and secondary schools under non-official agencies make their own arrangements while local authorities have been asked to provide for medical inspection in primary schools through private practitioners or Government doctors. In *Madras* a scheme applicable only to recognised secondary schools was introduced in 1925 and was extended in 1928 to colleges and to elementary schools for boys in those areas in which compulsory education was in force. The scheme was suspended in 1932 owing to financial stringency and has not yet been revived and medical inspection is now confined to schools in the city of *Madras* and in the *Poonamallee Health Unit*. In *Hyderabad* medical inspection was started in 1935 in middle and high schools and was extended in 1937 to the primary sections of such schools. In *Baroda* medical inspection of school children in the city was started as far back as 1909 and has continued up-to-date on a limited scale. In 1925 medical inspection was extended to other places in the State with hospitals and dispensaries. In *Mysore* a scheme for medical inspection of school children was sanctioned in 1926 for *Bangalore City*. The scheme was confined to Government high and middle schools and was extended in 1927 to primary schools. In 1928 all the boys schools in the State were brought within the scope of the scheme wherever medical men were available to undertake

the work. At present medical inspection is carried out in the two cities of Bangalore and Mysore, in the headquarter towns of five districts, in 80 per cent. of taluk headquarters and in a few villages.

From this brief summary of the development of school medical service in the different Provinces and States it will be seen that the area covered by the service varies widely as well as the types of schools in which medical inspection is done. Medical inspection in girls schools is limited. The schemes seem to cater more for middle and high schools than for primary schools.

The Committee wish to draw special attention to the frequency with which a system of medical inspection has been started in a Province, only to be abandoned after a short while as a measure of economy. There have also been a number of instances of change in policy which seem to indicate that there has not been a clear appreciation of the fundamental necessity for and the essential characteristics of a school-medical scheme calculated to promote the health of the school child. The Committee emphasise that satisfactory arrangements for school medical inspection and treatment form an essential part of any efficient system of public education.

CHAPTER II.

AIMS AND OBJECTS OF A SCHOOL MEDICAL SERVICE.

In his annual report for 1926 Sir George Newman, Chief Medical Officer of the Board of Education, England and Wales, summarised the functions of a School Medical Service as follows:—

1. To fit the child to receive the education provided for it by the State. But this must also mean to adapt educational methods to the natural physiological capacity and powers of the child. This involves a study and understanding of the sphere and compass of a child's physiology.
2. To detect any departures from the normal physiological health and growth, any impairments, aberrations, defects, or disease (physical or mental), and advise the remedy or amelioration of them (at the school or otherwise) lest worse befall.
3. To seek the causes and conditions (external and internal to the body of the child) of such defect and disease, and, as far as may be, prevent them.
4. To teach and practise personal hygiene in every school, so that a habit of hygiene may be contracted by the children, and the way of physiological life may be followed by each coming generation.

Newman further stated that the purpose of a school health service is "to prepare the child for education and for citizenship". To carry out this purpose a system has been devised in England by which a specially appointed doctor visits each elementary school at least once a year and examines every child at least three times during his school career, namely, as early as possible after joining the school, at eight years of age and lastly at twelve. This medical officer also examines all children referred to him for special examinations during the intervals by teachers and parents. Provision has been made, on a wide scale, for the treatment of the defects discovered during medical examination. The essential unity of the child's life in his home and in the school has been recognised and the school health organisation seeks to remedy or ameliorate as far as possible, the environmental and other factors which militate in the home and in the school against the child's attaining the full measure of his mental and physical development. The physical education of the child, an improvement of his nutrition, the inculcation of healthy habits by proper health training and the securing of the active cooperation of the parents by educational work among them are being pursued as an integral part of the campaign for improved school health.

The Committee are of opinion that the aims and objects of a School Medical Service as defined by Sir George Newman are applicable to India and consider it absolutely essential that in this country steps should be taken at any rate to ensure that those children who are attending school are healthy and kept healthy. This is essential not only from the medical point of view but from the educational point of view.

From the brief survey of the development of the school health services in India given in the last chapter it will be realised that they are rudimentary in type. During reorganisation and expansion, the rate of

progress in India cannot be the same as in England for various reasons which will be briefly indicated, and the organisation of a fully developed school health service for the country as a whole is a matter which cannot be completed in the near future. Nevertheless, it is justifiable to hold that, while the problem in this country may require for its solution a slower advance and, what is equally important, experimentation in the methods of administration and organisation suited to Indian conditions, the time has arrived for taking stock of the position and for making a determined effort to mobilise the available resources, particularly in the larger towns and cities, for developing as complete a school health service as circumstances permit.

One of the biggest difficulties to be overcome in India is the inadequate number of qualified doctors and nurses. In this country with its population of nearly 400 millions, the total number of doctors is only 40,000 or one doctor for an average population of 10,000. In England the proportion of doctors to the population is about 10 to 12 times greater. In England the school nurse plays a large part in the programme of treatment, health education and improving the environmental conditions of the child's home but in India the total number of registered nurses is only about 5,000. It will obviously take a considerable time to remedy these deficiencies and in the meantime alternative methods will have to be considered for meeting our requirements. Suggestions for alternative methods are made in the later sections of this report.

The majority of doctors in India are concentrated in the urban areas while nearly 90 per cent of the population live in the villages. The development of a school health service can therefore be carried out more easily in the larger urban centres. Apart from the higher proportion of medical men, the concentration of the school population within narrower limits in towns and cities, the better facilities for transport and for treatment and the existence of a public health organisation are other advantages which can be fully utilised in developing school health work in urban areas. In fact, in some of the large cities in India the available resources appear to be such as to make it possible to organise school health work on as wide a basis as has been done in the West.

CHAPTER III.

MEDICAL INSPECTION.

The replies to the questionnaire show that the percentage of children with one or more defects discovered during medical inspection in 1940 varies from 20 per cent. in Jodhpur to 87 per cent. in Coorg. The conclusion which the Committee feel justified in drawing from the figures before them is that probably fifty per cent. of the children attending school would be found to require medical attention or medical observation.

AGE OF ADMISSION TO SCHOOL.

That the provision for the care of the child in the pre-school period is far from adequate was shown in the report of the Maternity and Child Welfare Committee presented to the Central Advisory Board of Health at its second meeting. Even in those areas where maternity and child welfare centres are functioning, it is rarely that children after the age of three receive any special attention and at this period of their lives they are easily liable to develop defects. For this reason it is important that the gap between maternity and child welfare work and the school medical service should be narrowed as much as possible. Where maternity and child welfare work does not exist, the need for bringing the children under an inspection scheme at the earliest possible age becomes even more urgent.

The Committee consider that too much weight cannot be given to health considerations in determining the age at which children should be admitted to school. The Committee are of the opinion that the age of school entry which will enable a child to come under medical inspection should be not more than six and preferably five.

NUMBER AND NATURE OF EXAMINATIONS.

Three types of medical inspection are required in a scheme, namely (1) the full routine medical inspection at specified ages, (2) the re-inspection of children found defective at such routine inspections and (3) the special inspections of children selected by the parent or the teacher for examination by the doctor in the intervals between the routine inspections. The extent of these special inspections will depend on the ability of the parents, and still more so of the teacher, to recognise those children who are failing to develop satisfactorily either physically, mentally or socially. The basis of medical inspection of school children in England is their routine examination as early as possible after joining the school, at eight years of age and again at twelve. In that country there has been considerable discussion as to the most desirable number of such routine examinations. Some critics argue that they are a waste of a doctor's time because they involve the examination of large numbers of children who are found quite normal in order to select a minority suffering from defects. The critics urge that the defects discovered are generally of such a nature that they can be detected by an observant parent or teacher and brought to the notice of the doctor. However even the most enthusiastic protagonists for reducing the frequency of school medical inspections in England seem to regard two examinations as the minimum; one at the beginning and one at the end of the

school career. In India the frequency of routine examinations has varied considerably from as often as every three months to three times in the school career. The Committee consider that many routine examinations now carried out in different parts of India are unnecessary and recommend that the routine examinations of a child should take place; (a) on entry into a primary school at approximately its 6th year, (b) at the 11th year and (c) the 14th year. For children in high schools when leaving at the age of 17 a final examination is desirable. Children who go from a private school where they have not been under a medical inspection scheme to a secondary school should be given a routine examination as soon as possible after admission.

The Committee realise that, with the routine inspections in a child's school career limited to three, responsibility is thrown on the parent and the teacher for bringing the defects in a child to the notice of the doctor in the period intervening between these examinations.

RATE AT WHICH ROUTINE EXAMINATIONS CAN BE CARRIED OUT.

The Committee had before them figures showing the number of routine examinations which are carried out in different parts of India in relation to the fulltime staff employed. These figures varied somewhat and the consensus of opinion of the Committee eventually was that 28 routine examinations a day is a suitable number for a wholetime doctor who is also responsible for treatment. Taking the number of working days per annum in schools at 175, twenty-eight inspections per day will give a total of approximately 5,000 inspections in the year to be performed by a wholetime doctor. Taking a population of primary school children of 25,000 spread over a period of five years between the ages of 6 and 11, there would each year be 5,000 entrants and 5,000 at 11 years of age for examination, making 10,000 routine examinations. In all probability a total of 10,000 re-examinations and special examinations would be required in the year for the 25,000 school population. Such examinations are likely to occupy about half the time of a corresponding number of routine examinations. The total time required for medical inspection in a scheme covering 25,000 school children would therefore correspond to that of 15,000 routine examinations. With one doctor for 5,000 examinations, three doctors are considered necessary for the school population. These calculations are however of a general nature and the number of doctors required will depend on local conditions, especially on the proportion of re-examinations and special examinations which will have to be done.

FREQUENCY OF A DOCTOR'S VISIT TO A SCHOOL.

A doctor should maintain touch with the staff and children in each school throughout the year and his return visits for special inspection should enable him to do this. It is desirable that routine inspections should be timed so as to cause a minimum of interference with the routine working of the classes.

MEDICAL RECORD.

A medical record will have to be maintained for each child. The schedules used in the various Provinces for recording the results of medical inspection were placed before the Committee. The Committee consider that it would be advisable to have a standard record and a suggested schedule for the purpose is given as an appendix to this Report.

The Committee consider that it is most important for the guidance of the new head master in a secondary school that a child should bring with him from the primary school an up-to-date medical record; similarly in the case of a child going from one school to another. It is understood that in the United Provinces the transfer certificate, which a child receives on leaving one school for another, is accompanied, where medical inspection exists, by the medical record of the child. The head master of the school which the child is leaving should be made responsible for transferring this record.

In the maintenance of records, to avoid the doctor's time being taken up with clerical work, the head master should cooperate in filling the cards and he would of course be responsible for their safe custody in the school.

The Committee consider that the height and weight figures recorded at the routine examinations are not likely to prove a valuable index to a child's progress and that they will be of much greater value if height and weight are taken at regular intervals of not less than twice a year and recorded preferably in the form of graphs. This work should be done by the teacher. Any child showing material variation from the normal progress should be brought to the notice of the doctor. In view of their recommendation that routine examinations should be limited to three, the Committee desire to stress the value and importance of the regular maintenance of these height and weight records.

QUALIFICATIONS OF INSPECTING STAFF.

Medical inspection should only be carried out by a qualified doctor and by this the Committee imply a registered practitioner of modern scientific medicine. He will require some special training, especially in eye refraction tests and in the detection of the early signs of malnutrition and also in ear, nose and throat conditions. In view of the increasing part which physical education is playing in the life of the school child, it is considered essential that he should be well acquainted with the physiological basis of modern physical education.

PLACE OF INSPECTION.

Medical inspection should be carried out on the school premises during school hours. It is very desirable that if possible a parent should be present at the time of inspection. The doctor should always go through the inspection results with the head teacher and if necessary with the class teacher also before he leaves the school. In those schools which have a physical instructor it is also desirable that he should as far as possible be available during the inspection. In this way the three persons who are intimately connected with the child, viz., the teacher, the parent and physical instructor will have the opportunity of hearing the doctor's view regarding the child and of obtaining any special instructions regarding the child's health.

Statement showing percentages of children found suffering from specific defects at medical examination during 1940.

Name of the Province or State.	Defective vision.	External eye conditions.	Enlarged tonsils and adenoids.	Dental caries and pyorrhoea.	Ear diseases and defects of hearing.	Enlarged spleen.	Skin diseases.	Malnutrition.	
Bengal (Calcutta)	25.9	Not available.	10.7	8.7	1.0	0.6	1.6	6.9	
Delhi Province	9.0	17.0	10.9	11.9	1.2	1.1	3.1	6.9	
Punjab (Boys)	10.0	Not available.	26.6	Not available.	Not available.	2.4	Not available.	18.8	
N.-W. F. Province*	0.9	7.0	0.9	1.1	0.6†	Nil.	0.3	Not available.	
Madras	Entrants	Boys	3.5§	13.0	8.6||	2.7	Not available.	8.8	13.7
		Girls	0.2	2.2§	17.3	3.4||	0.9	Not available.	0.8
	Regulars	Boys	0.6	3.7§	23.5	14.8||	2.4	Not available.	11.0
		Girls	0.3	3.2§	21.2	36.7||	1.4	Not available.	1.3
Baroda city	5.3	4.3	18.9	33.8	23.9	2.1	1.8	15.1	
Hyderabad (City)	Boys	6.5	Not available.	11.2	15.0	5.1	0.7	6.2	10.6
	Girls	5.8	Not available.	8.0	5.5	0.3	0.7	1.0	4.1
Ajmer-Merwara	No figures are given ; enlargement of tonsils, defective vision, trachoma and anaemia are said to be the principal defects.								
Baluchistan	No figures are given ; the principal defects are stated to be diseases of the eye, malaria, avitaminosis, tonsillitis and splenomegaly.								
United Provinces	Urban	7.5	6.6	16.4	16.1	Not available.	0.5	2.7	14.0
	Rural	0.9	4.8	4.5	10.8	Not available.	1.5	2.3	6.0
Bihar (Boys)	13.2	0.1	11.9	4.2	Not available.	Not available.	Not available.	13.8	
Orissa	7.3	5.4	10.7	11.2	Not available.	12.0	6.6‡	19.5	

* The figures relate to Peshawar for the first quarter of the year July, 1939—June 1940.

†The figure includes diseases of the ear, nose and throat.

§Eye diseases. ||Only dental caries.

‡Figures are for scabies only.

CHAPTER IV.

TREATMENT AND FOLLOW UP OF DEFECTS.

The Committee cannot emphasise too strongly that a scheme for medical inspection without provision for treatment and follow up is of little or no use.

The table facing this page shows the nature and incidence of the principal defects found at medical inspection in certain Provinces and States. While the divergencies in the figures suggest that the examinations have not been carried out on a uniform basis, the disabilities from which the school child mainly suffers appear to be enlarged tonsils and adenoids, dental caries and pyorrhoea, malnutrition and defective vision.

Since malnutrition affects a considerable percentage of children, schemes for treatment will have to include provision for supplementary nourishment for such children. Special arrangements will be necessary for the treatment of dental defects, for the enucleation of tonsils and adenoids and for the correction of the more serious defects of vision and hearing. Simple errors of refraction can be dealt with by the school doctor as can diseases of the nose and throat which do not require operation.

The table does not provide any complete picture of the extent to which children suffer from passing ailments of the eyes and skin or other short-lived departures from normal health. The season of maximum incidence of conjunctivitis, for instance, may or may not coincide with the routine inspection of the school children. The vast bulk of these temporary defects can be treated in the school. Many of them are of such a nature that they can and should be effectively treated by a careful parent with domestic remedies. At present, however, owing to the indifference and ignorance of many parents provision for treatment must be made by the school authorities in the interests of the child. The important thing is that the child should receive treatment; treatment which will not only cure the defect in the shortest time and with least interference with his school attendance, but will also aim at preventing recurrence.

Replies to the questionnaire show that not only is the provision for treatment inadequate in most areas but that the facilities available are unlikely to fulfil the requirements set out in the previous paragraph. Exceptions are the N. W. F. Province, United Provinces and Delhi where school clinics or dispensaries have been established. In the N. W. F. Province 89·3 per cent. of the 14,401 children found with defects were treated. In Bihar 59·9 per cent. of 7,086 children with defects are said to have received treatment at hospitals and dispensaries. Most provinces gave no figure from which the percentage of defective children who actually received treatment can be calculated.

Generally speaking the child in order to obtain treatment has to take his chance at the out-patient department of the general hospital or dispensary which is usually overcrowded and where his minor ailments seem a matter of small moment to the doctor overworked in dealing with serious illness. There is small chance that any attempt will be made to explain to the child or his parents the circumstances and agencies through which the defect arose and how they can be modified to prevent recurrence. There may be no time even to do more than prescribe treatment to be carried out at home by unskilled and ignorant parents, a method which experience has shown does not give successful results.

The Committee are of opinion that the solution to the problem of providing the *right kind of treatment* in urban areas lies in the establishment of school clinics. The clinic should be conveniently placed to serve a number of schools. In many towns buildings suitable for the purpose already exist, for example maternity and child welfare centres, and in organising a scheme of treatment advantage should be taken of these. Similarly in the planning of new buildings for health activities the advisability of grouping welfare centres, school clinics, etc., should be borne in mind.

The Committee consider that, whenever his duties will permit the teacher should be present at the clinic with the children to see what is being done and to receive any instructions for treatment which is to be carried out in the school in order to relieve pressure on the school clinic. Failing the establishment of special school clinics staffed by the school health service, the next best plan will be to arrange a special session for school children daily at the local hospital or dispensary. This may have to be arranged in the afternoons when the doctor has got to attend other patients in the mornings.

Whatever may be the arrangements for providing treatment by a doctor for the child, a large amount of minor elementary treatment of children can and will have to be done at the school. Much of this work in other countries is done by the school nurse, but conditions in India at present make it essential that the duty to a large extent should fall on the teacher. It is recognised that the average primary school teacher cannot be regarded as the ideal person to carry out the daily treatment of a number of minor ailments. But until the necessary number of school nurses is available this is the obvious alternative. The teacher should be told by the school doctor the type of cases he may treat and what treatment should be given and he should be made to recognise the dangers of undertaking treatment beyond his scope. Given such training, a teacher who is interested and endowed with a fair degree of commonsense can do much for the health of his pupils. He will of course require the necessary dressings and drugs.

FOLLOW UP WORK.

It is important to keep in mind that treatment should be directed towards the care of the child as a whole and not merely of the particular defect discovered. The susceptibility of the child to disease is largely determined by his nutrition, his personal cleanliness and the hygienic condition of his environment.

The school itself where it is insanitary or overcrowded, or where the curriculum is not in conformity with the physiological capacity of the child, plays a large part in causing disease. In spite of this it remains true that a preponderant role is played by the home environment, and the campaign for the reduction and prevention of disease must therefore be carried into the home if any sound progress is to be achieved.

The most efficient agent for this purpose is the health visitor who is already in touch with the parents through the maternity and child welfare services. She is in the best position to win the confidence of the mother and to make her receptive to new ideas. Traditional customs and habits, particularly the observance of *purdah*, militate to a large extent against the attendance at medical inspection of the mother who is after all the chief determining factor in the home environment. Wherever a maternity

and child welfare service exists every effort should be made to secure the interest and cooperation of the health visitors in following up the defective school children in their homes. However, as the number of health visitors is inadequate, any large scale employment of health visitors for the work though desirable is not practicable and therefore alternative methods of influencing the parents must be tried out.

Attention has already been directed to the value of having the parents present at medical inspection to hear firsthand the doctor's advice regarding the health of the child. In the absence of the parents the teacher is once more the agent on whom the onus will fall of trying to improve home conditions. At present very few teachers even in high schools have ever been inside the homes of the pupils. The lack of contact in every type of school between teachers and parents is a regrettable feature of school life in India which the Committee feel should be remedied as soon as possible. Teachers ought to realise that it is their duty to know the parents of their pupils and to become welcome friends in the homes of the children.

The Committee recognise that it is difficult to create any real interest in many teachers for the welfare of the children so long as their status, salaries and prospects remain at their present low levels. Even under existing circumstances a good deal can be done to secure increased assistance from teachers, but the desired end can only be achieved when the condition of service of all teachers are such as to command their allegiance and cooperation. As the teacher is the solution to so many of the problems of school health, the Committee urge the vital importance of removing the sources of discontent and of making the conditions of employment more attractive to the right type of man and woman.

CHAPTER V. NUTRITION.

In the majority of the Provinces and States schemes for supplementing the nutrition of school children are stated to be in force, although their working in many cases is restricted to particular types of schools and to certain localities. Further evidence of the recognition by provincial authorities of the value of a midday meal for the school children is available from the fact that in certain Provinces, of the total budget allotment for the school health service a high proportion is for school meals. Examples are Madras city with a provision of Rs. 67,000 for supplementary food and an allotment of Rs. 12,000 for the school medical staff, and Bengal with a provision of Rs. 45,000 for food and Rs. 7,800 for medical inspection and treatment.

Certain details of the Bengal scheme were described to the Committee. The scheme has been in operation since 1934 by which a midday meal is given to the children of all aided high schools at a cost of four annas a month per child. This meal, although it is not substantial, is stated to have a marked effect in improving the working capacity of the children in the afternoons. In the initial stages the cost of the scheme was borne on half and half basis by Government and the parents. The scheme is now more extensively adopted and the division of cost is as follows:—

Parents where they can afford to do so pay the whole 4 annas per month. The headmaster is allowed to give free tiffin to 10 per cent. of the poorest children and the cost of this 10 per cent. is defrayed from the Government grant.

The small amount of four annas per child per month fully covers the cost of the food and its preparation in the school.

The Central Advisory Board of Health in appointing this Committee drew particular attention to the problem of nutrition in primary school children. The replies from the Provinces and States show that the children of primary schools are not generally included in the schemes for midday meals. One reason for this is that the primary school population is much larger and that the financial problem of providing supplementary food for them is therefore more difficult. The Committee were informed that in Bengal there were five million primary school children and that the cost of giving them supplementary food would be about Rs. 1½ crores. On the other hand, the effects of malnutrition on primary school children are not less serious than on children of higher ages.

In many parts of India it is the custom for children to have a meal before they leave for school and have no more food until they return home in the late afternoon. Such children cannot be expected to have the necessary energy to devote themselves to their school tasks. It is essential, both from the point of view of education and of health, that all the children should be given a midday meal, whether it is brought by the children from their homes or provided at the school by the authorities. Where food is provided by the authorities, parents who are able to pay should contribute their share to the cost of the scheme and in the case of children whose parents are too poor to pay no charge should be made. There is increasing recognition of the necessity for extending the facilities for primary education and for making it compulsory as far as possible but it is not sufficiently recognised that much of the value of such education will be lost if the child is not adequately nourished.

The main problem therefore is that of providing a satisfactory school meal at as low a cost as possible. No uniform scheme can be devised to meet the requirements of all. Various methods must be attempted for securing for the children of different economic levels some extra nourishment, and suggestions in this connection are now put forward.

The value of milk in promoting the growth of children and increasing their general sense of well-being has been definitely proved by large scale experiments in India and abroad. But whole milk is too costly an article of food to be widely used in this country. Researches by the Nutrition Research Laboratories, Coonoor, show that skimmed milk possesses considerable food value. It has now been made easily available for educational institutions by the removal of the import duty on it. Even so this food may be beyond the reach of poor primary schools.

Other experiments carried out by the Coonoor Laboratories have shown that much of the value of whole and skimmed milk is contained in calcium lactate, an important constituent of both. The administration of one gramme of calcium lactate per day has been shown to be of definite benefit to the child and costs only about one anna per child per month. Calcium lactate should therefore be within the reach of a wide section of the population.

Germinating grain has been found to be of considerable value in warding off food deficiency diseases and is a very desirable supplementary food for children. Germinating grain can be prepared easily and costs little.

Much more might be done to develop school gardens which could provide vegetables to supplement the children's midday meal. The lack of vegetables is a common deficiency in Indian diets and the development of school gardens in addition to providing nourishment for the children will have a desirable educative influence.

The Committee desire to draw the attention of health and education authorities in the Provinces to these facts, in the hope that use will be made of them in improving the nutrition of the school population.

The teacher can and should play an important part in teaching the principles of nutrition to school children and in educating the parents with regard to the methods of improving the diet of the children within the means available to them. Sound instruction of the teachers and children in nutrition requires that simple text-books embodying the fundamental principles of the subject should be made available in the different Indian languages. The Committee were informed that the preparation of such a text-book is engaging the attention of the Nutrition Advisory Committee of the Indian Research Fund Association. This text-book, when published, and the Health Bulletin entitled "The Nutritive Value of Indian Foods and the Planning of Satisfactory Diets", should be translated by Provincial Governments into the principal Indian languages and made available to the school authorities.

CHAPTER VI.**PERSONAL AND ENVIRONMENTAL HYGIENE.**

The practice of personal hygiene by the school children depends on many factors, not the least important being the example set by the teacher. Not only must the teacher's personal cleanliness be of a high standard but his physique and general health must also be good. To ensure this no teacher should be appointed without passing a medical examination of fitness approved by the Government of the Province or State.

Considerable hardship may result from the application of this recommendation unless at the same time a medical examination of all candidates for admission to training schools and colleges is instituted and the Committee therefore recommend that this should be done. At an earlier stage the school doctor and the teacher can do much to discourage pupils of poor physique or handicapped by special defects from choosing teaching as a profession.

During training and on subsequent employment it is no less important that a careful watch should be kept on the teacher's health. Periodical examinations of the teacher by the school doctor should present no serious difficulty. The object is as much to protect the teacher's own health as to eliminate any danger to the school population. If the medical examination brings to light any disease or defect every effort must be made to help the teacher to a complete recovery. Treatment may not be the only means necessary, the conditions of work and the amenities provided for the teacher's comfort also deserve attention.

The teaching and practice of personal hygiene in school are dealt with in a subsequent chapter and it is only necessary here to draw attention to the need for encouraging personal cleanliness amongst the school children and for providing the facilities required for the attainment of a high degree of personal cleanliness.

In a number of Provinces and States cleanliness parades are held by the teacher. In some schools the parades take place daily, in others weekly or biweekly, in others a cleanliness parade is held only at the time of the school doctor's visit. Parade inspection is most suitable for the younger classes. A daily parade of the school children before the school starts gives the teacher an opportunity of judging the cleanliness standards of the children and of supervising the practice of cleanliness. The scope of the parade should not, however, be limited to an inspection of cleanliness; minor ailments, fatigue, malnutrition and other departures from health can and should be detected and suitable advice given or treatment initiated when necessary.

The detection of dirty children has no value unless arrangements are made for remedying the conditions. Facilities for washing are particularly important and in towns with a pipe water supply this should present no difficulty. In rural areas the construction of a soakpit and the supply of water of reasonable purity are the minimum requirements. In areas where facilities for bathing are limited school baths are an invaluable asset to any scheme for promoting the health of the school child.

The beneficial results of membership of the Junior Red Cross on the personal hygiene of the pupils is mentioned elsewhere in the report.

The question of environmental hygiene was not extensively discussed since the School Buildings Committee appointed by the Central Advisory Board of Education are already dealing with this subject.

The replies received from Provinces and States to the questionnaire state that, generally speaking, the lighting, ventilation and construction of Government schools are satisfactory. On the other hand, schools under private management are often housed in buildings not originally designed for the use of schools and fall short of reasonable hygienic standards. The selection of a house for use as a school is frequently left to a Sub-Inspector of the Education Department who usually takes no account of the health requirements. Where it is necessary to use ordinary buildings as schools the responsible education authorities should obtain the advice of the local health officer as to their suitability.

Little scientific data on the lighting, ventilation and heating of schools are available with regard to tropical conditions. The School Buildings Committee of the Central Advisory Board of Education have recommended the appointment of a body of experts to investigate and report on suitable standards for Indian conditions. This recommendation is supported.

The necessity for providing a safe water supply in schools requires special emphasis. The Committee recommend that, whatever the source of supply, there should be provided in each school some type of container in which wholesome water, kept under lock and key, is made available to the children by being drawn off through a tap.

As regards the provision of latrines the Committee are of opinion that, for schools in rural and suburban areas, the bored-hole type of latrine offers a satisfactory solution in most areas. It is cheap to construct, costs practically nothing to maintain and should prove satisfactory in every way for preventing soil pollution in and around the school premises. The possibility of surface wells becoming polluted by infection travelling through the subsoil water from bored-hole latrines has been used as an argument against the wider use of this type of latrine. This danger seems to have been exaggerated. If preliminary investigations are made to determine the direction of the flow of subsoil water the location of bored-hole latrines can be decided on with safety.

The questionnaire asked for information on the extent to which suitable school furniture is provided but the details given were scanty. In India desks are in use in the higher classes but the children of primary schools are often made to sit on the floor with no support for the back. The effect of posture on the child's health and growth, with special reference to the use of desks and seats, is a matter of great importance and requires special investigation by an expert body. The Committee consider that, without such an investigation, it is not possible to assess the ill-effects, if any, that the habit of squatting on the floor is producing on the health of primary school children.

The attention now devoted by school authorities to environmental hygiene is not sufficient. The Committee therefore consider that all officers inspecting schools, whether they belong to the Education, Medical or Public Health Departments, should report on the sanitary condition of the premises and the surroundings and bring to the notice of the education authorities such defects as they discover.

But no permanent improvement of the environment can be expected until the school children and their teachers begin to take an active interest in keeping the school premises clean. Cooperative effort among the children for the cleaning up of the school and its surrounding areas should be encouraged. The children can also take part in other forms of communal health activity. Recent work in the rural area around Delhi has shown that one of the most useful methods of preventing malaria is by the use of insecticides to kill adult mosquitoes in houses. The children in these Delhi areas have been trained to do this work. In India malaria is the most important health problem and has a crippling effect on the lives of an enormous number of school children in the areas where the disease is prevalent. The control of the disease by the eradication of mosquito breeding places is often too costly, as it involves expensive engineering works, but in the destruction of adult mosquitoes with insecticides an effective method has become available for reducing the infection of school children. The method is not expensive and, it is hoped, will become cheaper. A progressive teacher can encourage the children to help in the filling or draining of shallow depressions where water collects and the malaria mosquito breeds. These are simple measures which require only the initiative and inspiration of the teacher for their success. A passive attitude regarding the prevalence of malaria has been allowed to continue too long.

CHAPTER VII.

TEACHING OF HYGIENE IN SCHOOLS AND IN TRAINING SCHOOLS AND COLLEGES.

Replies to the questionnaire show that on paper at least the importance of training the teacher and the children in a healthy way of life is realised by the Education authorities since hygiene is included in the syllabus of every Training College and nearly every Training School in the Provinces and States from which replies were received. Similarly with one or two exceptions hygiene is stated to be a subject of study in all primary and secondary schools. In the latter hygiene is not infrequently an optional subject. This seems reasonable in the senior classes if hygiene has been well taught at an earlier stage in the school curriculum.

While the general situation on paper sounds satisfactory the low standards of personal and environmental hygiene met with in many schools are such as to forbid an easy acceptance that all is well. These low standards lead to the conclusion that something is wrong with the content of the syllabuses and the methods of teaching hygiene both in training institutions for teachers and in schools for children.

Put shortly, the successful inculcation of healthy habits in school children will depend primarily on the standards set by the teacher in his personal hygiene and on his knowledge of and outlook on health questions. The teacher must be the model to be followed by the child with regard to health and healthy ways of life. If any progress is to be made, the health consciousness of the teacher must be stimulated by better teaching of hygiene in the training schools and colleges.

As a first step towards securing the fitness of the teacher for the teaching of hygiene, the Committee wish to affirm their view that practical hygiene should be a compulsory subject in all courses for the training of teachers, and that particular attention should be paid to the subject in training schools for teachers, in primary and vernacular schools.

The syllabus in use in many of the training schools and colleges requires revision, if the new demands which will be made on the knowledge and resourcefulness of the teacher as a part of the school medical service, are to be met. In only one or two Provinces has an effort been made to prepare and publish a text-book on hygiene in the vernacular for use in training schools. In training colleges the text-books prescribed are those in use in the United Kingdom. As the personal, communal and environmental aspects of hygiene in India differ widely from those obtaining in a temperate climate text-books dealing with Indian conditions are indispensable. Apart from text-books, a handbook on health education for use by school teachers would be a valuable addition to the equipment of the teacher.

Replies to the question "Is hygiene included in refresher courses for teachers" were in the negative in the majority of Provinces and States. In order to ensure that the knowledge and interest of teachers in the subject are kept alive and in order to keep them acquainted with new developments, the attention of educational authorities is drawn to the great desirability of providing facilities for refresher courses in the subject.

The Provincial educational and health authorities should collaborate in drawing up a syllabus for each type of training institution. The preparation and publication of text-books for use in training colleges and schools:

and of handbooks for the guidance of teachers responsible for health education are a necessary corollary to the revision of the syllabuses.

In the recommendations of the Committee regarding the organisation of medical inspection the teacher is called upon to play a very important part. On account of the ignorance of parents and the limited number of doctors it will largely fall on the teacher to detect early departures from normal in a child, to assist in treatment, to make contact with the home in order to influence the parents and to keep the teaching and practice of hygiene alive in the school. For these reasons the Committee consider that practical demonstrations should form an important part of the course of training. The teacher should be taught by practice how to recognise defects in children and to do elementary treatment as it is only by his learning to do so that it will be possible to establish a school medical service on a reasonably wide scale.

Certain parts of the training course will require to be taught, if possible, by a doctor, preferably by a member of the regular school medical service, the establishment of which is recommended by this Committee.

In regard to the teaching of hygiene to children the instruction now given in primary schools in several Provinces is inappropriate to the age of the child. The training of the child in health habits does not begin sufficiently early and the approach to the subject is through disease rather than through a study of the requirements for health. The Committee consider that instruction in hygiene should begin at the earliest age possible. At the beginning the instruction should be wholly on practical lines and devoted mainly to personal hygiene, while at a later age the child's interest can be directed to environmental hygiene and the health of the community. The Committee wish to emphasise that unless greater attention is given by the responsible authorities to the planning of school buildings and to the provision of equipment which will make the practice of healthy habits possible, progress will be difficult. It is futile to try to awaken in the child an interest in and a sense of responsibility for his own health and for the sanitary condition of his surroundings so long as the schools themselves fall short of reasonable hygienic standards. As the teacher should be the model for the child to follow in personal standards, the school should be the model for the home in regard to environmental cleanliness.

The replies from the Provinces show that the active and willing co-operation of the children in health matters is best secured in schools where a movement such as the Junior Red Cross is alive. In such schools, it is stated, a notable improvement has been made in the personal cleanliness and healthy habits of the children. The Committee are of opinion that the Junior Red Cross Health Game is an appropriate and valuable means of laying the foundations of a healthy life during the primary school years. At a later stage with fuller instruction in hygiene, and particularly in the environmental aspects of the subject, the child should become an asset to the school authorities for the care and orderliness of the school buildings and compound. Later his activities can be extended beyond the school boundaries to the community where he can take part in antimalaria campaigns and other measures for the control of disease and for a general raising of the standard of life in the community. In the senior classes the children can also assist the teacher in the recording of heights and weights and in the treatment of minor ailments under the direct supervision

of the teacher. In this connection the Mackenzie school course of First Aid, Home Nursing and Sanitation should prove to be of great value to the pupils.

For girls in the upper classes a training in mother-craft should prove invaluable and in order to make the training practical they should be given opportunities of visiting child welfare centres as far as this is feasible.

CHAPTER VIII.

PHYSICAL EDUCATION.

The information received from the Provinces and States shows that in a general way physical education has received more attention in secondary than in primary schools. The physical education of girls has received much less attention than that of boys.

The employment of trained physical instructors is practically limited to secondary schools, while in primary schools the teaching of the subject is entrusted to ordinary teachers who may or may not have had training in physical education.

Colleges for physical training exist in Madras, Bombay Hyderabad, Calcutta, Lucknow and Lahore. In many of the other places, facilities for physical training are provided in the training schools for primary and secondary school teachers.

The time devoted to formal physical exercises is usually part of the school hours while games are played after school has finished. The period set apart for physical exercises varies in the Provinces and States, from about 20 minutes each day to two periods of 30—45 minutes per week.

The types of physical exercises adopted in schools include games, gymnastics, drill, boxing and indigenous types of recreation such as folk dances. The Committee were informed that a lot of old fashioned drill goes on in schools which obviously does the children no good; far from benefitting them, it merely tires them. Many schools have physical drill at the end of the day, a time which should be avoided, if possible.

Physical education is everywhere stated to be compulsory for boys in secondary schools. An important question in this connection is that of ensuring that the nature and extent of the exercises that individual children are made to take do not go beyond their physiological capacity. The questionnaire asked whether the school doctor prescribed the type and extent of physical exercise to be taken by pupils suffering from physical disabilities and what other provision existed for this purpose in schools without a doctor. The replies state that where the services of a school doctor are available, his advice is followed; otherwise the physical instructor, the headmaster or the class teacher determines the class of exercise.

The Committee having considered the information available regarding the existing provisions in the country for the physical education of school children make the following recommendations:

ORGANISATION FOR THE SUPERVISION OF PHYSICAL EDUCATION.

In each Province and State, the Educational Department should have at headquarters an experienced and well qualified officer to organise the scheme for physical instruction in the colleges and schools. Under him there should be a District Inspector of Physical Education for each district. In every secondary school a fully trained physical instructor should be on the staff and the appointment of such an instructor should be a condition for a grant-in-aid. The number of primary schools is so large that the provision of wholtime trained instructors in all such schools is not practicable. However, the necessity for some skilled supervision of

physical exercises in elementary schools is urgent. District Inspectors of physical education should therefore organise training camps, lasting for about a month, for primary school teachers. The neglect of physical education for school girls up to now should be remembered when a Provincial scheme is being drawn up, and a special effort should be made to accelerate the rate of progress of physical education in girls' schools.

PHYSICAL INSTRUCTORS.

Physical education is intended to assist in promoting normal physiological development and to correct physical defects in so far as they can be remedied by such training. The physical instructor should therefore have had training in the elementary principles of physiology, of the hygienic mode of life and of nutrition. He should be trained to detect early signs of fatigue in the child and to regulate (under the guidance of a doctor in certain cases) the nature and amount of exercise for individual pupils. The Committee have, earlier in this report, drawn attention to the desirability of the physical instructor being present during the medical examination of the children. He should be allowed a period or periods within the time-table when he can give remedial exercises in cases recommended by the school medical officer.

The physical instructor should also help the child to become socially minded. Participation in games, especially team games, teaches the child to subordinate his desire for personal success to the interest of the team as a whole. It has been stated that an efficient system of physical education "should encourage the concurrent development of a healthy physique, alert intelligence and sound character"*. Participation by the children in games and in the varied corporate activities of the school, such as the Scout and Junior Red Cross movements, is essential for the attainment of these objects. The physical instructor who is concerned with providing for the child a wide and varied experience in healthful living, should therefore be fitted to guide all these activities in the school.

It will thus be seen that the training of the physical instructor will require to be of a comprehensive nature. The old concept of a drill-master or a weight lifting expert is now effete. The Committee had before them details of the training given to students in some modern colleges for physical training. Health education finds a prominent place in the programme of study, the aim being to develop in teachers the incentive and the ability to train children to practise healthful living, and to enable teachers to cooperate intelligently in medical inspection. The Committee agree with these aims and commend them to those responsible for the training of physical instructors in different parts of the country.

The Committee consider that physical instructors, when they reach the age of 40, should be absorbed into the normal teaching work. It is not uncommon to find men carrying on the duties of physical instructors at 50 and 55 years of age. This is undesirable. To prevent this, physical training instructors should also be qualified to teach other subjects and should be required to devote a certain amount of time to doing this throughout their career.

*Syllabus of physical training for schools issued by the Board of Education, England and Wales, 1933.

PHYSICAL EXERCISE.

The Committee consider that some period every day should be devoted to organised physical activity but that undue emphasis on drill is undesirable. Organised games should form an important part of the curriculum for physical education. Games should be played within the school hours since by postponing them to the end of the day, many children living at a distance are prevented from taking part. In view of the difficulty of securing playing fields in towns provision for small area games should, as far as possible, be encouraged in the schools in urban areas.

An essential part of any town-planning scheme is the provision of adequate open areas for school games.

MEDICAL CARE OF THE CHILDREN UNDERGOING PHYSICAL TRAINING.

The Committee consider that, wherever a school medical service exists, the school medical officer should note on the child's card any modification which he considers necessary regarding the child's physical education.

It is desirable that Provincial Health and Education authorities should together draw up a code on physical education and that this code should include advice on the medical aspects of this subject. The formulation of a system of graduated physical exercises to suit the requirements of different types of children is also desirable.

CHAPTER IX.**CORPORATE ACTIVITIES.**

The organisations for corporate activity which usually exist in schools are the Junior Red Cross, Boy Scouts and Girl Guides, the Hindustan Scouts and the Bengal Bratachari movement. All these organisations have a common aim, to aid the evolution of healthy and socially useful citizens. A certain amount of overlapping and duplication is inevitable in the activities of organisations which have a common objective, but while the objective may be the same, the lines of approach may vary. The same methods will not necessarily appeal to every child, nor to the same child at different ages, and it is therefore advantageous to have a variety of organisations even in one school. Fortunately the interests of the teachers will not be uniform and some account must be taken of their preferences and enthusiasms. Any corporate activity under an enthusiastic teacher will secure the willing and whole-hearted support of the children. The outlook and interests of the teacher are perhaps more important in determining the value of the activity on the character of the child than the actual organisation to which the child belongs.

At the same time there are differences in the programmes of the various organisations. The value of the Junior Red Cross in developing the health consciousness of the child has already been discussed. No other organisation lays quite the same emphasis on the practice of personal hygiene, and as an auxiliary to the school health services an active Junior Red Cross group can be a great help. The activities of the Junior Red Cross should be definitely correlated as closely as possible with the general health work of the school. From the point of view of health the Committee recognise the value of the Junior Red Cross and recommend that the Education Department should be strongly represented on the Provincial Junior Red Cross Committees in order that the potential benefits of this important movement may become more widespread throughout the schools in India. Other organisations which emphasise physical fitness, social service, nature study, crafts, camp life and other forms of healthful activity are equally important. The overlapping of activities can be in a large measure avoided by selecting the best features of each movement and by concentrating the activities of the group on the selected features, while leaving the members free to join up with other groups for the complementary activities.

The Committee recommend that the curriculum of the school should be arranged to provide at least one period a week for some corporate activity in addition to physical training and organised games.

Many agencies must work together to make secure the child's right to health and happiness. But of all those agencies, the parents are the most important as theirs is the longest and strongest influence in the child's life. No scheme for the school health services can be considered complete which does not arouse in the parents an interest in and a sense of responsibility for the care of their children. The advantages of having the parents present at medical inspection have already been stressed and attention has been drawn to the need for greater opportunities for individual parents and teachers to meet both in the school and in the home, but this is not enough. A sustained campaign to interest the parents in the school activities and to increase the opportunities of contact between

the parents and the school authorities must be undertaken. Broadcasts and cinematograph films may have a place in certain areas, and school journeys or excursions can be a valuable experience alike to children and parents. Social functions such as prize distributions, school concerts, sports and parents day celebrations are another method of reaching the parents. They should be encouraged to witness and appreciate the school and community health activities and by this means their cooperation can be secured towards introducing new ideas into the homes.

The limitations that poverty imposes on what the parents can do to improve their home environment are fully recognised, but the sanitary state of the home and the environment is largely due to ignorance and traditional custom. Much can be done through education to improve existing conditions and the simultaneous education of the child and his parents is an important part of the corporate activities of the school.

CHAPTER X.

ADMINISTRATION.

Provincial and District Headquarters.

The Education, Medical and Public Health Departments in the Provinces are all intimately concerned with the successful working of the school medical service. Any scheme proposed for the administrative control of the service must take note of this fact. During discussion in committee it was urged that as the full cooperation of the teachers would be essential, the Education Department should be given the administrative control of the service. The teachers would have to be brought into the scheme very largely to assist the school medical officers, and the fullest cooperation would be secured if both the medical officer and the teacher are under the same administrative authority. The Committee felt at the same time that the school medical services in the Provinces will have to work in the closest cooperation with the existing health services, and must derive the fullest advantage from the facilities and knowledge already available in the Medical and Public Health Departments. Coordination at provincial headquarters is therefore of the greatest importance.

In view of the above considerations the Committee came to the conclusion that school medical services should be created in the Provinces and that the administrative control of these, including the necessary budget provision, should be under the Education Department. In each major Province there should be a Chief School Medical Officer to administer the school medical service which should contain a sufficient number of doctors for the administrative and executive duties of medical inspection and treatment of school children. They also consider that in order to promote coordination in regard to school medical work between the Education Department and the Medical and Public Health Departments, a coordination committee of the Director of Public Instruction, Surgeon General or Inspector General of Civil Hospitals and the Director of Public Health should be set up in major Provinces.

In making the recommendation for the appointment of a Chief School Medical Officer the Committee do not regard it as necessarily involving the appointment of a third administrative medical officer at Provincial Headquarters. They are of opinion that, in order to secure as much coordination as possible and to facilitate the economic use of doctors already in the employment of the Provincial Government, it may be found convenient for the Surgeon General or the Inspector General of Civil Hospitals as the case may be or the Director of Public Health to act as Chief School Medical Officer under the Minister for Education. Whether one of these officers acts as Chief School Medical Officer or a separate appointment is made is obviously a matter for each Provincial Government to decide.

Coordination of effort among the officers of the three Departments should also be extended to the districts. The District Medical Officer is in charge of medical administration while the control of public health work is divided between Municipal Health Officers, wherever they exist, and the District Health Officer who is responsible for the rural areas. It is recommended that there should be a District School Medical Officer for the

organisation and supervision of the schemes in urban and rural areas. This Officer should work in close cooperation with the District Medical Officer and the Municipal and District Health Officers.

The school medical services in individual local areas are the statutory responsibility of Municipal Committees and District Boards. In India as in England, Government control over the efficiency of local health administration is exercised through the judicious distribution of grants-in-aid to the responsible local bodies. The same principle should apply in the case of local school medical services. The Committee consider that Government's grant-in-aid should be at least 50 per cent of the cost, and that necessary safeguards should be incorporated in the conditions governing the distribution of such grants. In this way the Provincial Government will be able to ensure that only considerations of efficiency will determine the recruitment of personnel and the standard of administration to be maintained by the local authority.

The expenditure on the supervising staff maintained at Provincial and District headquarters should be a charge on the Provincial funds. A Provincial cadre of school Medical Officers will attract suitable men to the service. They should be capable of directing the work in the local areas both from the administrative and technical points of view and will therefore require special qualifications and experience. Some doctors after a period of service in school medical work may desire to take up some other branch of medicine. This situation might be met by the deputation to the school medical service of officers from the Medical and Public Health Departments, and it will be an early task of the Co-ordination Committee at Provincial Headquarters to formulate a practical scheme for the appointment and deputation of such officers. Continuity in the school medical work is however vital and the period of deputation of a doctor for this work should be at least four to five years.

Urban Schemes.

The provision of medical facilities, the number of school children, the proportion of well-to-do parents and the facilities for transport vary widely among urban areas. It is therefore useful to divide these areas into two broad groups, one including the cities and large towns and the other the remaining urban centres of population. In regard to the first it has already been pointed out that the available resources may, in many cases, be such that there should be no great difficulty in attempting to develop a school health service on as broad a basis as has been done in Western countries. With respect to the latter group, a less ambitious programme is in keeping with the prevailing conditions.

In the larger towns the Committee consider that for efficient service the employment of wholtime school medical officers is essential. Such officers should not be permitted to engage in private practice. A scheme should include primary and secondary schools and it should be a condition of recognition and grant-in-aid that each school should either take advantage of the local school medical scheme or have approved medical arrangements of its own. The Committee consider that no child should be deprived of necessary treatment on account of the poverty of its parents. Medical inspection and treatment should therefore be provided free for the children

of all primary schools and of the primary departments of secondary schools. Treatment should include admission to the free wards of Government hospitals and operation treatment if required. In secondary schools where fees are charged for tuition, it is reasonable that an additional fee should be levied to cover the cost of medical inspection and treatment at the school clinic.* Where no school fees are charged it is not advisable to introduce a special fee for the school medical service.

In the smaller towns it will be necessary to utilise the services of part-time doctors. They may come from Government or local body hospitals and dispensaries or may be health officers. Others may be private practitioners. The Committee realise that with a part-time doctor there may be certain difficulties. The demands of private practice on his time may make it difficult for him to devote the necessary time to his school duties. It has been stated that some part-time school doctors have utilised the contacts which school work offers to extend their private practice. Strict supervision is required to prevent such abuses. The Committee recommend that the amount paid to a part-time private practitioner should bear the same relation to the salary of a full-time officer as that between the respective number of hours spent by each on the work. The duties to be performed by part-time doctors should be carefully defined and should include inspection and treatment.

Rural Schemes.

Rural areas present more difficulties than towns and cities. The extent to which medical relief and other health services have been developed in rural areas differs widely in the provinces and sometimes in different areas in one province. In some provinces subsidised rural practitioners have been established and in some others no such service has been provided. Again the number of medical men in general practice in rural areas varies greatly.

Certain facts relating to Bengal were described to the Committee. The average population in a district is approximately two millions of which the number of school children is estimated at 200,000. No subsidised practitioner service exists in the province. As regards facilities for travel, conditions differ widely in Eastern Bengal with its water transport system and in Western Bengal which is drier and has more rapid communications.

Similar diversity of conditions may exist in other provinces and the Committee therefore came to the conclusion that before a school medical inspection scheme can be drawn up for rural areas it is necessary that a preliminary survey be made to determine the extent of the medical facilities that are available in such areas and to determine ways of supplementing them. The survey should take into account the strength of the school population in the area, the medical men employed by Government and local bodies, the number of private practitioners, the public health organisation that exists, the distribution of schools and the means of communication between the different parts of the area.

Certain possible methods of securing medical men for inspection and treatment may be mentioned. The services of doctors in charge of Government or local body dispensaries or of private practitioners may be utilised

* In this connection please see the foot note on page 31.

on a part-time basis. It may be necessary to employ wholetime touring medical officers to carry out medical inspection but doubt was expressed regarding the value of this class of medical officer. Adequate supervision of their work is difficult. In very extensive and sparsely populated areas the employment of such an officer cannot perhaps be avoided. As in the case of urban schemes the part-time school medical officer should be paid a proportion of the wholetime medical officer's salary corresponding to the proportion of wholetime work which he carries out.

CHAPTER XI.

SUMMARY AND RECOMMENDATIONS.

Introduction and Historical.

1. The Committee wish to draw special attention to the frequency with which a system of medical inspection has been started in a Province only to be abandoned after a short while as a measure of economy. This indicates that there has not been a clear appreciation of the fundamental necessity for and the essential characteristics of a school medical scheme. The Committee emphasise that satisfactory arrangements for school medical inspection and treatment form an essential part of any efficient system of public education. (Page 6).

Aims and objects of a School Medical Service.

2. The Committee consider that the aims and objects of a school medical service, as defined by Sir George Newman, are applicable to India and that it is absolutely essential that steps be taken to ensure that children attending school are healthy and kept healthy. This is necessary not only from the medical but also from the educational point of view. (Page 7).

3. In developing a school medical service in India a big difficulty is the inadequate number of qualified doctors and nurses. However, in some of the large cities it should be possible to organise school health work on as wide a basis as in the West. (Page 8.)

Medical Inspection.

4. Probably fifty per cent. of the children attending school would be found to require medical attention or medical observation. (Page 9.)

5. Too much weight cannot be given to health considerations in determining the age at which children should be admitted to school. The age of school entry should be not more than six and preferably five. (Page 9.)

6. Many routine examinations of school children in some parts of India are unnecessary. The routine examinations should be (a) on entry into a primary school at approximately its sixth year, (b) at the 11th year and (c) at the 14th year. For children in high schools when leaving at the age of 17 a final examination is desirable. Children going from a private school without a medical inspection scheme to a secondary school should be given a routine examination as soon as possible after admission, (Page 10.)

7. A wholtime doctor may reasonably be expected to carry out 5,000 routine inspections in a year. (Page 10.)

8. A medical record will have to be maintained for each child which will go with the child when he goes from one school to another. (Pages 10-11.)

9. Height and weight records should be taken not less than twice a year. This work should be done by the teacher. (Page 11.)

10. Medical inspection should only be carried out by a qualified doctor with special training for the work. (Page 11.)

11. Medical inspection should take place in the school during school hours and if possible the parents should be present. In schools with a

physical instructor he should as far as possible be available during the inspection. The doctor should go through the inspection results with the teacher. (Page 11.)

Treatment and Follow up.

12. A scheme for medical inspection without provision for treatment and follow up is of little or no use. Schemes for treatment must include provision for supplementary nourishment. Special arrangements will be necessary for treating dental defects, tonsils and adenoids and for correcting the more serious defects of vision and hearing. (Page 13.)

13. In urban areas accommodation for school clinics should be provided at convenient centres. In many towns, buildings suitable for the purpose already exist, such as maternity and child welfare centres. Where it is not possible to provide special school clinics the next best plan is a special session for school children at the local hospital or dispensary. (Page 14.)

14. Much of the minor elementary treatment can be done by the teacher provided he has received the requisite instruction. (Page 14)

15. Any campaign for the reduction and prevention of disease amongst school children must be carried into the home if sound progress is to be achieved. (Page 14.)

16. Every effort should be made to secure the interest and cooperation of health visitors in following up the defective school children in their homes. (Pages 14-15.)

17. The lack of contact in every type of school between teachers and parents is a regrettable feature of school life in India which the Committee feel should be remedied as soon as possible. (Page 15.)

18. As the teacher is the solution of so many of the problems of school health, the Committee urge the vital importance of making the conditions of employment more attractive to the right type of man and woman. (Page 15.)

Nutrition.

19. The children of primary schools are not generally included in the schemes for midday meals. The effects of malnutrition on primary school children are not less serious than on children of higher ages. All the children should be given a midday meal, whether it is brought from their homes or provided at the school. Parents able to pay should contribute to the scheme. (Page 16.)

20. Simple text-books embodying the fundamental principles of nutrition should be made available in the different Indian languages. (Page 17.)

Personal and Environmental Hygiene.

21. The practice of personal hygiene by the school children depends largely on the example set by the teacher. Not only must the teacher's personal cleanliness be of a high standard but his physique and general health must also be good. All candidates for admission to training colleges and schools should be medically examined. The teacher should be medically examined at intervals as much to protect his own health as to eliminate any danger to the school population. (Page 18.)

22. A daily parade before the school starts gives an opportunity of judging cleanliness standards. It should be a health and cleanliness parade. (Page 18.)

23. Where it is necessary to use ordinary buildings as schools the responsible educational authority should obtain the advice of the local health officer as to their suitability. (Page 19.)

24. The appointment of a body of experts to report on suitable standards for lighting, ventilation and heating of schools is recommended. (Page 19.)

25. In each school some type of container should be provided in which wholesome water kept under lock and key is made available. (Page 19.)

26. Regarding the provision of latrines, the bored-hole latrine offers a satisfactory solution in most rural and suburban areas. (Page 19.)

27. The effect of posture on the child's health and growth with special reference to the use of desks and seats is a matter of great importance and requires special investigation by experts. (Page 19.)

28. Cooperative effort among the children for the cleaning up of the school and its surrounding areas should be encouraged and suggestions are made for carrying this out. (Page 20.)

Teaching of hygiene in schools and in training schools and colleges.

29. Instruction of school children in hygiene should begin at the earliest age possible and at the beginning should be made wholly on practical lines and devoted mainly to personal hygiene. (Page 22.)

30. The Junior Red Cross Health Game is an appropriate and valuable means of laying the foundations of a healthy life during the primary school years. (Page 22.)

31. Hygiene should be a compulsory subject in all courses for the training of teachers. (Page 21.)

32. Practical demonstrations should form an important part of the course of training in hygiene for teachers. They should be taught by practice to recognise defects in children and to do elementary treatment. (Page 22.)

33. Text-books on hygiene dealing with Indian conditions are indispensable. (Page 21.)

Physical education.

34. The Education Department headquarters staff should include a well qualified and experienced officer to organise the scheme for physical instruction in colleges and schools. He should have an Inspector for each District. (Page 24.)

35. The physical instructor should have training in the elementary principles of physiology, of the hygienic mode of life and of nutrition. (Page 25.)

36. Health education should find a prominent place in the programme of study of the physical instructor, the aim being to develop in them the incentive and the ability to train children to practise healthful living and to enable them to cooperate intelligently in medical inspection. (Page 25.)

37. Every secondary school should have a fully trained physical instructor, and his appointment should be a condition for a grant-in-aid. (Page 24.)

38. District Inspectors should organise training camps for physical instruction, lasting about a month, for primary school teachers. (Page 25.)

39. A special effort should be made to accelerate the rate of progress of physical education in girls schools. (Page 25.)

40. Some period every day during school hours should be devoted to organised physical activity but undue emphasis on drill is undesirable. Organised games should form an important part of the curriculum for physical education. (Page 26.)

Corporate activities.

41. The Education Department should be strongly represented on the Junior Red Cross Committees in order that the potential benefit of this important movement may become more widespread throughout the schools. (Page 27.)

42. The curriculum of the school should be arranged to provide at least one period a week for some corporate activity in addition to physical training and organised games. (Page 27.)

43. A sustained campaign to interest the parents in the school activities and to increase the opportunities of contact between the parents and the school authorities must be undertaken. (Pages 27-28.)

44. Much can be done through education to improve existing health conditions, and the simultaneous education of the child and his parent is an important part of the corporate activities of the school. (Page 28.)

Administration.

45. School medical services should be created in the Provinces. (Page 29.)

46. The administrative control of these, including the necessary budget provision, should be under the Education Department. (Page 29.)

47. In each major Province there should be a Chief School Medical Officer to administer the school medical service which should contain a sufficient number of doctors for the administrative and executive duties of medical inspection and treatment of school children. (Page 29.)

48. In order to promote coordination in regard to school medical work between the Education Department and the Medical and Public Health Departments, a coordination committee of the Director of Public Instruction, Surgeon General or Inspector General of Civil Hospitals and the Director of Public Health should be set up in major Provinces. (Page 29.)

49. In making the recommendation for the appointment of a Chief School Medical Officer the Committee do not regard it as necessarily involving the appointment of a third administrative medical officer at Provincial headquarters. They are of opinion that, in order to secure as much coordination as possible and to facilitate the economic use of doctors already in the employment of the Provincial Governments, it may be found convenient for the Surgeon General or the Inspector General of

Civil Hospitals as the case may be or the Director of Public Health to act as Chief School Medical Officer under the Minister for Education. Whether one of these officers acts as Chief School Medical Officer or a separate appointment is made is obviously a matter for each Provincial Government to decide. (Page 29.)

50. Government control over the efficiency of local school medical inspection schemes should be exercised through the judicious distribution of grants-in-aid to the responsible local bodies. Government grants-in-aid should be at least 50 per cent of the cost. (Page 30.)

51. The expenditure on the supervising staff maintained at Provincial and District headquarters should be a charge on the provincial funds. (Page 30.)

52. Continuity in school medical work is vital and the period of deputation of a doctor for this work should be at least four to five years. (Page 30.)

53. In the larger towns the employment of wholtime school medical officers is essential for efficient service and such officers should not be permitted to engage in private practice. A scheme should include primary and secondary schools and it should be a condition of recognition that each school takes part in the scheme. (Page 30.)

54. Medical inspection and treatment should be provided free for the children of all primary schools and of the primary departments of secondary schools. (Page 31.)

*55. In secondary schools where fees are charged for tuition an additional fee may be levied to cover the cost of medical inspection and treatment. (Page 31.)

56. Before a school medical inspection scheme can be drawn up for rural areas a preliminary survey should be made of the medical facilities available and of the ways of supplementing them. (Page 31.)

Sd. G. G. JOLLY (Chairman).

„ E. COTTER.

„ W. C. PATON.

„ A. C. BANERJEA.

„ C. M. GANAPATHY.

„ JEAN M. ORKNEY.

„ J. SARGENT.

„ S. N. MOOS.

„ W. A. JENKINS.

NEW DELHI;

The 26th December 1941.

* The Central Advisory Board of Education at its meeting held on the 14th and 15th January, 1942, in accepting the Report, suggested that this recommendation may be amended as follow :—

“In secondary schools particularly in urban areas the fees charged should include a contribution towards the cost of medical inspection and treatment.”

This amendment was accepted by the Central Advisory Board of Health when adopting the Report at its meeting held on the 26th, 27th and 28th January, 1942.

APPENDIX.

SCHEDULE FOR MEDICAL INSPECTION.

Name of Education Authority. *Primary and Secondary Education.*

I. Name of School.....District.....town/village.....
 Name of the pupil.....Name and address of parent or guar-
 dian.....
 Date of birth..... 1

	Year.	Year.	Year.	Year.
II. Personal history—				
Measles				
Whooping cough				
Diphtheria				
Chickenpox				
Vaccination and date				
Malaria				
Smallpox				
Typhoid				
Dysentery				
Other diseases			2	
Family medical history (if exceptional)				

III				
Height				3
Weight				3
Age				4
Standard				
Regularity of attendance				
Mental capacity				5
Vision				6
Hearing				7

	1st routine exami- nation.	2nd routine exami- nation.	3rd routine exami- nation.	4th routine exami- nation.
IV. Date of M. I. Initials of M. O.				
Parents present—				
<i>General conditions—</i>				
Nutrition				8
Clothing				9
Footwear				9
Cleanliness, body, hair and scalp				10
Chest measurement				11

1st routine exami- nation.	2nd routine exami- nation.	3rd routine exami- nation.	4th routine exami- nation.
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Special Conditions—

External eye diseases	12
Vision	13
Speech	14
Teeth and gums	15
Ear disease	16
Hearing	17
Skin disease	18
Nose or throat	19
Tonsils	20
Adenoids	
Glands, cervical and general	
Mental condition	21

Disease or deformity—

Heart	22
Anaemia	23
Lungs	
Nervous system	24
Digestive system	25
Liver	26
Spleen	27
Tuberculosis	28
Rickets	29
Deformities (posture)	30
Acute infectious diseases	
Other diseases or defects	31

The numbers relate to the attached notes.

V. Notification card	32
Date of issue	
Date of return	

VI. Doctor's observations	33
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VII. Teacher's observations	34
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Special inspections and re-inspections	35
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Date..... NotesPlace, duration
and result of treatment.

NOTES ON THE SCHEDULE FOR MEDICAL INSPECTION.

It is suggested that the schedules for boys and girls should be of different colours or should be coloured differently at one of the four corners. The schedule makes provision for the four routine examinations a child is likely to undergo during his or her school career, namely, at approximately the 6th, 11th, 14th and 17th year of age.

Sections I, II, III and VII are to be filled in by the school teacher prior to medical inspection. Sections IV, V, and VI are to be filled in by the school doctor.

1. To be stated exactly, date of month and year.
2. Should include any other illness likely to have an effect direct or indirect on the health of the child in after life, *e.g.*, rheumatism, tonsillitis, tuberculosis, syphilis, fits, operations, etc.
3. Height and weight should be recorded by the teacher at least twice yearly and preferably once every term and the record should be available at the time of medical inspection.
4. To be stated in years and months, *e.g.*, 11 2/12.
5. State the approximate number of years the child is educationally behind the average of the class.
6. To be tested as in Note 13. Failing this method the teacher should record as normal or defective on the presence or absence of such signs as headache, holding the book close, inability to see the blackboard etc.
7. Record as normal or defective. Note the child's attitude during class, the repetition required during dictation lesson or when commands are given, etc.
8. Classify as good, normal, subnormal, poor. The alertness, vigour and expression of the child, the appearance of the skin and hair, the redness or pallor of the mucous membranes should be taken into consideration in determining the nutrition.
9. Note insufficiency, need of repair, cleanliness (good, average, bad) presence or absence of footwear.
10. Note the cleanliness of body and head separately as clean, slightly dirty, dirty, scurf, nits, vermin and sores as well as skin disease should be looked for; sores and skin diseases being noted under "Special Conditions, skin diseases."
11. The chest measurement should be taken at the level of the junction of the 4th costal cartilage and the sternum and should be recorded at full inspiration and expiration.
12. Including blepharitis, styes, conjunctivitis, trachoma, diseases of the cornea or lens, squints, nystagmus, etc.
13. To be tested by Snellen's Test Types at 6 metres (20 ft.) and recorded for each eye separately thus R. 6/6 and 6/12. Children under 6 years need not be tested by Snellen's types.
14. Including defects of articulation, *e.g.*, stammering, lispng, etc.
15. Note pyorrhoea, abscesses, number of carious teeth, cleanliness special features, *e.g.*, irregularity, Hutchinson's teeth, etc.
16. Including otorrhoea, wax etc.

17. Each ear to be tested separately by the forced whisper method. Numbers should be whispered and the child should be asked to repeat the numbers.

18. Includes contagious diseases, *e.g.*, ringworm, scabies, etc.

19. Note mouth breathing, nasal catarrh, deflected septum, enlarged turbinates, polypi, malformations of palate etc.

20. Record as N. (normal + (slight enlargement) + + (moderate and severe enlargement) and for each tonsil separately, *e.g.*, R+/L + +.

21. Note as bright, average, dull, backward, mentally defective.

22. Functional or organic disease.

23. Normal (N): slight+ severe + +.

24. Including paralysis, epilepsy, emotional or social instability.

25. Note indigestion, anorexia, diarrhoea, constipation etc.

26. Note in inches below costal margin.

27. (1) State whether the spleen is palpable or not.

(2) If the spleen is palpable, ascertain the position of the costal margin and feeling gently below it, ascertain whether the spleen is projecting below the costal margin. If it does, outline with a grease pencil that portion of the edge of the spleen which projects most freely (the 'apex' of the spleen) while the child is standing in a perfectly natural position, equally on both feet, and looking directly to his front. Using this mark as a guide measure in centimeters the distance between the apex mark and the costal margin. Record this as the size of the enlarged spleen for the child.

(3) To find the 'average enlarged spleen' of a group of children take the sum of these measurements and divide the sum by the number of children in whom splenic enlargement is recorded.

28. Glandular, osseous, pulmonary, or other forms and whether definite or suspected.

29. Note particular form of rickets, knock-knee, spinal curvature, etc.

30. Including deformities of the head, trunk, limbs, spinal curvature, bone disease, deformed chest, shortened limbs, club foot etc.

31. Any weakness or defect not noted above, *e.g.*, hernia, which may unfit a child for ordinary school routine including physical exercise.

Catamenia may be added to the schedule for girls schools, if desired.

32. The notification card will be issued by the doctor through the teacher to the parents; the counterfoil should be returned to the teacher who will attach it to the schedule and enter the date of return of the counterfoil.

33. Includes a general summing up of the child's health and any peculiarities which may want watching. Includes also any special advice given to the parent or to the teacher regarding modification of school work, exercise, etc.

34. The teacher's remarks should include a general survey of the child's health including his special disabilities.

35. Special inspections should be entered in red ink. The findings at reinspection and any notes of illnesses treated by the family doctor, dispensary, hospital or at a school clinic or in school together with the dates of commencement and completion of the treatment should be entered in black ink.

The follow up of children with defects will be facilitated if a code is used to signify whether the child requires observation or treatment and nature of the treatment advised. Blue pencil may be used to mark the former class of defect for which treatment is unnecessary, but which must be kept under observation in case of unfavourable developments. For example if the child is suffering from slight enlargement of the tonsils which are causing no symptoms the symbol 'R.I.' (re-inspection) may be placed in blue pencil after the defect. Similarly a child wearing glasses for defective vision may need no immediate treatment but should be seen periodically and therefore marked with a blue 'R.I.' Red pencil may be used to mark defects requiring treatment and a red symbol used to indicate the nature of the treatment advised. For example, a red 'C.L.' may signify that the child has been advised to attend the school clinic, a red 'H' that the child has been referred to hospital or dispensary, and a red 'D' that he has been referred to a private practitioner. A circle round the symbol, *e.g.*, R.I. or H. may be used to indicate that a follow up visit to the home is desirable in order to explain to the parents the causes of the disability and the steps to be taken to ameliorate or cure the defect. All cards marked in red or blue pencil will be seen by the doctor at the time of his visit.

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Indian Army Book Depot, Dayalbagh,
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Chukerverty, Chatterjee & Co., Ltd., 13, College Square.
Das Gupta & Co., 54/3, College Street.
Hindu Library, 137-F, Balaram De Street.
Lahiri & Co., Ltd., Messrs. S. K.
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Newman & Co., Ltd., Messrs. W.
Roy Chowdhury & Co., Messrs. N. M., 72, Harrison Road.
Sarkar & Sons, Messrs. M. C., 15, College Square.
Sarkar & Sons, Ltd., Messrs. S. C., 1-1-ic., College Square.
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Wheeler & Co., Messrs. A. H.
- CAWNPORE**—
Advani & Co., P. O. Box No. 100.
Standard Book Depot, The Mall.
- CUTTACK**—Press Officer, Orissa Secretariat.
- DEHRADUN**—Ideal Book Depot, Rajpur Road.
- DELHI**—
Imperial Book Dept and Press, Near Jama Masjid (Maechliwalan).
Indian Army Book Depot, Daryaganj.
Jaina & Bros, Messrs. J. M., Morigate.
Oxford Book and Stationery Co.
Pioneer Book Supply Co., 219, Cloth Market,
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Young Man & Co. (Regd.), Egerton Road.
- DEVAKOTTAH**—Rajaji Press, Ltd.
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- HYDERABAD (DECCAN)**—Hyderabad Book Depot, Chaderghat.
- JAIPUR CITY**—Goyal & Goyal, Publishers & Book-sellers.
- JODHPUR**—Mathur & Co., Messrs. B.S., Chatter Vilas, Paota, Civil Lines.
- JUBBULPORE**—C. P. Circulating Library and Book Depot, Civil East-Street, Cantonment.
- ARACHI**—
Aero Stores.
English Bookstall.
Standard Bookstall.
- KARACHI (SADAR)**—Manager, Sind Government Book Depot and Record office.
- KARAIKUDI**—Rajaji Press, Ltd.
- KASHMIR**—Rainas News Agency, The Bund, Sri Nagar.
- KOLHAPUR**—International Bookstall, Market.
- LAHORE**—
Eastern Publishing and Stationery, Ltd., 10, Chamberlain Road.
Imperial Publishing Coy.
Kansil & Co., Messrs. N.C., 9, Commercial Buildings, The Mall.
Malhotra & Co., Messrs. U. P., Post Box No. 94.
Minerva Book Shop, Anarkali Street.
Modern Times, Moheni Road.
Punjab Religious Book Society.
Punjab Sanskrit Book Depot.
Rama Krishna & Sons, Anarkali,
Standard Book Depot.
Superintendent, Govt. Printing, Punjab.
Times Book Depot, Mohan Lal Road.
University Book Agency, Kacheri Road.
- LUCKNOW**—
Lucknow Publishing House.
Upper India Publishing House, Ltd.
Literature Palace, Aminuddula Park.
- LYALLPUR**—Lyal Book Depot.
- MADRAS**—
Company Law Institute, Thyagarayanagar.
Higginbothams.
Little Flower & Co., 44, Lingha Chetty Street G. T.
Superintendent, Govt. Press, Mount Road.
Varadachary & Co., Messrs. P.
- MEERUT**—
Ideal Book Depot, Big Bazar.
Parakash Educational Stores, Near Tehsil.
- MOGA**—Army Musketry Stores.
- NAGAPATAM**—Venkataraman, Mr. B.
- NAGPUR**—
Chiney & Sons, Booksellers, etc. Dhantoli.
Superintendent, Govt. Printing, Central Provinces.
- NEW DELHI**—
Bhawnani & Sons.
Delhi and U. P. Flying Club, Ltd. †
Idandas Book Co., Connaught Circus (opposite Soidnia House).
Jaina & Bros., Messrs. J. M., Connaught Place.
Ramesh Book Depot & Stationery Mart, Connaught Place.
Saraswati Book Depot, 15, Lady Hardinge Road.
- PATNA**—
Superintendent, Government Printing, Bihar, P. O. Guizarbagh.
Verma's Cambridge Book Depot.
- PATNA CITY**—
Agarwala & Co., Messrs. J. N. P., Padri-ki-Havell.
Ragunath Prasad & Sons.
- PESHAWAR**—
British Stationery Mart.
London Book Co. (India), Arbab Road,
Manager Govt. Printing & Stationery, N.-W. F. P.
- PESHAWAR CANTT.**—Faqir Chand Marwah.
- POONA**—
Dastane Bros., Home Service, 456, Rawiwar Peth.
International Book Service.
Ram Krishna Bros., Opposite Bishram Bagh.
- QUETTA**—Standard Bookstall.
- QUILON**—Associated News Agency, Big Bazar.
- RAJKOT**—Mohanal Dossabhai Shah.
- RANGOON**—Burma Book Club, Ltd.
- RAWALPINDI**—Ray & Sons, Messrs. J. 43, K. & L. Edwards Road.
- RAZMAK**—Tara & Sons; Messrs. B. S.
- SHILLONG**—Superintendent, Assam Secretariat Press
- SIALKOT CANTT.**—Modern Book Depot, Bazar Road
- SIALKOT CITY**—Buckingham & Co., Booksellers & Stationers, Greenwood Street.
- TRICHINOPOLY FORT**—Krishnaswami & Co., Messrs. S., Teppakulam.
- TRIVANDRUM**—Booklovers' Resort, Talkad.
- VELLORE**—Venkatasubban, Mr. A., Law Bookseller.

* Agents for Income-tax Law and allied Publications only.
† Agents for Publications on Aviation only.

PREFACE.

At the sixth meeting of the Central Advisory Board of Education held at Madras in January 1941, the Right Hon'ble Sir Akbar Hydari presented the report of the Scientific Terminology Committee, of which he was the Chairman. The Board adopted the recommendations of the Committee subject to the following modifications :—

- (a) No. II (ii) in the Main Conclusions and Recommendations should be deleted. The great majority of the members present were of opinion that the adoption of this recommendation would introduce an unnecessary complication since the legitimate aspirations of modern Indian languages in this respect could be satisfied under (iii) which, as the Chairman pointed out, did not preclude the adoption of new words formed and evolved in accordance with the traditions and genius of a people as distinct from neologisms invented, as it were for their own sake. Rajkumari Amrit Kaur recorded her dissent from the decision of the Board.
- (b) The two main groups into which Indian languages may be divided should be Sanskritic and Perso-Arabic instead of Hindustani and Dravidian as suggested by the Committee.
- (c) The words 'Mathematical propositions and questions' occurring in recommendation No. V and in para. 12 (a) in the report to be changed to 'Mathematical processes and formulæ'.

Report of the Scientific Terminology Committee of the Central Advisory Board of Education, 1940.

At the fifth meeting held in May 1940, the Central Advisory Board of Education considered the question of adopting a Uniform Scientific Terminology on an all-India basis. This question has been engaging the attention of certain Provincial Governments for sometime past and the Government of Bombay forwarded a note on the subject by their Deputy Director of Public Instruction, Mr. B. N. Seal, with a request that the question might be taken up by the Central Advisory Board. The main features of Mr. Seal's note were—

- (i) That a common scientific terminology should be fixed for India as a whole ;
- (ii) That the question of an all-India scientific terminology should, in the first instance, be referred to an authoritative all-India body ;
- (iii) That the main and common part of the scientific terminologies to be devised for the principal Indian languages should be borrowed extensively from the English terminology ;
- (iv) That every Indian language should have the following three main divisions in its scientific terminology, *viz.* :—
 - (a) the main English terminology which will practically be the common terminology for all-India,
 - (b) the terminology peculiar to the Indian language—a very small section,
 - (c) Sanskrit or Perso-Arabic terminology—comparatively small in number—adopted or coined according as the language is Sanskritic or Dravidian or Urdu, Pushto or Sindhi ;
- (v) That standard terminologies should be fixed for the various scientific and humanistic subjects such as Mathematics, Anatomy, Physiology, Economics, Scientific Philosophy, Modern Logic, etc.;
- (vi) That as soon as the tables of scientific terminology are settled, text books should be got written in the principal Indian languages for all grades of education and that all other terminology should be discouraged ;
- (vii) That it should be commended to the Provincial Governments that they should set up small representative committees of experts in their areas to take up the work of fixing and standardising the terminology under (iv) (b) above ; and
- (viii) That the Central Advisory Board of Education should set up a permanent Board of Reference whose views must ultimately be accepted by all educational authorities and organisations.

The Board, while expressing itself in favour of uniformity in the matter of adopting scientific terminology for regional languages in India, felt that the purpose in view could best be attained by following the English terminology, but in order that the question might be examined in greater detail decided to appoint the Committee named below, with power to co-opt :—

1. The Right Honourable Sir Akbar Hydari, LL.D., President of H. E. H. the Nizam's Executive Council, Hyderabad State—*Chairman*.
2. The Honourable Diwan Bahadur Sir K. Ramunni Menon.
3. Mr. S C Tripathi, I.E.S., Director of Public Instruction, Orissa.
4. Mr. W. H. F. Armstrong, I. E. S., Director of Public Instruction, Punjab.
5. Dr. Sir Zia-ud-Din Ahmad.
6. Pandit Amaranatha Jha, Vice-Chancellor, Allahabad University.
7. Dr U. M. Daudpota, M.A., Ph. D., Director of Public Instruction, Sind.
8. The Educational Commissioner with the Government of India.

2 In accordance with the powers conferred on the Committee by the Board, the following were co-opted as additional members :—

- (1) Dr. Abdul Haque, Secretary, All-India Anjuman-e-Taraqqi-e-Urdu, Delhi.
- 2) Dr. S. S. Bhatnagar, O.B.E., Director of Scientific and Industrial Research.
- (3) Dr. Mozaffaruddin Quraishi, Professor and Head of the Department of Chemistry, Osmania University.

3. The Committee, as finally constituted, met at Hyderabad Deccan, on the 15th and 16th October 1940. Pandit Amaranatha Jha was unable to be present on the 15th and attended the meeting on the 16th only. Mr. S C. Tripathi did not attend. Nawab Mahdi Yar Jung Bahadur, Vice-Chancellor of the Osmania University and Education Member, Government of His Exalted Highness the Nizam, was present at the meeting by special invitation

4. The Agenda and the other papers circulated along with it to the members are set out in Annexures I and II respectively. In addition, the following papers were circulated to the members :—

- a, A note by Pandit Amaranatha Jha, Vice-Chancellor, Allahabad University (*vide* Annexure III).
- (b) A note by Dr. Abdul Haque, Secretary, Anjuman-e-Taraqqi-e-Urdu (Hind *vide* Annexure IV).
- (c) A note by Dr. Mozaffaruddin Quraishi, Professor and Head of the Department of Chemistry, Osmania University (*vide* Annexure V).

5. In opening the proceedings, the Chairman cordially welcomed the members of the Committee to Hyderabad. The members in return expressed their appreciation of the generous hospitality extended to them by the Government of His Exalted Highness the Nizam.

6. The Chairman stated that the problem of adopting a Uniform Scientific Terminology based on Urdu had been engaging the attention of the Osmania University for a considerable period and much work had already been done. He referred in particular to the principles followed by the Osmania University as since 1920 (these are embodied in the note by the Director of Public Instruction, Hyderabad, in Annexure II (c) and explained in detail the organisation and activities of the Bureau of the Osmania University constituted specifically for this purpose.

7. The point was raised in connection with the Committee's terms of reference as to whether the discussion should be confined to the pre-university stages of education or should embrace all stages. The Committee decided that the question should be considered in relation to all stages of education. Opinion was also general that it would be impracticable to prescribe the particular sciences in relation to which the main question should be considered or to investigate issues restricted to individual sciences. The Committee felt that they should confine themselves to exploring the general problem in its widest aspect.

8. The Committee considered it desirable as a matter of general principle that a common approach to the main problem should be sought for India as a whole though they were fully conscious of the practical difficulties in the way of achieving this object. It was felt that regard might usefully be had to the attempts already made or at present in progress in different parts of the country to solve this problem so far as the principal regional languages are concerned. There was general agreement that whatever terms were adopted, they should be as precise and simple as possible so that they may be understood not only by those engaged in educational institutions but also by the public at large. A large number of people all over India were already familiar with many English technical and scientific terms through their use in every day life. For this reason and more particularly because of the world-wide tendency in the more advanced stages of learning towards the adoption of an international scientific terminology, the Committee came to the conclusion that where international terms (in their English form) are already in common use in India, they should be retained and that in other cases the question of adopting them for Indian use should be considered before any attempt is made to invent Indian equivalents.

9. The Committee next considered the need for supplementing the international terminology, particularly in the earlier stages of education, by words of Indian origin and which would be acceptable in all parts of the country. The primary objection to this is that the regional languages do not derive from a common parent stock and in view of their radical differences any uniform terminology imposed from above would be exposed to the criticism that it was largely artificial. It was, however, thought to be both possible and desirable that through progressive stages some degree of uniformity might be reached so far as the two main groups of Indian languages are concerned, *viz.*, Hindustani which covers most of the languages spoken in Northern India and the Dravidian group for Southern India. Terms already existing or of simple coinage which would be readily understood throughout their respective groups would form a valuable second category. The coining of elaborate or pedantic terms based on classical languages is to be deprecated.

10. In the third category will fall those terms which are peculiar to regional languages and are in common use. Their retention is clearly essential for the sake of intelligibility during the lower stages of education even though later on they may tend to be replaced by 'Indian group' or international terms. The stage at which and the means by which terms of wider acceptance whether 'group' or 'international' should be substituted for local names are questions which might usefully be explored by the Committee referred to in para. 11.

11. Having defined in broad terms the nature of the categories into which a scientific terminology for India should in their opinion be divided the Committee next considered how to determine the actual contents of each category and what machinery would be required for this purpose.

It was realised that in a matter of this kind finality was neither attainable nor desirable. Terms should be subject to revision in the light of internal experience and external developments. Moreover while it would be reasonable to expect a fair amount of agreement as the contents of the first or international category so far as the requirements of the more advanced stages of learning are concerned, at other stages there might be substantial variations in different parts of India dependent on the availability of suitable terms either common within one of the two main groups or peculiar to certain regional languages. While recognising that in such cases the final decision would have to be local and would naturally come within the purview of the Provinces and States concerned the Committee felt that some central committee of reference would be required to whom problems of general application could be submitted and that each of the two main language groups should have a committee of its own to offer advice on problems of terminology peculiar to its own group. The constitution of these Committees, which need not themselves consist of scientific or linguistic experts but should have power to co-opt experts or appoint *ad hoc* expert sub-committees, would have to be decided by the Central Government in consultation with Provincial Governments and States.

12. In connection with two matters of important detail the Committee decided—

- (a) that for all the sciences the international symbols and figures should invariably be adopted and that to avoid confusion mathematical propositions and questions should always be written from left to right even in those languages like Urdu where the script runs from right to left.
- (b) that the responsible authorities, assuming they accept the recommendations of the Committee, should take steps to secure that text-books are written in conformity with them.

Main conclusions and recommendations.

I. That in order to promote the further development of scientific studies in India, it is desirable to adopt a common terminology so far as may be practicable and full regard should be had to attempts which have already been carried out with this object in view.

II That in order to maintain the necessary contact between scientific development in India and similar developments in other countries, the scientific terminology adopted for India should assimilate wherever possible those terms which have already secured general international acceptance. In view, however, of the variety of languages in use in India and of the fact that these are not derived from one common parent stock, it will be necessary to employ, in addition to an international terminology, terms borrowed or adapted from the two main stocks to which most Indian languages belong as well as terms which are in common use in individual languages.

An Indian scientific terminology will therefore consist of—

- (i) An international terminology, in its English form, which will be employable throughout India ;
- (ii) Terms borrowed or adapted from Hindustani or the Dravidian languages according to the affinities of the area, but avoiding as far as possible difficult words from Sanskrit, Persian or other classical languages ;
- (iii) Terms peculiar to individual languages whose retention on the ground of familiarity may be essential in the interest of popular education. In the higher stages of education terms from categories (i) and (ii) may be progressively substituted for those in category (iii).

III. To ensure the steady and uniform growth of Scientific Terminology on an all-India basis it is desirable that there should be a Central Board of Reference with expert sub-committees whose guidance on general issues and decisions on specific issues submitted to them would be accepted by Provincial Governments and other regional bodies concerned.

IV. That on the assumption that Indian languages may be divided into two main groups, viz., (i) Hindustani, (ii) the Dravidian group, Boards should be set up for each group with the object of evolving a common terminology within the group

V. That for the sake of uniformity, mathematical propositions and questions in Urdu should be written from left to right.

VI. That to promote uniformity and to encourage the widest possible use of the terms approved, the authorities responsible for authorising the use of text-books should see that only those are sanctioned which employ the terms in question.

AKBAR HYDARI (*Chairman*).
 RAMUNNI MENON.
 W. H. F. ARMSTRONG.
 ZIA-UD-DIN AHMAD.
 AMARANATHA JHA.
 U. M. DAUDPOTA.
 JOHN SARGENT.
 ABDUL HAQUE.
 S. S. BHATNAGAR.
 MOZAFFARUDDIN QURAISHI.

NOTE OF DISSENT BY PANDIT AMARANATHA JHA.

I object to the division of Indian languages into Hindustani and Dravidian. I am of opinion that there should be three rather than two groups—(1) Sanskritic, (2) Persian-Arabic, and (3) Dravidian.

ANNEXURE I.

AGENDA FOR THE SCIENTIFIC TERMINOLOGY COMMITTEE OF THE CENTRAL
ADVISORY BOARD OF EDUCATION IN INDIA.

1. To consider whether a common scientific terminology should be fixed for India as a whole, and if so, whether the main and common part of such a terminology should be borrowed extensively from the English terminology.

2. To consider whether every Indian language should have three main divisions in its scientific terminology consisting of—

(a) the main English terminology which will practically be the common terminology for all India ;

(b) the terminology peculiar to the language ; and

(c) Sanskrit or Perso-Arabic terminology, adopted or coined, according as the language is Sanskritic or Dravidian, or Urdu, Pushto or Sindhi.

3. To consider whether standard terminologies should be fixed for the various scientific subjects such as Mathematics, Anatomy, Physiology, etc.

4. To consider whether the Central Advisory Board of Education should set up a permanent Board of Reference whose views would ultimately be accepted by all educational authorities and organisations.

5. To consider any other matter that may be raised at the meeting.

ANNEXURE II.

(a) MEMORANDUM PLACED BEFORE THE CENTRAL ADVISORY BOARD OF EDUCATION IN INDIA AT ITS MEETING HELD IN MAY 1940, ON THE SUBJECT OF ADOPTION OF A UNIFORM SCIENTIFIC TERMINOLOGY FOR INDIA.

The question of adopting a uniform scientific terminology for regional languages has been engaging the attention of the Government of Bombay for sometime past. They accordingly asked Mr. B. N. Seal, I.E.S., their Deputy Director of Public Instruction, to prepare a note on the subject. That Government have now forwarded a copy of the note prepared by that officer, and desire that the question should be taken up by the Central Advisory Board of Education in order that a common scientific terminology acceptable to the whole of India may be evolved. The Government of Bombay are prepared to take up this work in so far as Marathi, Gujarati and Kannada are concerned.

2. A copy of the letter from the Government of Bombay together with a copy of the note prepared by Mr. Seal, in which the proposed scheme is fully explained, is appended for the information of the Board. For the sake of convenience the main features of the scheme are given below :—

- I. That a common scientific terminology should be fixed for India as a whole ;
- II. That the question of an all-India scientific terminology should, in the first instance, be referred to an authoritative all-India body ;
- III. That the main and common part of the scientific terminologies to be devised for the principal Indian languages should be borrowed extensively from the English terminology ;
- IV. That every Indian language should have the following three main divisions in its scientific terminology, *viz.*—
 - (a) the main English terminology, which will practically be the common terminology for all-India.
 - (b) the terminology peculiar to the Indian language—a very small section,
 - (c) Sanskrit or Perso-Arabic terminology—comparatively small in number—adopted or coined, according as the language is Sanskritic or Dravidian or Urdu, Pushto or Sindhi.
- V. That standard terminologies should be fixed for the various scientific and humanistic subjects such as Mathematics, Anatomy, Physiology, Economics, Scientific Philosophy, Modern Logic, etc.;
- VI. That as soon as the tables of scientific terminology are settled, text books should be got written in the principal Indian languages for all grades of education and that all other terminology should be discouraged ;
- VII. That it should be commended to the Provincial Governments that they should set up small representative committees of experts in their areas to take up the work of fixing and standardising the terminology under IV (b) above ; and
- VIII. That the Central Advisory Board of Education should set up a permanent Board of Reference whose views must ultimately be accepted by all educational authorities and organisations.

3. The question of imparting education in India in all its grades through the medium of the Indian languages has assumed a great importance, and it is, therefore, considered desirable that the question raised by the Government of Bombay should receive the consideration of the Central Advisory Board of Education. The matter is accordingly placed before the Board for their consideration.

COPY OF LETTER NO. 6671/F., DATED THE 23RD NOVEMBER, 1939, FROM THE
GOVERNMENT OF BOMBAY.

SUBJECT.—*Adoption of uniform Scientific Terminology for regional languages*

I am directed to state that the question of adopting a uniform scientific terminology for regional languages has been engaging the attention of this Government for sometime past. Mr. B. N. Seal, I.E.S., was asked to prepare a note on this question, a copy of which is appended. The Government of Bombay agrees with Mr. Seal that if a common Scientific Terminology acceptable to the whole of India is to be evolved, then the work should be undertaken by the Central Advisory Board of Education. I am accordingly to request you to move the Central Advisory Board of Education to take up this question.

2. I am also to state that this Government is prepared to take up the work so far as the following languages are concerned, *viz.*, Marathi, Gujarati and Kannada.

A NOTE ON THE QUESTION OF A UNIFORM SCIENTIFIC TERMINOLOGY FOR
INDIA BY MR. B. N. SEAL, I.E.S., DEPUTY DIRECTOR OF PUBLIC
INSTRUCTION, POONA.

1. A representative Committee of eminent scientific and technological experts with an intimate knowledge of the theoretical as well as the practical aspects of their respective subjects, can alone succeed in fixing a common scientific terminology which can be expected to be accepted by India as a whole. This Committee, it goes without saying, must be helped by a body of scholars in Sanskrit, Persian and Arabic. If the question of a scientific terminology for India is going to be solved on an all-India basis, with variations to suit regional needs, I think the Central Advisory Board of Education in India should be moved to take up this important problem, as in my opinion, it is the duty of that body to give an effective lead in such a matter. I will, however, go into certain general considerations which I hope will help to clear the issues. That our education in all its grades should be imparted through the medium of the Indian languages is today almost a hackneyed statement and needs no reiteration. I doubt however, whether many of those who advocate this policy understand its full and varied implications. Without the concurrent creation of the necessary literature for the teaching of all science subjects in our schools and colleges, the Indian languages cannot fruitfully be employed as the vehicle of instruction. All efforts in this direction are bound to be unsuccessful unless we consciously plan to achieve our ultimate objects. Some, no doubt, may think that it is the business of authors in general to devise and accept independently the necessary scientific terminology for the purpose of producing the appropriate literature. But I cannot share

this view. If this important work is left to private initiative and enterprise, it is more than likely that parochial views will come in the way of the cultural unification of India. I advocate, therefore, that the accepted terminology must be more or less on an all-India basis, and in the main that terminology should be the English terminology. I am suggesting later in this note that the Central Advisory Board of Education and the Provincial Governments should appoint the necessary committees in connection with this work. These committees, however, should not be given the option of adopting the policy of citing words of Sanskrit, Persian or Arabic origin except in a comparatively small percentage of the total number of scientific terms. I am aware that I shall be vehemently opposed in the view by a number of educational authorities in India, and yet I am convinced that this borrowing from a foreign tongue is not only necessitated by the circumstances of our complex educational problems, but it can also be defended on sound educational grounds.

2. This question of an Indian Scientific terminology cannot be settled by a small compact committee representing any particular language or locality. It has to be referred to an authoritative all-India body in the first instance, since, in my view no constructive proposals can possibly be forthcoming unless the question is examined from all its diverse aspects by competent persons.

3. I will, therefore, confine myself to certain general considerations, because I feel I am not competent to give expert advice in relation to all Science subjects, nor in relation to all Indian languages. I fully realise that many controversial issues can be raised in connection with this problem. In my considered opinion, however, the main and the common part of the scientific terminologies, which are to be devised for the principal Indian languages, should be borrowed extensively from the English terminology. In support of my views I give below certain arguments which will incidentally meet the usual criticisms that are levelled against the adoption of a foreign terminology in the body of the Indian languages :

(1) It may be maintained by some that the introduction of foreign words in the Indian languages is not in consonance with the sentiments of nationalism. To be frank, however, the very spirit of nationalism requires a uniform terminology to be used all over India as far as possible. The adoption of the English terminology will settle many a dispute between the pro-Sanskrit and pro-Perso-Arabic parties and will avoid the circumstance of having two entirely distinct and parallel terminologies. Modern science in every sense is a gift of the West, and it has been mainly developed in Western Europe during the last 300 years. I cannot understand how anyone could feel humiliated if he has to accept that science even in its native terminological garb. Knowledge is knowledge—Eastern or Western.

(2) It may be urged by linguistic authorities that foreign words, borrowed from any of the vernaculars of Europe, will spoil the 'sound' quality, and is to say, will mar the music and flow of our languages. This argument is, to a large extent, untenable because the majority of our Indian languages are rich in consonants and vowels, and therefore the imported foreign technical words will hardly cause any phonetic incongruities or consonantal discords, nor will they raise much difficulty by way of pronunciation. The transliteration of these foreign terms in Indian scripts

will be comparatively speaking an easy task and slight variations in the pronunciation should not be forbidden as long as the adapted words or terms remain recognisable.

(3) These foreign terms, some critics point out, will lack native linguistic associations. It is difficult to say what exactly is meant by such a statement. Undoubtedly the scientific terms of the European languages were mainly drawn from Latin or Greek sources by the pioneers of scientific discovery. These terms were chosen not because they were considered to have any sacred and hoary associations, but mainly because they were found convenient, specially in view of the fact that no living language in Europe possessed a wider or more varied vocabulary than that of Latin or Greek. We must not also overlook the fact that the classical languages were almost universally used as the main vehicle of expression by scholars in all European academies. Again, the associations around these terms that appear now to be so firmly established, have really been a matter of natural growth due to the wide and prolonged usage that they have enjoyed in the general scientific literature of modern Europe for centuries. This question of literary associations raises, I am well aware, number of interesting and knotty problems in linguistics, semantics, and the psychology of languages, but I do not wish to enter into a disquisition on these and other allied topics. The two important but somewhat unacknowledged principles relating to this matter are briefly—

- (a) The word 'beautiful' in any language acquires the associations of beauty.
- (b) Good grammar and language in current usage is mainly bad grammar and language of a preceding age. King's English is, therefore, often bad English in current usage. In other words all languages are forms of *apabhraṃśa*.

(4) The foregoing observations are not strictly speaking relevant to the main subject under discussion. Until very recently pure scientific literature was hardly tested by aesthetic standards. It may be that fashions among scientific writers are changing and before long all jargons, scientific, administrative, or otherwise, will reach the same standard of literary excellence. We must not ignore our Hudsons and Whiteheads.

The importation of foreign words in any language should not be discouraged as long as such words do not interfere with the structure and syntax of that language. For instance, the English language has benefited by a steady influx of foreign words from all parts of the far-flung British Empire. Imperialism has thus not only enriched the Britisher materially by an extension of his territories but also intellectually by a similar enlargement of his vocabulary.

(5) It may be held by some interested parties that free competition among text-book writers is all that is required, and in course of time, this will lead to the unconscious acceptance of the very terminology that we are seeking to establish. This laudable procedure, I need only point out, will entail the labour of several generations of writers before any definite achievement is made possible. A *laissez faire* policy in this respect is nothing but the postponement of the solution of the problem to a future date.

4. Although I have maintained that our main terminology should be English I must not be understood to mean that I do not advocate any terminology from indigenous Indian sources. Before I can say as to which terms should be borrowed and which should have their Indian equivalents, it will be necessary to give a broad and somewhat unscientific classification of scientific terms which would enable us not only to see the complexity of our problems, but also to point out the way to solve a few of our difficulties. Broadly speaking, the main groups are—

(i) Names of concrete natural physical objects or phenomena (*viz.*, sun, moon, star, air, wind, water, lightning, thunder, echo, aurora borealis, earthquake, tree, grass, rose, stone, granite, mule, elephant, ant, vein, limb, metal, etc.). Such of these names as are easily available in any of the Indian languages should be accepted and the rest should be kept in their foreign forms.

(ii) Names of concrete physical objects or occurrent phenomena discovered by scientific analysis or investigation (*viz.*, proton, electron, positron, neutron, photon, Alpha particles, Beta ray, Xray, cosmic ray, ion, atm, molecule, radium, hydrogen, argon, anthrax, sodium, chromosome, neuron, gene, vitamin, enzyme circuit, eclipse, tide, spectrum, nebula, binary stars, Cepheid variables, etc.). Such names should be kept, as a rule, in their foreign forms. There may be a few exceptions.

(iii) Names of concrete artificial (man made) objects, instruments, apparatus, machinery, engines, etc. (*viz.*, barometer, telescope, microscope, galvanometer, gramophone, radio, calorimeter, battery, cathode, anode, dynamo, Davy's safety-lamp, tube, cylinder, piston, valve, transformer, insulator, eccentric wheel, rudder, anvil, furnace, watch, clock, table, screw, nail, mirror, prism, hinge, bolt, nut, pin, needle, Zeppelin, etc.). Such names should be adopted in their foreign forms except where convenient Indian terms are already in current usage.

(iv) Conceptual or abstract names (ideas) as well as adjectival names ; these are of two kinds for the purposes of our classification :—

- (a) concepts, abstract ideas, qualities, properties, names of subjects of study and of scientific theories, etc., which are of scientific importance and which are to be found in any of the civilized languages of the world (*viz.*, force, centre, volume, weight, dimension, unit, resistance, velocity, heliocentric, number, rotation, speed, impact, nutrition, action, reaction, sensation, size, measurement, pith, resonance, frequency, undulation, oscillation, latitude, longitude, equinox, surface, liquid, solid, gaseous, charge, radiation, dispersion, wave-propagation, centre of gravity, lines of force, Algebra, Geometry, Mathematics, etc.) Such names must be accepted in their native forms (Sanskrit, Persian, Arabic or in any Indian language as required) and names of complex ideas may even be coined from these basic sources, wherever necessary and feasible.
- (b) Concepts, abstract ideas, qualities, properties, names of subjects of study and of scientific theories, etc., which have been adopted or specially coined during the course of scientific investigation, particularly in the post-renaissance period. Most of these terms are names of a highly technical nature and may not have any direct or obvious connection with concepts mentioned under (iv) (a) (*viz.*, momentum, horse-power,

erg-kilowatt, ampere, isobar, isotherm, thermodynamic potential, electromagnetic induction, electrolysis, atomic number, atomic weight, specific gravity, specific heat, valency, isotope, amorphism, diffraction, polarisation, achromatism, spectral lines, insulation, conductivity, radioactivity, dissociation theory, wave-mechanics, geodesics, principle of indeterminacy, photon, entropy, acceleration, corpuscular theory, metabolism, atavism, recessive characters, electromagnetism, Astrophysics, Mechanics, Electrodynamics, Hydrostatics, Trigonometry, Bacteriology, Entomology, Biochemistry, etc.). Such terms, with few exceptions, should be retained in their foreign forms.

(v) Names of scientific principles, theories or laws associated with the names of their discoverers, inventors, etc. (*viz.*, Boyle's law, Hooke's law, Doppler's principle, Brownian movement, Ohm's law, Planck's quantum, Raman effect, Wassermann test, Lorentz transformation, Copernican Theory, Darwinian Theory, Lamarckism, Mendelism, etc.). Such names should be kept in their original forms.

(vi) Symbolic systems with their constituent concepts devised for expression and development of mathematico-scientific thinking on an exact basis, eliminating the employment of language as far as possible. Most of the symbols in such systems are non-linguistic or what has been termed in recent literature 'illustrative' or 'shorthand'. These systems as well as the symbols should be incorporated in Indian scientific literature, though minor modifications and adaptations of any easy and intelligible nature are to be allowed. (Examples: The major part of pure and applied mathematics, symbolic or mathematical logic, chemical formulæ and other hybrid pictorial methods of scientific exposition, etc.)

(vii) Names of units of weights and measures as well as of other units of scientific measurement (perceptual or conceptual) should be adopted wholesale. Some of these names fall within the scope of groups mentioned above.

(viii) Proper names naturally are proper names and cannot have equivalents.

From the above classification it will be apparent that we are committed to the adoption of any complicated system of accepted nomenclature, which is valuable for purposes of systematic scientific classification and description. (Linnean nomenclature, Anatomical nomenclature, Geological nomenclature, Chemical nomenclature, nomenclature of the British Pharmacopia, etc.).

5. I have deliberately abstained from any reference to verbs in my divisions of scientific terminologies but any body of experts who will tackle the general question will have to bear this in mind and suggest methods of adaptation.

6. It is hardly necessary to point out that the publication of dictionaries and glossaries of technical scientific terms in the Indian languages is useless unless the published terminology has been previously given the stamp of recognition. Terminologies of this kind (published or unpublished) can hope to acquire the requisite amount of importance only when they are uniformly forced upon the writers of scientific literature. It has been suggested in some quarters that teachers of science subjects can help materially in bringing about a standard Indian scientific terminology into currency by

means of oral teaching. This is a dangerous process. If the teachers are left free to introduce their own terminology to their own pupils, the prospect of the establishment of any uniform terminology will be greatly diminished. The resulting situation will become that of the Tower of Babel. In point of fact, it is through the appropriate and recognised literature which is in constant use in educational institutions that any particular terminology can be effectively brought into usage and acceptance. Again the question of terminology cannot be taken up by stages of education, that is to say, we cannot attempt at first to evolve and standardise the terminology suited to primary education and then to secondary and still later to university education. This cannot be done compartmentally for the obvious reason that some technical terms embodying scientific concepts, which are to be fully explained in text-books meant for the secondary stage must find mention in text-books belonging to the primary stage, and also the terminology of the university stage will, to some extent, delve into the terminology of the secondary stage. The whole question has, therefore, to be thrashed out, and the sooner we do it the better, because once a particular terminology is adopted unthinkingly for use in text-books as well as in the class-room, it will be very difficult to have it modified or removed afterwards.

7. As soon as the tables of our scientific terminology are settled by accredited authorities, our first duty will be to get text-books written in the main Indian languages for all grades of education. Apart from getting text-books written for use in educational institutions, there is the larger and equally important question of the creation of suitable popular literature in all modern sciences written in a style and manner which are intelligible to the layman. This type of literature will exercise a beneficent influence on the mentality of our literate population, including the so-called educated public and will ease the course of social reform and propaganda. I must point out that the popular literature of the kind I have in my mind will make copious use of the most modern and up-to-date scientific ideas and concepts which are attracting the attention of the contemporary scientific world. All the more therefore, the question of an Indian terminology cannot be taken by stages or compartmentally. Half-hearted tinkering with these problems will not improve matters, and it is more than likely that we shall have to plan out the completion of our scheme for the production of scientific literature within the space of not less than two decades. There is no room for local and narrow-minded solutions of our problems, and text-books written in non-recognised terminologies must be ruthlessly weeded out. In educational matters defective organisation is often much more deplorable than no organisation, to wit our present system of education.

8. One of the important considerations that has persuaded me to accept a foreign terminology in a major part is the fact that our students in scientific and technological subjects will have to go mainly to British and other European Universities for their advanced studies and research work. India cannot be brought to the forefront of the scientific world in a day. Without question, India has produced one of the world's greatest mathematicians in the present century. Ramanujan is only the beginning of India's modern career in pure science. Other eminent men of science have already appeared on the scene and are winning world reputation. Nevertheless many of our students will have to go abroad for higher technological and scientific training for some time to come. In my view they should, at

no stage of their education, be forced to discard any considerable part of the terminology which they will have learnt in India, and be taxed with the learning of thousands of new terms in a foreign tongue. We should, therefore, see that our students may not have to waste their mental energy in learning, unlearning, and relearning different sets of terms. The proposed predominantly English terminology will have many other advantages. The poorest boy in the village will be able to go up to the university and will not feel himself cut off from the higher spheres of education. There should not be under any condition, two brands of education, one Indian and meant for the poor and depressed country folk, and the other Europeanised and meant for the urban population and affluent classes. Further it should be borne in mind that a large number of Indian students will be trained in advanced and research work in the Science and Technological Colleges of this country, and they will have to keep themselves abreast of the up-to-date and modern developments in their subjects, which are reported in the scientific journals and proceedings of learned societies. Most of these journals are and will be written in European languages, and therefore, a knowledge of the Indian terminology, if it is mainly English, will be not only extremely convenient but also very desirable. I fully realise that these research and advanced students will have to learn a European language (generally English), if their training is to be effective. The standard of quality of the knowledge of a foreign tongue that is required for such purposes is easily attainable. As an example I might mention the ease with which professors of scientific subjects are being exchanged between different European countries. This is possible because the main scientific terminology is tending to become uniform all over Europe. Science is universal, so should be the scientific terminology within limits. Professor J. B. S. Haldane rightly observes: "Science is an international concern. Any paper on pure science becomes the property of the whole world the moment it is published, and the special scientific terminology so frequently termed jargon is, with all its faults, an international language. One can get the gist of a scientific paper in any European tongue, and even amid a wilderness of Japanese script one comes across cases of mathematical expressions, numerical tables, and chemical formulae."

9. Another point of interest is that, whether we like it or not, a number of English technological and scientific terms have already been accepted in our workshops, firms, yards, etc. Even the illiterate railway-workers, mechanics, motor drivers, fitters, etc., are at present well-acquainted with that part of English technological terminology which comes within the routine of their daily activities and avocations. We cannot drive out the English terminology from the life of these people by publishing literature in Indian terminology in the form of glossaries and dictionaries and text-books.

10. In my scheme the Sanskritic terms which should be adopted in our scientific terminology must be the same in most Indian languages. Similarly Perso-Arabic terms are bound to be adopted in such languages as Urdu, Pushto, Sindhi, etc. To put the matter in a nut-shell, every Indian language will have the following three main divisions in its scientific terminology :

(X) The main English terminology (practically the common all-India terminology).

(Y) The terminology peculiar to any of the Indian languages (a very small but variable section, each language having its own independent section).

(Z) (a) The Sanskritic terminology adopted or coined for all Sanskritic or Dravidian languages, or

(b) The Perso-Arabic terminology similarly adopted or coined for Urdu, Pushto, Sindhi, etc. (Both sections comparatively small, the Sanskritic section for one group of languages and the Perso-Arabic section for another).

N.B.—The X, Y and Z classes in respect of any given languages are mutually exclusive, although they need not be identical in extension with the three respective classes of any other language. I do not wish to enter into the further logical niceties of this division.

As and when Hindustani, in the form of a mixture of Hindi and Urdu, becomes current and is accepted as the common all-India language, the section (Z) relating to it will, as a matter of course, become a convenient component of (Z) (a) and (Z) (b) mentioned above.

The Indian parts of the terminology mentioned above must be fixed by bodies of experts. However, it should be borne in mind that ultimately the choice of these technical terms will be, to a certain extent, arbitrary. In Europe also the choice of the scientific terminology in current usage had been arbitrary, that is to say, the actual terms that are current today were fixed by scientific discoverers and thinkers according to their own imaginative likings. In India we cannot go through this natural process and gallantly propose to remake history. Without wholesale borrowing, the task of inventing our own terminology will be of a stupendous magnitude, hardly realised by our scientific—or is it unscientific?—enthusiasts, and is beyond the capacity of the men available in India for this purpose. The time-clock cannot be pushed back, in spite of Einstein. Therefore our terminology must be determined mainly on the basis of what has already been achieved by the patient labour of generations of European Scientists. To think otherwise is pure obscurantism. A body of eminent Indian scientists is alone competent to undertake this task in close consultation with one another and they will have to indicate the general lines or principles upon which the work of fixing the different local terminologies is to proceed. They will have to recommend a hybrid terminology if they mean business, and a hybrid terminology it should be. There is no such thing as absolute perfection in these matters—Einstein vindicated!

11. I believe that the Central Advisory Board of Education will advise the local Governments to set up small representative committees in their respective provinces and to take up the work of fixing and standardising the different terminologies coming under (Y) of para. 10 based on certain general principles laid down by the Board. The work in connection with the fixing of the sections (X) and (Z) of para. 10 will require wider and more representative committees.

With regard to the common Sanskritic terminology mentioned in (Y) (a) of para. 10 it is probable that an inter-Provincial committee, helped by Sanskrit scholars will be in a position to evolve an agreed terminology which will have the prospect of acceptance by Sanskritic India as a whole.

The Bombay University should be associated with the work of our Provincial terminologies. The Mysore University must also be consulted in the case of the Kannada terminology and the University of Nagpur in the case of Marathi. With regard to the Urdu terminology, we shall have

to seek the advice of the Osmania University, Hyderabad, the Muslim University, Aligarh, the Anjuman-e-Taraqqi-e-Urdu, Aurangabad, and the Jamia Millia Islamia, Delhi, and the final Urdu terminology evolved by these bodies and other authorities should be used by the Urdu-speaking population of India. Besides, this part of the work as has been hinted above in the case of Sanskrit terminology is not the concern of one province only.

Probably the Central Advisory Board of Education will find it necessary to set up a permanent Board of Reference whose views must ultimately be accepted by all educational authorities and organisations.

12. It is not possible to give anything like a complete list of the scientific and technological subjects for which we are in immediate need of technical terminologies. A tentative list may, however, be offered :—

1. Mathematics.
2. Astronomy.
3. Physics.
4. Engineering.
5. Some of the main branches of technological subjects.
6. Chemistry.
7. Geology.
8. Botany.
9. Zoology.
10. Anatomy.
11. Physiology.
12. Hygiene.
13. Geography.
14. Psychology, etc.

The list suggested above will have to be revised and modified by experts who have a first-hand knowledge of the actual and immediate needs of our country. It is almost certain that other branches of pure and applied science than those mentioned in the list will deserve our attention. For instance, the whole of medical and veterinary science.

In this connection it may be mentioned that there is also a necessity for fixing standard terminologies for the following more or less humanistic subjects :—

1. Economics.
2. Political science.
3. Anthropology.
4. Sociology.
5. Modern logic.
6. Scientific philosophy.

13. One more point ; and that is that the scheme adumbrated in this note may be sent to the Honorary Visitors of the Royal Institute of Science, Bombay, for remarks and criticisms.

EXTRACT FROM A LETTER NO. 11/2457, DATED THE 10TH FEBRUARY 1940,
FROM THE PRINCIPAL, ROYAL INSTITUTE OF SCIENCE, BOMBAY.

Scientific Terminology—Adoption of uniform—for regional languages.

With reference to the correspondence ending with your letter No. 711-C of 7th February 1940, on the subject mentioned above, I have the honour to say that so far only two out of the four Honorary Visitors have replied. Their opinions are as under :—

(i) *Dr. S. S. Bhatnagar, Director, University Chemical Laboratories, Lahore.*

“ I agree whole-heartedly with the suggestion of Mr. Seal and shall be glad to do whatever I can in the materialisation of his suggestions.”

(ii) *Dr. Birbal Sahni, Professor of Botany, University of Lucknow.*

“It is apparently a very thoughtful document, containing many valuable suggestions.”

* * * * *

3. *The Srishti Dnyan Association* is endeavouring to compile similar collections in other branches of science— Botany, Zoology, Chemistry, Mathematics and Medicine; but the work is considerably handicapped for want of finances.

4. It can be seen from the published articles that the views expressed therein are almost identical with those expressed by Professor Seal.

LETTER FROM THE GOVERNMENT OF BOMBAY, NO. 6671-F., DATED THE 24TH
APRIL 1940, WITH ENCLOSURE.

Scientific Terminology—Adoption of uniform—for regional languages.

In continuation of this Department letter No. 6671-F., dated the 1st April 1940, on the subject noted above, I am directed to forward herewith 2 copies of the letter dated the 13th March 1940, from Professor G. Mathai, which contains his views on Mr. Seal's note on Scientific Terminology. The views of the fourth Honorary Visitor are still awaited.

COPY OF LETTER, DATED THE 13TH MARCH 1940, FROM PROFESSOR G. MATHAI,
GOVERNMENT COLLEGE, LAHORE.

I have to thank you for sending me a copy of 'A Note on the question of a uniform Scientific Terminology in India' by Mr. B. N. Seal, I.E.S., which I have now read with much interest.

If it is finally decided that higher education (at College and University) and research publications in India are to be in the vernacular, it will be advisable to have a common Scientific Terminology. But it seems to be a complicated question to settle whether the Terminology should be taken from any of the European Languages (classical or modern) or from languages in India. Personally, I am doubtful, if higher scientific teaching and research can be properly carried on in India in any language other than English. It will certainly be helpful, if this general question is discussed by the Central Advisory Board of Education in India in the first instance.

I am sorry for the delay in replying, which was solely due to pressure of other work.

(b) EXTRACT FROM THE PROCEEDINGS OF THE FIFTH MEETING OF THE CENTRAL ADVISORY BOARD OF EDUCATION IN INDIA HELD IN MAY 1940 (PARAGRAPH 16).

* * * * *

16. *Item 14.*—The question of adopting a uniform scientific terminology for regional languages has been engaging the attention of the Government of Bombay for sometime past. They accordingly asked Mr. B. N. Seal, I.E.S., their Deputy Director of Public Instruction, to prepare a note on the subject and forwarded a copy of it with a request that the question should be taken up by the Central Advisory Board of Education in order that a common scientific terminology acceptable to the whole of India might be evolved. The matter was placed before the Board for its consideration. The Note prepared by Mr. Seal had been previously circulated to its members. The main features of the scheme contained therein are given below :—

- (i) That a common scientific terminology should be fixed for India as a whole ;
- (ii) That the question of an all-India scientific terminology should, in the first instance, be referred to an authoritative all-India body ;
- (iii) That the main and common part of the scientific terminologies to be devised for the principal Indian languages should be borrowed extensively from the English terminology ;
- (iv) That every Indian language should have the following three main divisions in its scientific terminology, *viz.* :—
 - (a) the main English terminology, which will practically be the common terminology for all-India.
 - (b) the terminology peculiar to the Indian language—a very small section,
 - (c) Sanskrit or Perso-Arabic terminology—comparatively small in number—adopted or coined, according as the language is Sanskritic or Dravidian or Urdu, Pushto or Sindhi ;
- (v) That standard terminologies should be fixed for the various scientific and humanistic subjects such as Mathematics, Anatomy, Physiology, Economics, Scientific Philosophy, Modern Logic, etc. ;
- (vi) That as soon as the tables of scientific terminology are settled, text books should be got written in the principal Indian languages for all grades of education and that all other terminology should be discouraged ;
- (vii) That it should be commended to the Provincial Governments that they should set up small representative committees of experts in their areas to take up the work of fixing and standardising the terminology under IV (b) above ; and

- (viii) That the Central Advisory Board of Education should set up a permanent Board of Reference whose views must ultimately be acceptable by all educational authorities and organisations.

While expressing itself in favour of uniformity in the matter of adopting scientific terminology for regional languages in India, the Board felt that the purpose in view could best be attained by following the English terminology. In order, however, that the question may be examined in detail the Board decided to appoint the Committee named below, with power to co-opt :—

1. The Right Hon'ble Sir Akbar Hydari, L.L.D., President of His Exalted Highness the Nizam's Executive Council, Hyderabad State. *Chairman.*
 2. The Hon'ble Diwan Bahadur Sir K. Ramunni Menon.
 3. Mr. S. C. Tripathi, I.E.S., Director of Public Instruction, Orissa.
 4. Mr. W. H. F. Armstrong, I.E.S., Director of Public Instruction, Punjab.
 5. Dr. Sir Zia-ud-Din Ahmad.
 6. Pandit Amaranatha Jha, Vice-Chancellor, Allahabad University.
 7. Dr. U. M. Daudpota, M.A., Ph. D., Director of Public Instruction, Sind.
 8. The Educational Commissioner with the Government of India
- The Committee's report when submitted will be examined by the Board.

* * * * *

(c) NOTE BY THE DIRECTOR OF PUBLIC INSTRUCTION, HYDERABAD, ON THE SUBJECT OF ADOPTION OF A UNIFORM SCIENTIFIC TERMINOLOGY FOR INDIA.

The issues raised in the note prepared by Mr. B. N. Seal on the subject of a uniform scientific terminology for India are as important as they are controversial. There can be no two opinions on the question of adopting a common scientific 'terminology' provided one is clear in one's mind as to what, exactly, is meant by 'terminology'. Mr. Seal does not seem to be very clear on this point, and as he has himself admitted in paragraph 4 of his note, his classification of the terms which should be imported into the Indian languages in their present form is "broad and somewhat unscientific."

Mr. Seal's note does not disclose any knowledge of the great work of compiling technical terms in *Hindustani* on which the Osmania University has been working for the last 2 years. A study of the methods followed at the Bureau would have been helpful in clearing some of the misunderstandings which Mr. Seal seems to entertain.

The question as to whether the English terminology used in scientific books should be retained in translations, and if so to what extent, was

examined in the Osmania University as far back as 1920, and the University Council in its meeting held in May 1920, passed the following resolutions :—

- (a) Resolved that in view of the immense difficulties with which the evolution of a complete system of indigenous nomenclature is beset, and the facilities accruing from the use of international nomenclature in the prosecution of research and further study in other branches of learning like Medicine, Engineering, etc., it is advisable at present to adopt the latter ;
- (b) That the international terms used be written both in English and in Urdu in the body of the text ;
- (c) That the international formulae and symbols be adopted ; and
- (d) That the movement for coining Urdu equivalents be kept up, and that the co-operation of learned bodies outside the State should be solicited so as to evolve a common nomenclature.

In the light of the principle laid down in the resolution quoted above, technical terms used in the Osmania University translations have been divided into the following three groups :—

- (i) Nomenclature.
- (ii) Notation.
- (iii) Terminology.

Words coming under group (i) are not translated, but are incorporated in their English form. Thus names of Elements and their compounds, names of gases in Chemistry, and the names of phylum, classes, orders, genus and species in Biology are treated as international and retained in their original forms.

Words coming under group (ii)—Notation—belong mostly to mathematics. These symbols and abbreviations are translated like the full terms of which they are the symbols.

Under group (iii) Terminology—are included all those scientific words which are either names of phenomena, properties, processes, apparatus, etc., or such terms as Heat, Light, Electricity, Sound, Magnetism which have connotations in common language also. These words form by far the largest part of scientific vocabulary, and have necessarily to be translated if a student has to understand scientific thought in his own language.

The above is the only scientific classification, for purposes of translations, that has ever been attempted in any Indian language, and experience at the Bureau and the lecture-rooms of the Osmania University has proved beyond doubt that it is the only sound method, consistently with the policy of imparting instruction in the highest Arts and Sciences of the West, through the medium of an Indian language. This experience will prove invaluable in any attempt that is contemplated to form an All-India Terminology.

To take some examples from the classification suggested by Mr. Seal (para. 10 of his note), if we are to retain terms such as 'spectrum', 'nebula', 'prism', 'valency', 'conductivity', 'radio-activity', etc., in their original English form, what shall we do with their derivatives such as 'spectral', 'spectroscope', 'spectrometer', 'nebulous', 'prismatic',

'prismatically', 'monovalent', 'di-valent', 'conductive', 'conductor', 'conductiveness', 'radio-active', etc. Experience at the Osmania University has shown that where a technical term has a number of derivatives, it is always not only desirable, but also necessary, to translate it in order to express properly the different shades of meanings of the derivatives. This becomes all the more necessary where a technical term is also used in ordinary language.

The Osmania University has always been liberal and open-minded in its handling of the scientific terms. It has never allowed sentimental considerations of the kind mentioned by Mr. Seal (paragraph 3 of his note) such as "national vocabulary" or "beauty of sound" or "native linguistic associations" to stand in the way of its determination to transfer the highest thought of the West into Hindustani. Nevertheless, it is felt that the adoption of Mr. Seal's classification of terms which should be borrowed exclusively from the English vocabulary, would militate against the very purpose which it is intended to serve, namely, that of disseminating scientific knowledge through the medium of the Indian languages. Nearly 80 per cent. of the technical terms used in scientific text-books fall under the category of terminology as defined above, and to retain them in their original English form would mean, in effect, the retention of English as the medium of instruction.

Mr. Seal's suggestion (paragraph 11 of his note) that a permanent Board of Reference should be set up whose views must ultimately be accepted by all educational authorities and organisations is a valuable one. It should be one of the duties of this Board to decide, in the light of experience gained at the Osmania University, as to which category of terms should be incorporated into the translations in their present form and which should be translated.

A word about Mr. Seal's division of terminology mentioned in paragraph 10 (X, Y, Z) of his note. He has included Urdu in the Perso-Arabic group, which is only a half-truth. With all its verbs derived from the Brij Bhasha, and being a composite language, Urdu has a greater claim to be made a basis of terminology than any other language and the present technical terms coined at the Osmania University may well serve the purpose of an All-India terminology.

(d) COPY OF A LETTER NO. 34997-B-1, DATED THE 12TH SEPTEMBER 1940, FROM THE GOVERNMENT OF MADRAS, TO THE DEPARTMENT OF EDUCATION, HEALTH AND LANDS.

Reference : Your letter No. F. 10-10/40-C. A. B. (C), dated 23rd August 1940.

The first official attempt at producing lists of scientific terms in Indian languages was made in 1923 when this Government appointed a Committee for the purpose of compiling such lists in the four main languages of this Presidency. This Committee completed its work in 1931 and the lists made by them were printed at the Government Press. These lists have not been looked upon as complete nor have they received universal acceptance by scholars. The lists were not accordingly specially approved by Government for use in schools.

2. Owing to a decision taken by Government that as from the school year 1938-39 the use of the mother tongue as the medium of instruction should be begun in the IV Form of secondary schools and continued in successive years in the V and VI Forms, the question has now acquired added importance. In June of this year the Government appointed a Committee of officials and non-officials for the purpose of settling the general principles on which a uniform system of standardised technical and scientific terms could be introduced in the Indian languages of this province. This Committee has just sent in its report. I am to forward a copy of this report and to add that the report is under the consideration of Government. The report is being published.

REPORT OF THE TECHNICAL TERMS COMMITTEE.

The Government in their Order No. Ms.-1051-Education, dated the 8th June 1940, appointed a Technical Terms Committee with the following terms of reference :—

- (1) (a) To what extent the equivalents of foreign technical terms in the South Indian languages which are now in use are acceptable for educational purposes ;
- (b) Whether it is desirable to retain for school purposes the use of English technical terms where there are no accepted equivalents in the South Indian languages ;
- (2) Whether in the alternative it is necessary to draw up new and standardised lists of equivalents of certain foreign technical terms for all the South Indian languages ;
- (3) What direction should be issued to publishing houses and authors in regard to the decisions arrived at on references (1) and (2).

2. The following were the Members of the Committee :—

1. The Rt. Hon. V. S. Srinivasa Sastri, P.C., C.H., M.L.C. (Chairman).
2. Dr. C. R. Reddi, M.L.C., Vice-Chancellor, Andhra University.
3. Mr. R. M. Statham, C.I.E., Director of Public Instruction.
4. Mr. H. C. Stagg, Messrs. Macmillan & Co., Madras.
5. Mr. A. Daniel, Headmaster, Christian College High School, Guntur.
6. Sri T. Suryanarayana, Principal, Government Arts College, Rajahmundry.
7. Vidwan G. J. Somayaji, Andhra University.
8. A representative of the Madura Tamil Sangam; Sri T. C. Srinivasa Ayyangar, B.A., B.L., M.L.C.
9. Sri N. Venkatarama Ayyar, Headmaster, Zamorin's College High School, Calicut.
10. Sri T. Rama Pisharodi, Commercial Instructor, Government College High School, Mangalore.
11. Miss C. L. Kausalya, Lecturer, Queen Mary's College, Madras.
12. Sri Rao Bahadur M. C. S. Anantapadmanabha Rao, Retired Professor of Physics.
13. Dr. Muhammad Abdul Huq, Principal, Government Muhammadan College, Madras.

14. Sri V. Rajagopala Ayyar, Headmaster, Board High School, Konegal (Coimbatore).

15. Professor K. Swaminathan, Addl. Professor of English, Presidency College, Madras (Secretary to the Committee).

3. The Committee met in the Committee Room of the Legislature, Fort St. George, on Monday, 24th June, on Tuesday, 25th June and on Monday, 15th July 1940, each day at 11 A.M., with the Rt. Hon'ble V. S. Srinivasa Sastri in the Chair.

4. Dr. C. R. Reddi was absent owing to ill-health on the first two days and Mr. T. C. Srinivasa Ayyangar was absent on the 25th June. All the members of the Committee were present on the 15th July.

5. The Committee had before it—

(a) a confidential memorandum on Uniform Scientific Terminology for India by Mr. B. N. Seal, I.E.S., Deputy Director of Public Instruction, Poona, submitted to the Central Advisory Board of Education, Government of India, Delhi ;

(b) a memorandum on the Language of Science Subjects by Mr. G. R. Paranjpe, M.Sc., A.I.I.Sc. (Royal Institute of Science, Bombay) ;

(c) a memorandum by Vidwan G. J. Somayaji, M.A., L.T., Andhra University.

6. All the Members of the Committee took part in the discussions which centred round the difficulties felt at present by pupils, teachers, publishers and examiners and the various methods for bringing about efficiency in teaching and uniformity in scientific terminology within each language and as between South Indian languages as a whole.

7. The Committee noted with gratification the proposal now before the Central Advisory Board of Education for introducing uniform scientific terminology for the whole of India to the extent it may be possible. If such an All-India terminology comes to be adopted, it would affect only the second class of words recommended by this Committee and it may be possible after a time to revise our lists so as to bring them into line with the rest of India.

8. The Committee also resolved to direct the attention of the various special committees to the developments in this direction in Travancore and Cochin for Malayalam, in Mysore for Kannada and in Hyderabad for Urdu.

9. The Committee resolved to submit to Government the following general principles on which a uniform system of standardised technical and scientific terms can be introduced in the South Indian languages :—

(i) The equivalents of foreign technical terms in the South Indian languages now in use in the lower secondary classes have mostly established themselves and are acceptable for educational purposes. Other terms which are current in the South Indian languages may also be adopted, such as the names of concrete natural (physical) objects or phenomena, like lightning, thunder, echo, earthquake, metal, limb, mule. This group of words may be peculiar to each of the South Indian languages.

(ii) It is necessary to draw up a standardised list of technical terms, common to all South Indian languages, for conceptual or abstract names and ideas, as for example, qualities, properties, names of subjects of study; force, centre, volume, nutrition, action, reaction, sensation, latitude, longitude, equinox, surface, liquid, solid, gaseous, rotation, algebra and geometry. These names may be based on Sanskrit elements for Dravidian languages and on Persian and Arabic for Urdu. This group will necessarily be small.

(Our colleague, Mr. Pisharodi is of opinion that for the first few years at least the practice may be adopted of enclosing within brackets the English equivalents of the technical terms under this category).

(iii) The remaining technical terms, not included in the two previous groups, will be bodily taken from English and transliterated into the South Indian scripts, accompanied wherever necessary by the original words in English script enclosed within brackets :

Provided however that candidates at examinations will be permitted to use, at their option, either the original forms in English or the transliterated forms or both.

(iv) In Mathematical and scientific books, Arabic numerals and the signs and symbols in use in English books are to be retained.

10. The Committee recommends to Government that a special committee be appointed for each one of the South Indian languages with power to co-opt members for different subjects to prepare lists of technical terms in each language in the light of the above principles. The Special Committee may in the first instance consist of five persons one of whom at least may be chosen from this Committee. Another Special Committee consisting of chosen members from each of the language committees may be appointed to frame the common lists referred to in resolutions (ii) and (iii) above.

11. When the various lists have been submitted by these Special Committees this Committee may be re-summoned for examining how far its recommendations have been followed and for making such revision of the terms as it may consider necessary.

12. When the lists have been finally adopted by this Committee it would be necessary for Government by order to prescribe them for use by the writers and the publishers of recognised text books; by teachers in recognised schools and by examiners at public examinations.

13. While the use of the lists as finally passed by this Committee and approved by Government should be enforced by order of Government, the lists should be subject to revision and modification at stated periods, say five years, and by properly constituted authorities. This would enable a uniform and acceptable terminology to evolve in due course and at the same time would free pupils, teachers, authors and examiners from the distractions of rival systems.

14. The Committee is of opinion that instruction in English shorthand and English type-writing can only be given through the English language.

(Sd.) V. S. SRINIVASA SASTRI,
Chairman,
Technical Terms Committee

APPENDIX III.

NOTE BY PANDIT AMARANATHA JHA, VICE-CHANCELLOR, ALLAHABAD UNIVERSITY.

Scientific Terminology in the Indian Languages.

The first attempt at organised work on Science in an Indian language was made in 1888 by Prof. T. K. Gajjar. The Baroda Darbar made for this purpose a grant of Rs. 50,000. In his report for 1891-92, while explaining why only 5 books had been prepared, Professor Gajjar said :

“The reason why but few books were received at the end of the academic year seems to be the want of suitable words—the difficulty of coining appropriate technical terms..... The transference of European knowledge to this country involves the search and creation of adequate words to signify all kinds of European ideas.”

Then the Bangiya Sahitya Parishad did some useful work. The Nagari Pracharini Sabha of Benares next undertook to prepare a glossary. They kept before themselves the following principles :

1. Preference should be given to the common and current Hindi terms.
2. In the absence of appropriate Hindi equivalents :
 - (a) Certain appropriate terms existing in some of the prevalent vernaculars—Marathi, Gujarati, Bengali, and Urdu—should be used.
 - (b) Failing these
 - (i) The existing Sanskrit terms should be taken.
 - (ii) The English terms should be used.
 - (iii) Terms should be coined from Sanskrit.

This work, comprising 360 pages, was published in 1906, with the title “Hindi Scientific Glossary”, and included separate chapters dealing with Geography, Astronomy, Political Economy, Chemistry, Mathematics, Physics, and Philosophy.

A revised and enlarged edition of this was published by the Sabha during the years 1929—34. The Glossary on Physics was revised by Dr. N. K. Sethi, D. Sc., and covers 116 pages. That on Chemistry was edited by Prof. P. S. Varma and in 82 pages. The Mathematics Glossary was edited by Prof. S. D. Pande and extends to 13 pages. That on Astronomy has 35 pages. One on Electricity has 60 pages. These five subjects have thus been carefully dealt with in 431 pages.

In 1932 Mr. Daya Shankar Dubey of the Economics Department of the Allahabad University brought out a Glossary of Economic Terms, covering 148 pages and one of Political Terms, covering 174 pages.

The Vijnan Parishad of Allahabad has since 1915 been publishing a Scientific Journal every month in Hindi and has brought out a valuable collection of scientific terms

There is next, the “Twentieth-Century English Hindi Dictionary”, compiled by Mr. Sukhsampathirai Bhandari, and published by the Dictionary Publishing House, Ajmer. It contains terms of “Commerce,

Economics, Politics, Medicine, Anatomy, Physiology, Surgery, Midwifery, Science, Astronomy, Mathematics, Botany, and Zoology". It devotes to Commerce and Economics 120 pages ; to Politics 102 pages ; to Medicine, Anatomy, Surgery and Physiology 294 pages ; to Physics and Chemistry 16 pages ; to Astronomy 17 pages ; to Mathematics 14 pages ; to Botany 14 pages ; to Zoology 13 pages and to Law 72 pages—a big work altogether comprising 862 pages.

So far as I am aware this is the work achieved so far in Hindi on this subject.

In Bengali, the Calcutta University has published glossaries in Physics, Mathematics, Geography, Biology, Chemistry, and Health and Hygiene.

I am not aware of what has been done in Marathi and Gujrati, and the languages of South India. But, as may be expected, there is much similarity between the Bengali and Hindi Terms, and presumably these will also be easily comprehended by those who speak Marathi and Gujrati. Here are a few identical terms, selected at random from the glossaries of the Nagari Pracharini Sabha and of the Calcutta University :—

Abbreviation	Sankshepa
Addition	Yog
Angle	Kon
At par	Sam mulya
Complex	Mishra

In Urdu also much work has been done. In 1915, the Rifah-i-Am Press of Lahore brought out, on behalf of the Anjuman Taraqqi-i-Urdu, a book on Physical Geography, with an eight-page glossary of technical terms : in 1916, a Geological Glossary, also of 8 pages. The main achievement has been that of the Osmania University. It has brought out Urdu books on Practical Anatomy, Mensuration, Chemistry, Sound, Astronomy, Mechanics, Sketching and Mapdrawing, Logic, and numerous other subjects. It has for the most part drawn on Arabic for coining new terms. Here are a few examples :

Dislocation	انفکاک
Natural Phenomena	آیات طبعی
Eruption	إلتهاب
Jointed	ذمی مفصل
Soil	فواش
Mixture	اختلاط
Hollow	مجوف
Curve	منحنی
Function	تفاعلت
Discovery	اکتشاف
Diagram	اسم
Corresponding	متناظر
Protection	تأمين
Joint Cost	مصارف مشترک
Gold Standard	معیار طلا

The Hindustani Committee, appointed by the Bihar Government, has, during the last month, sent round glossaries of Geographical, Geometrical, Algebraical, and Arithmetical Terms. They have attempted to discover or invent words which can be used both in Hindi and Urdu. Their endeavours are praiseworthy, although some of the terms recommended cannot possibly find favour with scholars (*e. g.*, 'Horizon' is explained as 'Nazargher'; 'Local Time' as 'muqami waqt') and although Sanskrit and Persian words seem to have been used now here and now there to produce an impression of unity (*e. g.*, 'Figure' as 'shaql'; 'Diagram' as 'chitra'; 'Constant' as 'atal'; 'Inference' as 'natija'); and although, in the really crucial instances, they are forced to fall back on separate Sanskrit and Arabic words (*e. g.*, "alternando" is translated by 'Ekantaranupat' and 'Ekantarnisbat'; 'Quantity' by 'Rashi' and 'Miqdar'; 'Fraction' as 'bhinna' and 'kasar'; 'Fourth proportional' as 'chautha samanupat' and 'tanasub'; 'Relative' as 'Sapaksha' and 'Izafi'; 'Magnitude' as 'pariman' and 'miqdar'; 'projection' as 'pras' and 'ta'abir'.

The Oxford University Press published in 1939, "A List of Technical Terms" in English, Urdu, Marathi and Hindi. It covers more than 200 pages, and is in many ways illuminating. Here are some words: the Bengali equivalents are taken from the Calcutta University Glossary:—

English.	Urdu.	Hindi.	Marathi.	Bengali.
Algebra	Jabromuqabla.	Beejganit.	Beejganit.	Beejganit.
Antecedent	Muqaddam.	Purvapada.	Purvapada.	Purvapada.
Cube	Maka'ab.	Ghan.	Ghan.	Ghan.
Formula	Zabta.	Sutra.	Sutra.	Sutra.
Transposition	Tanqeel.	Pakshantara.	Pakshantara.	Pakshantara.
Arithmetic	Ilmulhisab.	Ankaganita.	Ankaganita.	Ankaganita.
Consequent	Tali nisbat.	Uttarapada.	Uttarapada.	Uttarapada.
Dividend	Maqsoom.	Bhajya.	Bhajya.	Bhajya.
Magnitude	Miqdar.	Pariman.	Pariman.	Pariman.
Negative	Munfi.	Rin.	Rin.	Rin.
Odd number	Tqadad.	Visham sankhya.	Visham sankhya.	Visham sankhya.
Recurring	Kasar asharya.	Avartha.	Avartha.	Avartha.
Atmosphere	Kurra-e-bad.	Vayumandal.	Vayumandal.	Vayumandal.
Cattract	Jandal.	Jalprapat.	Jalprapat.	Jalprapat.
Anarchy	Adam hukumat	Arajakta.	Arajakta.	Arajakta.

English.	Urdu.	Hindi.	Marathi.	Bengali.
Chancellor of the Exchequer.	Diwan-i-Khalsa.	Koshadipati.	Koshadipati.	Koshadipati.
Epoch.	Zamana.	Yug.	Yug.	Yug.
Amalgam.	Malgham.	Paradmishran.	Paradmishran.	Paradmishran.
Analysis.	Tashrib.	Vishleshana.	Vishleshana.	Vishleshana.
Test Tube.	Imtihaninali.	Parikshana-nalika.	Parikshana-nalika.	Parikshana-nala.
Assumption.	Farziya.	Pramaya.	Pramaya.	Pramaya.

Thousands of other instances can be mentioned where the Hindi, Marathi and Bengali terms are identical. I do not know if in Gujrati also they would not be acceptable. Urdu has gone to Arabic or Persian sources and the Urdu terms would not be understood in the areas where Hindi, Bengali, Marathi or Gujrati is spoken and written.

The principles on which the different institutions have worked in preparing their terms are as follows :—

1. *The Bihar Hindustani Committee—*

- (a) Scientific terms should be, as far as possible, drawn from current Indian sources, commonly understood, and not directly from Sanskrit, Arabic, or Persian, or any other language.
- (b) Failing, terms usually employed in scientific terminology in the West should be adapted to our requirements.
- (c) The two above methods failing, words from Sanskrit, Arabic or Persian may be used with equivalents (as now used in Urdu or Persian) printed in brackets, so that the learner may become familiar with both sets of terms.

2. *The Vijnan Parishad, Allahabad—*

- (a) To find out such Hindi words as can correctly express the meaning of the European terms.
- (b) Failing them, to find out such European technical terms as are already used in factories and technical institutions and firms, possibly in a modified and corrupt form.
- (c) Failing these, to coin new terms derived from Sanskrit, but effort should be made to prevent these becoming difficult.
- (d) If none but exceedingly difficult Sanskritic terms are available, European terms should be adopted.

3. *The Anjuman Taraqqi-i-Urdu, Aurangabad (in Dr. Abdul Haque's Preface to Forhang Istilahat-i-Ilmia)*—

- (a) Terms may be borrowed from all those languages which have contributed to Urdu, viz., Arabic, Persian, Hindi, and Turkish.
- (b) When terms are borrowed from other languages they should conform to the laws of Urdu.
- (c) As far as practicable short rather than long terms should be preferred.
- (d) Such English terms as are already in use should be retained.

While scientific terms derived from Sanskrit will be intelligible to a very large proportion of Indians, it cannot be overlooked that an important section of the population will be more at home with words of Arabic or Persian origin. The attempt to compel either section to adopt one set of terms based either on Sanskrit on the one hand or on Arabic-Persian on the other will arouse bitter controversies. It is not possible that in all sciences all the terms can be derived from these sources. The attempt to confine newly-coined terms to Sanskrit or to Arabic will cause communal discord. English terms are now in use in India and will continue to be understood and used by all engaged on advanced scientific work. The adoption of these terms will prevent waste of energy and time in the attempt to invent their Indian equivalents. These English terms are practically the same in every European language and a knowledge of these enables one to follow the scientific books and journals published abroad.

For all these reasons, it is advisable to adopt English terminology in all scientific writings in all Indian languages.

APPENDIX IV.

NOTE BY DR. ABDUL HAQUE, SECRETARY, ANJUMAN-E-TRAQQI-E-URDU
(HIND).

The subject covered by the Agenda is dealt with here in three sections. Section (I) will specify my general attitude towards the question of scientific terminology for India. Section (II) will give a brief account of the experiments carried on till now to prepare a code of terminology, and to impart education with its aid. The last section will sum up my observations on the work so far done in this direction, and advance my views in respect of what might be done in the future.

SECTION I.

Item 1 of the Agenda requires the members of the Committee "to consider whether a common scientific terminology should be fixed for India *as a whole*, and, if so, whether the main and common part of such terminology should be borrowed extensively from the English terminology".

A common terminology for a sub-continent like India as a whole is possible only when it is superimposed by a powerful central authority, *i.e.*, the English or Indian. But the march of events points to no such possibility. The British Government have made it clear that India is soon to attain Dominion Status and that its administration will have to be run by her own sons in future. The possibility of any superimposition on the part of the British being thus eliminated, the question remains whether such an imposition from within is possible. This is certainly possible if one of the two major communities of India should dominate the administration at the centre, and in the constituent units of India, so that a language favoured by the dominant party might be chosen to form the basis for a common terminology. To every sensible observer of the prevailing situation in the land, it should be clear that an agreed constitution giving the dominant voice to one party will never be set up.

Such being the difficulties lying in the path of superimposition of a common terminology, whether foreign or Indian, for the whole of India, the question arises what is the alternative which might be followed so as to keep in check endless multiplication of terminologies. The aim before us, then, should be to see that we evolve terminologies such as might be agreeable to the genius of as many Indian languages as possible. This being so, *the question which will call for consideration is this; can we for the purpose of common terminology resolve Indian languages into the minimum number of convenient groups?*

During the course of my close association with the All-India-Anjuman-e-Taraqqi-e-Urdu for nearly thirty years, and no less close association with the Ormania University since its very inception—institutions which have devoted themselves to imparting modern knowledge in arts and science through an Indian language—I have had to give deep thought to the subject of common terminology. And my firm conviction is that India would need two sets of terminologies—one serving the interests of the Aryan group of languages including Urdu, and the other the Dravidian groups, the *international* terminology forming part of both. I cannot, therefore, agree with Mr. Seal that every Indian language should have a separate terminology, and that the main portion of it should be bodily imported from English. Nor can I agree with him in his classification of the Indian languages into *Sanskritic* (covering even the Dravidian languages) and *Perso-Arabic*.

So far as the Aryan group is concerned, the work done through Urdu may easily form the basis or groundwork for the building up of a code of terminology common to other languages of Aryan origin—languages spoken in the Hindustan proper as well as the languages outlying it, *viz.*, Bengali, Marathi, Gujrati, Sindhi, Punjabi, etc.

SECTION II.

To understand the value of the work done through Urdu and to see how it can be utilized for larger purposes, a brief account of it may be worthy of consideration.

Old Delhi College.

The earliest attempt ever made to supply scientific terminology in Urdu text books, was undertaken in the thirties of the past century by the old Delhi College, run by European Principals of whom Mr. Batrons and Dr. Springer deserve special mention.

The principles laid down by the Translation Society of the College for guidance in translation are set out here in the original :—

Proposed rules for the expression of English terms in Urdu translation.

1. Whenever a scientific word has no equivalent in Urdu and expresses a simple idea, as Sodium, Potassium, Chlorine, etc., there is apparently no objection to its being transferred bodily into the vernacular language. The same rule applies to titles, etc., not strictly corresponding to any other titles or dignities known in Indian History such as Bishop, Duke, Judge, Eari, Collector, Magistrate, etc.

2. If the scientific word expressing a simple idea has an equivalent in Urdu the latter must be used, as Loha for Iron; Gunduck for Sulphur; Wuzeer for Minister; Tulubnama for Summons.

3. If the word be a compound one, and the two original words be English and have neither of them equivalents in Urdu, the word must be transferred bodily into the Vernacular language as Hydrochloric for instance, the words Hydrogen and Chlorine having no equivalent in Urdu *. This should not however, be considered warranting the transfers of a whole English SENTENCE into a translation, as Justice of the Peace, which should perhaps rather be expressed by Justice peace ke—Military Order of the Bath, Lushkuree Jummat Bath Malta ke—Military and religious order of Malta, Lushkuree wo muzubee Jummat Malta ke.

4. If the word be a compound one and have no equivalent in Urdu, but be made from the words which singly have Urdu equivalents, the latter may be used in conjunction with each other, or some other equivalent translation made, as chronology, Ilmzeman—House of Lords, Cutchery Ameeran ke—House of Commons, Cutchery Waklaia raiake, or simply Cutchery Waklaia ke.

5. When this or the following cannot conveniently be adhered to, the foreign word should be transferred to Urdu as Hydrogen, Nitrogen.

6. If the compound word be formed from two single words one of which has an equivalent in Urdu and the other not, the Urdu compound one

* The nomenclature of Chemistry may perhaps be bodily transferred into Urdu. The Chemical elements which have Urdu names would retain them, but assume the English names in composition; as Hydro-Sulphuric, etc. The roots of that nomenclature not being numerous it would not be difficult to explain them clearly and distinctly.

must be made of the English and the Urdu single words, as Court of Directors, Cutchery Directoron ke-Archbishop, Bishopala

7. Such words as Order, Class, Genus, and Species, although having in respect equivalents in Urdu might however, be transferred into that language, because the Urdu equivalents are synonymous of each other, and would constantly lead to a very objectionable confusion in distinctions highly important in the study of natural history.

8. The names of the natural families of plants* are derived each from one of the most remarkable individuals of the family or some of its common properties, and a similar rule may be followed in Urdu unless it should be found more convenient and advantageous that the distinctive names of each family should invariably be drawn from some of its special and distinctive characters.

1. The above rules might, it is hoped, prevent any great discrepancies in the translations. When speaking of a word having an equivalent in Urdu it is meant that some word similar to it in meaning is well-known among the middle and educated classes of the native community. If it were necessary for an equivalent to a scientific word not found in our Oriental Dictionaries, to refer to a learned Pundit or a Moulvee it is obvious it would be better to adopt the English word, which, if equally unknown to the Urdu language, would have at least the advantage of being known to the translator, who might thus proceed in this translation without any Moulvee's or Pandit's assistance. As all, or nearly all, the science which is to be infused into Urdu must come from the English language, it is next to impossible, even if it were desirable, to prevent the introduction of many English words into it.

2. In the above, of course, are meant such words as are names of things and express simple ideas, or words formed from them, and not such derivative substantives and adjectives as are daily made from each other according to the well-known Arabic Forms.

3. On the whole, English words must not be used in Hindustani translations when this can be avoided without any inconvenience, and any person who intends to translate a work on any given science should, as much as possible, provide himself with any work which may have been already published on that science, and made use of the same words in his translation which were used in that which preceded it, unless there be in any particular instance some material objection to this. Whenever an English sentence assumes as known a fact probably familiar to an Englishman, but unknown to a Native, some short explanation

* What has been said above of the nomenclature of Chemistry may apply to the great divisions of the Linnean system, but to make a complete proper Botanical language is perhaps the most difficult task to perform in the work of translation. A literal transfer of our European nomenclature and terminology into an Urdu translation would make of Botany a perfectly unintelligible chaos. The second mode alluded to in this paragraph indicating the names of the natural families of plants, appears the best as it is universally applicable, whereas the most remarkable individuals of a family in Europe are not always so in India. On the whole it is extremely desirable that some gentlemen having at least a general knowledge of Indian Botany, well acquainted with Urdu should undertake the task. Some works on Anatomy and Physiology having some years ago been translated into Urdu, the difficulty relative to the technical terms of sciences must have been already overcome in some way or the other, but how this has been done has not as yet been ascertained by the Secretary.

of the fact alluded to should be given by the translator, either in a note or in the text of the translation if this can conveniently be done.

4. In general the translator must not endeavour to translate literally word for word. It is the spirit, the meaning of every sentence which it is important to transfer from one language to the other, however different the construction, or expression, of the sentence may be.

Keeping the above rules in view, the Delhi College was responsible for the compilation and the translation of about two hundred books dealing with Mathematics, Astronomy, Chemistry, Physics, Medicine, Natural History, Jurisprudence, Economics, Logic, Philosophy, Political and Constitutional History and several other subjects. The English educational authorities and scholars who paid visits to the College in those days highly appreciated this system of teaching sciences in particular through a vernacular and were pleased to record that the students of the Delhi College were as proficient as, if not more, than those who learnt those Sciences through the English language in other Colleges.

After the great disturbance of 1857, Delhi was annexed to the Punjab Province. No greater punishment could have been inflicted on that ancient city or harder blow dealt to it than the closing down of that noble institution which had created an intellectual and cultural atmosphere of a type new to India and produced some of our best minds and makers of Urdu in the last century, as for instance Master Ram Chandra, Nazir Ahmed, Mohammad Husain Azad, Zakauallah and others. Had this College been spared and allowed to continue its work of intellectual regeneration it would have, assuredly, revolutionised educational thought in the country and anticipated by at least three quarters of a century the establishment of Universities like the Osmania conducting education through the medium of Indian languages. It is an irony of fate that no historian—neither a Britisher whose forefathers were responsible for its foundation, nor any son of the soil, who would have been proud of it—has ever had the kindness to refer to it in his work.

Osmania University.

The next attempt—this time more serious and determined—was the establishment of a Bureau of Translation in Hyderabad, preparatory to the inauguration of a full-fledged statutory University to impart learning in all its branches through the most widely spoken language of Urdu.

The work of the University and its results have been under the public eye for nearly a quarter of a century—as admitted on all hands, the system is now no longer regarded as an experiment. Indeed it has already powerfully influenced the working of other Universities in the land; so much so that strong hopes are entertained everywhere that, sooner or later, they will all fall in line with the Osmania University and provide education to Indian children through Indian languages. A careful study of the system of terminology followed by such a University catering for students speaking different mother-tongues at home, is worth making. The principles of this system may be stated as follows:—

1. In order that a proper code of scientific terms be prepared, it is essential that collaboration should be arranged between experts in languages and experts in sciences, the object being that on the one hand the connotation of the original may be fully brought out in the translation and on the other the resultant term should be expressive of the genius of the language.

2. The primary principle which should be kept in view is this ; the term should be a word or part of a word for Hindi, Persian or Arabic, such as is either in common use or is easily comprehensible and possessing adaptibility for grammatical manipulation in Urdu. This condition being satisfied, perfect freedom is to be allowed for interchange of suffixes and prefixes from any of the three languages and combination of two or more words from the different languages taken together.
3. Terms from English which have become part of the language by usage should be retained. In addition, terms from a European language, for which an equivalent cannot be devised so as to bring out the full significance of the original, should be bodily transplanted.
4. Terms derived from foreign proper names should be so adopted as to retain on the one hand the proper name and on the other suit the structural and grammatical peculiarities of the language.
5. Old terms which are current and which can sustain the meaning in their modern application should be retained.
6. There are in current use certain scientific terms which originally bore one conception about which subsequent researches have come to convey a different conception. In translation of such terms the equivalent should follow not the literal sense of the terms but the present sense or significance of them, in spite of the fact that in the original language the same term is maintained.

Anjuman-e-Taraqqi-e-Urdu.

The work of terminology carried on by the Osmania University cannot be said to have reached any stage of finality. From the very nature of it, it will go on improving as time advances with its aim always concentrated on the need for greater simplification and greater expressiveness. In this task of simplification, it is my privilege as the life Secretary of the All-India Anjuman-e-Taraqqi-e-Urdu to submit that the Anjuman has unreservedly collaborated with the University at every stage. Not merely this, the Anjuman, in the interest of that wider public not directly accessible to the University, has so far complied :—

- (a) nearly 175 works dealing with different branches of learning (published).
- (b) the Urdu translation of Oxford Concise English Dictionary (published),
- (c) nine volumes of terms technical to different professions and handicrafts,
- (d) glossary of terminology in Chemistry, Physics, Botany, Astronomy, Economics, Sociology, History and Political Science (some of these still in press).

In addition to the work of above character, the Anjuman conducts among other journals, the *Science* quarterly which aims to popularise sciences among the Urdu speaking public. I may add that in my individual capacity I am preparing a comprehensive Urdu Lexicon for the Osmania University, some volumes of which are now ready for the press,

These endeavours of the Anjuman have all been directed towards supplementing the efforts of the Osmania University in evolving a more and more simplified code of terminology.

SECTION III.

What is the net result? For aught I can say the Urdu language now possesses a code of terminology which with a little further simplification can easily be adopted by any of the Aryan languages which form the Indo-Aryan group mentioned above, whatever the receipt. If this were done, you would have provided for the major portion of India, nearly three-fourths, a common terminology. As for the third, the Dravidian area, a common terminology can be evolved on parallel lines. It is only in this way that a right solution of the problem might be sought. If unfortunately the advocates of Hindi should insist on a Sanskritized variation of the terminology at present available in Urdu adopted for the Indo-Aryan group of languages, I shall certainly raise no objection. In that case there will be two terminologies for the area where the Indo-Aryan languages are spoken and one for the Dravidian. In all three sets.

I am, therefore, of clear opinion that the proposal made by Mr. Seal to have a common terminology for the whole of India composed extensively or mainly of borrowings bodily imported from the English terminology is neither desirable nor possible. No civilized country anxious for progress has a foreign terminology slavishly incorporated into its language. Take the case of Europe. In spite of the fact that the European countries have so much in common culturally, every country has its own scientific terminology. There is no doubt that a minimum quantity of international terms has been accepted by each language as an indispensable common factor and to that extent I should be agreeable to a similar latitude for Indian languages. But the wholesale importation will be demoralising, indeed it will disfigure the languages and crush their genius. Further, the Indian languages are so constituted that if the English terminology is imported even for the sake of sheer fancy, this will not feel quite at home when derivatives have to be employed. I give below a passage which observes the lines suggested by Mr. Seal :

تھر موڈ نامکس کے پہلے قانون سے یہ مطلب ہے کہ جب کسی کیمیکل ری ایکشن میں
جسکی کیلوری فک ویلوی U ہے ایکسٹرنل ورک کے پونٹس حاصل ہوتے ہیں اور
حرارت کے Q پونٹس کی ٹائڈر ایشن ہوتی ہے تو

$$\begin{aligned} U &= A - Q \\ Q &= A - U \end{aligned} \quad \text{یا}$$

تھر موڈ نامکس کے دوسرے قانون کے یہ معنی ہیں کہ جب کسی ایسیو تھرمل ریپر مڈل
عمل میں لیبر نوٹ ٹمپریچر T پر Q حرارت سے اینرجی کی dA مقدار حاصل ہوتی ہے تو

$$\begin{aligned} dA &= Q \times \frac{dT}{T} \\ Q &= T \times \frac{dA}{dT} \end{aligned} \quad \text{یا}$$

ان دونوں ایکویشنوں کو ملا کر Q نکال لینے سے گنٹر ہلمپو لٹنر کی ایکویشن حاصل ہوتی ہے

$$A - U = T \times \frac{dA}{dT}$$

What is this stuff? Is it an expression of any recognisable language? Is the genius of Urdu visible anywhere in it? Let the contents of the

above passage be similarly expressed in any other Indian language and it will not be difficult to see that the result will be equally interesting.

To sum up, taking everything into consideration my humble suggestion is that instead of frittering away energy in an idle pursuit to evolve a common terminology for the whole of India whether based on English terminology or not, the sensible procedure will be to attempt two sets of terminology—one common to the Indo-Aryan group of languages, the other to the Dravidian on the lines indicated above.

APPENDIX V.

NOTE BY DR. MOZAFFARUDDIN QURAIISHI, PROFESSOR AND HEAD OF THE DEPARTMENT OF CHEMISTRY, OSMANIA UNIVERSITY.

The question of adopting English scientific terminology as a whole was considered in all its aspects by several committees of scientists and linguists when the work of imparting higher scientific education through the medium of an Indian language was taken up for the first time in the Osmania University. The worthy chairman of this meeting was himself responsible for initiating and guiding these discussions. After long deliberations and after weighing arguments on both sides, it was finally decided that a middle course would be the best to follow under the present circumstances. Scientific terminology admits of a fairly sharp division into two sections, international and national. The international section, covering nomenclature and notation includes the following :—

- (a) Names of chemical elements and compounds such as sodium, potassium, chlorine, aluminium, nickel, hafium, sodium chloride, calcium carbonate, etc.
- (b) Names of minerals such as calcide, dolomite, hamitite, magnetite, bauxite, etc.
- (c) Symbols of elements and compounds, such as H, O, C, H₂O, N₂H, H₂SO₄ etc.
- (d) Names of units of measurement such as gram, centimetre, second, pound, foot. inch, dyne, erg., amp., volt, Walt, etc.
- (e) Names of units of matter and energy, such as molecule, atom, electron, neutron, proton, quantum, photon, etc.
- (f) Names of laws, theories, phenomena, effects, instruments, apparatus, machinery, etc., which are named after their discoverers or inventors, such as Boyle's law, Dhun's law, Tyndal effect, Zeeman effect, Raman effect, Bunsen burner, Solvay's process, Alienmore's cell, borrowed, etc.
- (g) Mathematical notation such as log, sine, cos, tan, dx, Ax.
- (h) Names of classes, orders, genera and species in biology such as Dicotyledon (two seed flower) Reftilia Annaceae, Annelida, Anona, Pheritima, Squamosa, Posthuma.

This international section of terminology has been adopted by us in its English form with the following few exceptions :—

(1) Words already existing in the language such as, 'loha', 'sona', 'chandi', 'neela thotha', 'Jauher', are also used along with their English equivalents, 'Iron', Gold, Silver, Copper sulphate and atom. It may be pointed out that in European languages, too, names of elements and com-

pounds peculiar to these languages find extensive use in scientific publication. Here are a few examples :—

English.	French.	German.
Nitrogen.	Azote.	Stickstoff.
Lead.	Plomb.	Blei.
Sulphur.	Soufre.	Schwefel.
Tungsten.	Tungstene.	Wolfram.
Formic acid.	Acide Formique.	Ameisensaure.
Tartaric acid.	Acide pyrotartarique.	Weinsaure.
Succinic acid.	Acide succinique.	Bernsteinsaure.

(2) A part of the mathematical notation had to be translated in order to make it fit with the Urdu alphabet and Indian numerals. For instance \sin is used for \sin and \cos for \cos . Some abbreviations of Arabic origin have been retained and used in place of their modern international equivalents, as these terms were already in current use in the schools of this country before the advent of English. For instance \sin is used for the trigonometrical ratio 'sine', \cos for 'Cos', \tan for 'tan' and 'cotan' for 'Cotan'. It is well known that Arabs made Algebra an exact science and laid the foundation of analytical geometry and plane and spherical trigonometry. The word 'sine' is evidently derived from the latin translation (sinus) of the Arabic term \sin , meaning 'a bay or curve'.

This question has recently been reconsidered and it has been decided to recommend the adoption of the International system for Notation for Mathematics

The other section of scientific terminology, the national section, includes the following :—

- (a) Names of concepts, qualities and properties, such as matter, energy, wave, force, weight, volume, velocity, valency, chemical reactivity, equilibrium, saturation, density, solubility, surface tension, viscosity, centre of gravity, lines of force, conductivity, refractivity, specific heat, specific gravity, spectrum.
- (b) Names of phenomena and processes and their adjectival and other derivatives, such as, chemical reaction, combustion, distillation, radiation, conduction, induction, dispersion, refraction, diffraction, polarisation, incubation, magnetisation, electrification, dissociation, association, magnetism, isomerism, polymerism, allotropy, electric discharge diffusion, solution, ionisation, parallax, projection, secretion, sterilisation, solution.

- (c) Names of instruments, apparatus, tools and machinery, such as, microscope, telescope, spectroscope, spectrograph, polarimeter, furnace, clock Rheostat, viscometer, manometer, test-tube, flask, crucible, refractometer, wheel, axle, lever, refrigerator, etc.
- (d) Names of mathematical figures—such as line, curve, triangle, rectangle, polygon, etc.

In this section of terminology, Urdu equivalents already existing in the language have been adopted, and where Urdu equivalents did not exist new equivalents have been coined. If Mr. Seal's suggestion for retaining most of these terms in their foreign form is followed, about 5,000 foreign words and their derivatives, at a rough estimate, will have to be imported, which is very much beyond the capacity of any Indian language to absorb and assimilate. I shall make my point clearer by taking two examples. If we adopt the word spectrum in its foreign form, we shall have to accept the following additional words in our language.

Spectra, Spectral, spectroscope, spectroscopy, Spectrometer, Spectrograph, Spectrography, Spectro-photo-meter, Spectrometry, Spectrophotometry.

If we adopt the word solution, we must also accept solutions, dissolve, solute, solvent, soluble, solubility, solvate, solvation. Such words, which denote concepts, properties and processes and their several derivatives are not uniform even in different European languages, which are closely related to one another, as the following few examples will show :—

English.	French.	German.
Density.	Desnite, epaisseur.	Dichte.
Weight.	Poids.	Gewicht.
Surface tension.	Tension superficielle.	Oberfläche spanng.
Viscosity.	Viscosite.	Innere reibung or Zähigkeit.
Conductivity.	Conductivite.	Leitungsvermögen.
Radiation.	Radiation.	Strahlung.
Horse power.	Force de chevaux.	Pferdestärke.
Reflection.	Reflexion.	Zurückwerfung.
Refraction.	Refraction.	Brechung.
Acceleration.	Acceleration.	Beschleunigung.
Specific gravity.	Gravite spécifique.	Specificische Gewich.
Specific heat.	Chaleur spécifique (or speciale).	Specificische Wärme.

English.	French.	German.
Atomic weight.	Poids atomique.	Atomgewicht.
Equilibrium.	Equilibre.	Gleichgewicht.
Equation.	Equation.	Gleichung.
Valency.	Valence.	Wertigkeit.
Solution.	Solution, solute (Pharm)	Lösung.
Solvent.	Solvant.	Lösungsmittel.
Soluble.	Soluble.	Löslich.
Solubility.	Solubilité.	Löslichkeit.

To sum up, the Osmania scientific terminology has two main divisions, namely, the International, which covers nomenclature and notation, and the National which covers names of concepts, properties, processes, instruments, mathematical figures, etc. The first part is, in the main, in English, while the second is, in the main, in Urdu. We have, therefore, already borrowed the essential international elements of scientific terminology from English, and the question of borrowing more does not arise in our case at least. If the other Indian languages follow the course adopted by us, the international section of terminology will be common to all the languages of the country. With regard to the national section, it is difficult to see how this could be achieved unless there is one common national language for the whole of India. But it is possible to minimise the differences by dividing the languages into two main groups, namely, Aryan and Dravidian, as suggested by Dr. Maulvi Abdul Haque, and having a common national section of terminology for each division. The national section of the Osmania terminology is devised in such a way that it contains words both of Perso-Arabic and Sanskrit origin, as dictated by the very nature of the Urdu language. It can, therefore, serve as a common terminology for the Aryan group of languages.

BUREAU OF EDUCATION, INDIA

Pamphlet No. 13

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Serial No.	Name of Publications	Year of Publication
1	Report on Vocational Education in India (Delhi, the Punjab and the United Provinces) (E.H.L.—34).	1937
2*	Report of the Women's education committee on primary education of girls in India—1936.	1937
3*	Report of the Women's education committee of Central Advisory Board of Education to consider curriculum of Girls' Primary Schools in India.	1937
4*	Report of the vernacular education committee of the Central Advisory Board of Education appointed to consider certain questions connected with the administration and control of Primary education.	1937
5	Report of the First committee of Central Advisory Board of Education appointed to consider the Wardha Education Scheme (E.H.L. 40).	1938
6	Report of the 2nd Wardha Education committee of the Central Advisory Board of Education (App. IV to 5th meeting proceedings).	1940
7	Report of the Adult Education Committee of the Central Advisory Board of Education, 1939. (E.H.L. 46) (App. III to 5th Meeting proceedings).	1940
8	Report of the Social Service and Public Administration Committee of the Central Advisory Board of Education in India, 1940 together with the decisions of the Board thereon. (E.C. 6).	1941
9†	Report of the Joint Committee appointed by the Central Advisory Board of Health and Central Advisory Board of Education on the Medical Inspection of School Children.	1941
10	Report of the Scientific Terminology Committee of the Central Advisory Board of Education in India, 1940, together with the decisions of the Board thereon. (E.C. 5)	1941
11	Proceedings of the 6th Meeting of the Central Advisory Board of Education held at Madras on 11th and 12th January, 1941 (E.C. 4 VI).	1942
12	Proceedings of the 7th Meeting of the Central Advisory Board of Education in India held at Hyderabad, Deccan on 14th and 15th January, 1942. (E.C. 4 VII).	1942
13	Report of the School Building Committee. (E.C. 8).	1942
14	Report of the Uniform Braille Code Committee. (E.C. 7).	1942
15	Report of the Examination Committee, 1942. (E.C. 12).	1942
16	Report of the Expert Committee on a Uniform Braille Code for India with the Braille charts printed in India Alphabets 1942.	1941
17	Proceedings of the 8th Meeting of the Central Advisory Board of Education held at Lucknow. (E.C. 4 VIII).	1943
18	Report of the Joint Committee of the Central Advisory Board of Education and the Inter-University Board appointed to investigate the question of the relation of the school leaving certificate Examination to the Matriculation Examination, 1942. (E.C. 9).	1943
19	Report of the Committee of the Central Advisory Board of Education on the Training, Recruitment and Conditions of service of teachers. (E.C. 10).	1943
20	Report of the Committee of the Central Advisory Board of Education appointed to consider the question of the recruitment to the Education Officer, 1942 together with the decisions of the Board thereon. (E.C. 11).	1943
21	Report of the Examination Committee.	1943
22	Proceedings of the 9th and 10th Meetings of the Central Advisory Board of Education in India held in October 1943 and January 1944 respectively. (E.C. 4 IX & X).	1944

Continued on page (ii)

*Not published previously, but proposed to be included in future reprints.

†Published by the Central Advisory Board of Health.

pamphlet no-13

PREFACE

In January 1942, the Board considered the report of the School Buildings Committee appointed at their meeting in 1941 and adopted the recommendations of the Committee and further decided that—

- (i) The Educational Commissioner should be authorised to reproduce in book form the material contained in the report together with such further information including illustration, plans, costing, and estimates as he may consider necessary.
- (ii) The Educational Commissioner with the Government of India should be asked to prepare a detailed note on the question of financing substantial schemes of non-recurring educational expenditure out of loans, a general principle which has the Board's strong support.
- (iii) The Educational Commissioner should be authorised to appoint an expert Committee to prescribe adequate standards for Indian schools in respect of lighting, heating and ventilation.

Report of the School Buildings Committee of the Central Advisory Board of Education, 1941.

At their sixth meeting held in January 1941 the Central Advisory Board of Education had under consideration the desirability of setting up an expert committee to examine what steps could be taken in the interests of efficiency and economy to improve the planning, construction and equipment of school buildings.

The Board were in agreement as to the importance of taking steps to ensure that school buildings should be designed in future with closer attention to modern scientific standards in regard to accommodation, lighting, ventilation and sanitation and with due regard to economy. The Board recognised that a certain amount of experimental work had already been done in this sphere in different parts of India but decided that in order to collate the results of these experiments as well as to consider problems which have not yet been tackled, it would be desirable to appoint a special Committee to prepare a report for the guidance of all authorities concerned with the provision of school buildings. The Board accordingly set up a Committee consisting of the Provincial Directors of Public Instruction or their nominees, and representatives of some of the larger States in India, with the Educational Commissioner with the Government of India as its Chairman. This Committee was given power to co-opt and/or consult such experts as they might think desirable. The Committee as finally constituted met at New Delhi on the 30th and 31st October and 1st November 1941. The following members were present:—

- John Sargent, Esq., M.A., C.I.E., Educational Commissioner with the Government of India. (*Chairman.*)
- W. H. F. Armstrong, Esq., M.A., I.E.S., Director of Public Instruction Punjab.
- S. M. Azam Esq., Offg. Director of Public Instruction, Hyderabad Deccan.
- J. M. Bottomley, Esq., C.I.E., I.E.S., Director of Public Instruction Bengal.
- A. W. H. Dean, Esq., C.I.E., M.C., Superintending Engineer, Delhi Province.
- A. Gopala Menon, Esq., M.A., B.Com. (Lond.), Director of Public Instruction, Travancore.
- Dr. G. G. R. Hunter, M.A., D. Phil. (Oxon), F.R.A.I., I.E.S., Director of Public Instruction, Central Provinces and Berar.
- Dr. Jyotindra Markand Mehta, M.A. (Oxon.), Ph.D. (Lond.), Barrister-at-Law, Commissioner of Education, Baroda.
- J. Leitch Wilson, Esq., M.A., Superintendent of Education in Baluchistan.
- E. G. Mcalpine, Esq., M.A. Director of Public Instruction, Mysore.
- M. A. Mirza, Esq., C.E. (Lond.), Chief Engineer and Secretary to H. E. H. the Nizam's Government in the Public Works Department, Hyderabad.
- S. N. Moos, Esq., I.E.S., Director of Public Instruction, Bombay.
- J. C. Powell-Price, Esq., C.I.E., I.E.S., Director of Public Instruction, United Provinces.

- D. S. Reddy, Esq., M.A., (Oxon.), M.B.E., Deputy Director of Public Instruction, Madras.
- S. C. Roy, Esq., I.E.S., Director of Public Instruction, Assam.
- K. G. Saiyidain. Esq., B.A., M.Ed., Director of Education, Kashmere.
- Surendra Nath Kar, Esq., Architect, . Visva-bharati, Santiniketan, Bengal.
- W. W. Wood, Esq., F.R.I.B.A., M.I.Struc.E., Principal, Delhi Polytechnic, Delhi.

Mr. A. S. Khan, I.E.S., Director of Public Instruction, Bihar. Khan Sahib Khan Shah Alam Khan, M.A., LL.B., Director of Public Instruction, North-West Frontier Province, Shamsul-Ulema Dr. U. M. Daudpota, M.A., Ph.D., Director of Public Instruction, Sind and Mr. S. C. Tripathi, I.E.S., Director of Public Instruction, Orissa, were unable to attend. The agenda and other papers circulated with it to the Members of the Committee will be found in Annexures I, II and III. In addition a Note on primary school buildings in rural areas by Dr. G. G. R. Hunter was circulated previous to the meeting (Annexure IV).

In opening the proceedings the Chairman welcomed the Members of the Committee and explained briefly the reasons which had led to its being set up. He stated that during the last ten years a considerable amount of research work had been done in the western countries and in particular by the National Institute of Industrial Psychology, Great Britain in co-operation with Education Authorities with the object of determining the environmental conditions under which both teachers and children would be capable of the maximum out-put without undue fatigue. They had been led to undertake this enquiry in view of the surprisingly successful results which had attended a similar investigation into factory conditions. The outcome of the enquiry had more than justified the labour and expense involved and had shown that there were scientific principles which if applied to the design and planning of schools would greatly improve their efficiency without necessarily increasing their cost. It had been conclusively shown that it was possible to prescribe and secure standards particularly in regard to lighting, heating and ventilation which eliminated unnecessary strain and fatigue and thereby increased output. The fact had of course to be recognised that a large number of schools in this country were housed in buildings that were never intended to be used as schools and that even in the case of new schools, financial considerations tended everywhere to determine construction. At the same time he felt that in India, where climatic conditions might simplify the building problem in some places and complicate it in others, any practical contribution towards the solution of the issue submitted to the Committee would be of immediate value to every authority responsible for the erection or provision of schools. In his opinion the function of the Committee was not to attempt to prescribe building standards for universal adoption but having due regard to essential educational requirements, climatic considerations and the need for economy to indicate possible alternatives in the way of school planning and construction for the guidance of all authorities concerned with these matters.

Scope of the Enquiry.—Although the terms of reference do not delimit in any way the extent of the enquiry, the Committee first considered whether it would be desirable and practicable to extend the investigation to cover educational institutions beyond the high school stage. It was felt that as the planning of technical and art institutions, university colleges and universities, and even training colleges and normal schools, would be largely determined by the particular nature of the work which they would be called upon to undertake and as this would vary from institution to institution to a greater or less degree, the prescribing of any schedule of accommodation, arrangement of buildings, etc.,

that would be generally applicable, would be an impossible task. It was, however, agreed that it might be feasible to lay down certain principles which might be observed in the design and planning of the buildings for such institutions. (cf. Section 13).

2. *Class room area per pupil.*—The Committee felt that as the principal unit in the types of school under consideration is and is likely to remain the ordinary class room, they should start by determining the superficial and cubic area which each pupil should be allotted in a room of this kind in order to secure for him or her reasonable space for movement and an adequate supply of fresh air. The standard prescribed by the Board of Education, England, is 10 sq. ft. for every pupil under 11 years of age and 12 sq. ft. for those over 11, with a minimum height of 11 ft., if the room has a flat ceiling. It was recognised that in England class rooms at all stages of education would be provided with desks or with chairs and tables and that the presence of furniture involved a greater demand on floor space than the habit of sitting on the floor, which prevalent throughout primary schools in India. On the other hand climatic conditions in many parts of India increase the importance as well as the difficulty of securing an adequate air supply for every pupil.

The Committee came to the conclusion that 10 sq. ft. should be recommended as the minimum floor area per pupil in Primary School and 12 sq., ft. in Middle and High Schools. The minimum height of class rooms should be 12 ft. but this should be interpreted as the average mean height where the roofs are not flat. It was agreed that this height might be reduced by 1 foot or possibly more when one or more sides of the class room are entirely open to the air. The height should in no case be reduced below the level necessary to secure both sufficient natural lighting and efficient heating (or cooling as the case may be).

The same floor and air space would be required for girls as for boys.

3. *Minimum sizes of rooms.*—(a) *Ordinary class rooms.*—Having set out what they regard as the minimum superficial and cubic space which is required for each pupil, the Committee with the object of deciding the size of an ordinary class room proceeded to consider the maximum number of pupils which it should be designed to accommodate. This they agreed should be fixed at 40 in Primary Schools and at 35 in Middle and High Schools, the standard to be the same both for boys and girls and for schools in urban and in rural areas. It would, however, obviously promote economic construction and facilitate the transfer of schools from one grade to another as required, if the class rooms in all types of schools in the same area could be of a uniform size. The adoption of what is known as the 'convertible unit' has proved of the utmost utility in schemes for educational reorganisation in Great Britain where a school planned for junior children might subsequently be required for seniors and *vice versa*. On the basis of 10 sq. ft. each for 40 pupils in a Primary School and 12 sq. ft. each for 35 in a Middle and High School as suggested in the previous paragraph the minimum floor area for a class room would vary between 400—420 sq. feet in the type of school now under consideration. The Committee therefore came to the conclusion that a minimum floor area of 400 sq. ft or a little over might safely be prescribed for the ordinary class room in any type of school, though where funds permit this might be extended up to 480 sq. ft. with advantage from the purely educational standpoint.

(b) *Special rooms.*—The Committee next considered the floor areas which should be provided for laboratories and practical rooms, *i. e.*, rooms for the teaching of various arts, and crafts in schools of different types. So far as Primary Schools are concerned, it was felt unnecessary to have

any special provision for science teaching and for practical work since in neither case at this stage would the use of any but the simplest apparatus or equipment be involved and an ordinary class room of the size already prescribed should be large enough to satisfy normal requirements. In those schools, however, which provide specially for infants and nursery classes there should be rooms of 600 sq. ft. for these, since very small children need approximately 50 per cent more floor space for the free movement which is now accepted as an essential feature of kindergarten training. In Middle Schools which do not form part of High Schools and will in most cases serve rural areas, it is unlikely that science will be taught on lines which will involve much practical work requiring the use by students of anything beyond very simple apparatus. In most schools also it will be found necessary to divide classes for science so that the average size will not exceed 20. It was therefore felt that a room of the ordinary class room size, *i. e.*, a 400 sq. ft. unit, would suffice. Where, however, it was found necessary or desirable that a whole class (*i. e.*, max. of 35-40) should take science together, it was suggested that two 400 sq. ft. class room units with a removable partition could be combined when required into a science laboratory of 800 sq. ft.

In High Schools it was agreed that both for science laboratories and for arts and crafts a room equivalent in area to two class room units, *viz.*, 800 sq. ft. would be needed for a half class.

4. *Minimum accommodation required in schools of various types—* Having thus defined the floor area of the main types of room required in a school building by multiplying the number of pupils in a given class by the number of sq. ft. which each of them needs for reasonably comfortable and hygienic working, the Committee next considered what should be the minimum accommodation (including rooms both for the teaching and non-teaching purposes) which ought to be provided for schools of different sizes at each of the three main stages of education with which they are concerned, *viz.*, Primary Schools, Middle Schools (which do not form part of High Schools), High Schools (including middle sections). The Committee wish to make it clear that in drawing up a schedule of accommodation they have no intention of trying to lay down hard and fast rules. Their main object is to indicate in a fairly precise way the minimum accommodation which in their opinion will allow, school of varying sizes at the three different stages specified to work efficiently. In the interests of economy which is a consideration of paramount importance in most parts of India so far as school building is concerned, they have not suggested the provision of any rooms which, however, desirable cannot be regarded as essential. For instance there can be little question that a separate hall is extremely desirable for corporate activities in a large Primary or Middle School; similarly in a large High School a separate Hall and gymnasium and, when any considerable number of pupils take meals at school, a separate dining room will not only add enormously to the amenities of the school but will also greatly facilitate the task of organisation. Extra accommodation of this kind should certainly be provided when funds allow.

The schedules of accommodation set out below have been drawn up with due regard to the activities covered by the normal curriculum in schools of the type specified. The Committee recognise that whenever the curriculum departs from the normal, *e. g.*, in giving a much greater amount of time to handicrafts, more practical rooms and possibly less ordinary class rooms will be required. It is also not the intention of the Committee to suggest that the sizes of school chosen by them for the

purpose of illustration are either those that commonly exist or those that should be adopted for ideal organisation. The reasons which led to their selection will no doubt be sufficiently apparent. At the same time it is desirable to point out that in cases where the size of school need not be finally determined by the number of pupils available, there is an optimum size at each stage of education which enables the most economic use to be made of the accommodation and staff, and in particular of the special rooms and specialist teachers. For example, if there are 30 teaching periods in a school week and the average number of periods per week which each class or half-class devotes to a practical subject such as wood and metal work or spinning and weaving or domestic science is three, then a school with ten classes or half-classes will enable the special room and teacher provided for each of these subjects to be fully employed. If there are fewer classes than ten, then expensive accommodation and equipment and a specialist teacher will be standing idle part of the time while if there are more, additional special rooms and teachers will be required and these again will not be fully employed until the number of classes doubles the original figure. Classes however cannot be multiplied indefinitely for there is a fundamental educational consideration which ought always to limit size. When any school gets beyond a certain number—experience suggests about 500 pupils—it begins to lose certain characteristics which are essential to the conception of a good school, e.g., the Head is no longer able to maintain contact with individual pupils and parents and the pupils themselves cease to be conscious of being members of a living corporate entity.

On the other hand a warning must be uttered against any assumption that the organization of the school can or ought to be unduly simplified purely in the interest of economising space. Apart from the splitting of classes for science and practical subjects which is usual throughout the world, most schools in India are faced with a further cross-classification to provide for language teaching. The provision of a reasonable margin of accommodation particularly at the higher stages is consequently inevitable. The Committee have met this need by recommending the provision of a class room for each class or class section in addition to laboratories and practical rooms. When the latter are used to anything like their full capacity, it must follow that there will always be some class rooms available for language groups.

Before drawing up a schedule the Committee examined the needs of schools of the three new types for teaching and non-teaching accommodation.

(a) *Primary Schools*.—There are certain needs common to all primary Schools. The Committee are strongly of opinion that to secure the conditions necessary for effective teaching each teacher whether in charge of one or more classes or class sections should have a class room to himself.

The Committee also recognise the educational advantage of every school having some place where all the pupils can be assembled from time to time for school functions, religious exercises and other forms of corporate activity, and which in variable climates can be used for physical training, music, rhythmical exercises, dramatics, etc., which require more space than that afforded by the ordinary class-room. For reasons given earlier in this report they are unable to regard the provision of separate halls as an essential part of the accommodation of a Primary School. At the same time they think that other less expensive means might be found of providing the space required. The most obvious of these is to arrange that the partitions between class rooms should be capable of being removed and replaced so that two or more class rooms can be thrown

together when a larger room is required. The Committee do not favour the movable partition commonly used in schools in Europe partly owing to its cost and partly because it would be unlikely to stand up to Indian climatic conditions. It was however suggested that partitions might be made of bamboo or other light screens which could be easily lifted out and put back, though doubts were expressed as to whether partitions of this nature would be effective in excluding sound and possible disturbance from the adjoining class room. The most promising alternative appeared to lie in an extended use of verandahs. Various designs (which will be incorporated in the proposed book of school plans) were suggested for enlarging verandahs so that they might provide some at any rate of the facilities normally afforded by a school hall. Apart from their use in this particular capacity the Committee wished to emphasise the importance of verandahs in all types of school buildings and particularly in those for schools in rural areas. In many districts a verandah will be an essential protection against excessive heat or heavy rain. It can also be used for open air classes in suitable weather. To be of the greatest use in these connections it should not be less than 8 ft. in depth. Its position in the plan will naturally be determined by the orientation of the main building which should itself be influenced so far as possible by the climatic conditions prevailing in the area.

In addition to the rooms required for actual teaching purposes the Committee regard adequate storage accommodation as essential in even the smallest school, particularly in view of the increased amount of practical work which is now being introduced into the curriculum, and the desirability of preserving specimens of the hand work done by the children. The accumulation of litter in the class room must on all accounts be avoided and the sort of almirah usually provided tends to occupy far too much space. A separate store-room, the size of which will obviously vary with the size of the school, should therefore be provided wherever possible. The Committee do not regard the built-in cupboard, common in modern school buildings in western countries as a practicable alternative owing both to Indian climatic conditions and to the nature of the construction of most primary schools but they feel that where the type of construction allows, the possibility of providing recesses in the walls of class rooms in which almirahs can be placed so as to avoid encroaching on floor space should be explored.

The Committee also attach importance particularly in the larger primary schools to some place being provided where the staff can do such administrative work as falls to their lot, interview parents and enjoy reasonable privacy in the intervals between lessons. Improvements in primary education are bound up to no small extent with raising the status of the teacher in the eyes of the public and it is felt that the provision of reasonable amenities for teachers in the school premises will help towards this end.

In the light of the foregoing general considerations it is possible to suggest the minimum accommodation which should be provided for Primary Schools of different sizes. As has been already stated the sizes taken by the Committee are not to be regarded as ideal units. In any case the predominant factor in settling the size of a school must be the number of children available. Nevertheless it is hoped that the units selected will illustrate satisfactorily what the Committee have in mind and that there will be little difficulty in adding to or subtracting from the schedule of accommodation suggested to meet the needs of schools of different sizes. Sanitary arrangements will be dealt with separately under Sanitation (pp. 10-12) and the question of the area needed for playing space and physical training under Sites (pp. 18-20).

While the Committee hope that in the interest of efficiency the single teacher school with its obvious drawbacks will be progressively eliminated, they are bound to accept the fact that a very large proportion of primary schools partial in rural areas will remain of the two teacher type. In view of their large number and the very limited resources of the authorities usually responsible for creating and maintaining them, the Committee felt the paramount need of restricting the schedule to the very minimum i.e., 2 class rooms of the minimum size already prescribed viz. 400 sq. ft. with a verandah wherever possible and a small room for storage. Where the store room is large enough a portion of it should be partitioned off for the use of the teachers. The next size taken is the 5 teacher school which provides a separate class section for each of the five years normally covered by the Primary course. In addition to the five class room units it is suggested that an extra unit (400 sq. ft.) should be provided to be subdivided into a teachers' room and a store room. In larger primary schools importance is attached to the provision in addition to ordinary class rooms and rooms for teachers and storage of an additional unit to be used as a reading room and library.

No special rooms are suggested for science and handicrafts in Primary Schools as at this stage these subjects, where they are taken, can be catered for in an ordinary class room. For the reasons given earlier the Committee are unable to recommend the provision of separate Assembly Halls for Primary Schools.

(b) Middle Schools not forming part of High Schools.

B. (N.—Where Middle Schools contain Primary departments the accommodation for the latter should be determined in accordance with the schedule prescribed for Primary Schools).

The middle stage normally covers 3 years and the Committee have assumed that self-contained middle schools will contain 3 classes or some multiple of 3 classes. Each class or class section will require a class room of the standard size. In a 3-class school one additional standard unit (400 sq. ft. approx.) should suffice for science and another for art and handicraft. Bigger schools may require 2 additional units for one or both of these subjects but this will be determined by the number or size of classes and the amount of time allotted to these subjects in the time table.

The reasons which have deterred the Committee from prescribing separate Assembly Halls in Primary Schools apply also in the case of Middle Schools. In all these schools however, there should be an additional unit or its equivalent in floor space for office and library and another for teachers and storage. Very large schools will require a separate unit for the library and two more for the other purposes specified.

(c) High Schools (with Middle Sections).

(N.B.—When High Schools contain Primary as well as Middle sections the accommodation for the Primary department should be determined in accordance with the schedule prescribed for Primary Schools).

In most parts of India the High (including Middle) School course covers 5 years. It will therefore normally contain 5 classes or some multiple of 5 classes, though for reasons already given the Committee would regard a school with 20 classes as the largest which under any circumstances could be accepted as an efficient unit for educational purposes.

The five-class High School in addition to 5 class rooms of the standard sizes (400 sq. ft. unit) should also contain a Science Laboratory (2 units), an Art and Craft Room (2 units), a Practical room for handicrafts, including

Domestic Science in the case of girls, (2 units) a Library and Reading Room (1 unit). The Committee were strongly of the opinion that in view of the increasing importance attached to these subjects at this stage there should be special rooms of a larger size, e.g., 600 sq. ft., for History and Geography. These may be provided in place of 2 ordinary class room units but it was felt that where the need exists to make special provision for language teaching, the History and Geography rooms should be in addition to the normal class room accommodation. Apart from the rooms required for teaching purposes there should be a Headmaster's (or Headmistress') room and office (1 unit), Staff room (1 unit), and a store room ($\frac{1}{2}$ unit). Extra-curricular activities should receive special encouragement at the High School stage and the Committee are of opinion that every High School should have accommodation for these including a room for Boy Scouts or Girl Guides ($\frac{1}{2}$ unit). There should also be a retiring room for girls, the size depending on the number of girls on the register. In the case of schools containing more than 5 classes the teaching accommodation should be increased proportionately though the additions required to the laboratories and practical rooms will obviously be determined in the light of the time devoted to the subjects concerned. There is a small but increasing number of High Schools which include classes XI and XII. In such cases an additional small laboratory (1 unit) would be necessary over and above extra class-room provision, where Science is taken.

The Committee regard the provision of an Assembly Hall and/or Gymnasium as extremely desirable in every large High School. The very high cost of such provision is the sole reason which has led them to exclude it from the minimum schedule of accommodation.

5. *Dimensions of Rooms.*—Apart from the question of the floor area, the actual dimensions of rooms used for teaching purposes deserve consideration.

Experience suggests that for convenient class arrangement and black-board visibility a slightly rectangular room is better than a square one. The standard class room unit of approximately 400 sq. ft. should preferably be 22' x 18' rather than 20' x 20'. Moreover when it may be necessary to combine two units to form a laboratory or practical room an area 22' x 36' has obvious advantages over one 20' x 40'. The importance of having minimum dimensions for class rooms and particularly for laboratories and practical rooms has been stressed in recent pamphlets on school buildings issued by the Board of Education (England). The Committee, however, do not overlook the fact that adherence to a uniform square unit may simplify the question of planning and reduce the cost of construction. In a subsequent section of this report (*cf.* Section 12) they make suggestions which will allow laboratories and practical rooms to be of the requisite shape without affecting the economic planning of the main building. Special consideration, however, is required in the case of Assembly Halls and/or Gymnasiums, where provided. The minimum dimensions of a Gymnasium or any room which it is intended to use for physical training should be 60' x 30'. Assembly Halls should provide at least 4 sq. ft. per pupil or person to be accommodated and the proportion of length (including stage) to breadth should not be less than 5:3. A gallery is a cheap and effective method of adding to the holding capacity: it can also be designed to improve acoustics.

The Committee gave special consideration to the provision which should be made for those pupils who take meals at school. The requirements of hostels are dealt with separately. (*cf.* Section 10). The Committee strongly deprecate the provision of separate dining rooms for different castes. It is essential to the conception of a school that pupils should take their food

together, subject of course to both vegetarian and non-vegetarian food being provided where desired. The Committee recognise, however, that economic and other considerations must largely determine the nature of the arrangements made for school meals.

They contemplate that in some areas and particularly in schools attended by the children of the well-to-do it may be feasible to provide separate dining rooms in which pupils will take their meals seated at table in western fashion. Another alternative is the standing buffet or milk bar where pupils will be able to obtain meals or supplement food brought from home. Thirdly, there is the provision of a simple weather-proof shed with a clean floor where food may be taken in Indian fashion. In all cases, the Committee feel that the arrangements made should be as simple and inexpensive as is consistent with cleanliness and decency but they emphasise the fact that the value of the school meal as a means of inculcating hygienic habits and good manners can hardly be exaggerated. Where separate accommodation is provided for dining the size of the room must be determined in the light of the number of pupils likely to take meals at school. Care should be taken to see that kitchens, pantries, etc., while conveniently situated in relation to the dining rooms, are not so placed that the smell of cooking will permeate the class or other teaching rooms.

6. *Special requirements of Technical High Schools and Junior Technical Schools not accommodated in Senior Technical Institutions.*—Pupils in schools of this type at any rate during the later years of the course will devote a much greater proportion of their time to practical work than those in the normal high schools. Increased provision of workshop and drawing office accommodation will thus be required. Since provision of this kind will probably be available during the day time at any Technical College or institute, the advantage of housing Technical High Schools and Junior Technical Schools in senior Technical Institutions, wherever possible, needs no emphasis.

Where however senior technical institutions are not available for this purpose special additional accommodation over and above that recommended for the ordinary High School will be required. A Technical High School containing 360—400 pupils should have 2 additional workshops and a drawing office. Each of these should have floor space equivalent to that of 2 standard units *viz.* 2×400 sq. ft. = 800 sq. ft. and should be provided in addition with adequate storage and a small room for the instructor in charge. In view of the large amount of time which Technical High School pupils spend in laboratories and workshops, it may be practicable, even though it complicates organisation, to make some reduction in the number of ordinary class rooms provided. In no case, however, can a laboratory or craft room be treated as equivalent to more than half a class-room.

7. *Special accommodation needed in Schools for Physically or Mentally Defective Children.*—Consideration was next given to the question whether any special accommodation is needed in the case of schools for children suffering from physical or mental defects. So little attention has hitherto been paid in India to this particular problem, that the Committee were doubtful whether such practical experience as is available would be sufficient to enable them to make specific recommendations. They felt it desirable, however, to record the opinion that although the average number in a class in the special schools for these children would be considerably smaller as a rule than that in an ordinary school, this should not be regarded as an adequate reason for reducing the size of any class room below that of the standard unit prescribed for normal children *viz.* 400 sq. ft. Children with physical defects require more space for movement and often need special furniture, while in a mentally sub normal class freedom of movement, variety of practical occupations and personal supervision by the

teacher all demand ample floor space. It is likely much experiment will be necessary before the type of accommodation especially suited to Indian conditions can be discovered.

8. *Additional accommodation for schools likely to be used also for Adult Education.*—Considerations of economy alone make it inevitable that enterprises connected with Adult Education should have to share the buildings as well as the staffs belonging primarily to other branches of Education. This fact, however, should not prevent some provision for adult classes being made in the planning of schools, particularly in rural areas. In all the larger schools of this type a separate full size room (*i.e.* one unit) should be provided for the use of adults. It is not considered necessary however to prescribe additional accommodation for adult classes in urban areas as it is felt that these would usually contain a High School or schools with a variety of suitable rooms or even a technical institute which could be placed at the disposal of adult classes out of normal school hours. The desirability of providing cultural and recreational facilities for adults in all technical institutions is being increasingly recognised.

As Adults have to be attracted to attend classes, it is important that the conditions under which such classes are held should be reasonably comfortable. The creation of a club rather than a school atmosphere is highly desirable and the furnishing of schools likely to be used for adult education should be considered from this point of view. A library and reading room is an essential requisite in every adult centre and wherever possible rooms suitable for music, dramatics, discussion groups etc. should be made available.

9. *Lighting, Heating, Ventilation and Sanitation.*—The need for scientific standards in the case of lighting, heating, ventilation and sanitation was discussed next. The Committee were agreed as to the extreme importance of securing adequate standards in these respects in all schools. It was felt that even where genuine efforts are made to provide good buildings, too little attention is paid to determining what in fact constitutes the conditions under which both teachers and taught are likely to give of their best. Climatic conditions in many parts of India put a premium on the need for making certain that such factors as eye-strain, uncomfortable temperatures and inadequate ventilation are not subjecting the inhabitants of a school to unnecessary fatigue. It has been ascertained by scientific research in recent years in western countries that there is a mean between too much and too little light, too much and too little heat, too much and too little draught, the attainment of which automatically reduces fatigue and increases output. It has also been found that these standards can be applied to school buildings without in any way increasing their cost. It is a question of design rather than of materials. The Committee feel that the ascertainment of such standards for Indian schools is a matter of urgent importance which should be investigated without delay by an expert committee.

The Committee lay equal stress on the desirability of adopting adequate standards in connection with sanitary accommodation. Much has to be done in the way of improving personal and social hygiene in the schools, but habits of cleanliness cannot be inculcated and maintained so long as the washing facilities and other necessary conveniences remain hopelessly inadequate. Although hygienic standards in this country generally are rising, it must be admitted that facilities for sanitary arrangements even in schools for the well-to-do usually fall far below any reasonable standard.

Where there is a water-carriage system available every school should be compelled to make use of it. There should be a generous supply of water, soap and clean towels to serve the needs of pupils after exercise or

other practical activities and wherever possible showers and wash basins should be provided. The Board of Education, England, prescribes a minimum of 12 basins for the first hundred children and 4 for each additional hundred. With the growing attention now being given to games and physical exercises it is highly desirable to have a changing room of adequate dimensions for the numbers involved. In connection with this showerbaths on the basis of at least one per 25 pupils should be provided. Sprays and circular washing fountains are also recommended. In each washing room a small sink (about 14 by 9) for filling jugs and washing inkpots is desirable.

The Committee realise, however, that at the present time and for a long while to come the vast majority of schools will be situated in places not only where there is no water carriage system but also where the supply of water itself is strictly limited. Even so they attach so much importance to a proper supply of water for school purposes that they have no hesitation in prescribing that every school should be provided with a sufficiently deep and pucca well. An area, not less than six feet in the width around the mouth of the well should be paved and made impervious, and the pavement sloped outward, should be at such a height as to allow the waste water to be carried through an open drain as far as the school garden. A cistern should be placed on a high platform for storing sufficient quantity of water for various sanitary purposes. The mouth of the well should be protected with a parapet of a sufficient height to prevent any water splashing back into the well, should anyone be washing or bathing nearby, as is the traditional custom in Indian villages. In areas where the subsoil water level is fairly high tube wells should be provided if arrangement can be made for their being kept in proper order and in others an open dug-out tank suitably protected may serve for washing purposes.

Apart from water for washing an adequate supply of drinking water is essential in all schools. The best way of providing this where water is laid on is by drinking fountains of the bubble or spray type. There should be one drinking fountain for every hundred pupils with a minimum of two. The provision of a sink water taps at convenient heights for filling jugs, etc. is desirable. In the absence of a water carriage system, tanks with taps and securable lids, and with facilities for emptying and cleaning are recommended for drinking purposes. Jars with taps and a siphon system have also been found satisfactory.

In schools, where a water carriage system exists, the W. Cs. and urinals may be placed adjacent to or even in the main building. If these are kept scrupulously clean, as they always should be, and if the children are trained in their proper use from their earliest years, there is no reason why this proximity should have any unpleasant effects, while from the point of view of convenience and discipline it will have obvious advantages. Wherever possible latrine accommodation should be within easy reach of the playgrounds and playing fields. Where this is not possible, some separate accommodation will have to be arranged. W. Cs. and urinals should be well-lighted and ventilated and so constructed that their cleaning is an easy matter. The following may be regarded as the minimum requirements where a water-carriage system is available:—

*Girls 6 W. Cs. for first 100 and 2 for each additional 100.

*Boys 3 W. Cs. for the first 100 and 2 for each additional 100.

Urinals where provided should be on the basis of 10 ft. run per 100 boys.

The size of the water closets should be about 2 ft. 6 inches by 4 ft. 6 inches. Doors should not be more than 6 ft. in overall height. In infants'

*The Board of Education recommendations are:—

Girls: 6 W. Cs. for first 100 and 4 W. Cs. for each additional 100.

Boys: 4 W. Cs. and 10 ft. run of urinals for first 100 and 3 W. Cs. and 10 ft. run of urinals for each additional 100.

W. Cs. the chains should be of a length which can conveniently be used by small children. The walls should be finished by some smooth, hard surface upon which writing is impossible.

Where a water-supply is not available, the Committee considered with the advice of experts the respective advantages of the following systems:—

1. Bore hole,
2. Septic tank,
3. Dry closet (as used in rural schools in England),
4. Service latrine.

The Committee have placed these in what they would regard as their order of utility for India generally; they do not favour the service latrine when it can be avoided. They realise, however, that local conditions and customs will largely determine the choice. The point to which they attach chief importance is that whichever type is chosen, it should be used and maintained in the best possible way. The Committee have been able to obtain from experts detailed descriptions of each of these systems and it is proposed that these should be included in the book which the Committee have in mind.

The Committee do not wish to conclude this section of their report without emphasising the extreme importance which ought everywhere to be attached to the maintenance of the highest possible hygienic standards in every type of school. The dangers likely to arise from inadequate drainage, the presence of avoidable litter and the insanitary practice of spitting are no doubt becoming better known but they are still far too often ignored in practice. Apart from the effect of clean and attractive surroundings on their physical well-being pupils will be found to react favourably in many other ways to a pleasant environment. Hygienic buildings have been proved by experience to be a strong inducement to the cultivation of hygienic habits by those who occupy them.

The Committee are aware that a very large proportion of the schools in this country are housed in rented buildings. While it may not be reasonable to require that all such buildings now in use should conform to the standards recommended in this report, the use of those which fall seriously short of them should be discontinued in the interest of the 'pupils' health at the earliest opportunity. Where it is necessary in future to have recourse to hired buildings, they should in all cases be inspected by a responsible officer of the Education Department in conjunction with an officer of the Public Health Department. Recognition should not be granted unless in respect of floor space, lighting, ventilation and sanitation they approximate closely to the requirements set out in this report.

10 *Hostels*.—In considering the nature and amount of the accommodation required for hostels, the Committee have taken as a convenient unit a hostel for 24 boarders, but the general requirements specified may be taken to apply with the necessary adjustments to smaller or larger units.

Sleeping arrangements may consist of open dormitories or partitioned cubicles or separate single rooms, but in the Committee's opinion, at any rate for boys and for girls up to the age of 16 or 17, an open dormitory is much to be preferred. It is more easily cleaned and aired, it is less dangerous in case of fire and it lends itself better to efficient supervision. A dormitory with 12 beds is a very desirable size. In girls schools separate dormitories should be provided for all girls above 12.

A floor area of not less than 50 to 55 sq. ft. should be provided for each occupant and the distance between beds should not be less than 3 ft.

Where a dormitory is divided into cubicles each cubicle should have its own window. If dormitories or cubicles are not furnished with cupboards, a separate room or rooms should be provided for keeping clothes. In addition to dormitories a hostel should contain adequate living accommodation for use during out-of-school hours—*i.e.*, for study and recreation. A space of 20 sq per pupil is desirable in this respect. Proper quarters should also be provided for the person or persons in charge of the hostel and in High School hostels bed sitting rooms 10' x 8' should be given to prefects. A separate room should also be provided for meals but as stated elsewhere the provision of separate rooms for different castes or communities should be strongly discouraged. The kitchen, which should be as close as possible to the dining room, should be spacious and airy. While the actual cooking arrangements will naturally conform to local custom, ample storage space is essential. Modern labour saving appliances should be installed wherever practicable.

Arrangements for washing and bathing may be provided within easy reach from the dormitories. At least one shower is needed for every 10 boarders and one closet for every 5. For boys, urinals may be in the same scale as in the day-schools. Separate sanitary arrangements should be made for staff and for servants.

In every hostel there should be one or two rooms according to the number of occupants which can be used in case of sickness and effectively isolated. In a two-storeyed building, a sick room is necessary on each floor. In large hostels, a separate building will be necessary for infectious diseases, which should be self-contained with its own kitchen, sanitary and other facilities. The Committee are of opinion that the following schedule would be adequate but in no way extravagant for a hostel to house 24 boarders:—

- 2 Dormitories, for 12 each (each 600—660 sq. ft.)
- 1 Common Room for recreation (480 sq. ft.).
- 1 Study Room (480 sq. ft.).
- 1 Supervisor's (Bed-sitting) room.
- 1 Dining room.
- 1 Kitchen.
- 1 Store room.
- 1 Box room (small)
- 1 Fuel room.
- 1 Sick Room.
- (1 water room where there is no water carriage system).
- Baths and closets as prescribed.
- Servants quarters.

Verandahs in hostels will serve the same useful purposes as in schools.

11. *Furniture and Equipment.*—In considering what furniture and equipment should be recommended for ordinary class rooms in Primary and Middle schools the Committee found themselves confronted by a more than usually sharp conflict between what is desirable educationally and what is practicable economically. In India at the present time the usual practice is for children in Primary schools to sit on the floor and for those in High schools to sit at desks or chairs and tables. In Western countries much importance is attached for health reasons to younger children in particular adopting a correct posture when at work and above all the proper support being provided for their backs during the period when the major bones are in process of hardening. Special care is taken to see that school desks and chairs are scientifically designed with this object in view.

In theory, therefore, at any rate the present Indian practice ought to be reversed. It was, however, suggested that sitting on the floor, provided that the floor is clean and dry, would not be detrimental to health if some simple means of affording back support could be devised. Before deciding to make any recommendations which would entail heavy expense on the authorities responsible for equipping Primary schools the Committee felt they should seek expert advice on the medical issue involved. They accordingly referred the question of the desirability of providing furniture at the Middle and Primary stages to the Committee set up by the Chairman of the Central Advisory Boards of Education and Health in 1941, to consider what steps should be taken to improve the physical condition of school children. As will be seen from their report (Appendix IV) that Committee attach great importance to the effect of posture on a child's health and growth but consider that the matter requires special investigation by a body of experts. Without such an investigation it is not possible in their opinion to assess the ill-effects, if any, which the habit of squatting on the floor is having on the health of primary school children. Where, however, chairs or desks are supplied care should be taken to see that they are designed to give support in the right place. The Committee are of opinion that this is a matter which requires further investigation as suggested above.

Apart from this particular issue the problem of furnishing and equipping a primary school is a comparatively simple one. For obvious reasons such furniture as may be provided should be cheap and strong and since in the primary schools the ordinary class room will have to be used for a diversity of purposes, any furniture it contains should be light and easily movable. This is specially important in special rooms for infant or nursery classes. Reference has already been made to the need for storage and for almirahs, where so used, to be disposed in a way that will occupy as little floor space as possible.

In Middle schools seating accommodation may or may not be provided, in High schools it probably will be. Since a child who is comfortable is more likely to pay attention and concentrate on his work than one who is not, it is important here also that the seat should be made to fit the child rather than the opposite. Small tables and chairs in place of desks will make an ordinary class room much more adaptable for certain types of practical work, e.g., needle work, book crafts etc. for which special rooms are not usually provided. Specially designed tables can be placed and where necessary clamped together to form work tables of a convenient size. Every class room in every school should be provided with a strip of 3-ply or other suitable wood 18" deep or with 3 pinrails 9" apart to which cuttings, charts and specimens of children's work can be easily affixed. The height of these should be roughly the child's eye-level.

The furniture and equipment for the various laboratories and practical rooms which the Committee have recommended in the case of Middle and High schools need careful consideration in the light of modern ideas with regard to science and handicraft teaching. The conventional type of laboratory equipment for instance is unnecessarily elaborate and expensive for all but the highest classes. A number of detailed suggestions for the furnishing of laboratories and of art and craft rooms which were discussed at the meeting of Committee will be found in Annexure V.

The question of furnishing Halls, gymnasias, libraries, dining rooms and hostels is dealt with in Annexure VI.

12. *Arrangement of School buildings.*—Apart from the actual accommodation to be provided, the planning of a good school building demands

that very careful attention should be paid to the way in which the various rooms are arranged in relation to one another. The Committee agree that in a matter of this kind finality is neither attainable nor desirable. Theory and practice in education are constantly changing and it is to be hoped that they will continue to do so. The ideal school building, therefore, will be one that can be readily adapted to new ideas, not one which will put obstacles in the way of their adoption. No school should be built with the object of lasting for generations. The plan must be flexible and the construction as simple and elastic as may be compatible with other essential requirements. As a general rule it may be laid down, that those parts of the buildings least likely to change materially *e. g.*, Hall, class rooms, teachers' and store rooms should be grouped together, while laboratories and practical rooms should be arranged in blocks separate from but reasonably close to the main building. For the same reason the former may if desired be built in more permanent construction than the latter. This will also facilitate laboratories and practical rooms being of such dimensions as may be educationally desirable without unduly complicating the design or increasing the cost of the main building. A further advantage of such an arrangement is that rooms which tend to be noisy, *e. g.*, craft rooms, can be isolated from the others.

Certain other general considerations that should determine the planning of schools of all types are set out below:—

(a) Due regard should be had to aesthetic standards, *e. g.* form, design and colour, in school building, in order that object lessons in good taste may be at all times before the eyes of the pupils.

(b) The question of easy movement, particularly in large schools on more than one storey, is important. Corridors should be wide enough and staircases should be so placed as to avoid congestion when classes change and above all in the event of fire.

(c) Similar considerations should apply to the siting of cloakrooms, changing rooms, bicycle sheds etc., where provided.

(d) Latrines, urinals and lavatories should from the point of convenience be as accessible as possible from all parts of the school, subject always to their being so placed as to create neither a nuisance nor an eyesore.

(e) The possibility of extension being required at some future date should always be borne in mind.

(f) Verandahs can be made a most useful adjunct to almost any school in India. The uses to which they can be put have been described on page 133.

(g) Kindergarten rooms and rooms for young children should always be on the ground floor.

(h) Where ample sites are available single storey buildings have certain advantages. They facilitate elastic grouping of rooms as well as the use of light forms of construction.

(i) The orientation of all class rooms and verandahs and of many practical rooms needs careful consideration. Local climatic conditions will largely determine this and sites should be chosen with this factor in mind.

(j) Provided that the arrangement is convenient and the design harmonious, the particular shape of the plan is of little importance. The quadrangular plan popular in Western countries twenty years ago has definite disadvantages, the most obvious being that it renders impossible the best orientation of many rooms. In rural areas there is much to be said both on grounds of economy and freedom from disturbance in favour of

building class rooms as separate units appropriately disposed in the school compound, a method commonly adopted in the case of open-air schools for delicate children in Great Britain.

(k) Economy can be effected and planning facilitated by the adoption of a standard class room unit which can be multiplied if necessary where larger rooms are required. It would be an advantage if sound-proof adjustable partitions could be provided and where partition walls are provided they should be left free from carrying loads, so that they can be moved if, at some future date, it should be necessary to rearrange the rooms.

Some interesting modern suggestions with regard to the arrangement of school buildings for Primary schools are contained in the 'Design of Nursery and Elementary Schools' published by the Architectural Press, London, 1938. Extracts from this book will be found in Appendix IV.

13. *General principles applicable to the design and planning of educational buildings beyond the High School stage.*—Beyond the High School stage so many considerations affect the design and planning of educational buildings that as already stated the Committee feel no useful purpose would be served by their attempting to prescribing any principles of general applicability as regards schedules of accommodation, planning or types of construction. The Committee believe, however, that there are certain criteria which should be observed in the building of Universities, Colleges and Technical Institutions as well as at the lower stages of education.

The first of these is that the whole conception of the buildings should be dignified and harmonious. Students at this stage are not less susceptible than their juniors to aesthetic influences. The educational value of a beautiful environment can hardly be exaggerated. A beautiful building, however, does not mean one elaborately designed or constructed of expensive material. A Technical Institute can be as satisfying aesthetically as any Arts College, so long as its design is primarily determined by fitness for its purpose. Ships, motorcars, aeroplanes and many other forms of essentially utilitarian construction illustrate this truth. The second criterion is the grouping within a harmonious whole of rooms according to function *i.e.*, the special needs and uses of halls, libraries, gymnasias, class rooms, laboratories, practical rooms should always determine their disposition in the plan. Noisy rooms should be isolated. Rooms where for educational reasons exceptional dimensions are required should never be deprived of these simply in order that they may conform to architectural considerations.

Practical rooms and particularly those containing heavy machinery should be so planned that plant and materials can easily be delivered and removed. This applies particularly to technical colleges and institutes, where there should be easy access for lorries to all workshops.

14. *Alternative types of construction.*—The Committee were strongly of the opinion that the possibility of adopting various forms of temporary or semi-permanent construction as an alternative to *pucca* buildings should be exhaustively explored, not only in the interest of economy but also with a view to facilitating the adaptation of school buildings to changing educational ideas. There are all over India various types of indigenous construction which suit local climatic conditions. Many of these could be made suitable for schools requirements. In a country like India, where there is so wide a difference in climatic conditions and materials available locally, it is not practicable to set up a common formula in regard to methods of construction. Subject to the general standards which they have prescribed being observed, the Committee feel that there is almost an unlimited field for experiment so far as the actual construction of schools and particularly of primary and middle schools in rural areas

is concerned. Any of the following types again, subject to the consideration mentioned above may be adopted to suit local requirements :—

- (i) Buildings with frame work of bamboos, walling of split bamboos or reeds with or without mud plaster, roof covered with straw or grass thatch over bamboo framing, mud floor, doors and windows of bamboo. Wooden frame doors and windows may be introduced as an improvement on this type.
- (ii) Buildings with mud walls replacing the bamboo frame or reed walling of the construction described above.
- (iii) Buildings with mud walls and roof of burnt tiles or slates replacing straw or grass.
- (iv) Buildings entirely of timber.
- (v) Buildings of timber with roof of slates or corrugated sheets.
- (vi) Buildings with mixed timber and mud walls or walls of sun-dried mud or bricks, and with burnt tiles, slates or corrugated roofing.
- (vii) Buildings of unplastered brick, with thatched roofs or alternately slates or corrugated roofing, brick or concrete flooring and wooden doors and windows. Stone or concrete walls may take the place of brick walls where stone or concrete is cheaper or most easily obtainable than bricks.

The practice of roofing school buildings of this pattern in the tropical areas with corrugated iron sheets is not favoured. Other forms of corrugated sheeting are now coming on the market which are cheaper, lighter and more pleasant to the eye than corrugated iron. The Committee are strongly of opinion that provided the necessary standards in lighting, temperature and ventilation can be secured—and they see no reason why, they should not be—the possibility of erecting satisfactory schools particularly in rural areas, by adopting any or all of these forms of constructions should be carefully explored.

Experience in Assam has shown that wood and bamboo structures properly seasoned, with thatched roof and mud floors make excellent village schools. It has been found that for a really good and stable building of this type the cost is as low as Re. 1 per square foot. Such buildings, like other forms of light construction, must be maintained in a constant state of good repair; the floors require a weekly “leap” of mud and cowdung to keep free from dust, and the thatch has to be renewed every fourth year. For this nearly half of the old thatch can be used over again and as labour and materials are available locally at a very cheap rate the whole cost of maintenance is extremely small.

A similar cheap but efficient form of construction is also being used in the Central Provinces and Berar. The Committee were shown a model of this type of construction and were satisfied that this was a suitable type for rural schools.

In the United Provinces light forms of construction have also been used and have been found to give satisfactory results. In many parts of Madras schools are housed in a combination of *pucca* and temporary construction. The *pucca* building usually accommodates the library, office, science laboratory, store rooms, etc., whereas sheds are used for general class rooms.

While the Committee do not wish to prescribe any one form of light or temporary construction as superior to another, they are of opinion that both the need for economy and the desirability of making school buildings as flexible as possible point to the extreme importance of investigating and

building class rooms as separate units appropriately disposed in the school compound, a method commonly adopted in the case of open-air schools for delicate children in Great Britain.

(k) Economy can be effected and planning facilitated by the adoption of a standard class room unit which can be multiplied if necessary where larger rooms are required. It would be an advantage if sound-proof adjustable partitions could be provided and where partition walls are provided they should be left free from carrying loads, so that they can be moved if, at some future date, it should be necessary to rearrange the rooms.

Some interesting modern suggestions with regard to the arrangement of school buildings for Primary schools are contained in the 'Design of Nursery and Elementary Schools' published by the Architectural Press, London, 1938. Extracts from this book will be found in Appendix IV.

13. *General principles applicable to the design and planning of educational buildings beyond the High School stage.*—Beyond the High School stage so many considerations affect the design and planning of educational buildings that as already stated the Committee feel no useful purpose would be served by their attempting to prescribing any principles of general applicability as regards schedules of accommodation, planning or types of construction. The Committee believe, however, that there are certain criteria which should be observed in the building of Universities, Colleges and Technical Institutions as well as at the lower stages of education.

The first of these is that the whole conception of the buildings should be dignified and harmonious. Students at this stage are not less susceptible than their juniors to aesthetic influences. The educational value of a beautiful environment can hardly be exaggerated. A beautiful building, however, does not mean one elaborately designed or constructed of expensive material. A Technical Institute can be as satisfying aesthetically as any Arts College, so long as its design is primarily determined by fitness for its purpose. Ships, motorcars, aeroplanes and many other forms of essentially utilitarian construction illustrate this truth. The second criterion is the grouping within a harmonious whole of rooms according to function *i.e.*, the special needs and uses of halls, libraries, gymnasias, class rooms, laboratories, practical rooms should always determine their disposition in the plan. Noisy rooms should be isolated. Rooms where for educational reasons exceptional dimensions are required should never be deprived of these simply in order that they may conform to architectural considerations.

Practical rooms and particularly those containing heavy machinery should be so planned that plant and materials can easily be delivered and removed. This applies particularly to technical colleges and institutes, where there should be easy access for lorries to all workshops.

14. *Alternative types of construction.*—The Committee were strongly of the opinion that the possibility of adopting various forms of temporary or semi-permanent construction as an alternative to *pucca* buildings should be exhaustively explored, not only in the interest of economy but also with a view to facilitating the adaptation of school buildings to changing educational ideas. There are all over India various types of indigenous construction which suit local climatic conditions. Many of these could be made suitable for schools requirements. In a country like India, where there is so wide a difference in climatic conditions and materials available locally, it is not practicable to set up a common formula in regard to methods of construction. Subject to the general standards which they have prescribed being observed, the Committee feel that there is almost an unlimited field for experiment so far as the actual construction of schools and particularly of primary and middle schools in rural areas

is concerned. Any of the following types again, subject to the consideration mentioned above may be adopted to suit local requirements :—

- (i) Buildings with frame work of bamboos, walling of split bamboos or reeds with or without mud plaster, roof covered with straw or grass thatch over bamboo framing, mud floor, doors and windows of bamboo. Wooden frame doors and windows may be introduced as an improvement on this type.
- (ii) Buildings with mud walls replacing the bamboo frame or reed walling of the construction described above.
- (iii) Buildings with mud walls and roof of burnt tiles or slates replacing straw or grass.
- (iv) Buildings entirely of timber.
- (v) Buildings of timber with roof of slates or corrugated sheets.
- (vi) Buildings with mixed timber and mud walls or walls of sun-dried mud or bricks, and with burnt tiles, slates or corrugated roofing.
- (vii) Buildings of unplastered brick, with thatched roofs or alternately slates or corrugated roofing, brick or concrete flooring and wooden doors and windows. Stone or concrete walls may take the place of brick walls where stone or concrete is cheaper or most easily obtainable than bricks.

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A similar cheap but efficient form of construction is also being used in the Central Provinces and Berar. The Committee were shown a model of this type of construction and were satisfied that this was a suitable type for rural schools.

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While the Committee do not wish to prescribe any one form of light or temporary construction as superior to another, they are of opinion that both the need for economy and the desirability of making school buildings as flexible as possible point to the extreme importance of investigating and

experimenting with the potentialities of materials other than brick and stone. They also anticipate that increasing use may be made of the many synthetic materials like Indianite which are now being placed on the market and may be expected to become cheaper as their use increases.

15. *Sites including Playgrounds and Playing Fields.*—The considerations which should in the Committee's opinion determine the size of school sites are as follows :—

- (i) In selecting a site the total accommodation that is likely to be required ultimately rather than the needs of the moment should be the determining factor.
- (ii) Sites for modern schools should be much larger than those previously thought adequate. Modern school design requires much more space for convenient grouping of rooms and for their proper lighting and ventilation. Apart from this the importance now attached to outdoor activities *e. g.*, gardening and the organised games and physical training calls for additional space.
- (iii) The responsible authorities should do their best to anticipate the need for new schools particularly in new centres of population and buy ample sites in good time.
- (iv) A school building should be kept as far as possible from the noise and dust of busy roads.
- (v) Sites should be reasonably level. There should be no undesirable surroundings and care should be taken to avoid land which is damp, made up or subject to floods.
- (vi) In urban areas, school sites should be conveniently accessible by road but every effort should be made to avoid an excess of road frontage.
- (vii) It is important that public services, *e. g.*, sewers, water and electricity should be available.

An area of one to two acres according to the design and method of construction adopted, should suffice for the actual buildings of any school primary, middle or high, for not more than 500 pupils. Apart from the actual space required for the buildings, the site should also provide room for a playground for recreation or physical training, in the schools above the primary stage for a school garden and wherever possible for playing fields as well. The size of the playground will probably depend to a considerable extent on the size of the school and whether land in the locality is reasonably cheap and easy to obtain. It is unnecessary to prescribe any definite amount for any particular size or type of school but the following limiting factors may usefully be borne in mind. As the playground will be much used for physical training it should be roughly rectangular in shape and should have a minimum dimension of 60'. The surface should be smooth, dry, as free as possible of dust and capable of being drained.

The following may be regarded as minimum areas :—

For	160	children	$\frac{3}{4}$ acre.
"	320	"	1 "
"	480	"	1 $\frac{1}{2}$ acres.

At the same time the importance which the Committee attach to all school buildings being as clean and tidy as possible extends also to the playground. No school will gain anything from the possession of a play-

ground so large that it cannot be kept in good order. While the Committee do not advocate the provision of a school garden, by which they mean an area suitable for practical instruction in horticulture, in the case of primary schools they certainly do not wish to discourage the provision on primary school sites of flower beds or even small vegetable gardens provided these can be kept in proper order. Even very young children get pleasure and profit from learning about flowers and vegetables. Gardening or agriculture as a subject will not find a place in the curriculum of many middle and high schools in urban areas but it should do so in those in rural areas and adequate space should be available for practical work. The area required will depend on the syllabus to be taken and may vary from a minimum of one up to four or five acres.

Playing fields as distinct from playgrounds are not essential at the primary stage but should be regarded as necessary adjuncts to any middle or high schools whether for boys or girls. No educational development is more to be welcomed than the encouragement now given to organise games in the better girls schools. If the time-table is properly arranged it will be found unnecessary to provide playing fields large enough for the whole school to play at the same time. While allowance must be made for the varying amounts of wear which different types of surface will stand, experience suggests that with good organisation and proper care the following areas will suffice for playing fields:—

For	160	children	2—3	acres.
”	320	”	4—5	”
”	480	”	6—7	”

Playing fields should be rectangular in shape to facilitate the economic siting of pitches, reasonably level and capable of being properly drained. Where the surface is grass, hockey and football goal areas should be frequently changed. Where they are at any considerable distance from the school itself changing and lavatory accommodation should be provided.

16. *Maintenance of School Buildings.*—The Committee are anxious to stress the fact that school buildings should always be kept in the best possible state of repair. They know of many instances where good buildings have been provided but owing to the fact that adequate provision has not been made for their maintenance, they have rapidly fallen into disrepair and apart from the adverse effect on their occupants their effective life has thus been materially shortened. The Committee strongly recommend that every educational budget should make adequate provision for the repair and upkeep of school buildings. There should be a regular rota for external and internal redecoration of schools, the period being determined by the nature of the construction and local climatic conditions. Temporary buildings, particularly when of wood, require frequent painting both inside and out and this is one of their obvious drawbacks. Another and probably the most important factor in maintaining school premises in the best possible order is the establishment of an efficient caretaking and cleaning service.

Particular attention has been paid to this in western countries and school caretaking cannot but be regarded as in effect a skilled trade. The Committee wish to endorse certain remarks by the Board of Education, England, in this connection which will be found below:—

“Schools should be planned so as to enable them to be well kept, with the minimum of trouble and expense. Attention to such details as the rounding off of all corners and the tiling of window sills, so as to facilitate the removal of dust, will produce buildings which are not only easier and cheaper to keep clean than the older schools, but also furnish

an object lessen to the children in the importance of a bright and clean environment. Ample accommodation should be provided for the caretaker. His function has usually been under-estimated in a school. It can, and should in fact, assume a great importance in the social training imparted by the school; dirty and ill-kept premises are a poor example for the teachers in their attempts to train the pupils in clean, tidy and healthy social habits. Apart from the paramount need for scrupulous cleanliness in the lavatories and offices, authorities and managers will be well advised to ensure that the floors, walls and windows of schools are kept clean. For this purpose it will be helpful to have at least one slop sink and water tap for the use of the caretaker, and where there is a considerable distance to walk from one end of the school to the other it may even be desirable to have such a sink attached to each set of lavatories. These sinks will be of considerable value also for such purposes as the cleaning of inkpots and the changing of water for flowers in the classrooms, both of which tasks are often performed in the ordinary wash basins with unfortunate results.

Provision should also be made for cupboards for the caretaker's necessities. Where the caretaker is employed full-time, but does not reside on the school premises, sanitary accommodation should be provided for him.

A covered space for dust-bins is necessary, so contrived that they are concealed from view."

The cleanliness of the school surroundings is not less important than that of the actual buildings and in both these respects the pupils should be trained to lighten the work of the caretaking staff. Bins for litter should be placed conveniently and failure to use them should be regarded as a matter for discipline. Finally Headteachers and Inspectors should be left in no doubt that the general cleanliness of the school buildings and grounds will be regarded as a very important factor in assessing its efficiency.

17. The Committee recognise, as they have stated earlier in this report that the great majority of the buildings at present used for school purposes in this country will not comply even with the minimum conditions prescribed in this report. They feel strongly that immediately circumstances permit—and they trust this will be in the near future—active measures will be taken to replace unsatisfactory buildings. Over and above this they assume that the time is not far distant when the need for providing education for the vast numbers of children not at present attending school will also receive recognition. To do this will mean in every part of India a building programme of vast dimensions. If this is to be made possible financially, a departure from the present system by which non-recurring expenditure is included in the annual budget becomes inevitable. The Committee understand that in Great Britain the financing of school construction out of revenue except where the amount involved is comparatively small is strongly discouraged by Government. Sites are purchased, schools built and furniture purchased out of loans spread over periods varying between 15 years in the case of temporary buildings, 30 to 40 in the case of permanent ones and 60 in the case of sites. By this means it is possible to embark on a heavy building programme without placing an intolerable burden on the budgets of one or two years. The Committee strongly recommend that all expenditure on school sites, buildings and equipment exceeding Rs. 5,000 for any one item should be met from loan.

18. *General conclusions.*—The Committee realise that in the ordinary way it is convenient to summarise the conclusions and recommendations of a report. They feel, however, that the enquiry upon which they have been engaged covers so wide a field and necessarily involves so many matters of detail that any summary to be comprehensive would have to be intolerably long. Moreover, as they have tried to indicate from time to time, their object has not been to prescribe one particular type of building as pre-eminently suitable

for each grade of school. They have endeavoured to lay down with sufficient precision certain conditions which must be observed in any building before it can be regarded to fit for use as a school but subject to the observance of these they feel that in a country as large as India where climatic conditions, local customs, available materials, resources and other factors determining construction vary so greatly the best service they can render is to supply the authorities responsible for building and maintaining schools with a number of suggestions to guide them in the planning of their buildings and a variety of actual plans among which they may make their choice. The main recommendation which the Committee wish to make is that if this report is approved generally by the Central Advisory Board, the material it contains, supplemented by plans and estimates which in many cases are already available, should be reproduced in book form. The Committee believe that a book on the design and construction of school buildings, revised from time to time in the light of up-to-date research and experiment, would be of real value and is precisely the form of practical assistance which the Board is in a position to render to Provincial Governments, Local Administrations, Indian States and all other bodies responsible for building and maintaining schools.

Sd. JOHN SARGENT. (*Chairman.*)
 „ W. H F. ARMSTRONG.
 „ S. M. AZAM.
 „ J M. BOTTOMLEY.
 „ A. W. H DEAN.
 „ A. GOPALA MENON.
 „ G. G. R. HUNTER.
 „ JYOTINDRA MARKAND MEHTA
 „ J. LEITCH WILSON
 „ E. G. MCALPINE.
 „ M. A. MIRZA.
 „ S. N. MOOS.
 „ J. C. POWELL-PRICE.
 „ D. S. REDDY.
 „ S. C. ROY.
 „ K. G. SAIYIDAIN.
 „ SURENDRA NATH KAR.
 „ W. W. WOOD.

ANNEXURE I.

AGENDA FOR THE SCHOOL BUILDINGS COMMITTEE OF THE CENTRAL ADVISORY BOARD OF EDUCATION.

(*N.B.*—A summary of the information available as to the standards adopted or rules prescribed by Provincial Governments and States in connection with school buildings will be found in Annexure II.)

1. To consider whether the Committee should confine their attention to buildings for schools up to the end of the high school stage or whether it is desirable and practicable to extend the investigation to cover educational institutions beyond that stage.

(*N.B.*—The agenda has been prepared on the assumption that the Committee will not desire to deal in detail with educational buildings beyond the high school stage. The planning of Technical and Art Institutions, University Colleges and Universities and even of Training Colleges and Normal Schools will be determined by the particular nature of the work which they are called upon to undertake and as this will vary from institution to institution to a greater or less degree, the prescribing of any schedules of accommodation etc., that would be generally applicable would appear to be an impossible task. It may, however, be feasible to lay down certain principles which may be observed in the design and planning of buildings for institutions of these types. This question has been put down for discussion under item 13 of the Agenda.)

2. To determine the superficial and cubic space required for each pupil in an ordinary class room at the primary stage, and in an ordinary class room, science laboratory and room for practical instruction (a) at the middle stage and (b) beyond the middle stage.

3. To consider the maximum number of (a) boys (b) girls for whom accommodation should be provided in an ordinary class room at the primary stage, and in an ordinary class room, science laboratory and room for practical instruction (a) at the middle stage and (b) beyond the middle stage.

4. To fix with due regard to educational efficiency and the need for economy a schedule of accommodation for—

(a) Primary Schools—

- (1) with 2 classes;
- (2) with 5 classes;
- (3) with more than 5 class sections.

(b) Middle Schools (not forming part of high schools):—

- (1) with 3 classes;
- (2) with 6 class sections;
- (3) with 9 class sections.

(c) High Schools (with middle sections):—

- (1) with 5 classes;
- (2) with 10 class sections;
- (3) with 15 class sections.

(A High school which includes classes XI and XII will require separate consideration).

(*N.B.*—A class section means a sub-division of a class large enough to require a separate teacher.)

5. To fix sizes and dimensions of rooms in:—

(a) Primary Schools:—

- (1) ordinary class rooms;
 - (2) rooms for kindergarten, infants or nursery classes;
 - (3) halls (if any);
 - (4) rooms for practical instruction (if any);
 - (5) teachers' rooms;
 - (6) store-rooms.
- (b) Middle Schools (not forming part of high schools):—
- (1) class rooms;
 - (2) practical rooms:—
 - (i) wood or metal work;
 - (ii) spinning and weaving;
 - (iii) domestic science;
 - (iv) other crafts.
 - (3) elementary science laboratories;
 - (4) halls (if any);
 - (5) library and reading rooms:—
 - (6) teachers' rooms;
 - (7) store-rooms.

(The size and dimensions of the area required for school gardening and agricultural instruction will be considered under 'Sites').

- (c) High Schools (with middle departments):—
- (1) class rooms;
 - (2) practical rooms:—
 - (i) wood or metal work;
 - (ii) arts and crafts;
 - (iii) domestic science;
 - (iv) geography.
 - (3) Laboratories:—
 - (i) junior;
 - (ii) senior,
 - (4) halls;
 - (5) gymnasia;
 - (6) libraries and reading rooms;
 - (7) dining rooms;
 - (8) teachers' rooms;
 - (9) store-rooms.

6. To consider the special requirements of Technical High Schools or Junior Technical Schools not accommodated in Senior Technical Institutions.

7. To consider whether any special accommodation is needed in the case of schools for physically or mentally defective children.

8. To consider what additional accommodation should be provided in any school which is likely to be used for adult education purposes.

9. To consider the possibility of adopting adequate standards in connection with:—

- (a) lighting;
- (b) heating;
- (c) ventilation;
- (d) sanitation,

and to prescribe the requisite standards in each case.

10. To consider the nature and amount of the accommodation required for hostels for 25, 50 and 100 boarders.

11. To consider the main issues arising in connection with furniture and equipments for:—

- (a) ordinary class rooms in:—
 - (i) Primary schools;
 - (ii) Middle schools;
 - (iii) High schools;
- (b) kindergarten rooms;
- (c) practical rooms:—
 - (i) wood and metal work;
 - (ii) spinning and weaving;
 - (iii) arts and crafts;
 - (iv) domestic science;
 - (v) geography.
- (d) laboratories;
- (e) halls;
- (f) gymnasia;
- (g) libraries and reading rooms;
- (h) dining rooms;
- (i) hostels.

12. To consider the general principles which should determine the arrangement of school buildings of different types with a view to securing the maximum efficiency from the point of view of school organisation.

13. To consider what general principles, if any, can be usefully laid down in connection with the design and planning of institutions beyond the high school stages.

14. To consider in the light of local climatic conditions the possibility of adopting various forms of temporary or semi-permanent construction as an alternative to pucca buildings.

15. To consider the minimum areas required for sites and play grounds for different types and sizes of schools in (a) urban and (b) rural areas.

16. To prepare rough sketch plans and estimates for school buildings of various types.

17. To consider what steps should be taken to maintain in the best possible condition school sites, buildings, furniture and equipment.

18. To consider the financial problems arising in connection with the carrying out of a substantial building programme.

19. Any other business.

ANNEXURE II.

Item 2 of the Agenda.

Province.	Minimum floor space required for a pupil in a class-room in.			Minimum height of a class-room in (from floor to underside of beam).		Remarks.
	Primary Schools.	Middle and High Schools.	Technical Schools and Training College.	Primary Schools.	Middle and High Schools.	
	Sq. ft.	Sq. ft.	Sq. ft.	Ft.	Ft.	
Madras ...	9½	11	15	10 to 12	12* to 14	With the availability of funds, floor space in excess of the minimum should be provided. Rooms intended to be used for practical work, etc., should be considered each on its own merits.
Bombay ...	10 to 12	12 to 15	15 to 20	†12 to 14	†12 to 14	Ditto.
Bengal ...	10 to 15	10 to 15	Not available.	12 to 14	†12 to 14	No single school-room should be more than 600 Sq. ft. nor designed for more than 40 children.
Punjab ...	9	12	do.	(a)	(a)	
Baluchistan ...	9	12	do.	(a)	(a)	
Travancore ...	8	8	do.	(a)	(a)	

* The same for technical schools and training colleges.

† When the total floor space exceeds 600 sq. ft., the height must be at least 14 ft. if the area exceeds 360 sq. ft., the height not to be less than 13 ft.

(a) Information not available.

Item 3 of the Agenda.

Province.	Maximum number of pupils in a class-room for whom accommodation should be provided.	Remarks.
Bengal	50	No room for less than 24 children, and no infants' room for more than 30 infants.
Punjab	45	
Baluchistan	40 in Middle and High and 30 in primary class-room.	
Travancore	Not less than 50 pupils.	The maximum number of pupils to be accommodated in any laboratory, workshop, etc., to be determined by the Inspecting staff.

Item 5 of the Agenda.

Province.	Type of room.	Dimensions of a room in a Primary School.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
Madras ...	<i>School for 150 children.</i>					No school or class-room should be more than 24 feet in width. In the case of a school divided into a number of class rooms, the dimensions of any room should not exceed 24-ft. X 25-ft. The smallest class room for 40 boys with dual desks should be 21-ft. wide and 23-ft. long.
	(a) Store room ...	14	7	9	...	
	(b) Class I(2 rooms)	24	14	9	...	
	(c) Class II(1 room)	20	14	9	...	
	(d) Class III and Classes IV and V (1 room for both)	17	14	9	...	
	<i>School for 100 children.</i>					
(a) Store ...	6	12	9	...		
(b) Class I(2 rooms) 26 children in each	20	12	9	...		

* Information collected from standard plans. *

Item 5 of the Agenda—contd.

Province.	Type of room.	Dimensions of a room in a Primary School.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
	(c) Class II (20 children).	16	12	9	...	
	(d) Classes III and IV (28 children). <i>School for 50 children.</i>	20	12	9	...	
	(a) Store ...	6	12	9	...	
	(b) Class I (25 children).	20	12	9	...	
	(c) Classes II and III.	16	12	9	...	
Bombay ...	Class room for 30 children.	16	16	10	...	1. The same as in Madras. 2. The size and dimensions of all the rooms to be the same.
Bengal ...	Class room for 27 children.	18	15	12	...	The sizes of class rooms to be kept within the following dimensions: L. B. H. Min. 18' 15' 12' Max. 26' 24' 14'
	Class room for 30 children.	26	22	13	...	No single class room to contain more than 600 sq. ft. of floor space.
Punjab ...	Four-roomed school	15	15	9	...	Each room to be of uniform size.
Bihar ...	Lower Primary (2 roomed) school.	23	12	12½	...	Verandah 4-ft. wide.
	Upper primary (3 roomed) school.	16	15	10½	...	Without verandah.
Orissa ...	Two roomed primary school for four classes.	30	15	13½	...	Verandah 5-ft. wide.
	Three roomed primary school for four classes.	(a) 20 (for 2 rooms each)	15	13½	...	Verandah 5-ft. wide.
		(b) 30 (For 3rd room).	15	13½	...	

Item 5 of the Agenda—*contd.*

Province.	Type of room.	Dimensions of a room in a Primary School.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
	Three roomed primary school for six classes.	30	15	13½	...	Verandah 5-ft. wide.
	Three roomed primary school for five classes.	(a) 30 (For 2 rooms each)	15	13½	...	Do.
		(b) 20 (For 3rd room).	15	13½	...	
Assam ...	A single teacher school room.	30	16	Not given.	...	Verandah 6-ft. wide.
	Two teachers school room.	50	16	Do.	...	Do.
	Three teachers school room.	75	16	Do.	...	Do.
North-West Frontier Province.	(a) One room ...	20	15	Do.	...	Verandah 10-ft. wide.
	(b) Second room	18'10½"	15	Do.	...	
	(c) Masters room	12	8'10½"	Do.	...	
Ajmer-Merwara.	(a) Store room...	8	8	12	...	
	(b) 2 Class rooms	18	15	12	...	
	(c) Water room...	8	8	12	...	
Baluchistan	(a) School at Hudda (4 roomed).	24	15	10	...	Verandah 10-ft. wide.
	(b) Headmaster's room.	10	15	10	...	
	(a) 2 roomed school at Kawas.	24	15	9½	...	Verandah 8-ft. wide.
	(b) Store room...	8	15	9½	...	
	A general two roomed school.	20	15	8½	...	Verandah 8-ft. wide.
	<i>Government Primary School, Quetta</i>					
	Two Kindergarten rooms.	50½	20	15	...	
	8 Class rooms ...	25	20	15	...	

Item 5 of the Agenda—*contd.*

Province.	Type of room.	Dimensions of a room in a Primary School.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
Sind ...	Headmaster's room	18	18	15	...	
	Staff room ...	18	20½	15	...	
	One teacher school room for 30 boys.	16	16	12	Rs. 1,616 (for pucca construction).	Verandah 8-ft. wide.
	Two teachers school—two rooms—each for 30 boys.	16	16	12	Rs. 2,713 (2 teachers). Rs. 4,119 (3 teachers).	Verandah 8-ft. wide and 32-ft. long.
Baroda ...	(3, 4, 5 and 6 roomed school).	16	16	12	Rs. 5,137 (4 teachers). Rs. 6,164 (5 teachers). Rs. 7,151 (6 teachers).	
	<i>Standard design for cheap village schools.</i>					
	1, 2 and 3 roomed school (each room for 40 boys).	20	16	10	Rs. 1,800 (1 roomed). Rs. 3,600. *Rs. 2,060 (2 roomed). Rs. 5,400. *Rs. 2,950 (3 roomed).	Verandah 6-ft. wide.
	<i>4 units school</i>					
	(a) Two outer rooms (each for 40 boys).	16	22	10	Rs. 8,000. *Rs. 4,650 (4 roomed). Rs. 9,500	Verandah 6-ft. wide.
	(b) Two other rooms	20	16	10	*Rs. 5,750 (5 roomed).	(5, 6, 7 and 8 units schools having same dimensions).
(c) Store room and Water room.	16	6	10	Rs. 11,000 (6 roomed). Rs. 12,500 (7 roomed). Rs. 14,000 (8 roomed).		
Mysore ...	<i>A design.</i>					
	(a) Two rooms...	12	15	12	...	
	(b) Third room...	24	12½	12	...	

*Without passage.

Item 5 of the Agenda—contd.

Province.	Type of room.	Dimensions of a room in a Primary School.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
	<i>D Design.</i>					
	(a) 1 Class room	12	10	Not given.	...	
	(b) Open air class	16	12	Do.	...	
	(c) Headmaster's room.	12	10	Do.	...	
Travancore	<i>Primary school for 200 pupils.</i>					
	6 rooms (separated by wooden partitions).	20	18	8	...	
Kashmere...	<i>Basic School.</i>					
	(Type plan No. 1.)					
	3 roomed school	20	16	14	Rs. 1,831 (without verandah). Rs. 2,051 (with verandah).	Verandah 8-ft. wide.
	(Type plan No. 2.)					
	(a) Four rooms...	20	16	14	Rs. 3,260 (without verandah).	Do.
	(b) One corner room.	24	16	14	Rs. 3,559 (with verandah).	
	(Type plan No. 3.)					
	(a) Six rooms ...	20	16	14	Rs. 4,064 (without verandah).	Verandah 8-ft. wide.
	(b) One corner room.	24	16	14	Rs. 4,740 (with verandah).	
	(Type plan No. 4.)					
	(a) Six rooms ...	20	16	14	Rs. 5,995 (without verandah).	Verandah 8-ft. wide.

Item 5 of the Agenda—*contd.*

Province.	Type of room.	Dimensions of a room in a Primary School.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
	(b) One corner room	24	16	14	Rs. 6,595 (with verandah).	
	(c) Craft room...	30	16	14	...	
	(d) Teacher's room.	18	16	14	...	
	(e) Office room...	16	16	14	...	
Bengal ...	(a) 8 rooms—each for about 30 pupils	26	22	Not given.	...	
	(b) Teachers' room	22	16	Do.	...	
	(c) Library and Office.	22	16	Do.	...	
	(d) Central Hall	52	26	Do.	...	
	(e) Ante room and cloak room.	52	16	Do.	...	
Punjab ...	<i>Government High School.</i> (Single section.)					
	(a) 4 Class rooms.	23	22	16	...	Verandah 8-ft. wide.
	(b) 2 Class rooms.	22	23	16	...	
	(c) Drawing room	25	25	16	...	
	(d) Sanskrit room and Arabic room.	22	12	16	...	
	(e) Science and Laboratory.	25	45	16	...	
	(f) Headmaster's room.	10½	14	16	...	
	(g) Office ...	10½	14	16	...	
Bihar ...	(a) 10 rooms ...	20	20	13	...	Verandah 6-ft. wide.
	(b) 2 rooms ...	25	20	13	...	
	(c) Library ...	15	20	13	...	
	(d) Office ...	15	20	13	...	
	(e) Hall ...	20	40	Not given.	...	
Assam ...	(a) 9 rooms ...	24	17	Do.	...	(1) Covered verandah 10-ft. wide.

Item 5 of the Agenda—*contd.*

Province.	Type of room.	Dimensions of a room in a High School.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
	(b) Science room	32	24	Not given.	...	(2) Another verandah 7-ft. wide.
	(c) Geography and Drawing room.	32	24	Do.	...	
	(d) Manual work room.	32	24	Do.	...	
	(e) Boys' Common room.	32	24	Do.	...	
	(f) Library ...	24	17	Do.	...	
	(g) Office room	16	17	Not given.	...	
	(h) Headmaster's room.	8	17	Do.	...	
	(i) Teacher's room	24	17	Do.	...	Verandah 8-ft. wide.
North-West Frontier Province.	(a) 8 Class rooms	23	22½	18	...	
	(b) Drawing room	31	25	18	...	
	(c) Sanskrit room	17	22½	18	...	
	(d) Arabic room	17	22½	18	...	
	(e) 2 Class rooms	23	24½	18	...	
	(f) 3 Class rooms	22½	23	18	...	
	(g) Science Practical room.	25	31	18	...	
	(h) Science Lecture room.	27	22½	18	...	
	(i) Staff room ...	15	15	18	...	
	(j) Headmaster's room.	15	15	18	...	
	(k) Record room.	21	7½	18	...	
Baluchistan	(a) 3 rooms ...	22	23	Not given.	...	
	(b) 6 rooms ...	23	22	Do.	...	
	(c) Kindergarten room.	25	40	Do.	...	
	(d) Language room.	22	23	Do.	...	

Item 5 of the Agenda—concl'd.

Province.	Type of room.	Dimensions of a room in a High School.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
	(c) Staff room ...	22	20	Not given.	...	
	(f) Science room	22	37	Do.	...	
	(g) Drawing room	25	25	Do.	...	
	(h) Record room	12	22	Do.	...	
	(i) Headmaster's room	12	16	Do.	...	

Item 9 of the Agenda.

(a) Lighting.

Madras.—For admission of light and air, there should be windows. (a) They should be placed at regular intervals so as to ensure uniformity of light. (The edge of the last window in the north wall should be behind the last row of pupils).

(b) Window sills should not be more than 4 ft. from the ground in rooms in which the scholars are seated at desks. When pupils sit on the floor the sills should come to within $2\frac{1}{2}'$ or $3'$ of the floor level. Windows for subsidiary lighting may have their sills more than $4'$ from the floor.

(c) The window area should not be less than one-fifth of the floor area and wherever possible the principal lighting should be from the north.

Bombay.—(a), (b), (c) as in Madras.

(d) The light from north windows should not be masked by sun bonnets or by verandahs except in localities where the sun glare is very great.

(e) The windows on the south aspect are subsidiary and are chiefly for ventilation.

(f) Sky-lights properly so called should never be placed in class rooms. Where, owing to difficulties of situation, some form of top lighting is unavoidable, the best form is that commonly adopted in factories and machine shops with the light coming in from the north.

Bangal.—Windows serve two purposes—(a) admission of light, (b) admission of air. No window should be provided merely for external architectural effect. Every part and corner of the school should be well lighted, and the sky should be visible from every seat in a class-room. To fulfil this requirement, the angle of aperture should not be less than five degrees of an arc in any part of the room.

Unilateral lighting of class-rooms should be adopted, the light being admitted from the left side of the pupils. Where left light is impossible, right light may be allowed. Direct front light is not allowable in any case. The whole window area should not be less than one-fifth of the floor space, but in very confined sites one-fourth may be required. The main effective light, but not less than one-half of the prescribed window area, should

be admitted from windows with a north aspect. Windows on the south aspect, if provided, should be merely subsidiary and chiefly for ventilation.

Except in localities where the sun glare is very great, the light from the north windows should not be masked by any sun bonnet or hood, shade or verandah.

The windows on the north may be placed at regular distances so as to ensure uniformity of light. They should be placed as far to the rear of the class-room as possible. The edge (glassline) of the last window (the window furthest to the teacher) in the north wall should be behind the last row of pupils.

The wall at the teacher's end should be left blank or blind (windowless) for a length of nine feet, as this space is kept between the teacher and the front of pupils.

The mullions or piers between the windows should be as narrow as safety of construction will permit, as thick heavy mullions not only obstruct a great amount of light, but they also use up a great deal of the effective wall space. To add strength and reduce width, iron mullions with heavy flanges or webs should be used. The window frames may be directly bolted to such mullions, the outer portions of which may be made wedge-shaped, running nearly to a sharp edge.

The window sills should be placed not more than four feet and not less than three feet and a half above the floor of rooms in which the pupils are seated at desks. For rooms in which the pupils sit on the floor, the sills should come to within three or two and a half feet.

The window heads should reach as near the ceiling as possible, which need not be more than ten to twelve inches. The tops of the glass surface of the windows should not be less than twelve feet above the floor. Unless the tops of the windows be more than fourteen feet above the floor, the plan should show no space more than 24 feet from the window wall in any class-room.

All window spaces should be fitted with hinged and glazed windows. All wood-work around the window and between the glass panes should be bevelled. The panes of windows may be either of clear (not frosted or ground) or ribbed (prismatic) glass, but the glass panes should not be broken up too much.

Skylights properly so called should not be placed in school-rooms or class-rooms. They may be allowed in central halls having ridge or apex ventilation.

Bihar has issued instructions similar to Madras.

Artificial Lighting.

Bengal.—If the prescribed rules are followed to provide the admission of the requisite amount of day light, artificial light should not be needed for day schools in India. But in evening and night schools, as well as in school buildings used for educational purposes after school hours, artificial illumination should be provided. Direct diffused lighting should be the rule. Indirect light, such as light reflected from the ceiling and coloured surfaces, should be avoided.

A proper system of school-room illumination should be installed to meet the following requirements:—

- (a) The light should be produced with as little contamination of the air as possible.
- (b) The heat production should be low.

- (c) The light should not be rich in the rays of the spectrum which are irritating to the eye.
- (d) The light should be steady and the lamps should not be subject to rapid deterioration.
- (e) The light should be well diffused so as to secure uniform illumination throughout the room.
- (f) The light should be properly shaded so as to prevent points of great brilliancy from coming within the field of vision and to avoid annoying and disturbing shadows from falling on the work.
- (g) The amount of light necessary varies according to the purpose for which it is required. More is needed for fine work than for the ordinary class exercises. The illumination of the work on the desk should be somewhat superior to that of the surrounding objects, but it should not be greatly in excess. The proper location of the lighting fixtures is of the greatest importance.
- (h) The cost of installation and maintenance should be moderate.
- (i) The fixtures should be of durable construction and easy to clean and repair.

Electric incandescent gas, or acetylene gas light is to be preferred in the order stated, and should be used with diffusing prismatic reflectors. The spacing of lights may be at intervals of six feet, measured from the first light, placed a little to the left of the first seat.

(b) Heating.

Bengal.—Provision should be made for the warming during the winter of schools located in cold or hilly places. 30 feet of heating surface should be allowed for every thousand cubic feet of air space. A low pressure hot water system in conjunction with open fires will be most advantageous. The fire-place should be located at the teacher's end of the room in the corner remote from the door, in order to keep space for the teacher's desk and blackboard. Radiations should be placed under the windows. A thermostat should be fixed in every class-room heated by an indirect method.

(c) Ventilation.

Madras, Bombay, Bengal.—Unless there are windows reaching to the top of the wall and capable of being opened, ventilators are necessary near the top of the wall on both the north and south aspects. The ventilators should be regularly distributed in the same way as the windows. For each pupil 48 square inches of open ventilator should be provided. Gratings in floors should not be allowed. Such a provision will not, however, be necessary when the walls are short and the space above their height is enclosed by bamboo or other lattice work.

(d) Sanitation.

Bengal.—In sewered towns where it is practicable to install water-closets no such closet may be located within the school building, but at a short distance, and be completely disconnected from the latter. The distance should not be less than twenty feet.

The septic tank system may be adopted in country schools.

Service privies may be provided only when sweepers are available; whose work can be supervised by a member of the school staff. Such

privies should not be placed nearer than forty feet to any school building. They should be so situated that the prevailing wind will not blow from them in the direction of the school.

Separate privies and approaches should be provided for boys and girls, and the same passages or corridors may not be used by both the sexes. Separate provision for teachers and pupils should also be made.

No privy shall be located within a distance of fifty feet from any source of water supply.

The number of closets for boys, girls and infants may be provided on the following scale:—

	Number of pupils.	Boys.	Girls.	Infants.	Girls and Infants.
Under . . .	30	1	2	2	2
” . . .	50	2	3	3	3
” . . .	70	2	4	4	4
” . . .	100	3	5	5	5
” . . .	150	3	6	6	6
” . . .	200	4	8	8	7
” . . .	300	5	12	12	8
” . . .	500	8	20	20	12

For boys, urinal stalls at the rate of 4 per cent, occupying 10 running feet of urinal space should be provided in addition to closets.

Urinals should be of impermeable material for their floors, sides and backs—patent stone, glazed tiles, good quality of slate, hard seamless marble, enameled stone ware or white glass slabs or plates shall be admissible for the purpose.

No closet should be less than two feet and a half, and not more than three feet, in width in the clear with a minimum depth of four feet. More room may be allowed to teachers and children. Only one set may be allowed in each closet.

A double row of privies or urinals placed back to back should be disallowed.

Every privy or urinal should be so constructed as to be flooded with sunlight during some part of each clear day, and under any condition, should be thoroughly lighted and ventilated.

The privy floor should be made of some impervious material, with an even surface capable of resisting disintegration and of being properly washed down. It should be sloped inwards.

The facings of the privy walls should be of a smooth, non-absorbant substance, and should extend to not less than three feet above the seats or squatting plates. Light glazed bricks or white glazed tiles from suitable wall surfaces, as they prevent the absorption of light and render it easy to scrub and disinfect them. Unglazed bricks cannot be allowed to be used for privies, as they are absorbant and may become highly offensive. Iron sheeting either flat or corrugated, may be allowed if properly attended to.

Every closet should be provided with a $\frac{3}{4}$ th door short of both bottom and top—not less than three inches at the bottom and not less than 6 inches at the top. The tops of the back walls should have rectangular ventilators.

As a screen for privies, a fenestrated brick wall or a sheet of corrugated iron may be used.

All water-closets and urinals should be provided with proper service cisterns, which, together with the outlet therefrom, should be capable of giving a sufficient flush.

Item 10 of the Agenda.

Hostels and Dormitories.

Bengal.—In the case of single rooms or cubicles the minimum floor space to be provided should be 96 square feet. Each such room or cubicle should be independently ventilated or lighted.

Rooms for the accommodation of not less than three, but not more than four, occupants should provide 65 square feet of floor space a head, and those for five or more pupils a minimum of 60 square feet a head. Sleeping-rooms, each measuring $16\frac{1}{2}' \times 16'$ and intended for the accommodation of four inmates, are recommended as convenient and economical in design.

The minimum floor area to be provided in dormitories should not be less than 60 square feet a head.

The scale of privy accommodation should be double of that prescribed for day schools (under item 9). Urinals may be in the same proportion as for day schools.

Item 10 of the Agenda—*contd.*

Province.	Type of room.	Dimensions of a room in a Boarding House			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
Punjab . . .	<i>Boarding House for 100 boys.</i>					
	(a) 4 Dormitories each for 16 boys.	45	18	15	58,500	Verandah 8 ft. wide.
	(b) 2 Dormitories each for 18 boys.	50	18	15	...	
	(c) 1 Reading room.	18	20	15	...	
	(d) 2nd Reading room.	19	19	15	...	
	(e) Sport's Go-down	18	10 $\frac{3}{4}$	15	...	
	(f) Bathing place.	19'10 $\frac{1}{2}$ "	19 $\frac{3}{4}$	11	...	
	(g) Space for lavatories.	29'1 $\frac{1}{2}$ "	7 $\frac{3}{4}$	...	...
	(h) Office . . .	12	18	15	...	
	(i) Superintendent's sitting room	16	12	15	...	
	(j) Superintendent's living room	12	12	15	...	
	(k) Bath room and Kitchen for Supdt. (each).	7	7	11	...	
	(l) 3 Dining rooms.	20	12	12	...	
	(m) 3 Kitchen rooms.	15	16	12	...	
	(n) 3 Store rooms	8	8	10	...	
(o) 3 Fuel rooms	8	7 $\frac{1}{4}$	10	...		
(p) 3 Water rooms	6	6	10	...		
(q) 3 Washing platforms.	3	5	...	...

Item 10 of the Agenda—*contd.*

Province.	Type of room.	Dimensions of a room in a Boarding House.			Estimated cost. Rs.	Remarks.
		Length ft.	Breadth ft.	Height ft.		
	(r) 2 rooms for cooks	12	8	10	...	
	(s) 4 Servants rooms.	12	10	10	...	Verandah 6-ft. wide.
	(t) 2 rooms for sweepers.	12	10	10	...	Do.
	<i>Boarding House for 50 boys.</i>					
	(a) 2 Dormitories for 16 boys.	18	45	15	R	o Verandah 8-ft. wide.
	(b) 1 Dormitory for 18 boys.	50	18	15	...	Do.
	(c) 1 Reading room.	19	19	15	...	Verandah 6-ft. wide.
	(d) Bathing place	19 ³ / ₄	9'7 ¹ / ₂ "	11	...	Do.
	(e) Space for Lavatories.	10'10 ¹ / ₂ "	7 (approx.)	...	...	Do.
	(f) Office ...	12	18	15	...	
	(g) Superintendent's sitting room.	16	12	15	...	Verandah 7-ft. wide.
	(h) Superintendent's living room.	12	12	15	...	
	(i) Superintendent's Bath room.	7	7	11	...	
	(j) Superintendent's kitchen.	7	10	11	...	
	(k) 2 Dining rooms.	20	12	12	...	
	(l) 2 Kitchen rooms.	15	16	12	...	
	(m) 2 Store rooms	8	8	10	...	
	(n) 2 Fuel Godown	8	7 ¹ / ₂	10	...	
	(o) 2 Water rooms	6	6	10	...	
	(p) 2 Cooks' quarters.	8	12	10	...	
	(q) 2 Servants' rooms.	12	10	10	...	Verandah 6-ft. wide.
	(r) 1 sweeper quarter.	12	10	10	...	Do.

ANNEXURE III.

Note on Pise' system prepared by Mr. Sheikh Ahmad, Lahore.

The art of building is one of the three fundamental needs of society for it provides shelter from the elements. Although in many schools students are taught to satisfy two of the three dominant needs, that is food and clothing, it is a pity that not enough emphasis is given to the art of living, with the consequence that the people of India are quite unaware of the fact that nice homes, beautiful school buildings and healthy surroundings will affect the future health and happiness of their children. It is generally recognised that the first impression created upon the mind of a child and his environments, are the two factors which influence his outlook on life. It is for this reason that equipment and building of schools along with well trained and efficient teachers are receiving more attention all over the world. In a place like India which has been for centuries the home of the finest of crafts and of industries, the present deficiency of new ideas and designs in the industrial produce of the country, can be ascribed to the lack of proper home and school environment which have gradually cramped the growth of artistic and aesthetic appreciation of the people.

In London a test was carried out to prove the authenticity of the idea that bad surroundings have a bad effect upon the mind of a child. It showed that the children bred in the slums were dull in matters of art, for their background and environment made no appeal to their aesthetic sensibility. It is for this reason I feel that along with reading, writing and arithmetic, the new generation of India and especially of her villages should be given instruction to build simple, cheap, appropriate and charming houses which will satisfy the growing needs of the educated class of people. Otherwise the dissatisfaction of being in ugly surroundings will drive them out of their homes and they will not be of any service or value for the future development of the countryside.

To carry out this work to a successful issue we should commence with the building of schools, for it is here that the new generation will spend most of its time. The experience of beautifully designed, well ventilated tastefully decorated, cool, or easily heated, school buildings will automatically affect the home life of the people in general and their industries in particular. Where new school buildings are not necessary, the students can carry out repairs in the existing buildings in accordance with the scheme. The teachers and the students may be trained to look after the repair of the buildings and apart from saving a considerable amount of money for the Department of Education, they will learn a most useful craft. Some of them may later take up the study of architecture seriously and become architects and town planners, and continue to work as a good architect in harmony with the natural beauty of each locality throughout India.

Using local labour and materials.—The following school building project may appear difficult on paper but in reality it is very practical and comparatively quite simple, because of the following facts:—

1. In building schools or houses, the local materials such as wood, stone or bricks and earth are employed to their best advantage. Earth is a material which is identified with the neighbourhood and when used properly will not only be cheap but very durable, growing in strength day by day. The defect in the present method of building with mud or other types of earth, carried out in some parts of India, is that it has neither the durability nor the beauty of *Pise* work. This

is because of the inherent faulty system in choice, treatment of earth and construction. This includes the foundation, actual building of the walls and their waterproof coating and plastering.

2. The equipment needed for *Pise* work is not only very small but very inexpensive. Hardly a dozen tools are needed for ramming the earth and a few types of shuttering and a few shapes of moulds for making *Pise* blocks.
3. In the beginning average students and teachers under the guidance of a mistry or two, can build beautiful and airy school buildings in a very short time when the design is supplied by the Department of Education under whose expert advice the entire work will be carried out. After a short training the teacher himself can take over charge of the construction. For the durability of *Pise* building, it is essential that it should have a pucca foundation which can be constructed either from the local stone or bricks. In contrast to an entire brick building, *Pise* building needs only a nine inch foundation which obviously saves time, labour and expense.
4. Similarly the construction of *Pise* walls is a very quick process and it is possible to build a structure in about one-third of the usual time.
5. The strength of *Pise* structure depends upon the choice of the earth and the special method of ramming, whereby all the air is driven from the material and the whole building becomes a homogeneous unit which strengthens as the years go by. I remember in America seeing a farmer trying to break an old *Pise* wall for which he was using a pick-axe as one would for a cement building.
6. Another beauty of *Pise* building is that it is comparatively cool in summer and warm in winter. The upkeep of these buildings is negligible. The usual colour of the building is light ochre but it is also possible to give it any other colour along with the waterproof coating.
7. It is desirable to evolve new and suitable designs for the various climates of the country. In cold climates the arrangement of the class rooms should be such that four rooms should be heated at once with one fire place which means a saving in the building and heating expense as well as leaving more space for the classes. For the warm climates cross ventilation, wide verandahs and the use of longer windows instead of too many doors is very essential.

The furniture of the future school buildings should be in harmony with the simplicity of the building. The designer should take into consideration the fact that it should be beautiful, useful and comfortable, for it is only when utility is combined with beauty that perfection is reached.

ANNEXURE IV.

Note on primary school buildings in Rural Areas by the Director of Public Instruction, Central Provinces and Berar.

The various types of buildings have all the common defect that they admit insufficient light, while most of them are insufficiently ventilated. This is largely due to the obsession prevalent both among school authorities and among the villagers themselves that a school building should approximate to a village house, quite forgetting that the village house is not used for reading or writing but only for cooking and sleeping and therefore does not require the same degree of lighting. It is also due to the familiarity of the school authorities with the old standard pattern of a four-walled brick building. In every type of building, then, whether the roof has rested on the walls or not, walls have always been built, right up to the roof either of solid mud, in cases where the walls were built to support the roof, or thin Sindhi walls of bamboo coated in mud and plaster, where the walls were intended merely for lateral protection against the wind and rain. But in every case the effect was the same. The day light was completely blotted out, except to the extent that it might enter through the diminutive windows high up in the wall, or through the single door, usually kept closed. The reasons usually given for building these Sindhi walls right up to the roof are two:—one for protection against rain and the other for protection against thieves. Neither are valid. Lateral protection against rain, except on the wind-ward side, would be afforded equally well by half-walls stopping short of the height of the exterior edge of the eaves: the intervening space between the half-wall and the roof could either be open or filled with bamboo lattice work. As regards protection against thieves, it is well-known that school masters place no credence in the power of the flimsy Sindhi walls to keep off thieves who, in any case, could make their entry through the thatched or tiled roof with the greatest of ease. And so, as a matter of fact, village Headmasters never leave anything of value in the school premises, but usually, make a habit of removing daily the school registers and the Time-Piece. (I have heard of only one case of theft from the village school, *viz.*, the Time-Piece, and this only in a single instance).

2. It must, however, be admitted that the need for protection against rain is a very real need, and no Sindhi wall or even solid mud-wall will stand up to a monsoon if not given lateral as well as vertical protection from the rain. A solid brick wall requires, of course, only vertical protection: but few villages know how to make burnt bricks; and the cost of importing bricks is prohibitive. Lateral protection to mud and Sindhi walls is sought to be given in many cases by placing Tattis made of grass against the wall. This is to a certain extent effective, but tends even further to diminish the scanty allotment of day-light, and in the monsoon the class rooms become darker than ever. There is no doubt that the staggering statistics of defective eye sight in high schools and colleges revealed by Medical Inspection is mainly, if not entirely, due to reading and writing in deficient day-light in our primary schools.

3. It is clear, therefore, that a new type of school must be designed for rural areas and a design, which it is believed will meet all requirements, is submitted herewith. The following points should be noticed:—

- (i) Instead of the usual marquee-tent-shaped roof, a shed-shape has been substituted. This will permit of indefinite extension as fresh class rooms are required.

- (ii) The school is to be orientated in such manner that the shorter side of the oblong faces the prevailing monsoon wind.
- (iii) On this side a wall of weather-boards is designed reaching from the ground right up to the apex of the roof, thus affording complete lateral protection from rain.
- (iv) No brick is employed at all in the building, the plinth consisting of mud overlaid with cow-dung.
- (v) The roof projects 3 ft. on the wind-ward side, thus screening the weather-board wall from roof drippings : it also projects 3 ft. on the lateral side sufficiently to cover the verandahs and afford protection from the wet to the mud half-walls that enclose the class rooms on the lateral sides.
- (vi) The bamboo lattice work which reaches from the mud half-wall to the roof supplies adequate ventilation and lighting for the class room, and at the same time permits of the lowering of rolled matting in the event of excessive wind, dust or glare. Naturally the matting will only be let down on one side at a time, which will ensure adequate ventilation and lighting from the opposite side.
- (vii) The interior accommodation, 16×24 ft., is designed to suit a single class of 40 pupils, allowing 8 sq. ft. per pupil and a further frontage of 4×16 ft. for the master and the black board. In the event of small enrolment, which is inevitable in rural circumstances where it not infrequently happens that the male population of school-going age of the centre and the feeder villages combined does not exceed 40, it will be possible to hold 2, 3 or even 4 classes in this single room without undue congestion; and according to the demands of classes or the distribution of light at different times of the day, classes can be held facing in any of the four directions. As the school expands with the growing popularity of education and, it is to be hoped, the gradually increasing attendance of girl pupils, the class room space can be easily extended by prolonging the roof in the direction away from the wind-ward side and prolonging the lateral half-walls to the same extent.
- (viii) Since adequate light and ventilation are provided by the lattice work it is not necessary to provide them through the class room entrance, which has therefore been confined in the plan to a single entrance on one of the lateral sides only at the end of the class room farthest from the wind-ward side.
- (ix) All the materials employed in the construction, with the exception of the weather-boards are such as are available to the villagers free of cost, or can be so made available by the Malguzar or the Forest Department; and the labour required for their utilization in the erection of school buildings is such as the villagers themselves can supply. Even nails (except for fixing the weather-boards) are not necessary, as jointures can be effected by the simple method of creeper lashings, as the villagers use in the construction of their own dwellings.
- (x) As regards the weather-boards, at present in many villages of the Central Provinces and Berar there is no carpenter. The only implement the villager uses in dressing his wood is the axe. Consequently it is not to be expected that the villagers will be able to fashion their own weather-boards. Here again, nails would be required to fasten the weather-boards to the

ballis (vertical wooden posts) and these the villagers will not be able to supply. It will therefore be incumbent on the school authority or the Government to supply the weather-boards and the requisite nails. It should not be unduly optimistic to hope that the Forest Department will supply the necessary weather-boards and that the school authority will supply the necessary nails, until such time as the introduction of Manual Training into the Primary School Curriculum will secure in each village an adequate knowledge of the use of the carpenter's plane, the saw and the hammer.

- (xi) It is estimated that the cost of erecting a single class room, 16×24 ft. on the plan submitted will not exceed Rs. 18 (the cost to the Forest Department and the school authority for weather-boards and nails) assuming that the other materials are provided by the villagers, that the Forest Department or the Malguzar makes no charge for the cutting of the timber and bamboos necessary, and that the villagers, as they have already done in many instances, volunteer their labour. However, even if this is not the case and the school is erected by a contractor it is estimated that the total cost should not exceed Rs. 162.

4. In cities and municipalities where the population is relatively, constant and the demand for primary schools permanent, we may continue to build solid buildings of brick or stone. But in rural areas the population is far more fluctuating; villages become deserted, schools have to be closed and re-opened at new centres: and this is an additional reason for urging the adoption of primary school buildings of the type set forth in the plan (placed on the table). Such a building, with annual repairs to its roof and annual renewals of its cow-dung floor covering and annual plastering of its half-mud walls, should last for at least 30 years, which is looking sufficiently far ahead in the case of village schools. And if at the end of that time the village still remains and the school-going population is sufficient to justify a continuance of the school, it can be rebuilt for the same infinitesimal cost.

5. The building of such schools is of course without prejudice to the desirability of holding classes in the open under the shade of a big tree when weather conditions are favourable.

ANNEXURE V.

Furniture and Equipment.

Rooms for Nursery and Infants Classes.—Expensive and elaborate equipment is not necessary. Simple well-designed toys will do much to stimulate a child's imagination and some educationists consider that scientifically designed play-material covering the progressive stages from 2 to 7 is essential. Where this is provided, special storage will be required.

The following articles may be found useful in equipping a Kindergarten room:—Swing, Climbing Rope, Rings, Slide, Balancing Board. Blackboards should either extend continuously along three sides of the room or should be in frames 4 to 6 feet long, fixed low, on the wall so that children can draw on them easily. As furniture in these rooms should be easily movable, nesting tables and chairs are recommended. Chairs should be so designed as to ensure good posture: a number of different sizes should be available.

Science laboratories.—There should be three suspension beams running the full length of the laboratory for demonstration purposes. These should be 3 inches wide, 9 inches deep below the ceiling and firm enough to support the head of a ladder. Ordinary plaster walls are not suitable for laboratories. Walls should be surfaced with some form of internal facing bricks or with plastic paint over a skim coat of plaster. For the lower $4\frac{1}{2}$ ft. of the wall, wherever possible, erosion-proof panels should be provided. Ceilings should be painted to avoid absorption of moisture and gases.

Up to and including the normal High School stage there is no need for heavy or elaborate furniture. A Demonstration bench about 8 ft. by 2 ft. to $2\frac{1}{2}$ ft., provided with a flap at one end to increase its length to 10 ft. and with a sink at the other end is recommended. Drawers and cupboards should be fitted on the teacher's side and the teacher's platform should be raised by 6 inches. A blackboard approximately 12 ft. by 4 ft. should be fixed to the wall behind the teacher's desk. Where a lantern or epidiascope is used, it should be projected from one end of the teacher's bench and part of the opposite wall should be left free and suitably treated for use as a screen.

The old type of bench is no longer regarded as necessary: ordinary firm tables with drawers and seasoned teak tops are quite adequate. Whether these should be double, *i.e.*, broad enough for pupils to work on two sides or single is a question which will have to be settled in relation to the dimensions of the laboratory and the maximum number likely to use it at any time. The usual dimension of double benches are 5 ft. long, $3\frac{1}{2}$ ft. wide, $2\frac{1}{2}$ ft. high. A wood and metal work bench should be provided for the repair of equipment. Two sinks, in addition to the one in the demonstration bench should also be provided. Gas and electric points at intervals are a great asset. Fume cupboards are only necessary when advanced work is done.

Practical Rooms—Middle and High Schools.—Practical instruction is being increasingly recognised as a desirable feature of the curriculums even in schools without any effective industrial bias. Schools of the modern type usually provide practical rooms or sheds where wood work, metal work, spinning, weaving, lino-cutting, needle-work, leather work and other crafts may be taught. Large schools may be able to afford a separate practical room for each craft, but in small schools each room will almost certainly be used for several purposes and must be equipped and furnished accordingly. Ample storage preferably in the form of a separate room is essential for every practical room and the dimensions of the store-room should be determined by the nature of the material to be stored *e.g.*, wood stores should be long enough to take the lengths of timber normally used. Store-rooms should also be easily accessible from the practical rooms. Cupboards, if provided in the practical room itself, should not be allowed to project too far from the walls or to encroach unduly on floor space.

If a water supply exists, one or two sinks should be provided in every practical room. Electric or gas points are also most useful but it is realised that in a great many cases the necessary supplies will not be available. One long fixed bench which may be combined with built-in cupboards should be placed under the main windows.

(a) *Wood work.*—The most convenient size for a wood work bench for 2 boys is about 5 feet by 2 ft. 6 inches. There should be clearance between benches of 3 ft. to 3 ft. 6 inches in each direction. In determining the height of benches regard should be had to the size of boy likely to use them; 27" for boys between 11 and 14, and 30" for boys over 14, may be taken as rough guides, except in those areas where the average stature varies considerably from the normal. An additional bench along one side of the room will also

be useful. The floor of the wood work room should be non-resonant and of a material which will not blunt tools if they are dropped on it. There should be plenty of blank wall-space and sufficient wall blackboards. A small first aid cupboard is desirable.

(b) *Metal Work*.—Equipment for light metal work may be provided at a moderate cost. Most of the work can be done with vices and benches round the room or down the centre but a solid floor must be provided for forges, muffles etc. Additional equipment in the shape of lathes or drilling and grinding machines will be needed for the senior classes in Technical High Schools. An adequate course in Wood and Metal Work can be provided in Middle and High Schools without the use of any power-driven machinery.

(c) *Spinning and Weaving*.—No special furnishing is required for spinning. For weaving, the furnishing will vary according to the size and pattern of the looms. The type of loom in which the leg space is dug out of the floor, is most suitable for the drier parts of the country. In placing the looms roughly the same clearances will be needed as in the case of wood work benches.

(d) *Art rooms*.—The walls and ceilings should be treated, in light, neutral tints in order not to confuse colour judgment. Free wall space is valuable for hanging children's work and exhibiting collections of drawings and paintings.

Furnishing may be of two main types, either in Western or in the traditional Indian style. Furniture in either case, should be light and easily movable, so that grouping may be varied as required. In the Indian style, the child sits on the floor on a piece of matting or board and works at a desk with a flat top. An alternative arrangement is to furnish the Art room with chairs with sloping backs and light trestles. Tables with adjustable tops are, however, sometimes preferred, particularly where light crafts are done in the Art room. The following equipment is also recommended :—

1. One long bench with teak top under the high windows of one wall.
2. Cupboards under the bench for uncompleted work.
3. Two sinks not less than 2 ft. by 1 ft. 6 inches.
4. A small blackboard for demonstration.
5. Shelves for display of models and pinrails for drawings.

There should be a store, not less than 90 sq. ft. in area, preferably with a window at one end and fitted with a large sink and draining board and shelves of varying heights. In addition, there should be built-in cupboards along one wall preferably fitted with sliding doors.

(e) *Domestic Science—Cookery and Laundry*.—Floors should be of a material which allows them to be kept scrupulously clean with the minimum labour. Many suitable types of patent flooring material are on the market. Walls should be lined with tiles or with mosaic to a height of 2 ft. above the sinks, cookers, and work tables, so that splashes can be readily cleaned off. The cooking and laundry equipment provided should be similar to that which the girls will be likely to use in their own houses. In places where water, gas and electric supplies are already or are likely to become available in the near future, there is much to be said for teaching the use of gas and electric stoves, irons, etc. In such cases the placing of the points needs careful consideration. Other equipment should be the the sinks with draining boards, 3 ft. by 1 ft. by 10 inches, one floor sink in another part of the room and a refrigerator, wherever possible.

For laundry work in addition to an adequate provision of sinks,—there should be at least two ironing tables with flaps. Other tables of a movable type, at least 5 ft. 6 inches, by 2 ft. 6 inches, with working spaces on either side may be provided. They should be fitted with drawers to take utensils. Stools of the nesting type are to be preferred. A blackboard of 6 ft. by 3 ft. in two parts hinged to form cupboard doors should also be provided.

Science Store and Dark Room—Ample storage should be provided behind the teacher's demonstration bench. Cupboards 1 ft. deep should be planned under the blackboard with a cupboard at least 2 ft. 6 inches deep at one side for storing bells, jars, bottles, etc. The store room, should run the full width of the Science room and should be directly accessible from it. One end may be partitioned off as a dark room so that the store room can still be available when the dark room is in use. These rooms should not have windows but should be carefully ventilated. Adequate shelves for materials and equipment must be provided and there should be a sink with hot and cold water in the dark room. In schools where Botany and Biology are taken, facilities for studying plant and animal life should be available. A greenhouse or Wardian cases for growing botanical specimens are essential and arrangements for housing live animals are desirable.

ANNEXURE VI.

Furniture and Equipment.

Halls.—Nesting chairs or wood folding chairs of varying sizes should be provided, so that the floor can be easily cleared for such purposes as physical training, rhythmical exercises etc. The provision of a stage with a proscenium is recommended. Storage can be conveniently arranged under the stage. Sectional or removable platforms are not recommended. The sections are not easy to store when not in use and such platforms are much less useful for dramatics.

Gymnasia.—The gymnasium floor is of great importance in view of the wear it receives. An open grained timber is to be preferred, soft woods tend to splinter and hardwoods become slippery. The placing both of fixed and movable equipment must be carefully considered in the planning and construction of a gymnasium. The main apparatus will consist of wall bars, beams, climbing ropes, and window ladders. This apparatus should be obtained from and fixed by a specialist. The strengthening of the walls and ceiling both to support apparatus and to resist the effect of constant vibration is of course a matter for the architect.

Libraries.—Book shelves should be at right angles to the longer walls and there should be a window to each of the alcoves so formed. Metal shelves are to be preferred to wooden ones but where metal is not available some hard wood impervious to weather and insects should be used. Two important considerations in planning a library are that the books should be as accessible as possible and that the lighting, natural or artificial, should be adequate.

Dining rooms.—The desirability of arranging for pupils to take a meal or meals at school has been generally accepted. Where a cooked meal is provided, the dining room and the kitchen will have to be on a more elaborate scale than where milk and light meals only are served from a buffet. The equipment of the kitchen will depend on the nature of the meals to be provided and local requirements.

The floor of the dining hall should be capable of being easily washed and cleaned. Wooden chairs with rubber tips to avoid noise may be provided for children to sit and if tables are provided, the top may be

of teak or of 'patent stone' or marble slabs wherever such materials are cheap. Where cooked meals in Indian style are served, table tops of patent stone or some metal are preferable as they are not susceptible to staining and are easily cleaned. Separate tables for not more than 10 children each should be provided. Suitable cupboard space should be provided for storing plates, cups and glasses.

Hostels.—With regard to the articles of furniture in the hostels the following suggestions are made :—

Beds should be constructed in such a way (either of metal or wood) as to afford little scope for harbouring bugs and other vermin. For each bed there should be one small bed-side table, one chair, a mirror fixed to the wall at a suitable height, a shelf for books and a deep cupboard built into the wall or an almirah.

The reading room and the common room may be furnished in the same way as they are in the ordinary day schools. Kitchen and dining rooms may also be similarly furnished.

ANNEXURE VII.

SCHOOL PLANNING.

(The following suggestions are extracted from "The Design of Nursery and Elementary Schools, Architectural Press, London, S. W. I, 1938.")

Classrooms.—There are many opposing ideas about the planning and disposition of classrooms. At present ideas are in an experimental stage and many experiments are still on paper.

In describing the possible disposition of classrooms, arguments are given for and against each type, based on information collected from recently built schools. As a general principle, classrooms should be grouped together as a separate unit of the plan: assembly hall, library, classrooms, science rooms, practical rooms, domestic science rooms, workshop—these are distinct departments and should be planned so that they can be appreciated as such. And for all types there are two warning signals: firstly, the ultimate objective is not merely to provide the maximum sunlight and air, but to give every child the maximum opportunity for health and interest in his work. Secondly, in the enthusiasm for "freer planning" it must be remembered that the most free plan is not necessarily the most attenuated, but rather the one which functions most easily and pleasantly, having coherence in all its parts.

A. Courtyard.

The grouping of classrooms round a courtyard became a habit as a result of confined sites allotted to schools in built-up areas. Though entirely unnecessary on generous sites, the habit still persists. Financial stringency is usually the first cause of this type.

Advantages.—Compactness of circulation. Economy.

Disadvantages.—Impossible for all classrooms (and practical rooms) to be given good orientation. Over-shadowing of rooms facing courtyard, particularly if building has two or more storeys. Cumbersome effect, shut-in feeling. Difficulties of adequate sound separation. Inflexibility.

B. Single Series

This is becoming the most common type for schools built on adequate sites. It is most successful when planned as a single floor with not more than eight class-rooms. With more than eight classrooms the continuous corridor becomes tedious. When there is only one floor, supplementary

lighting and cross ventilation can be provided by forming a continuous range of windows above the corridor roof level but when there are two or more storeys supplementary lighting to lower floors can only be provided by means of windows on both sides of the corridor, cross-ventilation by means of ducts below floors of upper corridors. Walls between classrooms can be made sufficiently sound proof by planning cupboards part of the way up the wall and using insulation board as lining for the remainder. Most sound leakage is likely to be through open windows. A glass sound-baffle, projecting about four feet between windows of classrooms, will deflect a considerable amount of sound, and windows themselves, if made to open in the right direction, provide a certain amount of deflection. Low shrubs also help to absorb sound and at the same time form visual shields for outdoor teaching spaces.

Advantages.—Simplicity, easy circulation, economical construction.

Disadvantages.—Difficulties of overcoming sound leakage. Only one full window-wall.

C. Separated Single Series.

This type is only suitable for single-storey buildings. It provides outdoor teaching spaces between classrooms. A variation is to have two classrooms sharing one outdoor teaching space.

D. Double Series.

Planning with central corridors is noticeable in some recent "model" schemes. It is only possible in single-storey buildings, the corridor roof being kept low in order to get light and ventilation in the upper parts of inner walls. Domestic service rooms, art and needle-work rooms are usually given the less sunny aspect. Corridors can be lighted and ventilated by the familiar dome method.

Advantages.—Reduced length of corridor. Reduced cost of construction. Variety of outlook.

Disadvantages.—Increased width of corridor (to cope with greater congestion). Sense of confinement in corridor (in spite of increased width). Wrong orientation for some classrooms.

E. Separated Double Series.

This type covers the same length as type B, while providing the intermediate outdoor teaching spaces of type C. It works best when classrooms are orientated with window-walls facing east and west.

Advantages.—Sound separation. Sheltered and shielded outdoor teaching spaces. Adequate lighting and ventilation. Variety of outlook.

Disadvantages.—Reduced sunlight in half of classrooms. Occasional west sun in teachers' eyes. Expensive.

F. Parallel Series.

An arrangement which has been successfully used in several American Schools. It is particularly suitable where a large number of classrooms have to be planned on one floor. If the spaces between each series are wide enough, an attractively planted playlawn can be provided for every four or five classrooms. It is reasonable to make the main corridor a covered way, or, if attached to a covered play space, screened by windows on one side only.

Advantages.—Easy and pleasant circulation. Opportunity for planning covered way, cloakrooms and lavatories along side main corridor without taking away light and outlook. Good orientation and variety of

outlook for all classrooms. Avoidance of monotony. Double window wall in end classrooms. Easy to add additional classrooms.

Disadvantages.—Difficulties of overcoming sound leakage. Only one full window wall in most classrooms. Additional lengths of corridor. Expensive.

G. Elbow Access, Square.

Its object is to get two parallel window-walls in each classroom. The planning becomes more feasible if minor corridors are widened out and used as locker rooms for each pair of classrooms.

Advantages.—Adequate light and ventilation on both sides of classrooms, whether planned on one or two floors. Extension of class outdoors in either direction. Classes undisturbed by circulation in corridor.

Disadvantages.—Sound leakage through windows likely to be exaggerated in small courts, particularly if two storeys high. Small courts difficult to keep attractive. Disturbance of main circulation by constant elbow bends. Extra lengths of corridor. Additional expense, including cleaning and upkeep.

H. Elbow Access, Diagonal.

Not so suitable for two-storey planning as type G. Another variation of this type is to have classrooms in the same formation but directly connected with main corridor the triangular space forming a bay for lockers. This cuts out the second window-wall but eases circulation considerably.

Advantages.—Same as type G *plus* good insulation between class rooms and between outdoor teaching spaces.

Disadvantages.—Even smaller courts than in type G, awkward in shape and difficult to keep attractive. Breaking up of main circulation, extra lengths of corridor, additional expenses.

LIST OF PUBLICATIONS OF THE BUREAU OF
EDUCATION IN INDIA—*contd.*

<i>Serial No</i>	<i>Name of Publications</i>	<i>Year of Publication</i>
23	Report of the Technical Education Committee 1943. (E.C. 16).	
24	Report of the Text Book Committee, 1943. (E.C. 15).	1944
25	Report of the Examination Committee (Technique of Examinations), 1943. (E.C. 17).	1944
26	Report of the Committee of Central Advisory Board of Education appointed to consider the question of Training, Recruitment and condition of service in Universities, etc., together with the decisions of the Board thereon. (E.C. 22).	1945
27	Report of the Central Advisory Board of Education on Post-War Educational Development in India, 1944. (E.C. 13).	1945
28	Volume containing reports of the Committee of Central Advisory Board of Education. (E.C. 14).	1945
29	Report of the Administration Committee of Central Advisory Board of Education.	1945
30	Proceedings of the 11th Meeting of the Central Advisory Board of Education. (E.C. 4 XI)	1945
31	Report of the Agricultural Education Committee of the Central Advisory Board of Education, 1944. (E.C. 20).	1945
32	Proceedings of the 12th Meeting of the Central Advisory Board of Education held at Mysore in January 1946.	1946
33	Report of the Religious Education Committee of the Central Advisory Board of Education.	1946
34	Development of Higher Technical Institutions in India (Interim Report of Sarkar's Committee).	1946
35	Report of the Committee of the Central Advisory Board of Education on selection of pupils for Higher Education.	1946
36	Report of the Central Advisory Board of Education on conditions of service of teachers.	1946

BUREAU OF EDUCATION, INDIA

PAMPHLET No. 16.

Report

of the

Expert Committee

of the

Central Advisory Board of Education

on

UNIFORM INDIAN BRAILLE

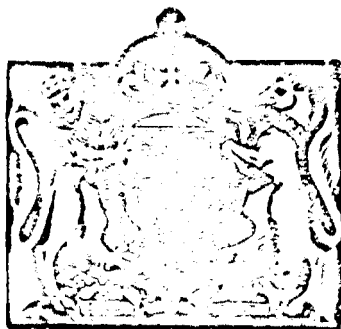
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FOREWORD

While the Uniform Indian Braille Code, drawn up by the Expert Committee appointed by the Central Advisory Board of Education, in the form in which it was finally approved by the Board, is being published for use by schools for the Blind in India it is fitting that a short history of the efforts made in that direction till it attained this final form be placed on record.

The Braille alphabet was invented by Louis Braille, a blind young man in Paris in the year 1829 and has since then come to be used as the medium for reading and writing for the Blind all over the world. From the time when the first school for the Blind was established in India in the eighties of the last century, each school before it could start had to draw up or adopt a Braille Code for the reading and writing of the language of the area which it served. Thus a number of Braille Codes came into existence in India, principal among which were :

1. The Shirreff Braille, used for Urdu, Hindi and Gurmukhi in Northern India.
2. The Shah Braille used for Bengali and Bihari in Calcutta and Patna.
3. The Oriental Braille of Messrs. Knowles and Garthwaite used by the American Mission School for the Blind, now known as Dadar School for the Blind for Marathi.
4. The Indian Braille of Dr. Nilkanthrai used by the Victoria Memorial School for the Blind in Bombay and the Schools for the Blind in Poona and Mahsana.
5. The Mysore Braille used for Tamil, Telugu and Kanarese in Mysore.
6. The Tamil Braille of Miss Askwith for use in the Schools for the Blind in Palamcottah and Poonamallee.
7. The Sindhi Braille used in the School for the Blind in Karachi.

This created a babel for the Indian Blind in general and against this necessity for a Uniform Braille System for various Indian languages was gress was made with the education of the Blind in this country, the state of affairs, which was bound to create greater difficulties as more pro-necessity for a Uniform Braille System for various Indian languages was thus keenly felt. Sporadic attempts by the educationists in the field and the Government were also made but no uniformity of the objective could be arrived at.

2. The first movement for unification began with the publication by the British and Foreign Bible Society of the excellent scholarly piece of joint work "The Oriental Braille" by Rev. J. Knowles and Mr. L. Garthwaite in 1902 and it was circulated for opinion but ultimately did not bear the desired result.

3. The next effort for producing a Uniform Braille Code for Indian languages was made by Mr. P. M. Advani who attended by invitation the fourth meeting of the Central Advisory Board of Education held in New Delhi on the 5th January, 1922 to advise the Board on the education of the blind, and explained to them his scheme for a Uniform Braille.

System for Indian Vernaculars. The Board at this meeting made the following recommendations to the Government of India :

(i) That a Committee should immediately be appointed by the Central Government to go into the subject of the possibility of a Uniform Braille for all Indian or all Indo-Aryan languages and frame such a Uniform system.

(ii) That at least one up-to-date embossing plant should be established somewhere in India to emboss literature for the blind; also a depot and workshop where apparatus for the education of the blind could be produced and made available.

Mr. Advani later read a paper on his Uniform Code at the 2nd Oriental Conference which met in Calcutta and his paper was published in the Calcutta Review of September, 1922.

The Government of India while in full sympathy was unable to accept these recommendations on account of financial stringency prevailing at the time.

4. In January, 1923, on the initiative of the Rev. Canon W. G. Speight, Principal, Palamcottah Schools for the Blind, a Conference of the Workers for the Blind met at Bombay and considered this subject and resolved :

"That this Conference strongly recommends that all the Braille alphabets at present in use in India shall be thoroughly tested in all the Schools for the Blind with a view to obtaining a complete consensus of opinion thereon".

This consensus of opinion was never achieved as the Conference did not meet again, but Mr. H. D. Chhatrapati, Principal of the Victoria Memorial School for the Blind and brother of Dr. Nilkanthrai continued to press for the adoption of the "Indian Braille" used in his School in all the Schools in India and secured the support of the Government of Bombay for the scheme so that the matter came up again when the reconstituted Central Advisory Board of Education met in December, 1935, but was not considered owing to lack of time. At the 1936 and 1938 meetings of the Central Advisory Board of Education, the subject was also raised in varying forms, but on the strength of the general unfavourable attitude of the Provincial Governments to allot funds for purposes other than for the education of normal children the Board decided that no further action could then be taken in the matter.

5. The National Institute for the Blind, London, also raised the question and in 1932 suggested the setting up of a Braille Printing Press in India, and for that purpose referred to the difficulty caused by the variety of Codes in use in the country. They suggested the formation of an Advisory Committee on the lines of Advisory Committee on the Welfare of the Blind in England. As the majority of the Provincial Governments, to whom this subject was referred by the Government of India, was not in favour of the proposal; it was dropped. In 1936, they again raised the question and suggested that if some of the teachers of the principal Schools for the Blind in India could meet and confer, it might be possible to reach some measure of agreement in the matter.

6. Eventually, at its sixth meeting held at Madras on the 11th and 12th January, 1941, the Central Advisory Board of Education felt that the question of adopting a "Uniform Braille Code" in Schools for the Blind was a matter which called for expert advice. It accordingly asked the Educational Commissioner with the Government of India to appoint a small Committee of experts to go into the question and prepare a report for the Board at its next meeting.

The Educational Commissioner got in touch with the Provincial Governments and asked them to nominate Representatives from their Provinces on this Committee and eventually the following personnel for the Committee was selected which met at New Delhi on the 17th and 18th November, 1941 :—

1. John Sargent, Esq., M.A., C.I.E., Educational Commissioner with the Government of India,—Chairman.
 2. Col. A. M. Dick, Irwin Hospital, New Delhi.
 3. Lt.-Col. E. O'G. Kirwan, C.I.E., I.M.S., Professor of Ophthalmology, Medical College, Calcutta.
 4. Mr. S. C. Roy, M.A., B.L., Lecturer, Calcutta University.
 5. Mrs. Evelyn Roy, Honorary Recording Secretary, Lighthouse for the Blind, Calcutta.
 6. Mr. A. K. Shah, Principal, Calcutta Blind School.
 7. Rev. W. G. Speight, Principal and Manager, Schools for the Blind, Palamcottah, South India.
 8. Mr. R. M. Halder, M. Ed., Principal, Dadar School for the Blind, Bombay.
 9. Mr. H. D. Chhatrapati, B.A., late Principal, Victoria Memorial School for the Blind, Bombay.
 10. Miss Georgina Bateman, Superintendent and Chief Teacher, Blind School, S. P. G. Mission, Ranchi, Bihar.
 11. Rao Saheb W. N. Wadegaonkar, Superintendent, Blind Boys' Institute, Nagpur.
 12. Mr. P. M. Advani, M.A., B.Sc., Principal, School for the Blind, Karachi.
 13. Mahamahopadhyaya Pandit Lachhmi Dhar, M.A., M.O.L., Shastri, St. Stephen's College, Delhi.
- Dr. D. M. Sen, M.A., Ph.D. (London), Secretary, Central Advisory Board of Education, was Secretary of the Committee.

Together with the agenda of the Meeting, each member of the Uniform Braille Committee was supplied with a copy of the note written by Mr. H. D. Chhatrapati on the excellence of the Nilkanthrai Code and its adaptability to all Indian languages, a note by Mr. R. M. Halder on the present position with regard to Codes and the tactual psychology of blind students and one by Mr. S. C. Roy suggesting that the Committee should not allow itself to be led by the protagonist of any particular Code, but must plan things purely from the point of view of the good of the blind, to which fraternity he himself belonged.

Mr. P. M. Advani distributed among the members a new edition of his paper on "A Uniform Braille Code" and there was on the table for reference by members a paper on "Hindustani Uniform Braille" by Mr. K. Bhattacharjee, B.A. (Gallaudet, U.S.A.), Principal, Lady Noyce School for the Deaf and Dumb, New Delhi.

Three main principles had been followed in drawing up the Codes which existed at the time and the new one recommended by Mr. Bhattacharjee, namely,

- (a) Arrangement of the Braille alphabet along the lines of the Standard English Braille and assignation to them, wherever possible, of Indian sounds corresponding to those they represented in English.
- (b) Re-arrangement of the seven lines of Braille so as to give them a horizontal symmetry in addition to the vertical symmetry they already possessed and arranging Indian sounds in their phonetic order against this rearranged scheme, so that related phonetic sounds were obtained from the fundamental one by a Uniform Scheme in each case.
- (c) Re-arrangement of the Braille signs in pairs on the principle of mirror images and assignation of sounds to them on the phonetic principles of Indian alphabets, so as to achieve the same result as in (b).

The protagonists of the three Schemes were represented on the Committee and after a threadbare discussion of all points, arrived at the following main conclusions and recommendations :

I. That in order to promote the development of the education of the blind in a systematic and co-ordinated manner, it is essential to adopt a Uniform Braille Code for Indian languages as a whole, each Braille sign representing as far as possible the same sound in all Indian languages.

II. That the Uniform Code proposed should be based on the following fundamental principles :—

- (i) As far as practicable the blind should not be segregated from the sighted in the process of their education.
- (ii) The original arrangement of the Braille signs in seven lines as in the Standard English Braille should be maintained in the Code to be framed for Indian languages.
- (iii) In the arrangement of alphabets in the Code, the Phonetic order of grouping in the Indian languages should, as far as practicable, be retained.
- (iv) Phonetic relations between the letters of the alphabets should be represented, as far as possible, within the decision already reached, by some simple relations between the signs assigned to them.
- (v) Two-cell arrangements should, as far as possible, be avoided and sounds from the different languages, be accommodated by assigning the same signs to different but related sounds.

III. That none of the current Codes can reasonably be accepted as satisfying the needs of a common Code for all languages of India.

IV. That the question of incorporating contractions and abbreviations can only be taken up after the all-India Code has been formulated.

V. That the Central Advisory Board of Education should set up a small expert Committee including linguists, who shall—

- (i) work out a Uniform Braille Code in accordance with the principles recommended in this report;
- (ii) serve as a Central Board of Reference to whom any specific issues that may arise during the transitional period may be submitted;
- (iii) form the members of an Advisory Body to the Central Advisory Board of Education on the Education of the Blind.

VI. That to ensure adequate production of suitable literature for the Blind, a Central Press with an up-to-date embossing plant and a workshop for manufacturing necessary educational apparatus should be established and a Central Library to serve all the institutions in India should also be founded.

VII. That in order to enable the Schools for the Blind to adopt the new Code and replace their existing stock of literature printed on old lines, the Central and the Provincial Governments should provide such financial assistances as the circumstances may demand.

VIII. That for the execution of any planned programme of education in the interest of the Blind, accurate statistics are essential and the enumeration of the Blind population should be taken up by the Government of India as early as possible, and at any rate not later than the next census.

IX. That the Central and Provincial Governments should be urged to promote legislation for the special benefit of blind persons.

X. That the Central Advisory Boards of Education and Health should jointly consider the problem of the prevention of blindness in this country at an early date.

7. The Board in its seventh meeting held in Hyderabad-Deccan, in January, 1942, approved the above recommendations of the Braille Code Committee of 1941 and in pursuance of the recommendation No. V, set up a small committee with Braille experts, who had already done some work in this connection and linguists for the purpose of drawing up the proposed Uniform Braille Code. The personnel of the expert committee thus set up was :—

1. Dr. Sir John Sargent, M.A., C.I.E., Educational Adviser with the Government of India—Chairman.
2. Dr. Abdul Haq, B. Litt., Ph.D. (Oxon), (Formerly Head of the Department of Arabic, Osmania University), Secretary, All India Anjuman-e-Taraqqi-e-Urdu, Delhi—Linguist.
3. Dr. Suniti Kumar Chatterji, M.A., D. Litt. (London), Head of the Department of Comparative Philology, Calcutta University—Linguist.

PREFACE

The Central Advisory Board of Education at their eighth meeting held in January, 1943 gave their careful consideration to the Uniform Braille Code for India prepared by the Expert Committee appointed at their previous meeting and expressed their genuine appreciation of the work done by the Committee. They thought the issue of the utmost importance to the country and recommended that the report of the Expert Committee be circulated to the Provincial Governments, Local Administrations and States concerned for their opinion in the first instance. The Board also directed that the draft Code be forwarded to the National Institute for the Blind in Great Britain for their opinion.

2. At their eleventh meeting in January, 1945, the Board considered the views of the Provincial Governments, etc., as well as the views furnished by the National Institute for the Blind, London, on the report, together with the recommendations of Expert Committee, on the suggestions submitted by the various authorities. The Board accepted the recommendations of the Expert Committee and decided that steps should be taken to bring the Uniform Braille Code as finally approved, into use in all the schools for the blind in India. The Board, however, directed that any difficulties experienced in the actual use of the Code should be brought to the notice of the Expert Committee for their further consideration.

3. The Code as finally approved by the Board is appended to this Report.

REPORT OF

THE EXPERT COMMITTEE ON THE UNIFORM BRAILLE CODE,
1943

After our preliminary meeting on the 18th December 1942, we have been able to draw up a chart of Uniform Indian Braille, and herewith submit the same with a few explanatory notes.

2. We have indicated the manner in which the Code is to be used for the alphabets of the three different groups of Indian languages with the help of one alphabet in each group, but we hope that the Central Advisory Board of Education will publish the Code with all Indian alphabets printed, so that the Code will be available for the use of every school in India without any doubt or difficulty. When that stage is arrived, we shall do our best to help in the correct publication of the Code.*

3. We have based our Code on the recommendations of the Uniform Braille Committee, and have sought to carry them out as far as it is possible. We were directed to retain the original seven line arrangement of Braille and in doing that we regret that we have not been able to take advantage of the horizontal symmetry which would have suited Indian languages better. We have, therefore, made only a very limited use of Principle II (iv)* In the case of the Perso-Arabic alphabets where letters having the same sound are given similar front and back signs, so that if a beginner should find it difficult to distinguish the front signs of line 7 he should yet produce the correct sounds.

4. In ordinary writing the short vowel *a* is supposed to be inherent in the consonants of the Indo-Aryan and Dravidian languages when fully written. They will always be fully written in Braille, and we suggest that the short vowel *a* should be written each time it occurs rather than that the sign of *virama* should be written when a consonant is unmoved by a vowel. We have, therefore, provided no sign for *virama* or *jazm*. This arrangement will make the Code more scientific and more uniform. It will also lead to greater accuracy in reading and writing.

5. The Dravidian languages require two extra vowels, the short *e* and *o* which are not used in the Indo-Aryan and the Perso-Arabic alphabets. These have been provided in line 5 and assigned signs similar to those used for the corresponding long vowels. As a teacher in each language will choose the order in which he teaches the alphabet on modern principles of education, the separation of these two vowels from the main scheme will present no difficulty.

6. We recommend that for the Perso-Arabic alphabets the 10 vowels required should have the same signs as are provided for the Indo-Aryan alphabets as has been the practice up to now. This arrangement is necessitated by reasons of uniformity and has besides other advantages as well.

*In the attached charts the manner in which the Code is to be used for the 13 alphabets of the three different groups of Indian languages has been indicated. An abridged chart with one alphabet for each of the three groups of languages has also been provided similar to the seven line arrangement in the Standard English Braille to note the adaptations in one and the same chart.

If spelt out as the vowels are done for the sighted in these languages, they will require two or even three signs for each vowel, and economy of writing space is a matter of paramount importance in Braille.

We have provided separate signs for all the consonants required by these alphabets in spite of the fact that some of them have the same sounds as others already provided, because these will be useful for the study of Arabic and the reading and writing of the Quran.

7. No separate signs have been provided for *tashdid* and *tanwin*. For the former it is suggested that the consonant concerned should be written twice as in other languages and for the latter the short vowel involved should be written twice as in the case of the sighted.

8. For classical studies in the Perso-Arabic group of languages we suggest that the sign for the long vowel *a* should be used for *alif* and the same written twice for *alifmadd*, using the short vowels *a*, *i* and *u* for *zabar*, *zer* and *pesh* respectively.

9. For purposes of teaching we recommend that the letters of the alphabet be named as they are in the language as taught to the sighted.

10. Indian Uniform Braille shall be written from right to left and read from left to right.

11. We hope this Code will meet the approval of those who have the welfare of the blind at heart, and will solve the problem of the Uniform Code for India.

JOHN SARGENT (*Chairman*).

ABDUL HAQ.

P. M. ADVANI.

K. BHATTACHARJEE.

S. K. CHATTERJI.

UNIFORM INDIAN BRAILLE

INDO-ARYAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
DRAVIDIAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
PERSO-ARABIC	۞	۞	۞	۞	۞	۞	۞	۞	۞
NUMERALS	1	2	3	4	5	6	7	8	9
LINE 1	अ	आ	इ	ई	उ	ऊ	ए	ऐ	ओ
INDO-ARYAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
DRAVIDIAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
PERSO-ARABIC	۞	۞	۞	۞	۞	۞	۞	۞	۞
LINE 2	क	ख	ग	घ	ङ	च	छ	ज	झ
INDO-ARYAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
DRAVIDIAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
PERSO-ARABIC	۞	۞	۞	۞	۞	۞	۞	۞	۞
LINE 3	ट	ठ	ड	ढ	ण	त	थ	द	ध
INDO-ARYAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
DRAVIDIAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
PERSO-ARABIC	۞	۞	۞	۞	۞	۞	۞	۞	۞
LINE 4	न	प	फ	ब	भ	म	य	र	ल
INDO-ARYAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
DRAVIDIAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
PERSO-ARABIC	۞	۞	۞	۞	۞	۞	۞	۞	۞
LINE 5	श	ष	स	ह	ळ	॥	॥	॥	॥
INDO-ARYAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
DRAVIDIAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
PERSO-ARABIC	۞	۞	۞	۞	۞	۞	۞	۞	۞
LINE 6	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
INDO-ARYAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
DRAVIDIAN	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ
PERSO-ARABIC	۞	۞	۞	۞	۞	۞	۞	۞	۞
LINE 7	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ	ॐ

The Devanagiri characters have been used to represent the Indo-Aryan group of language Where additional letters are required they are taken from Bengali and are marked B. Kanarese letters have been used for Dravidian group of languages. Additional letters have been marked Ta for Tamil and Te for Telugu. Urdu is used as the base for the Perso-Arabic alphabets. Sindhi, Pushto or Arabic letters are marked S, 'P' and A, respectively.

UNIFORM INDIAN BRAILLE CHART-LINE I.

<i>TRANSLITERATION</i>	a	ā	i	ī	u	ū	e	ai	o	au
<i>KANARESE</i>	ಅ	ಌ	ಇ	ಊ	ಉ	ಊ	ಏ	ಏಐ	ಓ	ಓಌ
<i>MALAYALAM</i>	അ	ഘ	ഇ	ഊ	ഉ	ഊ	ഏ	ഏഐ	ഓ	ഓഌ
<i>TAMIL</i>	அ	ஆ	இ	ஊ	உ	ஊ	ஏ	ஏஐ	ஓ	ஓ஌
<i>TELUGU</i>	అ	ఌ	ఇ	ఊ	ఉ	ఊ	ఏ	ఏఐ	ఓ	ఓఌ
<i>BENGALI</i>	অ	আ	ই	ঊ	উ	ঊ	ঐ	ঐ	ঔ	ঔ
<i>DEVANAGARI</i>	अ	आ	इ	ऊ	उ	ऊ	ऎ	ऎ	ए	ए
<i>GUJRATI</i>	અ	આ	ઇ	ઊ	ઉ	ઊ	ૈ	ૈ	ૌ	ૌ
<i>GURMUKHI</i>	ਅ	ਆ	ਇ	ਊ	ਉ	ਊ	ਏ	ਏ	ਓ	ਓ
<i>ORIYA</i>	ଅ	ଌ	ଇ	ଊ	ଉ	ଊ	ଐ	ଐ	ଓ	ଓ
<i>PUSHTO</i>	ا	آ	ي	ۍ	و	ۍ	ه	ه	و	و
<i>SINDHI</i>	ا	آ	ي	ۍ	و	ۍ	ه	ه	و	و
<i>URDU</i>	ا	آ	ي	ۍ	و	ۍ	ه	ه	و	و
<i>ARABIC</i>	ا	آ	ي	ۍ	و	ۍ	ه	ه	و	و
<i>NUMERALS</i>	1	2	3	4	5	6	7	8	9	0
<i>BRAILLE</i>	⠁	⠃	⠇	⠏	⠑	⠕	⠗	⠗⠠	⠗⠢	⠗⠠⠠

UNIFORM INDIAN BRAILLE CHART-LINE II.

TRANSLITERATION	k	kh	g	gh	ṅ	c	ch	j	jh	ñ
KANARESE	ಕ	ಖ	ಗ	ಘ	ಙ	ಚ	ಛ	ಜ	ಞ	ಞ
MALAYALAM	ക	ഖ	ഗ	ഘ	ങ	ച	ഛ	ജ	ഞ	ഞ
TAMIL	க	க	க	க	ங	ச	ச	ஜ	ஜ	ன
TELUGU	క	ఖ	గ	ఘ	ఙ	చ	ఛ	జ	ఞ	ఞ
BENGALI	ক	খ	গ	ঘ	ঙ	চ	ছ	জ	ঞ	ঞ
DEVANAGARI	क	ख	ग	घ	ङ	च	छ	ज	झ	ञ
GUJRATI	ક	ખ	ગ	ઘ	ઙ	ચ	છ	જ	ઞ	ઞ
GURMUKHI	ਕ	ਖ	ਗ	ਘ	ਙ	ਚ	ਛ	ਜ	ਞ	ਞ
ORIYA	କ	ଖ	ଗ	ଘ	ଙ	ଚ	ଛ	ଜ	ଞ	ଞ
PUSHTO	ګ	ګ	ګ	ګ	ګ	چ	چ	ج	ج	ن
SINDHI	ک	ک	گ	گ	ڱ	چ	چ	ج	ج	ن
URDU	ک	خ	گ	غ	ڱ	چ	چ	ج	ج	ن
ARABIC	ك	خ	گ	غ	ڱ	چ	چ	ج	ج	ن
BRAILLE	⠠⠠⠠	⠠⠠⠠	⠠⠠⠠	⠠⠠⠠	⠠⠠⠠	⠠⠠⠠	⠠⠠⠠	⠠⠠⠠	⠠⠠⠠	⠠⠠⠠

UNIFORM INDIAN BRAILLE CHART-LINE III.

<i>TRANSLITERATION</i>	t	th	d	dh	ṛ	r	ṣ	ṣ	ḍ	ḍh	ṛ
<i>KANARESE</i>	ಟ	ಠ	ಡ	ಢ	ಠ	ರ	ಷ	ಠ	ಠ	ಢ	ಠ
<i>MALAYALAM</i>	ട	ഠ	ട	ഢ	ഠ	ര	ഷ	ഠ	ഠ	ഢ	ഠ
<i>TAMIL</i>	ட	ಠ	ட	ಢ	ಠ	ர	ಷ	ಠ	ಠ	ಢ	ಠ
<i>TELUGU</i>	ట	ఠ	డ	ఢ	ఠ	ర	ష	ఠ	ఠ	ఢ	ఠ
<i>BENGALI</i>	ট	ঠ	ড	ঢ	ৠ	র	ষ	ঠ	ঠ	ঢ	ৠ
<i>DEVANAGARI</i>	ट	ठ	ड	ढ	ठ	र	ष	ठ	ठ	ढ	ठ
<i>GUJRATI</i>	ટ	ઠ	ડ	ઢ	ઠ	ર	ષ	ઠ	ઠ	ઢ	ઠ
<i>GURMUKHI</i>	ਟ	ਠ	ਡ	ਢ	ਠ	ਰ	਷	ਠ	ਠ	ਢ	ਠ
<i>ORIYA</i>	ଟ	ਠ	ਡ	ਢ	ਠ	ਰ	਷	ਠ	ਠ	ਢ	ਠ
<i>PUSHTO</i>	ټ	ټ	ډ	ډ	ټ	ر	ش	ټ	ټ	ډ	ټ
<i>SINDHI</i>	ٽ	ٽ	ڙ	ڙ	ٽ	ر	ش	ٽ	ٽ	ڙ	ٽ
<i>URDU</i>	ٹ	ٹ	ڊ	ڊ	ٹ	ر	ش	ٹ	ٹ	ڊ	ٹ
<i>ARABIC</i>	ٲ	ٲ	ٲ	ٲ	ٲ	ر	ش	ٲ	ٲ	ٲ	ٲ
<i>BRAILLE</i>	⠠⠠	⠠⠠⠠	⠠⠠	⠠⠠⠠	⠠⠠	⠠⠠⠠⠠	⠠⠠	⠠⠠⠠⠠	⠠⠠	⠠⠠⠠	⠠⠠⠠⠠

UNIFORM INDIAN BRAILLE CHART-LINE IV.

TRANSLITERATION
 KANARESE
 MALAYALAM
 TAMIL
 TELUGU
 BENGALI
 DEVANAGARI
 GUJRATI
 GURMUKHI
 ORIYA
 PUSHTO
 SINDHI
 URDU
 ARABIC
 BRAILLE

p	ಫ	ಬ	ಭ	ಮ	ಋ	ರ	ಲ	ಳ	ಝ
ಪ	ಫ	ಬ	ಭ	ಮ	ಋ	ರ	ಲ	ಳ	ಝ
പ	ഫ	ബ	ഭ	മ	ഋ	ര	ല	ഴ	ഞ
ப	஫	ப	ஞ	ம	஠	ர	ல	ழ	ஞ
ପ	ଫ	ବ	ଭ	ମ	ଠ	ର	ଲ	ଞ	ଞ
ਪ	ਫ	ਬ	ਭ	ਮ	ਠ	ਰ	ਲ	ਞ	ਞ
ପ	ଫ	ବ	ଭ	ମ	ଠ	ର	ଲ	ଞ	ଞ
پ	ف	ب	بھ	م	مھ	ر	ل	ڙ	ڙھ
پ	ف	ب	بھ	م	مھ	ر	ل	ڙ	ڙھ
⠠⠠	⠠⠠	⠠⠠	⠠⠠	⠠⠠	⠠⠠	⠠⠠	⠠⠠	⠠⠠	⠠⠠

UNIFORM INDIAN BRAILLE CHART-LINE V.

<i>TRANSLITERATION</i>	h	a	e	i	n	n	e	m	o	y
<i>KANARESE</i>	ಫ	ಅ	ಇ	ಊ	ಉ	ಋ	ಌ	ಮ	ಒ	ಯ
<i>MALAYALAM</i>	ಫ	ಅ	ಇ	ಊ	ಉ	ಋ	ಌ	ಮ	ಒ	ಯ
<i>TAMIL</i>	ಫ	ಅ	ಇ	ಊ	ಉ	ಋ	ಌ	ಮ	ಒ	ಯ
<i>TELUGU</i>	ಫ	ಅ	ಇ	ಊ	ಉ	ಋ	ಌ	ಮ	ಒ	ಯ
<i>TRANSLITERATION</i>	h	a	e	i	n	n	e	m	o	y
<i>BENGALI</i>	ফ	অ	ই	ঊ	ঋ	ঌ	এ	ম	ও	য
<i>DEVANAGARI</i>	फ	अ	इ	ऊ	ऋ	ॠ	ए	म	ओ	य
<i>GUJRATI</i>	फ	अ	इ	ऊ	ऋ	ॠ	ए	म	ओ	य
<i>GURMUKHI</i>	ਫ	ਅ	ਇ	ਊ	ਊ	ਊ	ਏ	ਮ	ਓ	ਯ
<i>ORIYA</i>	ଫ	ଅ	ଇ	ଊ	ଋ	ୠ	ଏ	ମ	ଓ	ଯ
<i>TRANSLITERATION</i>	h	a	e	i	n	n	e	m	o	y
<i>PUSHTO</i>	ه	ا	ي	و	ځ	ښ	ه	م	و	ي
<i>SINDHI</i>	ه	ا	ي	و	ځ	ښ	ه	م	و	ي
<i>URDU</i>	ه	ا	ي	و	ځ	ښ	ه	م	و	ي
<i>ARABIC</i>	ه	ا	ي	و	ځ	ښ	ه	م	و	ي
<i>PUNCTUATIONS</i>	.	.	.	.	.	.	.	.	.	.
<i>BRAILLE</i>	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠

UNIFORM INDIAN BRAILLE CHART-LINES VI & VII.

TRANSLITERATION

KANARESE

MALAYALAM

TAMIL

TELUGU

TRANSLITERATION

BENGALI

DEVANAGARI

GUJRATI

GURMUKHI

ORIYA

TRANSLITERATION

PUSHTO

SINDHI

URDU

ARABIC

BRAILLE

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Fraction Line Sign

Numeral Sign

Poetry Sign

Appostrophe & Abbreviation Sign

Hyphen Sign

Accent Sign

Italic or Decimal Sign

Letter Point Sign

EXPLANATORY NOTE

The history of past attempts for the adoption of a Uniform Braille Code in the schools for the blind in India will be found in the Proceedings of the Sixth Meeting of the Central Advisory Board of Education in India held at Madras on the 11th and 12th January 1941 on pages 54-55—Appendix I (h) read with the Report of the Uniform Braille Code Committee, both of which are published.

2. The report of the Expert Committee appointed to work out a Uniform Braille Code is on page 11 and the decisions of the Board thereon are given in the Preface to this report. The Uniform Indian Braille is on page 13 and the Uniform Code with 12 Indian alphabets and the Arabic alphabet to show how it can be used in schools for the blind all over the country is to be found on pages 14 to 19 of this report. Arabic though not an Indian language is included because it was felt by the Committee that the value of a Uniform Indian Code would be enhanced if the Muslim blind in India could use the Code for writing and reading the Quran. The Code for Arabic may, if so desired, be used in the more orthodox style. For Urdu, the vowels in Line I are written in the form adopted by the Anjuman-e-Taraqqi-e-Urdu and used by the Osmania University of Hyderabad-Deccan. The orthodox form of these vowels is the same as that used for Pushto and Sindhi.

3. The charts published herewith prove conclusively the need there was for a Uniform Indian Braille Code to take the place of the many Codes which exist today because in the case of the first forty signs of the Braille alphabet all Indian languages are almost identical. The common features of the Indian alphabets do not end with the first forty signs but extend further into a considerable portion of the remaining 23 Braille signs. Tamil has a very short alphabet and does not use many of these signs but it fits in with the scheme. Pushto does not use the aspirated consonants but it too fits in admirably. So far almost every school had a Code of its own and in some cases schools teaching the same language used different Codes so that children of one school could not read from the books used in the other or correspond with friends who had been trained in the other school.

4. The charts also justify the decision of the Uniform Braille Committee of 1941, which laid down the fundamental principles on which the Uniform Code was to be based, that the phonetic order of grouping used in the majority of Indian alphabets, should be retained. This phonetic order brings out very clearly the great similarity between the alphabets of the three groups of Indian literary languages. The alphabets classed here as Indo-Aryan cover all the North-Indian languages which belong to the Indic class of the Indo-Germanic family of languages. The Dravidian languages belong to a different family, but their alphabets on account of the large admixture of Aryans with the Dravidians of South India have in course of time come very close together, Tamil alone retaining its short alphabet. The Perso-Arabic alphabets cover four principal languages, Pushto, Urdu, Punjabi and Sindhi. Of these the first belongs to the Iranic class of the Indo-Germanic family of languages while the other three are Indo-Aryan in origin. Their alphabets, therefore, show great similarity

in their phonetic values to the Indo-Aryan languages but owing to the use of a large number of words of Arabic origin in these languages they also require a number of letters from the Arabic alphabet, many of which have changed their phonetic values by such adoption. These alphabets have, therefore, a larger number of letters in them.

The adoption of the original seven line arrangement of Braille has enabled the Committee to retain in the Uniform Code all international items so that the numerals, the punctuations and the language and mathematical signs for the Uniform Indian Braille are the same as for the Standard English Braille.

5. The Code was actually drawn up by the Brailist members of the Committee, under the guidance of their linguist colleagues. They have faithfully carried out the instructions given to them in the fundamental principles laid down by the Uniform Braille Committee, even though it meant a considerable modification of what they considered to be more a scientific scheme for a Uniform Code. An effort has been made to make the Code include all that would be needed in the different languages of India, but it is possible that at this preliminary stage some omissions and discrepancies may have occurred, and if any such are detected and brought to their notice, the Expert Committee would try their best to provide for them.

6. Indian languages have a total of 89 different sounds which have to be represented, and therefore it was necessary to use a number of Braille signs to represent more than one sound each, generally in different groups of languages. The Perso-Arabic Group of languages presented special difficulty in that this group alone had 68 sounds to be represented, but Sindhi and Pushto had each four sounds peculiar to itself and these have been represented by four signs of Braille, two sounds one in Sindhi and one in Pushto to a Braille Sign and by dealing with other peculiarities also in the same way it has been possible to work out Uniform Code with only 62 Braille signs, leaving the last one for future use in making up two-cell signs and contractions.

7. The Uniform Code here presented is the result of the largest possible agreement among those concerned with the education of the blind who formed the Uniform Braille Committee of 1941 and of a considerable amount of labour and thoughtfulness on the part of the Expert Committee, appointed by the Central Advisory Board of Education. It will, I hope, be a great step forward in the education of the blind in India and will bring the establishment of a Braille Press in India into early realization.

JOHN SARGENT,

Educational Adviser to the Government of India.

STANDARD ENGLISH BRAILLE

1st LINE { A B C D E F G H I J

2nd LINE { K L M N O P Q R S T

3rd LINE { U V X Y Z and for of the with

4th LINE { ch gh sh th wh ed er ou ow W

5th LINE { ea i i dis en ! () " ? in "

6th LINE { Fraction-line sign Numeral sign Poetry sign Apostrophe Hyphen
 at ing ble ar corn

7th LINE { Accent sign Italic or Decimal-point sign Letter sign Capital sign

Used in forming Contractions:

Compound Signs { * Dash Square Brackets Inner Inverted Commas

Notes

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Notes

BUREAU OF EDUCATION, INDIA

Pamphlet No. 23

Report of the Technical Education Committee of the Central Advisory Board of Education in India, 1943, together with the decisions of the Board thereon.



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PREFACE

The Board considered the report of the Committee appointed by them to explore the mode of developing the facilities for technical education (including art and commercial education) in the country as a whole. The Board adopted the recommendations of the Committee. In view of the importance of agricultural education in this country with its vast rural population they appointed the following Committee to examine and report on the issue:—

W. H. F. Armstrong, Esquire, C. I. E., M. A., I. E. S.,
Director of Public Instruction, Punjab.

The Hon'ble Pir Illahi Bakhsh Nawazali,
Minister for Education, Sind.

Rao Bahadur Sir V. T. Krishnamachari, K.C.I.E.,
Dewan of Baroda.

Gaganvihari L. Mehta, Esquire, M.A.,
Ex-President, Federation of Indian Chambers of Commerce.

S. N. Moos, Esquire, C.I.E., M.A., I.E.S.,
Director of Public Instruction, Bombay.

John Sargent, Esquire, C.I.E., M.A.,
Educational Adviser to the Government of India.

Sardar Bahadur Sardar Ujjal Singh, M. A., M.L.A. (Punjab).

The Chairman was authorised to nominate a suitable number of agricultural experts to serve on the Committee.

Report of the Technical Education Committee of the Central Advisory Board of Education, 1943.

At their Eighth Meeting held at Lucknow in January 1943 the Central Advisory Board of Education appointed a Committee consisting of the following members, with powers to co-opt, to explore ways and means of developing facilities for technical education in the country as a whole :—

- Dr. P. N. Banerjea, M.A., D.Sc. (Lond.), Bar-at-Law, M.L.A.
- Mr. Gaganvihari L. Mehta, M.A.
- Mr. S. N. Moos, C.I.E., M.A. (Cantab.), I.E.S.
Director of Public Instruction, Bombay.
- Mr. John Sargent, C.I.E., M.A.
Educational Adviser to the Government of India.
- The Hon'ble Khan Bahadur Sayidur Rahman, M.A., B.L.,
Minister of Education, Assam.
- Sir Meverel Statham, C.I.E., M.A., I.E.S.,
Director of Public Instruction, Madras.
- Sardar Bahadur Sardar Ujjal Singh, M.A., M.L.A. (Punjab).
- Mr. P. F. S. Warren, B.A. (Cantab.), A.M.I.C.E., M.I.E. (Ind.).
- Dr. Sir Ziauddin Ahmad, C.I.E., M.A., Ph.D., D.Sc., M.L.A.

2. With the approval of the Chairman of the Board the following members were co-opted on the Committee :—

- Mr. R. B. Elwin, I.C.S.,
representing the Industries and Civil Supplies Department of the Government of India
- Mr. W. W. Wood, F.R.I.B.A., M.I. Struct. E.,
Principal, Delhi Polytechnic, Delhi.
- Dr. W. A. Jenkins, C.I.E., D.Sc., I.E.S.,
Director of Public Instruction, Bengal.

The Labour Department of the Government of India, who were also invited to send a representative, regretted the inability to do so.

3. The Chairman of the Central Advisory Board of Education appointed Mr. John Sargent as Chairman of the Committee.

4. The Committee met at Dehra Dun on the 11th and 12th October 1943. The following members were present :—

- Mr. John Sargent (Chairman).
- Dr. P. N. Banerjea.
- Mr. R. B. Elwin.
- Dr. W. A. Jenkins.
- Mr. Gaganvihari L. Mehta.
- Mr. S. N. Moos.
- The Hon'ble Khan Bahadur Sayidur Rahman.
- Mr. P. F. S. Warren.
- Mr. W. W. Wood.

Dr. D. M. Sen, M.A., Ph.D. (Lond.), Secretary, Central Advisory Board of Education, was Secretary of the Committee.

The following members were unable to attend :—

- Sir Meverel Statham.
- Sardar Bahadur Sardar Ujjal Singh.
- Dr. Sir Ziauddin Ahmad.

5. The agenda and papers circulated to the members of the Committee are set out in Annexures.

6. The Committee had before them, among other documents, the Report on Vocational Education in India by Mr. A. Abbott, formerly H. M. Chief Inspector of Technical Schools, Board of Education, England, who visited India in company with Mr. S. H. Wood in 1936-7. His very valuable survey deals fully with the scope, content and duration of the courses which should be provided in the different types of technical institutions and the Committee regard it as unnecessary to cover the same ground again. They are of opinion, however, that some of Mr. Abbott's conclusions must be reviewed in the light of the Report of the English Board of Education's Consultative Committee on Secondary Education with special reference to Grammar Schools and Technical High Schools (1939), hereinafter referred to as the "Spens Report" and more particularly in the light of the changes which the war has brought about in Indian industrial conditions generally. Special attention should be directed in their opinion to the cultural and vocational value of the new type of secondary schools, called Technical High Schools, envisaged by the Spens Report. The success, which experimental schools of this kind have already achieved in England in ensuring to Industry and Commerce a fair share of the best brains of the country, gives grounds for hope that they may satisfy in India also a need which is already urgent and is likely to become still more so in the post-war period, if present anticipations in regard to industrialisation are realised.

It is impossible to forecast with precision at the moment to what extent the expansion of industry due to the war will be maintained or accelerated after the war or what form or forms it will take. This will largely depend on the plans adopted for post-war reconstruction and development. It is, however, safe to assume that there will be sufficient industrialisation to create an urgent and increasing need for facilities for technical education and that, given an adequate system of practical instruction, there is no reason why India should not be able before long to produce all the skilled artisans, technicians and research workers necessary for her full industrial development.

7. Hitherto the demand has been restricted partly by the limited number of openings which have been available in Industry and Commerce and partly by the practice of filling the more remunerative posts with imported technicians. The supply of suitable students have been adversely affected not only by the uncertainty of subsequent employment but also by the fact that young Indians of the middle and upper classes have not in the past taken readily to industrial occupations. The instruction itself has not escaped the over-academic atmosphere which characterises education generally in India nor has it been linked up closely enough with the actual conditions obtaining in works and factories. What it is fashionable to call a vicious circle has been described by Mr. Abbott in the following words :—

"No country can initiate and carry on industries on a large scale, unless it has an adequate supply of men specially trained for the direction and management of large industrial concerns as well as of others qualified for the minor but very important supervisory posts in them. On the other hand it cannot be expected that capable and ambitious men will devote themselves to acquiring this special knowledge and skill unless they see a reasonable prospect of exercising it and gaining a decent livelihood thereby".

The experience of the war, however, has already led to a number of salutary changes; it has compelled a large expansion of industry and created a greatly increased demand for technicians of all grades, while at the same time the urgent need for skilled and semi-skilled workers has led to almost

every technical institution in the country becoming a centre for Technical Training Schemes. Many young men, who would not otherwise have embarked on a technical career have been recruited under these schemes and the prejudice against industrial employment has been steadily breaking down. This process is likely to be accelerated when Technical High Schools become an established part of a selective High School system. The ground is, therefore, being rapidly prepared for developments on practical and up-to-date lines but before any attempt is made to forecast the nature and scope of these developments or the precise lines which they should follow, it is necessary to define in relation to the requirements of a modern community the function of technical instruction, including the cognate subjects of education in Commerce and in Art as applied to industrial and commercial needs.

8. Technical education as a branch of education, has a special purpose of its own but it cannot too strongly be emphasised that it is after all an integral part of the general educational system and not merely a special training for industrial employment. "No definition of technical training", observed the Bryce Commission,* "is possible that does not bring it under the head of secondary education, nor can secondary education be so defined as absolutely to exclude from it the idea of technical education".

9. The conception of the function of technical education, as regards both its aim and its content, has been considerably revised and enlarged in Western countries during recent years. Consequently it is important to emphasise from the outset that any scheme for the development of technical instruction as an integral part of a national system must have a two-fold character. It must both form a link between education and industry and it must at the same time receive quite separate consideration as a form of mental training which is especially suited to certain types of intelligence irrespective of their future occupations.

The primary function of technical instruction remains and is likely to remain that of satisfying the needs of industry and commerce for (a) skilled craftsmen, (b) intelligent foremen and executives, and (c) research workers. In Western countries, however, of late years the content of a technical curriculum has been steadily widening, due on the one hand to increased demands on the part of industry, created not only by accentuated competition but also by the emergence of entirely new industries, and on the other hand to a recognition perhaps rather belated, on the part of those responsible that technical education, if it is to be really fertile, should include the study of design and distribution as well as the actual processes of manufacture. The industrial product of today to command a market must do its work efficiently, must be attractive to the purchaser and must pass easily and cheaply from the maker to the consumer.

Moreover, the changes which are affecting the character of what is produced are also determining the training of those engaged in production. The ranks of the skilled craftsmen, depleted by the advent of the machine and mass production, are being reinforced by the makers and menders of machines and machine tools. Training in precision work has already acquired an importance out of all proportion to the number of men so employed. New problems, again, both human and material, call for more sympathy, more imagination and a deeper insight into the processes they control from those placed in positions of authority. In his turn the research worker has not merely to concern himself with improvements along established lines; it is also his business now-a-days to explore how a dying industry may be revived or a new one created. It has been assumed, perhaps too readily during the last fifty years even by those who for social reasons deplore their extinction most keenly, that

*Royal Commission on Secondary Education, 1895.

the small business and the cottage industry are bound to be eliminated by the large scale factory. Modern methods of distribution and marketing, however, now give grounds for hope that even in highly industrialised countries the small producer may survive and prosper alongside of his larger rival.

The obvious lesson implicit in these changes is that technical instruction today must be a wider and more liberal form of training than it has been in the past ; it must comprehend the scientific principles underlying the process of manufacture as well as the processes themselves ; it must link up the sciences of production and business organisation with the arts of design and salesmanship. It must take cognisance also of social science in relation to the effect of industrial development on the life of a previously non-industrial community and it cannot even neglect the provision of purely cultural and recreational facilities as an antidote against mental and moral stagnation for those workers who are destined to remain the semi-skilled servants of the machine.

10. At the same time contributing towards the same enlarged conception there is a secondary function of technical instruction the importance of which is being increasingly recognised abroad and has received striking emphasis in the Spens Report. So-called technical subjects have been found to be capable of providing an all-round education or culture as distinct from a vocational training for the many people, not necessarily by any means the less-intelligent, whose mental faculties are more actively stimulated and more fully satisfied by practical than by academic studies. In this sense the technical school or college has a valuable contribution to make towards the introduction of greater variety into education at its higher stages and towards satisfying the need of industry for a reasonable share of the best brains of the community, which under the influence of the conventional high school seek professional occupations, and too often find unemployment. Further, it may provide many people who were not suited for or were prevented by the economic exigencies of life from taking a university course of the ordinary type, with knowledge of the things necessary to the fuller discharge of their duties as citizens or the more profitable employment of their leisure.

11. While the general influences affecting the development of technical education, which have been outlined above, have been felt most strongly hitherto in countries remote from India in distance, in natural resources and in the social and economic conditions under which the great mass of their people live, their practical bearing on the future trend of development in this country can hardly be doubted. If the fillip which the war has given to industrial development is to be maintained and consolidated, it is difficult to think of any country where a real partnership between education and industry is more essential or where it is more important to help the small business or the cottage industry, to increase the supply of skilled craftsmen and competent executives, to convert abundant raw materials to the service of the country which produces them and above all to check the flow of potentially creative intelligence through academic channels in the slough of unemployment.

12. Considered from the point of view of the students, technical instruction will be either pre-employment, or post-employment, that is, it will either be directed to giving young people not yet at work a preliminary training which will prepare them for entry into industrial or commercial occupations or it will afford opportunities to those already in employment for increasing their skill as craftsmen, for fitting themselves to occupy positions of greater responsibility or for improving their all round equipment as citizens as well as workers.

The size of the area to be served and the extent and nature of its industrial development will determine whether such instruction should be provided in one institution or in several. If in several, then similar considerations will

indicate whether these institutions should each serve one industry or group of industries or whether there should be a central institution at which the more advanced work in all branches should be concentrated, with ancillary schools, conveniently distributed, which will relieve it of the more elementary work and feed it in turn with suitably prepared students. The question of monotronics *versus* polytechnics has been a controversial issue over a considerable period but the polytechnics wherever practicable and subject to certain exceptions to be mentioned below, has a strong balance of educational, industrial and economic argument in its favour. It is indeed hardly necessary to elaborate the case for concentrating provision for technical instruction, and particularly the more advanced branches of it, under one roof. There is in the first place the factor of cost. Technical instruction is necessarily expensive, owing among other reasons to the large amount of practical work involved and the cost of the plant and apparatus required. Secondly, there is the importance of economising teaching power, since competent instructors in many of the more advanced technical subjects are always difficult to obtain. A third argument for centralisation arises from the fact that many technological courses overlap to a certain extent and in a large institution the same workshop or laboratory may be used by students taking different courses. The last but by no means the least important consideration is the benefit students derive from being brought into contact with others engaged in different occupations and studying different subjects.

The monotronic is to be preferred only where an industry is highly localised, or where its needs are so complicated or peculiar that it is difficult to satisfy them in the same building as those of other industries or where the material to be dealt with, as for instance in tanning, makes it an uncomfortable neighbour.

Accommodation should be provided in the polytechnic, whether it has ancillary institutions or not, for (i) a full-time day school (Technical High School) for boys and in course of time girls also of the normal high school age and type, whose training will be based on the assumption that they may rise ultimately to positions of responsibility, (ii) part-time classes in the day and in the evening both for younger employees (including apprentices) and for older workers, and (iii) classes, full-time or part-time, for more advanced students and (iv) facilities for research workers. Finally there should be provision for adult education of a non-vocational kind.

13. The next step is to apply what has been said above about the general aim and content of technical (including commercial and art) instruction to the post-war conditions of India, so far as it is possible to forecast them. It is clear that the amount, type and location of facilities for technical education will largely be determined by the requirements of industry and commerce, but it is by no means clear at this stage what these requirements are going to be. It is true that war-time production has broken the vicious circle in which industrial development in India has been enclosed in the past. New industries are now being established and the nucleus of a supply of labour for them has been created.

The first task will be to recondition for absorption in civil industry the large number of technicians who have been through an intensive short course of training for war production. It is impossible to say how many of these by the end of the war will have reached the standard of skill and adaptability which will enable them to fit easily in to the post-war system. This applies both to the men enlisted in the technical branches of the Fighting Services and those employed in civil factories. It is, however, satisfactory to know that the Labour Department's Technical Training Centres will be kept going for 18 months after the war in order to complete the training of these workers, where required.

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11. While the general influences affecting the development of technical education, which have been outlined above, have been felt most strongly hitherto in countries remote from India in distance, in natural resources and in the social and economic conditions under which the great mass of their people live, their practical bearing on the future trend of development in this country can hardly be doubted. If the fillip which the war has given to industrial development is to be maintained and consolidated, it is difficult to think of any country where a real partnership between education and industry is more essential or where it is more important to help the small business or the cottage industry, to increase the supply of skilled craftsmen and competent executives, to convert abundant raw materials to the service of the country which produces them and above all to check the flow of potentially creative intelligence through academic channels in the slough of unemployment.

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Though it is impossible to say how many technicians will be needed in each main employment category in industry and commerce, it is possible to prescribe the categories themselves and the sort of training their members will require. In the highest category there will be the chief executives as well as the research workers of the future. These will normally have their preliminary training in a Technical High School and will then pass to the Technological Department of a University or to a full-time course of the National Diploma type in a Technical Institution. This category will necessarily be a small one but in view of its importance admission to it should be the outcome of a very strict process of selection.

The next category will contain the minor executives, foremen, charge hands, etc., a not less important class, if only in view of the difficulty which Western countries have experienced in recruiting the right kind of people. It is the main aim of the Technical High School to satisfy this need but the Technical High School pupil on completing the course there will need to continue his technical education either by taking a National Diploma or Certificate Course or by attending part-time classes of a fairly advanced description.

Mr. Abbott has emphasised again and again, and few will disagree with him, the need for concentrating on what may be called the supervisory grade. It is this grade, intermediate between the management and the operatives, "which ought to have sufficient knowledge and intelligence to understand the instructions of the former and sufficient powers of expression to communicate and interpret them to the latter. At the same time they should have sufficient practical skill to earn the respect and confidence of the operatives whose work they direct, control and supervise".

The third category will comprise the skilled craftsmen, most of whom will not aspire to executive positions. These may be recruited from ex-Technical High School pupils but as a rule after passing through the Senior Basic (Middle) Schools, where they will have mastered the rudiments of craft work, they will go on to Junior Technical, Trade or Industrial Schools for a further two or three years' full-time course.

Below these three categories will come the great mass of semi-skilled and unskilled labour. These will not as a rule receive any special technical training before entering employment apart from the craft work they will have done in the Senior Basic (Middle) School. It will, however, be very important to afford them facilities both for continuing their general education and for improving their skill, so that the best of them may ultimately ascend to the skilled class.

It should be made abundantly clear that the rough classification given above does not presuppose a rigidly horizontal organisation of post-war industry. If the necessary incentives are to be provided, promotion must remain open from the bottom to the top and this will be particularly important until the selective system of higher education has been firmly established. Nor must the needs of small businesses or rural industries be forgotten. For the latter separate departments in suitably located Technical Institutions should be provided, where local crafts can be taught and practised under appropriate conditions.

14. While the foregoing refers mainly to technical education, it also covers the general provision to be made for commercial and art students. In regard to commercial education it may be possible to reduce them to two main groups (a) those who will transact business on an important scale or perform professional functions such as banking, accountancy, etc., (b) those engaged in recording the transactions of group (a). According to Mr. Abbott, group (a) requires mainly a training in imagination, initiative, administration and

leadership, while group (b) needs training in the ordinary office arts, e.g., shorthand, typing, book-keeping, commercial practice, etc., as well as in alertness, accuracy and a sense of responsibility. It is possible that Mr. Abbott somewhat underestimates the need for expert knowledge in those controlling the great processes of salesmanship and distribution. With regard to Art as applied to Industrial and Commercial requirements he gives voice to a well justified criticism when he says "Nothing has disappointed us more than the general neglect of the teaching of Art". Indian manufacturers will be well advised to devote far greater attention to the artistic qualities of the goods they produce. One of the great advantages of a Polytechnic is that it brings those engaged in manufacture into immediate contact with those studying design and distribution.

15. It has already been pointed out that the requisite training for future chief executives and research workers should be provided in some form of senior technical institution and it is desirable to determine the respective parts to be played in this connection by the technological departments of Universities and by Polytechnics and other senior technical institutes, which will not as a rule form part of Universities. The Committee fully realise the very important role which universities should in future play in the progress of technical education in general and in the training of the highest grades of workers in particular. It is often alleged that technical education, as it exists at present, is in its higher stages too academic in character and insufficiently in touch with the actual needs and conditions of industry. There is a good deal of truth in this criticism but the Committee believe that the grounds for it could be removed, if Universities would make their technological courses more practical and ensure that students are given first hand experience of industrial conditions throughout the course and not merely at the end of it. Even if this were done, however, there would still be much to be said for providing the highest forms of training in institutions of the Polytechnic type as well as in Universities. Of the many arguments which can be advanced in favour of this it is not necessary to mention more than two here. Firstly it is most important that the future expert or executive should receive this training in a place where he can come into contact with the people with whom he shall have to deal and work later on; these will not usually be found in a University. Secondly, a technical institution for obvious reasons should be located as close as possible to the industry or industries which it is designed to serve; the location of universities is usually determined by quite different considerations, though some, of course, are in or near industrial areas.

There is also the question of the future control of the highest stages of technical education. If the central body, which it is proposed elsewhere in the report should be set up, is to anticipate and provide for the needs of post-war industry, it should have under its control a comprehensive system of advanced technical instruction in all its branches. It is too much to expect that universities would be prepared to hand over to it forthwith the direction of their technological departments and in any case friendly rivalry within economic bounds may have its advantages during a period of transition and experiment. At a later stage it is possible that senior Technical Institutions, as in some Western countries will become increasingly recognised as the technological departments of Universities.

It is nevertheless necessary that in order to avoid overlapping and wastage there must from the beginning be some co-operation of the work of Technological Departments of universities and that of Senior Technical Institutions. This would be facilitated if there was also a Central Body directing University development, either as a whole or in the fields of technology and applied science.

16. Apart from the recommendations set out above which concern the provision of full-time instruction, it is reasonable to assume that as industrial development takes place, whether in the form of large scale or village industries an increasing number of workers will continue their technical education on a part-time basis by attending classes either in the day or the evening. The drawbacks to evening classes are well-known and owing to climatic and other conditions they may well be greater in India, than in Western countries. Nevertheless, it is fair to record that many people, who today occupy positions of responsibility in Industry all over the world, owe their success to attending at evening classes. Those who give up part of their leisure after a day's work in order to improve their qualifications at any rate show signs of possessing the qualities of grit and determination that make for success in life. Part-time day classes, or the sandwich system, which is an extension of the same idea, on the other hand constitute a factor of great importance in any modern scheme for technical education. Their main advantages may be summarised as follows:—

- (1) They minimise fatigue on the part of students.
- (2) They bring the efficiency of the instruction under the criticism of students who have some first hand knowledge of the requirements of modern industry.
- (3) They enlist the direct interest of employers, inasmuch as they are releasing and, it is to be hoped, paying their employees to undergo instruction during their ordinary working hours and consequently expect to derive some practical benefit from the sacrifice they are making.

In spite of some initial opposition progressive employers in Great Britain have become convinced of the benefits of the part-time day system not only to their employees but also to themselves, and it is now the practice of many firms to release their younger employees to attend technical classes on two half days or one full day a week or even longer at the expense of the firm, which pays not merely the class fees but also the employees' wages during the time spent under instruction. The sandwich system, which is most suitable for the higher grades of workers, means that the employee instead of attending classes for a day or two half days a week, divides the year between the works and attendance at a Technical Institution. The adoption of such a system would be of particular value in India, as it would help to counteract the present over-academic tendency of too many technical courses, whereby a student may spend several years under instruction without obtaining any first-hand experience of actual factory conditions. It is to be hoped that Indian employers will quickly recognise the value of the part-time day system; if not, it may be necessary to stimulate their interest by levying a special tax for the further education of their employees, as was done in France after the last war, on those employers who do not provide the necessary facilities themselves. The cost to them of such part-time instruction is not in any case likely to be prohibitive. Recently an industrialist in England carried out an enquiry in three factories and it was found that the cost of releasing all juvenile employees for a full half-week would amount to only about 2 per cent. of the total wages bill and 1 per cent. of the total cost of production.

17. In addition to the provision of facilities for training skilled artisans and the superior grades, an up-to-date system of Technical Education must also cater for those in the lower grades who wish to improve their equipment as workers and as citizens. The conception of a modern Polytechnic as a People's University has already been referred to and this idea is capable of very wide development in all thickly populated districts.

At this stage the sphere of Technical Education will overlap that of Adult Education, which will also be engaged in the provision of vocational classes

Some demarcation will arise from the fact that Technical Institutions, apart from Agricultural Institutions, which should really be regarded as a part of Technical Education, will normally be found only in urban or thickly populated districts, whereas Adult Education should cover the whole country. At the same time, as the Board's Adult Education Committee has pointed out, it is neither possible nor desirable, especially in India, to draw too strict a line between the spheres of Technical and Adult Education. It will be the business of the responsible Administrative Authority to prevent unnecessary overlapping.

It is quite impossible to forecast the extent of the demand for part-time classes; the provision of such facilities in other countries has proved so remunerative in the widest sense that it is justifiable to lay down the general rule that where any reasonable demand arises, every effort should be made to satisfy it.

18. In view of the extent and nature of the technical instruction and training required for workers of different categories, from the managerial to the operative class, the following courses should be provided:

(i) A two-year full-time course in Trade (or Junior Technical or Industrial) Schools for those who are likely to enter industry immediately afterwards and to become skilled artisans. Pupils will be admitted to this course on leaving the Senior Basic (Middle) School at the age of about 14.

(ii) A six-year full-time course in Technical High Schools for those who aim at reaching ultimately the supervisory or managerial grades or becoming research workers. Only selected pupils will be admitted to Technical High Schools on completing the Junior Basic (Primary) stage at the age of about eleven, though facilities will be provided for transfer up to the age of fourteen from Senior Basic Schools or High Schools of the academic type. The first three years of the course will be devoted mainly to general or cultural subjects.

(iii) A three-year full-time Diploma course, to which students will be admitted after passing the final examination of a Technical High School or an equivalent examination.

(iv) A two-year full-time Advanced Diploma course in Senior Technical Institutions, for those who have obtained the first Diploma.

(v) A three-year part-time Certificate course for those already in employment. Here again the normal condition for entry will be a Technical High School Leaving Certificate or its equivalent.

(vi) A two-year part-time Advanced Certificate course for those who have obtained the first Certificate.

(vii) Courses of all kinds and all standards in individual arts, crafts and other subjects related to industry and commerce, for which there may be a sufficient demand.

19. While it is necessary that in Technical as in other branches of education there should be examinations of some kind, since prospective employers will require some certificate as to the standard to which the would-be employee has attained, it is particularly important that in an activity so closely related to constantly changing needs freedom to experiment as well as to modify both methods of teaching and the contents of courses should be at all costs preserved. It is not less important, particularly in the case of those senior students who will receive this training in Polytechnics rather than Universities, that the Diplomas and Certificates awarded to them on the successful completion of their courses should enjoy all-India recognition and should represent an approximately uniform standard. In the absence of any national institutions or recognised examining bodies capable of satisfying this need the Committee particularly welcome the recent formation of the Association of Principals

of Technical Institutions (India). This Association has already done valuable work in the way of establishing national diploma and certificate courses etc., in the main branches of technical and commercial education and of framing syllabuses in connection therewith, and the Committee are of opinion that all the bodies responsible for administering technical education should not merely recognise this body and give it all the assistance in their power but should also look to it increasingly for help and guidance in all matters affecting the future development of technical instruction generally and the conduct of examinations in particular.

20. As in other branches of education, or perhaps even to a greater extent because it is still more or less a new field, the success of any system of technical education will call for the most careful selection of teachers. It is necessary in the case of all teachers that, apart from possessing the required pedagogic ability, they should be in sufficiently intimate contact with the current problems and realities of the world around them to be able to give their methods of teaching a practical character, to humanise instruction and to stimulate and train the emotional as well as the mental faculties of their pupils. The need for such a realistic and intelligent handling of the human material in their charge is even greater in the case of teachers in technical institutions. Such teachers will be of two main types, those for general or cultural subjects and those for technical subjects. The technical subject teacher must be recruited direct from industry, so that he may be fully conversant not only with the principles underlying the processes of production but also with the practical application of those principles as well as with the actual conditions and problems of industry as a whole. For the general subject teacher it is not, of course, so important that he should have the same first-hand knowledge of industry, but some trade experience is certainly desirable, in order that he may understand both the outlook and methods of industry, and the conditions under which his students have or will have to work and live.

While it is desirable that the teacher of general subjects should have had the normal professional training as well as industrial experience, in the case of teachers of technical subjects such pedagogical training as they may need should normally be provided in the technical institution itself. In the early stages, in view of the dearth of qualified teachers, special arrangements will probably be necessary to give teachers of general subjects some experience of industry and commerce as well as to recruit skilled craftsmen into the teaching profession. Until, however, industrial development has proceeded sufficiently far in this country, it will also be necessary to recruit a large number of technical teachers, at least in the higher grades, from among those who have received their training abroad, or alternatively to send suitable Indian teachers abroad for training. For teachers concerned with the more highly specialised or complicated branches of industry dependence on foreign recruitment may remain for some time, though every effort should be made to provide the requisite training facilities in this country.

21. With regard to conditions of service, the Committee feel that there should be no undue differentiation between the teachers of general subjects and those of technical subjects. They should be regarded as enjoying equal status as members of the teaching staff of the institution though the qualifications of the two categories may vary widely. It is possible, for instance, that a teacher of a technical subject may have no paper qualification at all, but if he possesses the requisite ability and suitability he should not only not be considered in any way inferior to the other teachers but should also have an equal chance of promotion.

Theoretically perhaps the salaries of all teachers in the same grade should be the same irrespective of the subject they teach. In practice, however, such

uniformity cannot be enforced and the principle of higher remuneration for specialist teachers must be accepted for two main reasons. They will normally be recruited from industry and trade where they will have already spent several years acquiring practical experience and thus will enter a technical institution at a higher age than the general subject teachers. Secondly, since they will be drawn from industry and commerce, where the standard of remuneration for experts is higher than anything which the teaching profession normally offers, they must be afforded the necessary inducement to transfer.

The Committee, therefore, recommend the following scales of salaries which, it may be noted, are based on pre-war standards:

(a) Teachers of general subjects in Technical High Schools should receive the same grades of pay as teachers with comparable qualifications in ordinary High Schools. They may, however, be granted up to five increments for appropriate industrial or commercial experience after the age of 20.

(b) Teachers of technical subjects:

(i) Workshop or laboratory Assistants—Rs. 50—1—75. The initial salary should be fixed according to experience.

(ii) Teachers Class III—Rs. 75—5—150.

(iii) Teachers Class II—Rs. 175—10—325.

(iv) Teachers Class I—Rs. 400—25—1,000 (including Heads of Departments).

(v) Principals—Salary according to the nature and size of the institution.

Teachers in Technical Institutions below the grade of Heads of Departments may be given an allowance of up to 50 per cent. of their salary to meet the higher cost of living in certain areas or other special circumstances.

There should also be a limited number of posts of special responsibility carrying an allowance of Rs. 25 p. m. These posts will normally be confined to Teachers in Class II and Class III.

22. It is necessary not only that technical teachers should possess some trade experience at the time of their appointment but also that they should retain contact with the trades which they are called upon to teach, so that they may keep their own knowledge and methods up-to-date and at the same time remain familiar with the conditions in which their students will have to work. The head of a technical institution should also maintain constant and intimate contact with industry, not merely because he is more than anyone else responsible for ensuring the realistic character of the instruction given in his institution but also because such contact alone can enable him to relate the output of his institution to the changing needs of the occupations it is designed to serve.

In order to encourage teachers to keep up-to-date in their own particular crafts permission should be given to them to undertake consulting practice or commission subject to specified conditions, which will ensure that such private work does not interfere with the efficient discharge of their duties as teachers.

23. In order that the right type of students may be encouraged to undergo technical instruction, which is necessarily more expensive than most other forms of education, care must be taken to see that those with the requisite aptitude are not debarred through inability to pay the prescribed fees.

Those taking part-time courses may perhaps be expected to pay a reasonable fee since they will usually be in employment. Of those selected for full-

time courses, some may be able to pay fees but many are not likely to be in a position to do so. It will, therefore, be necessary to offer a liberal number of freeships, scholarships and maintenance allowances. The number and amount of these will vary in different places but it is reasonable to assume that at least half the students in technical institutions will need assistance in one form or another.

While technical institutions will be provided only in those areas where there is need for them, admission must obviously not be restricted to students belonging to those areas but must be open to every part of the country. It will therefore also be necessary to provide ample hostel accommodation in a large number of institutions where such accommodation is likely to be required.

24. In view of what has already been said in regard to the need for relating technical instruction to the actual conditions and requirements of industries, it follows that technical institutions should be located as close as possible to the industries which they are designed to serve. On the one hand, the teachers and students of technical institutions must be able to study industrial organisation and developments at first hand; on the other, it is equally important that there should be opportunities for constant contact between the employers and the institutions which train their future employees and that technical institutions should be able to obtain readily the advice and criticism of industrial experts.

The need for locating technical institutions near industries necessarily means that certain areas will have abundant facilities for technical education while others will have few or none. If technical instruction, at any rate in the higher grades, continues to be a provincial responsibility, this will mean that while some areas will have to maintain and support a very large number of technical institutions, others will have an unduly light burden to bear. In view of past experience, there is also a considerable danger of opportunities for technical education being denied even to most suitable students who happen to belong to a non-industrial area. It is a common complaint today that admission to institutions providing professional or technological courses of an expensive kind is more or less restricted to residents of the province in which those institutions are situated. Apart from this, however, it may not be fair to expect some areas and not others to meet the whole cost of developments which are really for the benefit of the country generally.

The Committee are, therefore, strongly of opinion that technical education in its higher stages must be organised on an all-India basis. It is not proposed that technical institutions of all types should be brought into an all-India system. Technical High Schools and Trade (or Junior Technical or Industrial) Schools, which will properly be a part of the general system of Secondary Education and which will to some extent cater for local needs, should remain under Provincial Governments. All higher technical education, however, except that in the Technological Departments of universities, should form part of an all-India organisation designed to serve the needs of the country as a whole.

If the Committee's recommendation is accepted by the authorities concerned, it will follow that the entire financial responsibility for such a system should be accepted by the Central Government. This will ensure a coherent and consistent policy in regard to developments in technical education and will also remove the injustices referred to earlier; it will throw open the doors of every senior technical institution to all suitable candidates, whatever their domicile, and it will relieve the provincial exchequers of an unfair burden.

25. "In nearly every great industrial country" Mr. Abbott pointed in his Report, "technical education and general education are administered by the same Department of State, i.e., the Ministry of Education". In India,

however, there has been no uniformity of practice in this respect and it is the exception rather than the rule to find technical education under the administrative control of the Education Department. The reason for this has probably been that the primary function of technical institutions has been considered to be the serving of particular trade needs, and it was, therefore, thought proper to entrust their administration to the Departments immediately concerned with industry and commerce. There is now-a-days, however, a growing realisation of the value of technical instruction as a means of general education, and it is coming to be recognised that although technical education is a preparation for certain vocations, its primary function is educative; in other words, it is an integral part of the general educational system. The Committee have, therefore, no doubt that the administration of technical education should be entrusted to the educational authorities.

They feel, however, that since technical education is a highly specialised branch of education, its administration requires expert knowledge and practical experience, and they, therefore, recommend that every Education Department should have a special section dealing with technical education and that there should be a separate directional and inspectorial staff for this purpose.

Although technical education should be administered by the Education Department, there should be very close contact and co-operation between that Department and the other Departments concerned as well as with industry and commerce. While the need for such co-operation can hardly be overstressed, the Committee do not wish to lay down any rigid rules or exact procedure for ensuring it. It must obviously be based on a realisation of community of interest, and there is ample room for experiment in devising the best means of bringing together the many interests concerned.

26. The need for organising higher technical education on an all-India basis has already been emphasised. In view of probable post-war industrial development the nature of such an organisation will call for careful consideration. At present there is no machinery which can effectively stimulate and supervise a large development of technical education. The formation of the Association of Principals of Technical Institutions (India) has already been welcomed as an important step in the direction of co-ordinating technical instruction on an All-India basis, and the Committee feel that it should be given every encouragement in its work; but while this body can render very useful service in advising as to the lines which development should follow and particularly in undertaking the essential preliminary surveys, it is hardly suited to shoulder administrative responsibilities and the need for a controlling authority remains.

To ensure both comprehensive planning and the fullest co-operation and contact between the different Government Departments concerned and industry and commerce, the Committee are of opinion that there should be an All-India body in supreme charge of all higher technical education, except that provided in the Technological Departments of universities. This body should consist of representatives of all the Government Departments concerned, Central and Provincial, of Industry and Commerce, associations of employers or of employees and of other interested bodies such as the Central Advisory Board of Education, the Universities and the Association of Principals of Technical Institutions (India). Effective liaison with universities will be essential.

This central body, which might be called the All-India Council for Technical Education, should concern itself not so much with the day-to-day administration of individual institutions, which should have their own governing bodies as with prescribing policy generally and allocating government grants in such a way as to ensure that it can be carried out.

27. The following is a summary of the Committee's main conclusions and recommendations:—

(1) In view of the recent expansion of industry and the likelihood of further development after the war it is necessary to plan immediately a comprehensive system of technical education at all stages.

(2) The function of Technical education may be described as two-fold, (a) to meet the needs of industry and commerce for properly trained workers of all grades and (b) to provide a suitable form of education for those boys and girls whose natural abilities can best be developed by instruction on practical lines.

(3) Technical education should be regarded as an integral part of any educational system and as in no way inferior to education of the academic type.

(4) Education from the earliest stages should be given a more practical character, and the curriculum should aim at making boys and girls familiar with practical as well as academic subjects.

(5) Technical education must include commercial education and art in relation to industry.

(6) Agricultural education should be regarded as an essential branch of technical education and should be closely linked up with the other branches. Senior Basic or Middle as well as High Schools in rural areas should have an agricultural bias.

(7) In view of the great importance of agricultural education for this country a special committee of educational and agricultural experts should be set up to consider the subject fully.

(8) In order to provide suitable instruction and training for the different types of workers required there should be the following main types of technical institutions:—

(a) Junior Technical or Industrial or Trade Schools,

(b) Technical High Schools,

(c) Senior Technical Institutions.

(a) and (b) will normally provide full-time instruction preparatory to employment, while (c) will also provide part-time instruction for those already in employment.

(9) The type and duration of part-time instruction should be determined in consultation with employers and according to the needs of the locality. It is desirable that part-time classes should be held during the day rather than in the evening.

(10) Wherever circumstances permit polytechnics are to be preferred to monotchnics.

(11) The following courses of studies should be provided in technical institutions:—

(i) a two-year full-time course in Junior Technical or Industrial or Trade Schools to which pupils should be admitted on leaving the Senior Basic (or Middle) schools at the age of about fourteen,

(ii) a six-year full time course in Technical High Schools to which selected pupils will be admitted on completing the Primary (Junior Basic) stage at about the age of eleven. The first three years of the course will be mainly devoted to general subjects,

(iii) a three-year full-time Diploma course to which students will be admitted after passing the final examination of a Technical High School or an equivalent examination.

(iv) a two-year full-time Advanced Diploma course for those who

have passed the above examination,

(v) a three-year part-time Certificate course in Technical High Schools for students already in employment,

(vi) a two-year part-time Advanced Certificate course for those who have passed the above examination, and

(vii) classes in individual arts, crafts and other subjects, related to Industry and Commerce for which there may be a sufficient demand.

(12) There should be only one external examination at the end of a course. Other examinations should be conducted internally.

(13) All teachers in technical institutions should have some first-hand experience of some branch of industry or commerce.

(14) (a) Teachers of general subjects in Technical High Schools should receive the same grades of pay as teachers in ordinary High Schools. They may be granted up to five increments for appropriate industrial or commercial experience after the age of twenty,

(b) Teachers of technical subjects should receive the following scales of salaries:—

(i) Workshop or Laboratory Assistants—Rs. 50—1—75. The initial salary should be fixed according to experience.

(ii) Teachers Class III—Rs. 75—5—150.

(iii) Teachers Class II—Rs. 175—10—325.

(iv) Teachers Class I—Rs. 400—25—1,000.

(v) Principals—Salary according to the nature and size of the institution.

Teachers in Classes II and III may in certain areas be given an allowance of up to 50 per cent. to meet the high cost of living or other special circumstances. There should also be a limited number of posts of special responsibility carrying an allowance of Rs. 25 p.m. These will normally be limited to Teachers in Class II and Class III.

(15) All teachers of technical subjects should be encouraged to keep in touch with the appropriate branch of industry or commerce and, with this object in view, they should be permitted to undertake consulting practice or commissions, subject to approved conditions designed to prevent such private work interfering with the efficient discharge of their duties as teachers.

(16) There should be an adequate system of scholarships and maintenance allowances designed to ensure that no one having the necessary aptitude and ability should be prevented by lack of means from pursuing a course in technical institutions. Hostels should be provided wherever necessary.

(17) Technical institutions should be located in or near industrial and commercial areas, but students from other areas should have an equal opportunity of admission to those institutions. To ensure this it is necessary that technical education should be organised on an all-India basis.

(18) Technical High Schools and Junior Technical, Trade or Industrial Schools should be administered by Provincial Governments, but all technical education beyond this stage, except that conducted in the Technological Departments of Universities, should be placed under a central controlling body which would have on it representatives of all the interests concerned. This body should be set up as soon as possible.

(19) The formation of A. P. T. I. (I) is a most welcome step in the direction of co-ordinating technical instruction in the country. It should be given adequate representation on the central controlling body.

(20) It is essential that the administration of all technical education should be under the Education Department of the Central or Provincial Government or State, as the case may be. There should be a separate inspectorial staff for this purpose. The Education Department should maintain close contact with the other Departments concerned with Industry and Commerce.

(21) As a corollary to technical education in its higher stages being administered by a central body, the financial responsibility will have to be accepted by the Central Government.

ANNEXURE I

Agenda

1. To consider the scope and function of Technical Education in the light of recent developments and with special reference to the future needs of India, so far as these can be foreseen.

2. To consider whether the following branches of instruction should be regarded as coming under the general heading of Technical Education:—

(a) Commercial Education.

(b) Art in relation to Industry.

(c) Agricultural.

3. To consider what types of institution should be included in a national system of Technical Education and, in this connection to define the special function and place of Technical High Schools and Junior Technical or Industrial Schools in relation to the other branches of the Educational System.

4. To consider the proper relationship of the higher branches of technical instruction, including research, to universities and institutions of university rank.

5. To determine how far the provision for Technical Education should consist of full-time courses preparatory to employment or of part-time courses, day or evening, designed for those already in employment.

6. To consider the content and duration of the main types of course to be provided in technical institutions.

7. To consider the question of Examinations at the different stages of Technical Education.

8. To consider the question of the recruitment, training, and condition of service of teachers for technical institutions of different types.

9. To consider what arrangements should be made for enabling suitable students in poor circumstances to take full advantage of facilities for technical education.

10. To explore the best means of organising and administering Technical Education in order to meet the needs of the country as a whole.

11. To consider what Department of Government should be generally in control of Technical Education.

12. To consider what steps should be taken to secure the active co-operation of other Departments concerned with technical problems as well as of employers and employees in Industry and Commerce.

ANNEXURE II

Note on Technical High School

General aims.—The general aims of a Technical High School will be to offer to pupils of the normal high school type an alternative form of higher education of a less academic character, which will allow a greater freedom of choice both to pupils and teachers and will comprise in the later stages grouped courses incorporating the principles of technology and of commerce. Technical skill and manual dexterity will not be pursued merely for their own sake. The object will be to cultivate an interest in the wider problems of modern industry rather than in the technical difficulties of particular processes, so that the pupil upon entering employment will bring to bear an interest in his trade or profession not confined only to the office or workshop but embracing its more comprehensive aspects, whether economic, technical or sociological.

Age of admission and length of course.—In order to secure the right type of pupil it will be important to fix the age of admission not higher than that at which boys commonly enter upon other forms of post-primary education, i.e., about 11 *plus*. For the first three years (or possibly four if boys are admitted in any number before 11) the curriculum should be of a general character and on similar lines to those followed in a good middle school so that at the end of this stage pupils, whose particular bent or probable future occupation would best be met by a normal high school course, may be transferred without difficulty. This would at the same time facilitate transfers from as well as to high schools. After this stage a certain number of subjects of a practical character will be introduced into the curriculum but it should again be emphasised that the methods by which they will be approached will be primarily cultural and that the general education of the pupils in such subjects as the Mother Tongue, English, History, Geography and Mathematics will be correlated with but not subordinated to the practical instruction. As the number of grouped courses containing technical, commercial and art subjects will depend on the number of pupils admitted, their particular desires and aptitudes, as well as the needs of industry and commerce in the area which the school may be expected to serve, it will be undesirable to specify in too great a detail what these grouped courses will comprise, at any rate during the experimental stage. In any case this will be a matter for determination in the first instance by the principal in consultation with his Heads of Departments. As a general indication, however, it may be taken that the properties of materials, the elements of engineering science, measured drawing and simple design will find a place in the technical course, while commercial geography, economic history and business practice will form part of the commercial course. This second stage would normally last for three years, the practical subjects occupying a progressively large place during the last two years.

A very important question will arise in connection with the medium of instruction. As it is hoped that pupils leaving the school will ultimately attain to positions of responsibility in the business world, it is important that by the time they leave they should have a sound practical mastery of English, i.e., they should be able to read, speak and understand English as used by an educated Englishman. English of this kind as distinct from the English of poets and classical writers should occupy a prominent place from the beginning of the course, but the stage at which and the subjects in which it should be used as the medium of instruction may be left for decision in the light of experience. Shorthand and typewriting, if the demand for them is sufficiently great, should be taught intensively towards the end of the course. It is realised that suitable text books for some of the proposed subjects may not be available in Bengal. In such cases the school must satisfy its own needs by writing them or getting them written.

A further question is whether schools of this type should take on external leaving examination. There can be little doubt that pupils, parents and prospective employers will all look for some certificate that the course has been successfully completed, but external examinations must on no account be allowed to dominate the curriculum or restrict freedom to experiment.

It is essential that all pupils throughout should be provided with the same social and recreational amenities as they would enjoy at a good high school and emphasis should also be laid on the fact that the school aims at turning out adaptable well-educated boys rather than trained specialists for any particular branch of industry and commerce. If this objective is kept clearly in mind the intake of the school need not be determined by any statistical survey of the capacity of local industry to absorb leavers in as much as the normal leaver will be at least as adequately equipped as the high school leaver to find employment.

Placing of leavers in employment.—If schools of the type contemplated are to be regarded as addition to the provisions for higher education already made in schools of the accepted high school type, their products must increase the number of juveniles seeking employment of a progressive and attractive kind. If, however, their main object is to provide instruction which will lead to more suitable employment for young people who would remain in any case at some kind of school until 17 or 18, the numerical aspect of the effect of their output on the labour market becomes less important. The general question, however, of suitable employment for boys (and girls) leaving school, and particularly for those who have been kept there at some sacrifice by their parents with the hope of their making a better start in life, requires careful study. It is a valid criticism of the present educational system that it produces an article and does not concern itself whether the finished product finds a market and if it finds one, whether it fetches what it is worth. From this point of view also it is essential that the new type of school, because it is new, should enlist the active interest and support of industry and commerce from the beginning and that what it stands for and what it offers should be made known at every opportunity to the public at large. A Careers Bureau will form a necessary part of the organisation. Steps should also be taken to ascertain not only from the principal employers of labour in the area but also from Government Departments which might find suitable recruits in the type of body produced by a school of this kind and from municipal undertakings with similar needs the approximate number of leavers they would be prepared to take on annually.

Possible modification in the organisation of the Technical High School during the transitional stage.—It will be observed that the suggested course for the Technical High School is designed to cover six years beginning from the age of eleven plus. This means that the normal boy will complete the course at about the age of seventeen. I am aware that at the present time, not only in Bengal but also in India generally, boys are accustomed to complete their high school course and even to enter universities at a much younger age. I believe, however, that modern educational opinion in India is coming to regard the truncation of the high school course and the unduly early commencement of the university course as undesirable and that before, very long it will be the exception rather than the rule for a boy to start a university career before the age of seventeen. I feel, therefore, that the length of the course suggested for the Technical High School should stand, though during the period of transition it may be necessary to shorten the second stage of the course, at any rate for the abler boys, from three years to two. This may involve a certain amount of adjustment in the curriculum at the earlier stage, though it is to be hoped that the need for this will only be temporary.

This note was written sometime ago. Mr. Wood, Principal of the Delhi

Polytechnic, who has practical experience of running a Technical High School in India, will be able to advise the Committee how far in his opinion the views expressed in the note require modification.

Sd/- JOHN SARGENT.

ANNEXURE III

Note on the History of the Control of Technical and Industrial Education in India

The Report of the Indian Industrial Commission (1916-1918) contained the following observations on the question whether the control of Technical and Industrial Education should be exercised by the Departments of Education or the Departments of Industries :—

“177. Although we have proposed to place the control of technical and industrial education under the Departments of Industries, we are aware that, specially in regard to the former class of education, there is a strong body of opinion in favour of retaining it under the Director of Public Instruction.

“This opinion appears to be based on the following grounds; firstly, that the Department of Education cannot be dissociated from these forms of teaching without loss, on account of the importance of method, with which that department is naturally more familiar than any other; secondly, that any form of teaching which is removed from the Department of Education may lose prestige in the popular mind; thirdly, that all technical and industrial training must include some degree of general education, with which the Department of Education is organised to deal.

“178. In meeting these arguments, it must be borne in mind that, in the first place, education designed to produce men who will readily find industrial employment must in any case be very largely controlled by an agency which, by its training and constant association, is in touch with the industries that will furnish that employment. Both in devising educational schemes and in ensuring by inspection that they are actually followed in working, this class of agency must have a predominant part. It is not enough to appoint a man with an industrial training as an inspector of Industrial school; he must throughout be kept in touch with industries and industrialists, or the training given will soon degenerate. Speaking generally, the different forms of technical and industrial education have as their object either the training of a man who will ultimately direct industrial operations or the productions of workman skilled in some form of handicraft. Of the success of the teaching, the private industrial employer must remain the ultimate judge. The Department of Industries is the only Government organisation capable of entering into his point of view, and the only one with which he can readily associate himself. It is the only agency of any kind that can correlate the training of the requirements as ascertained by it. Almost every educationalist of standing who appeared before us was in general agreement with these views.

“Our conclusions are strengthened by a consideration of the nature of the various forms of technical and industrial education, the necessity of which has been indicated in our report. In the case of industrial schools, where craftsmanship is the all-essential feature of the training, the small amount of elementary general education that is required can easily be supervised by any person of ordinary intelligence, whilst the teaching of craftsmanship must be provided and controlled by an agency which knows from practical experience the type of employee required by an industry, and can judge if the requirements have been fulfilled. This the Education Department is not likely to be able to do, judging by the results of its past efforts in this direction. In the case of artisans who are trained in shops, the same arguments apply; and it

will be easier for a Department of Industries to maintain the necessary relations with railway or private shop managements. The superior training for foremen which will be given under somewhat similar conditions but to better educated persons and will involve a greater amount of theoretical teaching seems to fall into the same category; the only question is whether the theoretical teaching requires any degree of control by experts in the methods of imparting teaching generally. The danger of allowing the theoretical to outweigh the practical aspect of the training must be remembered. It must also not be forgotten that the experience of industrial and technical training in other countries has evolved its own theories, traditions and expert teachers, of which the Department of Industries can make a more understanding use than the Department of Education. The control of the foregoing forms of education should, therefore, rest with the Department of Industries, but the advice and co-operation of the Department of Education should be obtained in respect of general educational subjects, both in framing the courses of instruction and in deciding on the methods of teaching and inspection.

"It is only where some form of higher theoretical instruction is needed; such as that proposed by us for engineers and specialised technologists, that any question arises of the participation of the Department of Education in the control. Part of the education of engineers and the entire training of men for posts of specialised technologists should, we have suggested, be given in institutions of collegiate rank. Their expenditure should be administered and their teaching controlled by joint boards, on which the Department of Industries, the local University and employers should be represented. We have already explained the relations which should exist between the Universities and these colleges.

"179. We desire here to draw attention to the great diversity of practice which has hitherto prevailed in the methods of imparting industrial and technical education of all kinds in different parts of India, a diversity which has unfortunately permitted the existence of much inefficient or misdirected teaching. We think it necessary, for some time at any rate, to arrange for the provision of a system of regular visits by specialist officers of the Imperial Department of Industries. There is at present in the various provinces no generally accepted tradition of correct methods in these forms of teaching, and we think that Local Governments and Departments of Industries would be greatly assisted in their efforts to create one, by occasional visits from imperial officers, whose functions would be merely advisory, and would be confined to placing their notes and observations before the Local Governments for consideration. The specialist visitors would form a convenient channel for transmission to one province of useful experience acquired by another, and this would enable Local Governments, while retaining complete control of their own industrial and technical education, to profit by the knowledge gained elsewhere".

The recommendations of the Industrial Commission were generally followed in all Provinces in India, except Bombay. In Bombay an industrial workshop was placed under the Industries Department for some time and that Department also supervised the weaving schools, but the Department of Education (assisted by a Committee of Direction) remained in control of technical and industrial education. The majority of a Committee which considered the subject of technical education in Bombay in 1921-22 recorded their opinion that "in common with most other provinces, the provincial Department of Education has not handled with confidence the problems of technical education". But they recommended that technical education should remain under the Director of Public Instruction, the immediate control resting with an enlarged Committee of Direction, over which the Director of Industries could, if necessary, preside. But a Committee appointed by the Provincial

Government in 1926 to examine the working of the reconstituted department of Industries found that the Director of Industries was not a member of the Committee of Direction. They recommended his addition to the Committee and advised that industrial education should be placed under his control.

In Madras, a committee on technical and industrial education which presented its report in 1923 approved the system in force by which trade and industrial schools were supervised by the Industries Department and the colleges and higher institutions by other departments. In the Punjab, prior to the report of the Industrial Commission, industrial and technical schools were few and were under the control of the Education Department. The Punjab Government accepted the advice of the Commission and the schools were transferred to the Industries Department. The position therefore is that technical and industrial schools are under the jurisdiction of the Department of Industries whereas Technical Colleges are under the universities and *ipso facto* under the Education Department.

In their report on Vocational Education in India Messrs. Wood and Abbott observed as follows :—

“ 139. There remains for discussion the important question of the control of the trade, industrial and technical schools, that is whether they should be transferred to the Department of Education when this assumes responsibility for a certain measure of vocational education; or whether their control should remain, as at present, with the Department of Industries. The latter course was recommended in 1918 by the Indian Industrial Commission, which had carefully considered the various factors to be taken into account in reaching a decision in this point (Section 178 and 179 of their Report); and their recommendation was accepted and acted upon.

“ 140. We are bound to point out that in nearly every great industrial country of whose system of vocational education we have any knowledge (and we have obtained information on this point from more than twenty different countries) technical education and general education are administered by the same Department of State, i.e., the Ministry of Education, although this Ministry has, usually, separate sections each dealing with a particular branch of education. Nevertheless, we are not disposed to recommend that at the moment any transfer of the trade, industrial and technical schools should be made from one department to another, though we believe that such a transfer may ultimately be necessary. Our reasons for this conclusion are—

(a) It is not desirable to modify an existing arrangement, which is generally understood and accepted, unless quite cogent reasons exist.

(b) The schools, as now organised, are often productive industrial undertakings rather than schools. Many of them buy raw materials, convert them into finished goods and sell the product; and their aim is, in many instances, to give manual skill rather than scientific knowledge.

(c) The Department of Education as yet have no staff competent to inspect and advise on technical education, whereas the Department of Industries in both provinces have officers of suitable experience and knowledge.

(d) The industrial schools are aiming, not merely at training students but at developing fresh industries and using new local materials.

“ With the growth of preparatory vocational education and, as we hope, the development of technical schools of the polytechnic type in India, the conditions will be materially altered and the control of technical education may then have to be transferred, as in other industrial countries, to the Departments of Education. We believe, however, that at present the time is not ripe for this step to be taken ”.

“*Administration of Junior and Senior Vocational Schools.*—141. What we have said about the control of Industrial and Technical Schools does not apply either to Junior or Senior Vocational Schools, whose educational content is so very closely related to that of the Schools of general education. We recommend that they should in each province be administered by the Department of Education.”

In November 1941, the Government of Assam pressed for the discussion by the Central Advisory Board of Education in India of the question of the co-ordination of the Departments of Education and Industries in regard to the promotion of Technical and Industrial education along with general education through universities and colleges. In doing so the Assam Government referred to the need for the development of technical education especially in relation to the process of industrialisation which had been stimulated by India's contribution to the War effort.

The Central Advisory Board of Education considered the question at their Seventh Meeting in January 1942, and, “while recognising the importance of the closest collaboration between the Department of Education and the other Departments of Government concerned with industry and commerce as well as industrial and commercial interests, were strongly of opinion that if overlapping and waste were to be avoided, all types of Technical Education, using the word in its broadest sense, should in all provinces be under the direct control of the Department of Education. They based this opinion mainly on the ground that whatever other interests may be concerned, both the primary objective and the technique required were essentially instructional. The Board regarded the matter as of particular importance in view of the industrial developments which may be anticipated after the war and of the contribution which Technical Institutions would be expected to make in this connection. Even in the case of War emergency measures like the Technical Training Scheme the Board would attach much importance to close consultation between the department immediately responsible for the scheme and the education authorities affected by it.” At their Eighth Meeting held in January 1943 the Board reiterated the recommendation made at their Seventh Meeting that all types of Technical Education should be under the control of the Education Department concerned.

ANNEXURE IV.

DRAFT LETTER PROPOSED TO BE ISSUED BY THE PRESIDENT, ASSOCIATION OF PRINCIPALS OF TECHNICAL INSTITUTIONS (INDIA), TO THE DIRECTORS OF PUBLIC INSTRUCTION AND DIRECTORS OF INDUSTRIES OF ALL PROVINCIAL AND STATE GOVERNMENTS.

Association of Principals of Technical Institutions (India).

I enclose herewith a pamphlet describing the reasons for the creation of the Association of Principals of Technical Institutions (India)—its aims and objects, together with a copy of its Constitution. The appendix to the pamphlet gives an account of the activities, achievements and ambitions of the Association of Principals of Technical Institutions (England) and the Association of Principals of Technical Institutions (India). The Educational Adviser to the Government of India has given full support on behalf of the Government of India. This Association believes that your Government will recognise the need for co-ordinating Technical Education in India and will co-operate with it in such a manner as to make this possible.

1. by recognising the A. P. T. I. (India),
2. by accepting the All-India Diploma and Certificate Schemes (copy attached) prepared and recommended by the A. P. T. I. (India) by adopting the All-India Courses in the Technical Institutions within your juris-

diction and by accepting the financial commitments implied, namely :—a fee payable to the appropriate Joint Examination Board by each institution on applying for recognition and annually a fee per subject in which candidates are to be presented in a final examination.

3. by releasing, if required, any Principal in your employ to take part in the Proceedings of the Council of the A. P. T. I. (India), not more than four times a year, any in the Annual General Meeting of the A. P. T. I. (India) and to pay the expenses incurred by your Principal engaged in this connection.

4. by nominating a representative to the Consultative Committee which is being set up to draw up a Policy in Technical Education.

This Association will always be glad to receive suggestions from you for the betterment of Technical Education in this country with an indication to the extent to which you will be prepared to commit your Government.

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A pamphlet describing the reasons for the creation of the Association of Principals of Technical Institutions (India)—its aims and objects.

“Education today might be considered to have three main objects. It trained individuals to get a living, to live a life, to mould a world—in other words, it was education for work, leisure and responsibility.”

(Sir Josiah Stamp)

In the last decade, unemployment amongst the educated middle classes in India grew to alarming proportions. The causes for the malady and the remedies, therefore, came to be seriously discussed by Governments, Universities and leaders of public opinion. Enquiry Committees were set up and in several cases exhaustive reports were written and published.

In general, the existing system of education came in for severe criticism as one of the main causes for the extent of unemployment amongst University graduates and under-graduates. While the old system does not deserve the wholesale condemnation to which it is subjected, it will have to be agreed that it was too academic and too far divorced from first hand contact with the needs and conditions obtaining in industry. There is need for a greater variety of occupation. It was neither planned nor well defined.

Suggestions for educational reform covered a wide field, from the primary to the post-graduate standard. Industrialisation on a countrywide scale, came to be regarded by many as a sovereign remedy.

While all agreed that the situation was serious, the ways and means suggested to meet the situation were necessarily different.

With the introduction of the constitutional reforms in 1921, Indian education became a “Provincial” subject and was placed under the charge of a Minister responsible to the provincial legislature. The control and supervision exercised by the Government of India over education in the Provinces ceased.

Along with many advantages certain disadvantages came to be noticed as a result of this transfer, arising “mainly from an undue growth of provincial exclusiveness. The Government of India realising the possibilities of these dangers, still desired to take part in educational discussions and to assist provincial governments by the dissemination of valuable information and by arranging for meetings held with the object of promoting interchanges of thought and experience.”

This led to the establishment in 1921, of a Central Advisory Board of Education, which the Government of India, on the advice of the Indian Retrenchment Committee, decided to abolish in 1923, though they were doubtful of the wisdom of such a step.

The situation arising from the scale of unemployment amongst the educated middle classes must, in no small measure, have been responsible for the revival of the Board in August 1935.

At its inaugural meeting, the Board formulated proposals for a radical reconstruction of school education. The scheme contemplated the division of the school courses into definite stages, each with clearly defined objectives, which would enable pupils, on the completion of each stage, either to pass on with as little disturbance as possible to the next stage or enter employment.

On the advice of the Board, after consulting the Provinces and with their concurrence, the government of India in 1936, secured the services of Messrs. A. Abbott and S. H. Wood to advise the Provinces in the task of educational reconstruction, with special reference to technical and vocational instruction. The selection of these experts was made with the assistance of the Board of Education in the United Kingdom. Mr. Abbott was a former Chief Inspector of Technical Schools in England and Mr. S. H. Wood was Director of Intelligence at the Board of Education, England.

Messrs. Abbott and Wood visited India during the winter season of 1936-37. After an intensive study of conditions in the United Provinces, the Punjab and Delhi, which they considered more profitable than a necessarily cursory survey of British India generally, they submitted to the Government of India their report entitled "Vocational Education in India, with a section on General Education and Administration". But before the Provincial Governments had time to examine the report and take action to suit their requirements, the war broke out.

"War is waste but is not all waste". This is particularly applicable to Technical education which came into prominence through the unprecedented demand for additional skilled workers for the purposes of a highly mechanised war. The Technical Training Scheme, started in 1940, by the Labour Department of the Government of India for the intensive training of semi-skilled tradesmen for war purposes, aimed at turning out 50,000 men by the end of March 1943, with a total training capacity of about 28,000. The scheme applied not only to technical institutions but also to factories and workshops. These latter were further requested to co-operate in a process of "up grading" by which unskilled and semi-skilled replaced skilled and highly skilled labour for transfer to the technical branches of the Defence Services and Ordnance and Munitions factories.

At the end of July 1943, 37,116 candidates were being trained in 317 training centres all over India. The training centres are still not working to full capacity; there are vacancies for over 9,245 candidates. This scheme alone has more than doubled the existing facilities in the country, the number of students on the rolls of Technical, Craft and Industrial Schools in India being about 30,000 in the year 1937. 49,589 technicians have been supplied to the Indian Army, the Royal Indian Navy, the Indian Air Force, and Ordnance and Civil factories. In addition, men recruited directly by the Defence Services receive specialised training in the service workshops and with machines they handle.

The problem for post-war industry is not merely one of how to retain the additional workers taken on for expansion that was necessary to execute war contracts, but is also one of absorbing the skilled personnel no longer required for the Defence Services. Education of new personnel will be as important as re-educating and reconditioning the demobilised war technicians efficiently to serve the peace-time requirements of industry. The two aspects of the problem, industrial and educational, will have to be solved together.

It was recognised as early as 1935 that a radical reconstruction of school education was essential. The scheme formulated by the Central Advisory Board of Education at its inaugural meeting rightly laid great stress on the

intimate relationship between Secondary and Technical education. A stage appears to have now been reached when it is equally essential to carry the policy to its logical conclusion by a radical reconstruction of Technical education.

The substantial encouragement that the Governments have given to industry and to technical education as a part of their war effort can only be of permanent benefit to the country if those connected with technical education will, without any delay, formulate a policy for the co-ordination and co-operation of the different elements and work out a systematic plan for the future. This is all the more necessary if we are not to be confronted with a problem of unemployment similar to the one that stared us in the face in the middle and later years of the last decade.

Industrial self-sufficiency in terms of National Defence and serious interference of free importation of essential articles in times of war need hardly be stressed after the experience in the country during the last four years. New industries are springing up everywhere and old ones are moving forward under rapidly changing conditions. In order that this process may continue with ease and efficiency it seems desirable to evolve a system of technical education which can cope with the ever changing requirements of industry.

Any system of co-ordination and co-operation should have for its object the elimination of waste and duplication. It is well known that many provinces and Indian States have no engineering colleges of their own and the students from these areas experience great difficulties in securing admission into outside colleges. There are, on the other hand, many colleges offering instruction in Civil, Mechanical and Electrical Engineering but very few in Architecture, Marine Engineering, Aeronautical Engineering, Town Planning and other important subjects. The position is so serious that it is even difficult to secure comprehensive information about the details of the instruction imparted in different technical institutions in the country, as prior to the formation of the Association of Principals of Technical Institutions (India), there was no organisation in existence which concerned itself with this all-important subject.

The existing conditions can hardly be deemed satisfactory. What is needed is a policy and a plan for co-ordination of effort. What should be the policy? Who are the persons best suited to lay down that policy? What should be the agency to put it into execution? These are questions which call for an urgent answer.

Before examining the details of the policy it would be necessary to understand the object it is intended to achieve. Technical education in its widest implication, covering education for Industry, Commerce and Citizenship must form an integral part of the educational system. The impression that this type of education is necessarily on a lower plane than literary education should be removed. For its success, it is essential that occupations should absorb the students who pass out of the technical schools. At the same time the purely educational benefit to be derived from studies of a practical kind must be recognised, and the expansion of technical education, not simply on the ground of its contribution to industrial development but also because it has a more stimulating effect on certain types of intelligence than a curriculum of the normal academic kind needs encouragement.

There are three parties principally concerned with technical education in this or any other country. They are the school, the college and the employer. They are engaged in producing young men who will be able to take their places in industry as artisans, foremen and executives. The artisan is the product of the primary school, the foreman of the junior technical school or technical high school and the executive of the Polytechnic, the technical college or the uni-

versity. The university, on the whole, tends to turn out a more academic article than the Polytechnic, with the result that the former leans towards research and the latter towards the managerial posts in industry. Universities take only a small proportion of a fairly uniform age, standard and type while the technical institutions are concerned with the remainder.

After a boy leaves the primary school the whole of industry should be open to him in accordance with his ability and his desire to apply it. If he completes the technical high school education, he should normally be able to go into industry where he can secure his further training in works, along with facilities to attend part-time classes at technical colleges to improve his theoretical knowledge. These part-time classes may be taken during the day by arrangement with the employer or in the evening in the students' own time.

If a man in Madras wants to employ a foreman who received the theoretical part of his training, after he started in the works or mill, at Delhi he should be able to see a certificate which would be as well known and have as much value to him as to a Delhi employer—in other words an all-India Certificate. The object is not to secure a common examination but to ensure a common standard.

If an employer, in Bombay, has before him candidates with diplomas or certificates awarded at Benares, Calcutta, or Madras, he should not have to weigh up the value of the respective qualifications. It would be a great help to him if he had a common standard by which to judge his prospective employees. To secure this object by an all-India Certificate Scheme of Examination close collaboration between the college, the employer and the Governments is necessary. But before technical institutions can usefully and effectively participate in such a scheme they will have to be organised on a national basis.

Before a detailed policy for technical education can be adopted on an All-India basis, a survey will have to be undertaken to study the existing conditions so that changes and improvements can be devised to suit the changing requirements of an industrially young country. No opportunity should, however, be lost of deriving benefit from the experience of other countries who have led the way in industrialisation.

In 1937, four Associations in the United Kingdom, intimately connected with Technical Education, *viz.*, the Association of Technical Institutions, the Association of Principals of Technical Institutions, the Association of Teachers in Technical Institutions and the National Society of Art Masters appointed a Joint Committee to prepare a report on "Policy in Technical Education". The most valuable experience in the country would thus appear to have been brought to bear on the subject and the recommendations contained in the joint report would necessarily give a definite lead in the formation of a National policy. While some of the recommendations must, by their very nature, deal with problems that are peculiar to that country, there are others that are of a general nature and could with advantage be studied and applied to other countries as well.

The following ten out of twenty-two recommendations contained in the report could with equal force apply to Indian conditions:—

1. Technical Education should be organised on a regional basis. Where the region, regarded as an art, commercial, or industrial unit, embraces areas of more than one Local Education Authority, the arrangements should be such that students in any one institution, taking the same courses, may be treated alike in regard to fees and conditions of admission.
2. Co-operation between Technical Colleges, Art Colleges, Commercial Colleges, University Colleges, and Universities should be encouraged and so

defined as to secure co-ordination and to minimise overlapping in staffing and equipment.

3. Attendance at part-time day courses of study for advanced students should be encouraged.

4. Additional facilities should be provided to enable workers in small urban and rural areas who cannot obtain suitable Technical Education locally to proceed to centres for short intensive full-time courses of training. Similar courses might usefully be provided for workers from certain large centres either in their own towns or at chosen centres, where suitable groups could be collected.

5. A National Scheme of Technical and Art Scholarships should be provided to enable students of sufficient merit and works experience to pass into appropriate full-time day courses of study.

6. The system of National Diplomas and Certificates, forming a most valuable link between industry and commerce and education should be encouraged and, where possible, extended.

7. The teaching of Industrial Administration is capable of wide development, and should receive every assistance.

8. Short week-end or summer courses for specialist teachers organised by the Board of Education have proved most valuable and should be extended.

9. Courses of training in teaching should be made available as widely as possible for part-time teachers engaged in industry and commerce.

10. Facilities for physical training and social activities should be extended.

An all-India policy based on the principles enunciated in the above recommendations would be on a regional basis. It will depend on inter-provincial co-operation to minimise overlapping in staffing and equipment. Part-time day courses can be successful only if the employers adopt a progressive attitude towards employees and theoretical training. National Surveys and National Technical or Arts Scholarships can only be possible with liberal financial aid from industrialists and/or Governments. All-India Certificate, short week-end or Vacation courses and teaching of Industrial administration will require constant co-ordination between Governments, Technical Institutions, professional bodies and the employers.

For such a comprehensive policy, for its initiation and execution, consultations and exchange of opinions between Government representatives, employers, employees and teachers will be necessary. To suit the present Indian conditions it is felt that an Association of Principals of Technical Institutions would be a suitable body to help the smooth working of a National policy of Technical Education, while the formulation of such a policy will be the responsibility of a consultative body consisting of representatives of the Central Government, Provincial and State Governments, organised industries, Trade and Commerce, employers and employees. Provision can be made for the co-option of additional members on this Committee whose experience and advice is likely to be of value. Through a Standing Committee and various Sub-committees, the Consultative Committee could maintain permanent contact with the Association of Principals of Technical Institutions, which could suitably run the secretariat of the Consultative Committee.

The main responsibility to ensure the working of the policy would rest with the Association. For the working of any single item of the programme contained in the broad outline of a national policy suggested above, an organisation of this kind would appear essential. A Principal of a technical institution is the best person to advise on regionalisation, staff, equipment, National Certificates and scholarships, short week-end and vacation courses and the training of teachers.

An enthusiastic group of principals aided by a Consultative Committee as outlined above is best fitted to conduct a survey of the facilities at present existing in the Technical Institutions with a view to implementing a planned and well-defined policy.

With a national policy and a trusted, able and keen group of Principals of Technical Institutions guided and advised by a truly representative Consultative Committee, it should be possible to proceed confidently to make an effective contribution in the building up of a democratic post war industrially-minded India.

APPENDIX.

The A. P. T. I. (England) is a body which has taken firm root in that country and is one of the chief agencies for co-ordinating Technical Education on a National basis acting in an advisory capacity to the Board of Education. The Association deals with matters such as entrance examinations, the relationship between Secondary and Technical Education, Syllabuses, Examinations, Diplomas, Certificates, Scholarships, Staff, buildings, equipment, libraries, recreational and social amenities, research, etc., pertaining to Technical Education. It also co-operates with its sister associations (A. T. I., A. T. T. I. and N. S. A. M.) and professional bodies in regard to all matters of common interest, but it has no executive powers.

The more important matters which the A. P. T. I. (England), in conjunction with its sister associations, has so far achieved, are the following:—

(1) Most of the Principals of Technical Institutions are members of the A. P. T. I., and the work and progress made by the association are given publicity through periodic bulletins.

(2) (a) It has established links with technical educational organisations in other countries so that common Problems of Technical Education are discussed and their knowledge is kept up-to-date.

(b) It maintains contact with the English-Speaking Union and other similar organisations. These bodies award scholarships which enable the holders to visit and see industrial works of other countries.

(c) It is represented on the British Management Council, which provides facilities for education and training in industrial and commercial management.

(3) It has been able to establish uniform scales of salaries for the teachers of Technical Institutions, with extra allowances available for those teachers whose work is of an advanced character.

(4) It has formulated a scheme for the training of technical teachers.

(5) It has set up a system of State Technical Scholarships.

(6) It has helped to establish the National Diploma and Certificate schemes. The schemes themselves are based upon collaboration between the Board of Education and the appropriate national professional organisation, on the one hand, and the local Technical Institution on the other. The National Diploma and Certificate schemes now cover Mechanical Engineering, Electrical Engineering, Naval Architecture, Chemistry, Building, Textiles, and to some extent Gas Engineering and Gas Supply; other proposals are being considered, and a scheme for Board of Education Endorsed Certificates in Commerce has been put into operation.

Some light will be thrown on the present activity of the Association from the following account on the recent Memorandum entitled "Britain needs a National Policy of Technical Education" (*vide Times Educational Supplement*, 8th May 1943).

"The Memorandum outlines a comprehensive policy for Technical Education as the only sure foundation for national development. It further states that nothing less than a fully comprehensive national plan, covering the entire field of technical and commercial education will suffice to meet future needs. This plan must make provision for boys and girls, adults and juveniles, for all grades of ability and every kind of occupation; it must be co-ordinated with all other aspects of education and incorporated with the total educational policy of the nation. It is with this conviction, states the Memorandum, that the Association of Technical Institutions and the Association of Principals of Technical Institutions are now engaged in considering proposals for a national policy of Technical Education".

In July 1941, Mr. W. W. Wood, F.R.I.B.A., M.I. Struct. E., Principal, Delhi Polytechnic, Delhi, called a meeting at Delhi of Principals of Technical Institutions from all over India. Mr. John Sargent, C.I.E., M.A., Educational Adviser to the Government of India, presided at the first session. The meeting resolved to form an Association of Principals of Technical Institutions in India, on the lines of the A. P. T. I. (England), for the express purpose of co-ordinating Technical Education throughout the country, including Indian States.

The A. P. T. I. (India) set up a Constitution Sub-Committee which drew up the Constitution. Pressure of work due to the fact that the members of the Association are connected with the Technical Training Scheme, also difficulties of travel, and shortage of funds, have been the main impediments in the functioning of the Association. However, within the short period of its existence, it has been able to achieve the following towards the co-ordination of Technical Education in India:—

1. It has a membership of 60 and the Association maintains contact with the Inter-University Board and the Central Advisory Board of Education.

2. It has prepared a programme and terms of reference for an All-India Consultative Committee to draw up a Policy in Technical Education in which all interests—Governmental, employers, employees, educational and examination will be represented (copy attached).

3. It has prepared a scheme for All-India Diploma Certificate Courses in Technical, Art and Commercial subjects (copy attached).

(a) It has formed a Joint Examination Board with Sir Cameron Badenoch, Auditor General in India as Chairman to implement the A. P. T. I. (I) Scheme in 'Commerce' and All-India Diploma Certificate courses in Commerce have now been established at Delhi Polytechnic.

(b) It is taking steps to form Joint Examination Boards in Engineering, Applied Science, Art, Architecture, etc.

(c) It has been invited by the Government of India, Department of Education, Health and Lands, to form a Joint Examination Board for the conduct of the Pre-Engineering Course of Delhi University.

The Joint Examination Board will form a Sub-Committee to draft syllabii of courses, etc.

4. It hopes to institute a Sub-Committee on post-war training for ex-service men and others, with a view to equip them for peace-time occupations in industries.

THE ASSOCIATION OF PRINCIPALS OF TECHNICAL INSTITUTIONS (INDIA).

All-India Diploma and Certificate Scheme.

1. The All-India Diploma and Certificate Scheme will aim at producing:
 - (a) Foremen and Charge hands, and
 - (b) Supervisory grades, in industry and persons in equivalent positions in the professions and commerce.

2. It is proposed to run two types of courses:
 (a) All-India Certificate Course which will be a:
 (i) Part-time Day Course, or
 (ii) Part-time Evening Course, or
 (iii) Part-time Day and Evening Course.

These courses are intended to provide Technical Training for persons already in employment.

(b) All-India Diploma Course which will be a Full-Time Day Course.

3. All-India Certificate Course:

(a) *Preliminary*:

Object:—This is a preparatory course for the Senior All-India Certificate Course.

Qualifications for admission:—

- (i) After completion of 6th or its equivalent class.
 Duration:—4 years.
 (ii) After completion of 9th or its equivalent class.
 Duration:—2 years.

(b) *Senior* :

Object:—To prepare persons already in the employ of workshops, factories, etc., for promotion as Foremen and Chargemen, and to equivalent positions in the professions and commerce.

Qualifications for admission:

- (i) The Preliminary All-India Certificate;
 (ii) A Leaving Certificate of a Technical High School;
 (iii) Up to the Matriculation standard conditional upon passing the prescribed admission examination. Admission to a year of a course higher than the First year may be made by the Principal on the recommendation of the Head of the Department concerned after a personal interview with the candidate.

Duration:—3 years.

(c) *Advanced*:

Object:—This is in continuation of the Senior All-India Certificate Course for a higher qualification.

Qualifications for admission: A senior All-India Certificate:

Duration:—1 to 3 years according to subject.

In all the above courses instruction must be provided for at least 180 hours per annum.

4. All-India Diploma Course:

(a) *Senior*:

Object:—To prepare persons for Supervisory Grades.

Qualifications for admission:

- (i) A Leaving Certificate of a Technical High School; or
 (ii) Up to Matriculation standard conditional upon passing the prescribed admission examination

Admission to a year of a course higher than the First Year may be made by the Principal on the recommendation of the Head of the Department concerned, after a personal interview with the candidate.

Duration:—Three years' full-time training plus one year's full-time practical training in a recognised industrial or commercial concern.

(b) *Advanced*:

Object:—This is in continuation of the Senior All-India Diploma Course for a higher qualification.

Qualification for admission:

A Senior All-India Diploma in the same subject.

Duration :—One year's full-time training plus one year's full-time practical training in a recognised industrial or commercial concern.

5. The A. P. T. I. (I), in conjunction with the individual institutions like the Institution of Engineers, India; Institute of Architects, India; Mill-owners, India, (Bombay, Ahmedabad, Calcutta); European and Indian Chambers of Commerce, Indian Branch of Institute of Chemistry, etc., will form the Examining and Certificate and Diploma awarding body and will be styled the "Examination Board". Subject to their acceptance of the Scheme the Certificate or Diploma will be endorsed by the Central and Provincial or Indian State Government concerned.

6. *Definition* : In the following rules the term Association refers to the "Association of Principals of Technical Institutions (India)" and the term "Board" as defined at (5) above, to the Examination Board.

7. Colleges or Schools seeking the approval of schemes must submit these in accordance with the instructions laid down by the A. P. T. I. (I). Before approving a scheme the Association and the Board will require to be satisfied, for the purpose of the courses under the scheme, as to the equipment of the school, the qualifications of the staff, the curriculum and syllabuses of instruction in the several subjects, and the steps to be taken to secure that students are not admitted to the courses unless they are qualified to profit by them.

8. Examinations upon the courses of study as set out in syllabuses submitted with the schemes must be held in each year of the course. The examinations in all except the final stage in each course will be conducted by the Technical Institutions or Colleges concerned. The final examination in each stage of each course will be conducted by the Board.

9. It will be a condition of approval of a scheme that certificates and diplomas shall be issued only to those candidates who pass the prescribed examinations, and that no candidate shall be awarded any certificate or diploma by the Board on the result of a common examination in which he has failed to obtain an All-India Certificate or Diploma. The further conditions of issue, *viz.*, as to home work, class work, laboratory work, etc., prior to the final year of the course must be submitted for approval. The right is reserved to call for the worked papers and the testimonies of the studies of any student to whom the issue of a certificate or diploma is desired and for any school records of his attendance, etc. The award of a certificate or diploma may be withheld if the prescribed conditions are not satisfied.

10. Arrangements must be made by the College or School Authorities for the conduct and supervision of the examinations held under the scheme. The examinations will be open to inspection by representatives of the Board.

11. The marking by the examiners appointed by the Board of the papers worked in the final examination will be subject to revision by the Board and the marks as accepted or revised by them will be taken into account as explained below for the purpose of awarding certificates, diplomas or distinctions.

12. In order to obtain a certificate or diploma a candidate must make not less than 75 per cent. of the possible attendances in each year of the course, and must obtain :—

(i) not less than 40 per cent of the possible marks in each subject in the final examination ;

(ii) not less than 40 per cent. of the possible marks obtainable in the final year for home work, class work, laboratory work, etc., taken separately, in each subject for which such marks are to be awarded under the approved scheme ;

(iii) not less than 50 per cent. of the grand total of marks obtainable in the final year. Of this total the possible marks in the final examination should constitute 70 per cent. and the remaining 30 per cent. should be the possible marks for home work, class work, laboratory work, etc., for the final year.

In order to obtain an endorsement in a subject where no marks are available for home work, class work and laboratory work, etc., a candidate must secure not less than 50 per cent. of the possible marks in that subject.

13. A distinction may be awarded to any candidate qualified to receive a certificate or diploma who gains not less than 70 per cent. of the possible marks in the final examination in any subject and his certificate or diploma may be specially endorsed with the name or names of the subject (s) in which he has thus distinguished himself.

Holders of Advanced Certificates or Diplomas may be candidates at subsequent examinations, with a view to obtaining distinction, but this will not be permitted in the case of Senior Certificates or Diplomas.

For a limited period after a scheme has been approved, certificates and diplomas may be awarded to students who have not fulfilled the prescribed conditions in earlier years, provided that the conditions applicable to the final year have been completely satisfied.

14. All syllabuses will be issued by the Board in skeleton form and the Technical Schools/Colleges will submit detailed syllabuses based thereon for the approval of the Board.

15. *Examination Fees:—*

All-India Certificate:

	Rs.
(a) Preliminary	5
(b) Senior	10
(c) Advanced	15

All-India Diploma:

	Rs.
(a) Senior	20
(b) Advanced	25

ASSOCIATION OF PRINCIPALS OF TECHNICAL INSTITUTIONS (INDIA).

Constitution.

1. *Title.*—The title of the Association shall be the "Association of Principals of Technical Institutions India".

2. *Object.*—To confer on all matters relating to the work now conducted and which may be conducted in the Technical Institutions, and to take such action with reference thereto as seems desirable.

3. (i) *Membership.*—Members of the Association shall be Ordinary Members, Life Members and Honorary Members. In the case of Ordinary Members, membership shall be limited to persons holding the position of whole-time principal of one of the following :

(a) Technological, Commercial, or Art Institution which provides a full time progressive course of instruction, covering at least 3 years, for students over the age of 16, leading to a degree, diploma or certificate, provided that the Institution in question is affiliated to a University or is maintained by or receives a grant from the Central Government, the Government of a Province or of an Indian State.

(b) High School offering full-time instruction of a technological or vocational character to all students for a period of not less than 3 years.

(c) Institution imparting progressive part-time instruction in technological, art or commercial subjects, leading up to qualifications under (a), provided the institution has had at least 100 individual students on its rolls in each of the 3 consecutive calendar years, prior to application for membership.

An officiating Principal, as well as a Principal, who is on furlough or absent from his post, may both be members of the Association.

Notwithstanding what has been laid down above, the Council reserves the right to accept or reject any application for membership, subject to the approval of a general meeting.

Life membership, admission to which shall be made at the annual general meeting on the nomination of the Council, shall be limited to persons who, having been Ordinary Members, have retired from active service with an institution as defined above.

Honorary Members shall be nominated by the Council or by the District branches for election at the annual general meeting. Honorary Members will be elected for a period of one year at a time.

3. (ii) *Associateship*.—Associates shall be persons having held the post of whole-time Principal of an institution mentioned in para. 3, sub-para. (a), (b) and (c) temporarily, and who have reverted to their substantive post in the same institution.

4. *Voting*.—Members and Life Members shall each have one vote. Honorary Members shall have no vote but may attend all general meetings. The Chairman of Committee or meeting shall have a casting vote in addition to his own individual vote. Associates shall have no vote. An officiating Principal (or the person in active charge of the Institution) shall have a vote only whilst holding the office of Principal in the absence of the Principal. Should the Principal be temporarily in charge of another Institution as defined in (a), (b) or (c) under para. 3 (i) both have the right to vote.

5. *Subscription*.—The subscription of each Ordinary Member shall be Rs. 10 a year. The fee for Life Membership shall be the amount of one year's Ordinary Membership subscription, i.e., Rs. 10. Principals elected to Ordinary Membership on and after 1st July in each year shall be required to pay half the annual subscription for that year. An ordinary member may, if he so desires, pay a compounded subscription of Rs. 100 to cover the whole period of active Ordinary Membership.

Subscriptions shall be due in advance on the 1st January in each year. Fees for Life Membership shall accompany application for transference to this class. Members who have not paid their subscriptions by the beginning of December will receive notice of the same by registered letter from the Honorary Secretary in calling the Annual General Meeting, and such defaulting members will have no power to vote until their arrears of subscription have been paid.

6. *Officers of the Association*.—The Officers of the Association shall consist of:—

The President,

The Vice President (who shall be president-elect for the following year),

The Hon. Treasurer, and

The Hon. Secretary or two joint Hon. Secretaries.

Casual vacancies may be filled by the Council and remain valid until the next Annual General Meeting.

The Officers shall be proposed and seconded in writing not less than 60 days prior to the Annual General Meeting and elected by a majority by postal vote and the results announced by the Hon. Secretary at the Annual General meeting.

The Council may appoint an Assistant Secretary, who need not be a member of the Association, and they are empowered to grant an honorarium to such Assistant Secretary.

7. *Meetings of the Association.*—The official year of the Association shall be the calendar year.

(a) An Annual General Meeting shall be held on a date and at a place, to be decided by the Council.

The business shall be :—

- (1) to receive the Annual Report of the Council,
- (2) to receive the Financial Statement,
- (3) to elect the Officers of the Association and the members of the Council,
- (4) to elect Auditors,
- (5) to transact any other business in accordance with Article (2) of the Constitution.

(b) A Special General Meeting shall be called by a resolution of the Council, or at the request of ten members, forwarded in writing to the Hon. Secretary. Fourteen days, notice of such a meeting shall be considered sufficient, and the meeting shall take place within twenty-eight days of the receipt of the request by the Hon. Secretary.

8. *District Branches.*—Members shall be grouped as belonging to one or other of the following districts, *viz.* :—

Northern, Southern, Eastern, Western and Central.

Each District Branch shall appoint a Chairman and a Convener and shall arrange meetings of its members at such times and places as may be found convenient. Each such Branch may form Sub-Branches, if desired. The rules for the government of Branches and Sub-Branches shall be framed by the Council and approved at a general meeting.

The Treasurer of the Association shall be empowered to meet the expenses incurred by a Branch in summoning meetings of the Branch or Sub-Branches and in issuing Minutes and other reports, provided that such expenses do not in any year exceed two Rupees per ordinary member of the District Branch.

No District Branch or Sub-Branch shall have power to enter into negotiations involving questions of policy with other bodies except through and with the consent of the Council.

9. *Council.*—There should be a Council, consisting of the officers of the Association, together with the retiring President and ten district representatives, two from each district.

No district representative on the Council shall normally continue in office for more than three years, or be eligible for re-election until after an interval of one year from the date of his retirement from office. The order of retirement shall be subject to the further limitation that a member elected to fill a casual vacancy on the Council shall hold office only until the expiry of the term of office of the member whose place he has taken. Such period of service on the Council shall not prevent a member from immediate election to a further period of three years.

The retiring President shall be a member of the Council for a period of one year.

Elections of district representatives to membership of the Council shall be made by the District Branches. The names of members so elected shall be forwarded to the Hon. Secretary twenty-one days prior to the Annual General Meeting.

10. *Meeting of the Council.*—Meeting shall take place as often as the Council may decide, and at such places as may be found most convenient. The quorum shall be four out of 16. The Council may be summoned by the President on receipt of a request in writing by three members of the Council, such meeting to be held within fourteen days of the receipt of request by the Hon. Secretary.

11. *Notices of Meetings.*—Notices calling ordinary, general and Council meetings, other than on the President's requisition, shall be despatched by the Honorary Secretary 30 days in advance of the meeting.

12. *Alterations to Rules.*—No alteration shall be made in these Rules except at the Annual General Meeting, and notice proposing any alterations must be in the hands of the Hon. Secretary one month before the date of the Annual General Meeting, and be circulated amongst the members at least one week before the date of the meeting. Such alterations shall require by show of hands, or such other method as the Chairman of the Meeting may decide, a two-thirds majority of members present at the meeting.

ASSOCIATION OF PRINCIPALS OF TECHNICAL INSTITUTIONS (INDIA) CONSULTATIVE
SUB-COMMITTEE.

*Meeting of the Consultative Sub-Committee held on Thursday,
the 15th October 1942*

The following resolutions were finally accepted for presentation to the Executive Committee, Association of Principals of Technical Institutions (India), for adoption:—

1. That a pamphlet describing the reasons for the creation of the A.P.T.I. (I) and its aims and objects, if possible, with a foreword by the Member for Education, Health and Lands or the Educational Commissioner, Central Government be issued. This pamphlet, with a copy of these proposals and a copy of the constitution, to be sent to the Secretaries of the Departments of Education, Health and Lands and of Labour of the Central Government, and Chief Secretaries to Provincial Governments and to the Governments of Indian States with an accompanying letter from the President explaining the desirability of creating a Consultative Committee to draw up a policy in Technical Education, pointing out that up to date only a Nucleus Committee has been formed, and inviting the Governments to nominate representatives to serve on the Committee. Mr. B. R. Kagal very kindly undertook the preparation of the pamphlet.

2. It was felt that this country lacks a definite co-ordinated system of technical education. Our existing system of technical education is neither planned nor well defined.

3. It was felt that the facilities at present existing in the Technical Institutions in this country should be gone into in detail in order to overcome this defect. This survey can be undertaken by the Consultative Committee provided the governments and employers come forward with the necessary financial help. The survey should take into account the growth and development of technical education and report upon the provision of building accommodation, and the adequacy of equipment, staff, library facilities, sport facilities, etc., available in the institutions.

4. It was considered that technical education should be organised on an All-India basis. Education is at present a provincial subject, and owing to this arrangement there has been of recent years, a growing tendency to limit admissions to technical colleges and technical institutions to students domiciled in a particular province. This restriction of admission may ultimately lead to unnecessary duplication in certain branches of technology, and create more technically qualified men in excess of the demand. If Technical Education were organised on a basis of all-India co-operation, eliminating unhealthy competition without doing away with healthy rivalry, it would be possible to make arrangements for students to take courses of training in any institution, students from all over India being treated alike in regard to fees and conditions of admission.

5. It was considered desirable to encourage co-operation between Technical, Art, Crafts, and Commercial Institutions and Universities, so as to secure co-ordination and to minimise overlapping in staff and equipment.

6. It was considered necessary to increase the provision of full-time trade schools providing training in individual trades. In the provision of such courses due regard should be given to the possibility of absorption of students in industry and commerce.

7. The Sub-Committee felt that preliminary and secondary education should be reviewed in the light of the present conditions of India and consideration given to the creation of basic schools, Technical Bias Schools and Technical High Schools. Co-operation between all these and the Secondary and High Schools for general education should be encouraged.

8. The Sub-Committee was of the opinion that attendance should be encouraged at part-time Day Courses of study rather than, or in addition to, part-time evening course. Employers should be persuaded to release their employees for one or two days per week to attend day classes in addition to, or preferably instead of, evening classes, when students are tired out after a day's work.

9. The Sub-Committee considered that additional facilities should be provided to enable workers in small urban and rural areas, who cannot obtain suitable technical education locally, to proceed to centres for short intensive full-time courses of training. Similar courses might usefully be provided for workers from certain large centres, either in their own towns or at chosen centres, where suitable groups could be collected.

10. It was felt that schemes of Technical, Commercial and Art Scholarship should be provided to enable students of sufficient merit and works experience to pass into appropriate full-time day courses of study.

11. The Sub-Committee recommends that a system of All-India Diplomas and Certificates, forming a most valuable link between industry and commerce and education, should be created.

12. The grouped course system, in which several closely related subjects connected with a particular trade are taught together as one single course, is recommended.

13. Short week-end or Summer Courses for specialist teachers were considered essential.

14. The Sub-Committee was of the opinion that every encouragement to undertake research should be given to teachers capable of carrying out original investigation, without detriment to the efficient performance of their normal duties. In all Technical Institutions doing advanced work, research by a fair proportion of the staff is essential to inspired instruction.

15. It was considered desirable to extend facilities for physical training and social activities.

16. The Sub-Committee understands that the Central Government has agreed to continue the War Technical Training Scheme for a minimum period of 18 months after the cessation of hostilities. The Committee thought it desirable that the Government should be advised on the form that this continued training of artisans should take. It was of opinion that, generally speaking, it should consist in a widening of practical training supplemented by the theoretical background that it has been impossible, owing to the time factor, to include in the original Scheme.

LIST OF PUBLICATIONS OF THE BUREAU OF
EDUCATION IN INDIA

Serial No.	Name of Publications	Year of Publication
1	Report on Vocational Education in India (Delhi, the Punjab and the United Provinces) (E.H.L.—34).	1937
2*	Report of the Women's education committee on primary education of girls in India—1936.	1937
3*	Report of the Women's education committee of Central Advisory Board of Education to consider curriculum of Girls' Primary Schools in India.	1937
4*	Report of the vernacular education committee of the Central Advisory Board of Education appointed to consider certain questions connected with the administration and control of Primary education.	1937
5	Report of the First committee of Central Advisory Board of Education appointed to consider the Wardha Education Scheme (E.H.L. 40).	1938
6	Report of the 2nd Wardha Education committee of the Central Advisory Board of Education (App. IV to 5th meeting proceedings).	1940
7	Report of the Adult Education Committee of the Central Advisory Board of Education, 1939. (E.H.L. 46) (App. III to 5th Meeting proceedings).	1940
8	Report of the Social Service and Public Administration Committee of the Central Advisory Board of Education in India, 1940 together with the decisions of the Board thereon. (E.C. 6).	1941
9†	Report of the Joint Committee appointed by the Central Advisory Board of Health and Central Advisory Board of Education on the Medical Inspection of School Children.	1941
10	Report of the Scientific Terminology Committee of the Central Advisory Board of Education in India, 1940, together with the decisions of the Board thereon. (E.C. 5)	1941
11	Proceedings of the 6th Meeting of the Central Advisory Board of Education held at Madras on 11th and 12th January, 1941 (E.C. 4 VI).	1942
12	Proceedings of the 7th Meeting of the Central Advisory Board of Education in India held at Hyderabad, Deccan on 14th and 15th January, 1942. (E.C. 4 VII).	1942
13	Report of the School Building Committee. (E.C. 8).	1942
14	Report of the Uniform Braille Code Committee. (E.C. 7).	1942
15	Report of the Examination Committee, 1942. (E.C. 12).	1942
16	Report of the Expert Committee on a Uniform Braille Code for India with the Braille charts printed in India Alphabets 1942.	1941
17	Proceedings of the 8th Meeting of the Central Advisory Board of Education held at Lucknow. (E.C. 4 VIII).	1943
18	Report of the Joint Committee of the Central Advisory Board of Education and the Inter-University Board appointed to investigate the question of the relation of the school leaving certificate Examination to the Matriculation Examination, 1942. (E.C. 9).	1943
19	Report of the Committee of the Central Advisory Board of Education on the Training, Recruitment and Conditions of service of teachers. (E.C. 10).	1943
20	Report of the Committee of the Central Advisory Board of Education appointed to consider the question of the recruitment to the Education Officer, 1942 together with the decisions of the Board thereon. (E.C. 11).	1943
21	Report of the Examination Committee.	1943
22	Proceedings of the 9th and 10th Meetings of the Central Advisory Board of Education in India held in October 1943 and January 1944 respectively. (E.C. 4 IX & X).	1944

Continued on page (ii)

*Not published previously, but proposed to be included in future reprints.

†Published by the Central Advisory Board of Health.

LIST OF PUBLICATIONS OF THE BUREAU OF
EDUCATION IN INDIA—*contd.*

<i>Serial No.</i>	<i>Name of Publications</i>	<i>Year of Publication</i>
23	Report of the Technical Education Committee 1943. (E.C. 16).	
24	Report of the Text Book Committee, 1943. (E.C. 15).	1944
25	Report of the Examination Committee (Technique of Examinations), 1943. (E.C. 17).	1944
26	Report of the Committee of Central Advisory Board of Education appointed to consider the question of Training, Recruitment and condition of service in Universities, etc., together with the decisions of the Board thereon. (E.C. 22).	1945
27	Report of the Central Advisory Board of Education on Post-War Educational Development in India, 1944. (E.C. 13).	1945
28	Volume containing reports of the Committee of Central Advisory Board of Education. (E.C. 14).	1945
29	Report of the Administration Committee of Central Advisory Board of Education.	1945
30	Proceedings of the 11th Meeting of the Central Advisory Board of Education. (E.C. 4 XI)	1945
31	Report of the Agricultural Education Committee of the Central Advisory Board of Education, 1944. (E.C. 20).	1945
32	Proceedings of the 12th Meeting of the Central Advisory Board of Education held at Mysore in January 1946.	1946
33	Report of the Religious Education Committee of the Central Advisory Board of Education.	1946
34	Development of Higher Technical Institutions in India (Interim Report of Sarkar's Committee).	1946
35	Report of the Committee of the Central Advisory Board of Education on selection of pupils for Higher Education.	1946
36	Report of the Central Advisory Board of Education on conditions of service of teachers.	1946

BUREAU OF EDUCATION, INDIA

Report of the Text-Books Committee
of the Central Advisory Board of
Education, 1943, together with the
decisions of the Board thereon



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1944

.PREFACE.

Mr. W. H. F. Armstrong, C.I.E., the Chairman of the Committee appointed by the Board to investigate the ways and means for improving the Planning, Production and Supply of Text-books, presented to the Board the Report of the Committee. After careful consideration, the Board adopted the recommendations of the Committee and decided that it should be forwarded to the Provincial Governments, Local Administrations, etc., for their opinion and necessary action.

Report of the Text-Books Committee of the Central Advisory Board of Education, 1943.

At their eighth meeting held in January 1943, the Central Advisory Board of Education had under consideration the following resolution submitted by Dr. Sir Zia-ud-Din Ahmad, C.I.E., Ph.D., D.Sc., M.L.A., Vice-Chancellor, Aligarh Muslim University :—

“ Parents have been complaining of frequent changes and the high prices of the text-books which substantially increase the cost of education. The text-books are often written not by experts but by persons whom the publishers could conveniently engage on small remuneration. The publishers could get their books recommended more by propaganda among the members of the Text-book Committee than on the merit of the books. It seems desirable that copyright of the books approved by the Text-book Committee should be purchased by the Government and like standard classical works, they may be printed and published by any firm. The maximum price of these books should also be fixed by the Government. The books prescribed should not be changed for at least three years.

“ I will like to propose that the Central Advisory Committee may appoint a sub-Committee to examine the defects in the present system of selection of text-books prescribed in High Schools and for the Intermediate Examination (and to recommend the manner of removing them). The Committee will also examine in particular whether the Government should purchase the copyright of these text-books and allow any publisher to publish these books at fixed prices.”

In view of the importance of this issue the Board appointed a committee to examine what steps should be taken in the interests of educational efficiency and economy to improve the planning, production and selection of text-books and other literature for use in educational institutions in this country. At their special meeting in Dehra Dun, the Board appointed additional members to the Committee. The Committee as finally constituted met at New Delhi, on the 22nd and 23rd November 1943.

The following members were present :—

Mr. W. H. F. Armstrong, C.I.E., M.A., I.E.S., Director of Public Instruction, Punjab. (*Chairman*).

Dr. P. N. Banerjee, M.A., D.Sc. (Lond.), Bar-at-Law, M.L.A.

Rajyasevapravina, Dr. C. V. Chandrasekharan, M.A. (Oxon.), D. Litt., F.R.H.S., Pro-Vice-Chancellor, University of Travancore.

Shamsul-Ulema Dr. U. M. Daudpota, M.A., Ph.D., Director of Public Instruction, Sind.

Srimati Renuka Ray, B.Sc. Econ. (Lond.), M.L.A.

Mr. John Sargent, C.I.E., M.A., Educational Adviser to the Government of India.

Mr. W. G. P. Wall, M.Sc., I.E.S., Director of Public Instruction, United Provinces.

Dr. Sir Zia-ud-Din Ahmad, C.I.E., Ph.D., D.Sc., M.L.A., Vice-Chancellor, Aligarh Muslim University.

Dr. W. A. Jenkins, C.I.E., D.Sc., I.E.S., Director of Public Instruction, Bengal, was unable to attend.

2. The agenda considered by the Committee was as follows :—

I. To consider whether the Committee could confine their attention to text-books for schools or whether it is desirable and practicable to extend the investigation to cover the university and technical education as well.

II. To consider with due regard to educational efficiency and the need for economy how far the present methods of production and selection of text-books for the following stages are satisfactory :—

- (i) Junior Basic (Primary) Schools.
- (ii) Senior Basic (Middle) Schools.
- (iii) High Schools.
- (iv) Universities.
- (v) Technical, Commercial and Art Institutions.
- (vi) Adult Education.

If the present system is unsatisfactory, what are the fundamental principles on which the production and selection of text-books should in future be based.

III. To consider how far the text-books in literary subjects need separate consideration from other text-books.

IV. To consider whether it is possible or desirable to set up an organisation which will be concerned with the general planning of text-books in different subjects.

V. To consider whether a province is a suitable economic unit for the production of text-books and if not to determine a suitable area which would ensure production of text-books of the requisite quality at an economic cost.

VI. To consider what steps should be taken to encourage the production of text-books in various subjects in Indian languages.

VII. To consider what steps should be taken to encourage the production of popular and authoritative books in the regional languages for use as supplementary readers by school children as well as for the general reader.

VIII. To consider how far it is desirable or practicable—

(a) to restrict the number of text-books to be approved for each class in each subject ;

(b) to fix the minimum period for which a text-book should be prescribed.

IX. To consider whether it is necessary or desirable that the responsible educational authority should purchase the copyright of text-books and allow publishers to publish them at fixed rates.

X. To consider in what stages of education—

(a) institutions should be responsible for the supply of text-books ;

(b) students should be expected to purchase for themselves.

XI. To consider any other matter that may be raised at the meeting with the permission of the Chairman.

3. Although the terms of reference did not restrict in any way the extent of the enquiry, the Committee felt it advisable to consider whether it would be desirable and practicable to extend their investigation to cover educational institutions beyond the high school stage. It was decided that the present committee were not in a position to examine fully the requirements of universities and colleges and of Technical and Art institutions of university status. It was, however, agreed that it would be feasible to lay down certain principles which will be of general application in the planning, production and selection of text-books at all stages.

4. In considering the choice and use of text-books the Committee wish to lay stress on the fact that the personality of the teacher and his spoken words should constitute the vital part of any school lesson. The activity principles common to modern methods of teaching make an increasing demand on the

resourcefulness of the teacher and emphasise the necessity for direct contact between pupils and concrete objects. This tendency has to an appreciable extent lessened the importance of text-books as far as school work is concerned. Nevertheless, they still remain in all branches of studies not only a valuable guide but also an indispensable auxiliary to study.

5. The Committee then examined the methods of production and selection of text-books adopted at present in different areas of this country. They appreciate the difficulties, by no means always of an educational nature, which stand in the way of effecting any substantial improvement as long as the existing system is allowed to continue. It was generally agreed that there is a serious lack of scientific planning in this connection throughout all stages and that the contents of text-books should have due regard to educational requirements, to the limits of topics, their presentation in relation to the requirements of the different grades, the precision and accuracy of facts, the formulation of suitable exercises, and so on. Attention must also be devoted to technical aspect of the subject, the question of paper, the colour of the ink, the suitability of types, the significance and artistic merit of illustrations—i.e., the general appearance and the make-up of the books. Its price is no less an important consideration. It not infrequently happens that the production of text-books is left to publishers of no outstanding reputation, who for the sake of economy may engage professional writers of a poor calibre or whose influence would be likely to secure the selection and the adoption of the text-books in question by educational authorities. Apart from this the syllabuses prescribed for the different grades require as a rule, expert interpretation and authors of the type mentioned above generally lack the necessary technical knowledge as well as the art of writing books suitable for school use. Though text-books of excellent quality are produced from time to time in some areas the Committee are satisfied that judged as a whole the books available do not fulfil educational, technical or economical requirements.

6. The Committee are of the opinion that the objective they have in view *viz.*, the provision of an adequate supply of up-to-date text-books suited to the needs of people and students at the various stages cannot be secured by any modification of the present system and recommend that the following procedure should be adopted in future :—

(i) An educational authority should invite the submission of text-books by authors or publishers by public advertisement.

(ii) The authority concerned should give the authors as full information as possible regarding the required contents of the text-books and their appearance and general make-up.

(iii) Any one submitting a book or manuscript should be required to pay a fee, the amount of which may be determined by the educational authorities, the object being to keep down the number of manuscripts of indifferent quality. In the case of books which are approved, the fee charged at submission may be refunded.

The manuscripts thus received should be placed before a Reviewing Committee consisting of members selected purely on the basis of educational merit. The honorarium paid to these reviewers should be sufficient to attract people of the requisite calibre. Where thought desirable educational authorities may invite reputable authors to write books according to their requirements, in which case the question of levying a fee will obviously not arise. There are, however, obvious limitations to this practice.

(iv) The recommendations of the Reviewing Committee should be submitted to the Director of Public Instruction, or any other authority set up in this connection, whose decision should be final.

(v) Once a book has been finally approved, the copyright should be purchased by the Education Authority concerned with a view to its publication at a fixed price.

(vi) The publication of the book should be undertaken directly by the Education Authority or through their approved publishers.

(vii) Education Authorities should maintain a panel of such publishers, who should be selected after a careful scrutiny of their ability to meet the demands in view.

7. Where an educational authority is not in a position to undertake the printing of text-books in a press directly under its own control, the entire printing work of the year in this connection should be allocated amongst the approved publishers on the panel, after due consideration of the tenders submitted by them. Where the Education Authority itself undertakes the publication and the distribution of the books, it is desirable to secure wherever possible their free distribution or at least concession rates in carriage and postage rates. Where the Education Authority is unable to assume direct responsibility for distribution, this will have to be done through local booksellers. In no part of the country however, should any higher charge than the published price be permissible. It is also desirable that school text-books should be free from all taxes likely to result in an increase in their price. Unless and until all books are supplied free to pupils, the importance of ensuring that the price is as low as possible needs no emphasis.

As the purpose of a text-book is that of a guide and of an auxiliary, the Committee consider it desirable to ensure a certain measure of choice, for this reason the number of text-books in each class for each subject should not be less than two or more than six. The procedure recommended above should obviate the too frequent changes of text-books in schools which is the cause of such frequent and justifiable complaint; at the same time will be advisable to review the position every three years, both to keep suppliers up-to-date and to encourage new authors or new publications of the requisite standard.

8. The Committee are of the opinion that the above suggestions should be applicable to text-books published in Indian languages only. With regard to English Readers, it is felt on educational grounds it will not be desirable to exclude text-books produced in other countries particularly where research and experiment in this field have been carried much further than in India. The Committee recommend that as far as English readers are concerned, the following procedure should be adopted:—

(i) An educational authority should invite by public advertisement the submission of books in each subject, grade by grade, stating their specific requirements.

(ii) The submission of books in this case also should be accompanied by a fee to be determined by the educational authority concerned.

(iii) The books so submitted should be sent to an *ad hoc* reviewing committee, the members of which should be selected solely on educational qualifications.

(iv) The Director of Public Instruction, or a person or persons appointed by the educational authority concerned, should make the final selection of books in the light of the recommendation of the reviewing committee.

(v) The number and the period of use of English text-books should be the same as in other cases.

9. The Committee wish to draw the attention of the educational authorities to the various types of high school that have been recommended by the Central

Advisory Board of Education in their scheme for post-war educational development. The demands of these schools, and particularly of the new types, so far as text-books in Indian languages are concerned, will be large and varied. The Committee were conscious that suitable text-books in Indian languages at the high school stage are not yet available to the required extent. They cannot however, do more than to call the attention of the educational authorities to this important consideration and urge them to take all possible measures directly or in co-operation with reputable voluntary agencies, to ensure the production of suitable literature at an early date. As all teachers employed in High Schools should in future possess sound educational qualifications and professional training, the Committee feel that they should be allowed to exercise their own judgment in the choice of books within the limits prescribed. The number of books approved at this stage may be slightly larger than at the primary and middle stages.

10. With regard to the requirements of adult education, the Committee felt that they should restrict their enquiry at this stage to literature suitable for those adults who are to be rendered literate. The planning, production and selection of literature in this case should follow generally that recommended for primary and middle schools, although there should be a wider choice with regard to the number of text-books.

11. The Committee gave special consideration to the question of text-books in literary subjects and came to the conclusion that the procedure here should not differ essentially from that advocated elsewhere. It is certainly desirable that pupils at the school stage should be encouraged to study the original works of reputable authors, whenever possible.

12. The Committee wish to emphasise the importance of research in regard to the planning of text-books at all stages of education. In some educationally advanced countries text-books are planned at what are known as curriculum-centres and it is suggested that educational authorities in India should encourage the training colleges under their control to set up departments for research and experiment.

13. Opinion was general that the larger provinces have a sufficiently large school-going population to constitute an economic unit for text-book production and to ensure an economic price in the supply of text-books. There is, however, considerable scope for co-operation between those provinces where common languages are spoken. The educational authorities in such cases might profitably advertise for books jointly, or one province may sell or lend to another the copyright of a book which has proved a success in their own area. In the case of some subjects, where the number of books required is not large, the Committee are of opinion that it would be of general advantage to education and to the pupils concerned, if provinces pooled their resources for the production and supply of text-books.

14. The question of production of a supply, adequate both in quantity and quality, of text-books in Indian languages has already received attention in connection with the requirements of the high schools. In view of the importance of the issue to the general educational development in the country, the Committee further recommend that the Central Advisory Board of Education should maintain a Bureau whose function it will be—

(i) to circulate to the provinces standard text-books produced in different parts of the country,

(ii) to issue a periodical containing good reviews of recent books,

(iii) to maintain a staff competent to produce, as required, in Indian languages, either original books or compilations suitable to Indian needs from materials available in standard text-books produced in other countries.

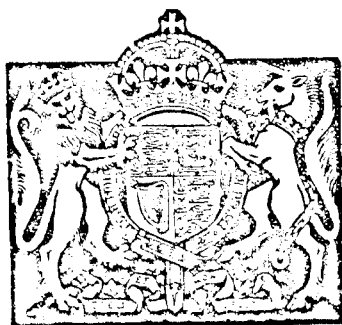
The Bureau should be in a position to give general guidance to Educational Authorities in regard to text-books and other literature especially in scientific and technical subjects and should also be prepared to produce books where the restricted demand is not likely to make it an economic proposition for a provincial authority to take the responsibility of producing them. The Committee are further of opinion that it should be the responsibility of the Central and the Provincial educational authorities to encourage in every possible way the production of popular and authoritative books in the regional languages for use as supplementary literature by the school child as well as for the general reader. As such literature is invaluable for the continuation of education after children have left school and for the use of adults who have just attained literacy, great emphasis is laid on this point. The Committee note with satisfaction that there are a few voluntary organisations in the country doing highly commendable work in this connection and express the hope that voluntary agencies and enterprising authors who are trying on their own to meet urgent needs in this connection will receive generous assistance from public funds.

15. The Committee recommend that school and public libraries should receive every encouragement and that grants on a much more liberal scales should be made from public funds so that they may be fully equipped with popular and authoritative literature in various branches of knowledge.

In the opinion of the Committee it is desirable that in the primary and middle stages the educational authorities should themselves be responsible for the free supply of text-books and other educational material required by pupils in the schools. This they realise may not be possible in the present circumstances but in the post-war period, as soon as education becomes free and compulsory, the State will have to take full responsibility in this matter. Meanwhile it is an objective which should be pursued progressively with the least possible delay. In the high school stage also it is recommended that the school authorities should undertake responsibility for the supply of all books and other educational materials required by pupils, raising the normal school fees to such an extent as may be necessary to cover the additional expenditure involved. Although it is outside the scope of their enquiry, as they have delimited it, the Committee wish in conclusion to call attention to the desirability at the higher stages of education, and particularly in Universities, to encourage students to begin to acquire libraries of their own. For the sake of those precluded from doing this for financial or other reasons libraries should be well supplied with duplicate copies of standard works.

BUREAU OF EDUCATION, INDIA

Report of the Examinations Committee
of the Central Advisory Board of
Education on the Technique of
Examinations, 1943, together with the
decisions of the Board thereon



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PREFACE.

Sir Maurice Gwyer, K.C.B., K.C.S.I., D.C.L., LL.D., the Chairman of the Examinations Committee, who had been asked to submit a further report on the technique of examinations, placed before the meeting the recommendations of this Committee. The Board were of the opinion that in the present state of development of the system of education in this country it may not be practicable to adopt symbolic marking in stages of education below that of B.A. (Hons.) course. They, therefore, recommended the retention of numerical marking, for the present, below that stage. They also wished to stress the principle set out by the Committee that in any test or examination with the object of selecting people for higher stages of education, the main emphasis should be on the native intelligence of the scholar rather than on his achievements. Subject to the above-comments, the Board endorsed the recommendations submitted to them and directed that they should be forwarded to the Provincial Governments, etc., for their consideration.

Report of the Examinations Committee of the Central Advisory Board of Education on the technique of examinations, 1943.

1. The Committee of the Central Advisory Board of Education appointed to define the scope of the enquiry to be undertaken in regard to examinations decided at their meeting on the 2nd April 1942, that the enquiry should be divided into two parts—

A. (i) At what stages in the educational system are external examinations necessary and to what extent can the present number be reduced without impairing educational efficiency ?

(ii) What is the minimum number of internal examinations necessary and at what stages can such examinations be most profitably introduced ?

(iii) What steps can be undertaken to make examinations (both external and internal) more conducive to the all-round mental development of the scholar ?

B. The technique of examinations.

The first part of the enquiry has been completed and the Committee's report has been already published.

2. At their special meeting in Dehra Dun the Board appointed additional members to the Committee. The Committee, as finally constituted met at New Delhi on the 24th and 25th November 1943. The following members were present :—

Sir Maurice Gwyer, K.C.B., K.C.S.I., D.C.L., LL.D., Vice-Chancellor, Delhi University (*Chairman*).

W. H. F. Armstrong, Esq., C.I.E., M.A., I.E.S., Director of Public Instruction, Punjab.

Dr. P. N. Banerjea, M.A., D.Sc. (Lond.), Bar-at-Law, M.L.A.,

Rajyasevapravina Dr. C. V. Chandrasekharan, M.A. (Oxon.), D.Litt., F.R.I.S., Pro-Vice-Chancellor, University of Travancore.

Khan Bahadur Mian M. Afzal Husain, M.Sc., M.A. (Cantab), I.A.S., Vice-Chancellor, University of the Punjab.

Srimati Renuka Ray, B.Sc. Econ. (Lond.), M.L.A.

John Sargent, Esq., C.I.E., M.A., Educational Adviser to the Government of India.

W. G. P. Wall, Esq., M.Sc., I.E.S., Director of Public Instruction, United Provinces.

Dr. Sir Zia-ud-Din Ahmad, C.I.E., Ph.D., D.Sc., M.L.A., Vice-Chancellor, Aligarh Muslim University.

Dr. W. A. Jenkins, C.I.E., D.Sc., I.E.S., Director of Public Instruction, Bengal, was unable to attend.

3. The Agenda considered by the Committee was as follows :—

I. To consider what general changes are desirable in the method of conducting examinations in this country, whether external or internal.

II. To consider how far modern psychological, (*i.e.*, intelligence, aptitude, etc.) tests standardised in this country could be incorporated in examinations at different stages of education.

III. To consider how far an examination to assess the achievement of a candidate could be distributed over different parts of the school or college career.

IV. To consider what should be the technique for the selection test recommended at the end of primary stage.

(a) at 11+

(b) at 13+ for "late developers"

V. To consider the technique of the special selective test, if any, for the purpose of admission to technical high schools.

VI. To consider the nature of an external examination at the end of the High school stage

(i) for a High School Leaving certificate,

(ii) for the purpose of admission to a university or higher technical and professional institutions.

VII. To consider the technique of the examination for the purpose of admission to—

(i) a training school

(ii) a training college.

VIII. To consider the technique of examinations in universities at the end of—

(a) a degree course

(b) post-graduate stages.

IX. To consider if it is desirable or practicable to introduce the compartmental or supplementary system of examination into the external examinations at post-school stages.

X. To consider any other matter that may be raised in the meeting with the permission of the Chairman.

The papers circulated with it to the members of the Committee will be found in annexures.

4. Before proceeding to discuss the items on the agenda, the Committee gave their attention to certain general issues. They noted the sustained criticisms of the reliability of examinations which have been made by leading educationists in recent years. It is said that examinations of the type common in India have often shown themselves to be injurious to the health of the pupils by causing over-strain and consequent nervous disorders, and that instead of remaining an auxiliary to the education system they have tended to become an end in themselves. By encouraging cramming they do not only waste time but also are inimical to original thinking and research. Apart from such positive defects it is said to be open to doubt whether their actual results indicate with sufficient precision the standard of the attainments of the examinees let alone their intellectual capacity or promise. Marking is dominated by subjective factors and there is evidence to suggest that in spite of the recent safeguards adopted as a result of scientific investigation examinations of the normal type still fail to eliminate the defects referred to above. The Committee agreed that the ultimate objective to be kept in view is the creation of more technically accurate, reliable and valid types of examinations, which should both eliminate subjective variations and establish objectively measurable standards. The process will involve elaborate research and co-ordinated experiments all over the country and it may take the national education system some time to evolve the types of examination which will be most conducive to the all-round mental development of the scholar. Meanwhile, however, the committee are of opinion that they cannot do better than to lay down certain principles.

(i) Examination results are the common ground on which parents, pupils and teachers in this country often meet. Without exploring in detail the merits and demerits of various types of marking the Committee believe that symbolic marking is the most satisfactory method of determining whether a candidate or a group of candidates has reached a certain level of efficiency. The Committee realise that examination results are often used for the award of public scholarships and for other purposes for which an order of merit is

necessary. The Committee are of the opinion that though it may be necessary to allot numeral marks or produce an order of merit in the top group of candidates, attempts to arrange all candidates in order should be avoided wherever possible. In the normal course, for grading the achievements of examinees it would be sufficient if they were graded into three or four main groups. While the majority of the members were in favour of the adoption of symbolic marking, a few were desirous of retaining numeral marking in the case of papers in mathematics and the exact sciences.

(ii) It is desirable that every examining authority should set up Boards for moderating examination papers set by individual examiners. In the case of a University, the Board should consist of a chairman and an external and an internal examiner.

(iii) With a view to reducing the subjective factor as far as possible, the Committee consider it most desirable that all answers books should be marked separately by two examiners and in case of disagreement the answerbooks should be referred to the chief examiner. The Committee appreciate that in the present circumstances it may not be feasible to adopt the suggestion at the school stage where the number of examiners is very large, but they see no reason why this practice could not be adopted forthwith at all stages after Matriculation.

The moderation of marks by any outside moderating Committee is greatly to be deprecated; but where in the case of any particular examiner or any particular paper striking discrepancies are manifest, a University (or other examining authority) may properly cause further inquiry to be made.

(iv) Apart from the proposed agencies for ensuring moderation of papers and standardisation of examination results as a whole, it is desirable that every examining authority should appoint a permanent official of professional rank, with adequate knowledge and experience of the various examination techniques to enable him to advise the authorities concerned in regard to the results of current examinations and to improvements that could be effected in the light of the experience gained in this country or abroad.

(v) The utmost care should be taken in preparing lists or panels of examiners: the selection should be based on merit alone. The Committee, therefore, emphasise the point that Boards of Studies should spare no pains to prepare lists of the best men available in each subject and the panel should be approved by the Vice-Chancellor or the relevant authority in this behalf. The Committee were strongly of the opinion that there should not be any appreciable difference in the qualifications of the examiners. Once panels have been formed, the following methods for selecting the individual examiners are recommended:—

(a) the final selection should be made by drawing lots, or

(b) the final selection should be in the hands of a committee consisting of the Vice-Chancellor, a member of the Academic Council and a member of the Executive Council (or the corresponding bodies), either nominated or elected, as the authorities may decide, though the Committee's own opinion is in favour of nomination by the Vice-Chancellor or,

(c) the final selection may be made by rotation—those at the top giving way to those below, after they have served for a prescribed period.

The Committee are of the opinion that examiners should not, in the normal course, be allowed to examine continuously in the same subject for a period exceeding three years though they might become eligible for reappointment after a reasonable interval.

(vi) Methods of selecting text-books have at times an unhealthy influence on examinations and the Committee are glad to note that the Board are having this issue examined separately. They wish however to suggest that in cases where text-books written by a member of the university are prescribed for examination purposes, the approval of the Vice-Chancellor as well as of the Boards of Studies should be required.

(vii) The Committee's attention has been drawn to the difficulties which arise when an examining authority as in some of the affiliated universities has to deal with too large a number of students. This often results in undue delay in publishing results. Even in the largest examinations, results ought to be declared within two months from the date of the examination: steps should be taken to impress on all examiners the need for punctuality and despatch.

The suggestions made above are those most likely in the opinion of the Committee to effect immediate improvements in the current method of conducting examinations in this country. They are, however, conscious that their suggestions are only applicable to the transition period and that drastic changes may be necessary to meet the requirements of a comprehensive national system of education at a later stage.

5. The recent criticisms of the conventional type of examination, have been accompanied by a move to formulate more reliable and objective standards of assessment. The new methods, the evolution of which was made possible by the techniques already established for the development and standardisation of intelligence tests, are being increasingly used now-a-days in Western countries to test attainments in all subjects of the curriculum at any level of instruction. The new type of test is considered superior to the old form of examination for a variety of reasons. Among those the following may be mentioned:—

(i) Subjective factors in the examiner such as bias, personal opinions and temperament are reduced to a minimum.

(ii) It is statistically more reliable in so far as scores of two equivalent new tests given to the same pupils are found to agree more closely than in the old type.

(iii) It is more comprehensive because it includes wide sampling of the subject of the examination and to that extent it is also more reliable.

(iv) It is easily administered and marked, with economy of time and effort for both examiners and pupils.

(v) The results can be interpreted more easily and used for specific purposes, e.g., detecting deficiencies in pupils.

The function of an examination is not merely to divide the school population into passes and failures but to aid in discovering the right sort of education for each pupil. The success of an educational system today tends to be measured not in terms of the percentage of examination distinctions or passes but by the degree to which it has been able to discover the abilities and the needs of children and has provided for them the particular type of education by which they are most capable of profiting. The Committee are of the opinion that as these new techniques have proved their efficacy beyond all doubt at all school stages every attempt should be made to devise and standardise them for use in this country so that they may supplement and ultimately replace the old types of Examination. Whether, however, the new technique will prove equally efficacious beyond the High School stage is a matter still open to doubt.

6. The Committee then considered how far an examination to assess the achievements of a candidate could or should be distributed over the different

parts of his career. As far as external examinations are concerned, the Committee have already given consideration to this question (see recommendations 12—15, Part I of the Report). As it is desirable to take into account carefully prepared school records it is obvious that such an assessment must continue to be made throughout the school career of a candidate. The degree of reliability of a cumulative school record will necessarily vary in direct ratio to the quality of the teachers employed and the Committee are of the opinion that until the improved type of the teacher envisaged by the Central Advisory Board of Education is actually in the schools, school records may have to be treated with caution.

7. Admission to high schools has never been selective in this country and it will, therefore, be necessary to give very careful consideration to the technique of the selective process at this stage, if and when selection becomes general. With the introduction of a compulsory and universal system of primary education there will be an unprecedented increase in the number of children seeking admission to High Schools. This will necessitate some positive type of test by which abilities and aptitudes of the pupils can be ascertained with sufficient precision. The Committee are of opinion that selection at this stage, i.e., about the age of eleven should be based on a careful scrutiny of candidates' previous school records with due regard to their probable reliability and of their performance at a test designed and conducted by experts. Every effort should be made to guard against children of real promise being excluded through stagefright, illness or any other cause from the chance of going to a High School. Whatever the procedure adopted—and regard may usefully be had to the experiments already conducted in other countries—the general control should be in the hands of a Board of Examiners specially constituted for the purpose and presided over by a very senior officer. For the "late-developers" at the age of thirteen or fourteen the technique of selection should generally be the same as at the age of eleven.

8. With regard to the mode of selection for the purpose of admission to a Technical High School, the Committee considered that the methods suggested for ordinary high school should generally be followed, though special stress will have to be laid on the aptitude tests, with a view to ensure that the selected candidates possess the requisite practical ability.

9. With regard to the nature of the external examination at the end of the High School stage, the Committee are in general agreement with the recommendations made in 1942 by the Joint Committee of the Central Advisory Board of Education and the Inter-University Board on the relation of Matriculation to the School Leaving Certificate Examination (c.f. the Joint Committee's Report—pp. 1 and 2). The Committee wish, however, to point out in this connection that the principal cause of the over-academic nature of the high schools in this country has been university Matriculation requirements combined with the popular demand for a Matriculation certificate even for those pupils who do not intend to enter a university. Since under a national system of education only a small percentage of High Schools students will proceed to universities, there will be still less justification for the curriculum, methods of instruction for the others being determined by the requirements of the prospective university students. The Committee hope that both educational and examining authorities concerned with High Schools will bear this important consideration in mind both in devising courses and methods of study and in formulating examination techniques.

The Committee also wish to emphasise the need of adequate provision for practical examinations at this stage. As practical examinations are relatively more expensive for the large examining authorities, the Committee apprehend that there may be a tendency to avoid them, but they are emphatically of the

opinion that if the school curriculum is to be sufficiently varied to satisfy the wide range of interests of the High School population the technique of examinations at this stage must provide for practical tests in subjects like arts and crafts, music and domestic and other applied sciences.

10. For the purpose of admission to Training Schools, the Committee recommend the following procedure. Pupils who wish to become teachers should be picked out during the last two years of their high school course. They should be kept under observation by heads and inspectors and given the opportunity of visiting other schools and trying their hands at actual teaching. Doubtful cases may be sifted by this means. This system has the advantage of ensuring that intending teachers before being admitted to Training Schools will have shown at any rate some signs that they are likely to make good.

For admission to Training Colleges candidates should register their names while they are still studying for the Degree examination. During the long vacation prior to their admission to the Training College they should be required to do not less than a fortnight's teaching practice. The Head of the school in which they teach should send a report on their promise as teachers to the Principal of the Training College. The candidate should then be interviewed by the Principal of the Training College and his Committee. The technique of selection should take into consideration—

- (i) the College record of the candidate,
- (ii) the report of the Head Master of the Practising School, and
- (iii) the result of the interview by the Principal of the Training College.

The Committee hope that some of the tests now being evolved by the Officers' Selection Board may in due course be adopted with necessary modifications for selecting intending teachers.

11. With regard to the technique of examinations at the University stage, the Committee are of the opinion that it is not possible to effect improvements piecemeal. They are convinced that there cannot be any substantial progress unless and until the standard of instruction is appreciably raised. To secure this the primary requisite is that the conditions of service of teachers should be improved and a definite ratio should be laid down between the number of students under instruction and of teachers. The tutorial system, that is, private instruction of students in small groups—the smaller the better—should also be adopted by all Universities, and the number of lectures reduced, in order that students may learn better how to teach themselves. During class teaching, teachers should be encouraged to give explanation in the mother tongue when students fail to grasp the lecturer's meaning on account of their inadequate knowledge of the English language. Additional provision for teaching English at the initial stage of the University course will be necessary so long as English remains the medium of instruction.

As far as M.A. and M.Sc. examinations are concerned, the Committee are generally of the opinion that these post-graduate degrees should as a rule be awarded on the results of an examination and not on a thesis. It is not considered necessary, however, to lay down any rigid rule as there may be some subjects where the assessment may usefully be made partly by examination and partly by thesis.

Doctorates should alone be awarded on theses or on work already published.

The Committee recognise that their suggestions can scarcely be carried out unless larger grants are forthcoming from official sources. They are of the opinion that much of the teaching at the present day is valueless or more

or less valueless because of the lack of the provisions they have pointed out. Government should therefore be urged not only to increase their grants but also to attach such conditions to them as will secure what the Committee have in view.

12. The Committee noted that most universities have adopted the compartmental system of examinations. They are themselves in favour of its introduction or retention at the following stages and on the following conditions.

(i) *Matriculation*.—As pupils at this stage are required to take a considerable variety of subjects, a candidate should be given a further chance if he fails in one subject, provided his score therein is not below 25 per cent. of the maximum and his attainment in other subjects is definitely satisfactory—say 40 to 45 per cent. of the total marks as the case may be.

The Committee also recommend a similar compartmental system at the Intermediate stage so long as those examinations continue.

(ii) *B.A. (Pass)*.—Compartmental examinations are already in force in most Universities and their retention is favoured by the Committee.

(iii) *Honours and Post-graduate*.—It is not considered desirable to make any such provision in the Honours and the higher University examinations.

The compartmental examination should take place within a period of not less than three months from the date of the original examination or at the latest just before the beginning of the next academic term.

The Committee are also in favour of holding supplementary examinations in all subjects for those candidates who have failed to appear at an examination for adequate reasons, which are to be determined by the authorities concerned. Compartmental examinations may be combined with supplementary examinations for the sake of economy and administrative convenience.

13. The Committee wish to reiterate that the practice of stretching out examinations over a substantial period of time in order to afford intervals in which candidates may refresh their memories for papers still to come is greatly to be deprecated. In their view no examination ought to extend over a longer period than one week, unless it is absolutely impossible to make the necessary arrangements.

14. In conclusion the Committee wish to record their keen interest in the development of the tests that are now being devised and used by the Officers' Selection Boards, under the Selection of Army Personnel Directorate. They hope that all the educational and employment authorities will keep themselves in close touch with these experiments and adopt the tests devised as far as practicable as soon as they are standardised for use in this country.

ANNEXURE I.

Note prepared by the Secretary, Inter-University Board, India, on the Compartmental System and Supplementary Examinations.

The principle underlying compartmental examinations is that if a candidate fails in one of his subjects by a few marks only, but at the same time attains a fairly high degree of efficiency in other subjects, he should not be burdened with sitting for the examination in those subjects in which his efficiency has been definitely proved. Most of the Universities allow compartmental examinations on conditions, but discourage compartments for Honours, and even those few which allow compartments in Honours do not admit a candidate who has passed his examination by compartments to an Honours Degree. The practice with regard to the aggregate and the minimum number of marks for the failed subject varies in different Universities and for

different examinations. There is a variation also with regard to the minimum marks allowed for the purposes of compartments in different examinations, and generally the minimum so allowed in the case of Professional Examinations is higher than in the case of B.A. and B.Sc., which itself is higher than that allowed for the Intermediate. There are further variations, but for the purpose of enunciating the line of greatest agreement, they need not be taken into account.

It seems that the system of having compartments is a salutary one because a student who has proved his efficiency in certain subjects by a fairly high standard of marks should not be forced to sit for such subjects again, provided he had failed only by a few marks in just one subject. The question of Supplementary Examinations is closely allied with the Compartmental system in a number of Universities most of which allow only those candidates who have qualified for compartments to sit in the Supplementary Examinations. There are some Universities who have no supplementary Examinations at all, and this either for financial reasons or else because they wish to discourage failed candidates from sitting again and again for the same examination without sufficient time at their disposal to prepare their subjects or owing to other practical difficulties. Merely financial reasons should not come in the way of the institution of Supplementary Examinations as University education itself is an expensive department and failed candidates may perhaps be charged higher fees so as to make Supplementary Examinations self-sufficient. The second point is worth consideration and there is a wide difference in the practice of various Universities in the matter. I myself have a feeling that only those students should be allowed to sit in Supplementary Examinations who have got at least 25 per cent. marks in the subject in which they have failed but have at the same time attained a high standard in the aggregate.

On the whole the following seems to be the line of greatest agreement between the Universities.

1. A candidate must sit for the whole examination in the first instance ;
2. If he fails in one subject only and secures not less than 25 per cent. in the failed subject in the case of Arts and Sciences and 35 per cent. in the case of Professional Examinations and at the same time has passed in the remaining subjects by securing not less than 40 per cent. in the case of Arts and Sciences and 50 per cent. in the case of Professional Examinations in the aggregate, he may appear in the failed subject only at a subsequent examination ;
3. No compartments may be allowed in the case of Honours and other higher degree examinations ;
4. Supplementary Examinations should be held about six months after the annual examination in order that the candidates who have qualified themselves for appearing in compartments might be able to appear in the test then ;
5. No class or distinction should be awarded to the candidates who have passed their examinations by compartments.

ANNEXURE II.

Summary of replies received from certain universities regarding compartmental and supplementary examinations by the Secretary, Inter-University Board, India.

1. *Agra*.—In this University a candidate has to sit for the whole examination in the first instance.

2. If a candidate fails in one subject only and secures not less than 25 per cent. in the failed subject and 40 per cent. in the aggregate of the remaining subjects, he may appear in the failed subject only at the subsequent following examination only.

3. No compartment is allowed in the case of M.A. examinations. There are no Honours Examinations in this University.

4. The question of holding Supplementary Examinations is under consideration of University bodies.

5. No class is awarded to candidates passing by compartments.

Allahabad.—Students are permitted to appear compartmentally at the Examinations of this University as in the following Ordinance :

“ Any candidate for the B.A., B.Sc., B. Com. Examination who has failed in one subject only, obtaining not less than 25 per cent. in that subject and has obtained 40 per cent. of the aggregate number of marks allotted to the remaining subjects, shall be admitted to the examinations of the following year in the subject in which he failed, and if he passes in that subject, he shall be deemed to have passed the examination. The fee for such an examination shall be prescribed by the Executive Council.” (A fee of Rs. 15 for each subject has been fixed, *vide* Executive Council Resolution No. 302, dated December 15, 1923.)

(On comparing the terms of the scheme contained in your letter with the rules already in force in this University it will be seen that there is substantial agreement. The University, however, does not hold supplementary examination.)

Andhra.—Recorded.

Annamalai.—The University is agreeable to points 1, 3 and 4 embodied in the draft scheme proposed while they consider that the present practice should continue in respect of points 2 and 5 of the draft scheme.

The Regulations of this University do not either restrict the number of subjects in which one should fail or prescribe a minimum percentage of marks in the failed subject as suggested to qualify for taking the supplementary examination. Under the present Regulations there is no bar either on candidates passing the examination, by compartments to secure a class or distinctions in the subjects of the examination.

1. *Bombay.*—In this University a candidate is required to submit his application for admission to the entire examination, but there is nothing to prevent a candidate from answering a few of the papers and not all ;

2. The system of examination in this University does not provide that an unsuccessful candidate in order to be entitled to appear, in the subject in which he fails at a subsequent examination, should obtain a certain minimum numbers of marks in the subject in which he had failed.

3. As a rule candidates are not allowed to pass the examination in compartments at the Honours and other Degree Examinations, except at the B.Sc. Examination where the University itself permits candidates to take the Subsidiary Examination separately from the Principal Examination, and except candidates for the B.A. Honours Degree who are given exemption either from Compulsory English or from the Optional subject, if they have secured exemption marks in either of these. In such a case, however, a higher percentage is insisted on for the Honours Degree.

4. Supplementary examinations are held in the month of October but admission to these is not restricted to candidates who have once appeared and qualified themselves for appearing in compartments. Any candidate who

has kept the required attendance and completed the course of study is permitted to appear for these examinations. The B.A. Honours and the B.Sc. Principal Examinations are not held in October.

5. As a rule, no class or distinction is awarded to a candidate who passes in compartments. There is, however, an exception in the case of the B.Sc. and the B.A. (Honours) Examinations as already pointed out in paragraph 3 above.

This University does not propose to make any alterations in the aforesaid scheme of Compartmental and Supplementary Examinations.

Madras.—It will not be possible to have a uniform policy as so much depends upon local circumstances, subjects for study and standard of examinations in the area. The system followed in the University has worked well and there is no need to disturb it.

1. *Mysore.*—This is done in this University.

2. (i) There is exemption in a single subject in Medical and Engineering Examinations.

(ii) Compartmental Examinations are being conducted in the case of I.A. and I.Sc. and B.A. and B.Sc. Degree Examinations.

3. There is no compartmental pass in Honours and M.A. examinations.

4. Supplementary examinations are held for (i) Intermediate (ii) L.M.P. (iii) Final M.B. and Part III of Second M.B., B.S. It is not possible to extend this principle to Arts, Science and Engineering Degree Examinations.

5. This is in vogue in this University.

Nagpur.—This University is in complete agreement with the points mentioned in the concluding paragraph of your letter under reference, with the exception of 4 regarding advisability of holding Supplementary Examinations. Necessity for holding supplementary examinations about six months after the annual Examination is not keenly felt as provisions have been made in the Ordinances to the effect that Compartmental candidates at the Intermediate and other preliminary examinations are permitted to join a college, under certain conditions, for receiving the required instruction for the degree course. Thus the purpose of holding Supplementary Examinations is partially, if not wholly, served. Further, the scheme is likely to entail extra expenditure which, under the present financial conditions, cannot be ordinarily met.

The Punjab.—The rules of this University conform with items one and three mentioned in the concluding paragraph of your letter. Regarding item two, for all practical purposes our system is in line with the plan indicated by you, our scheme being as follows :—

If a candidate fails in one subject only and secures :—

Inter	B. A., B. Sc.	Law	Medical.
25%	25%	25%	40%

in the failed subject and at the same time has passed in the remaining subjects by securing not less than

40%	45%	50%	50%
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in the aggregate, he may appear in the failed subject only at a subsequent examination.

Regarding item four, our supplementary examinations are held about five months after the annual examinations. This is due to the complications which arise by late admissions to colleges.

Regarding item five, we show division in the certificates of candidates who pass by compartment. If and when you make a definite recommendation for adoption of a general scheme by all the Universities, the matter will be brought before the various Faculties concerned, with a view to adopt the same system to ensure uniformity.

Travancore.—It was after very careful consideration of all the aspects of the question that this University decided that there should be no 'compartmental passing' for the Intermediate, the B.A. (Honours) and B.Sc. (Honours), the Orient Titles and the professional examinations, and that a supplemental examination need be held only for the Intermediate. In the opinion of the Syndicate, the working of the system of compartmental and supplemental examinations in other Universities has shown that they lead inevitably, though perhaps imperceptibly, to deterioration of academic standards. The Syndicate is not, therefore, in favour of any change in the present system of compartmental and supplemental examinations adopted in this University.

For certain professional courses like Engineering, University Examinations are held at the end of each year's course and the marks secured by the candidates each year are carried forward to the next year; thus the benefits of the compartmental system have to some extent been made available to the candidates without detriment to the maintenance of high academic standards.



REPORT

OF THE

COMMITTEE OF THE CENTRAL ADVISORY BOARD OF EDUCATION

Appointed to consider the question of the Training, Recruitment and conditions of Service of Teachers in Universities and other institutions of higher education not previously dealt with by the Board.

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PREFACE

The Board considered the Report of the Committee appointed to consider the question of the Training, Recruitment and Conditions of Service of Teachers in Universities and other institutions of higher education not previously dealt with by the Board. The report was adopted by the Board subject to a few minor modifications and it was decided that the report should be forwarded to the Provincial and State Governments and Universities for necessary action.

Report of the Committee of the Central Advisory Board of Education appointed to consider the question of the Training Recruitment and Conditions of Service of Teachers in Universities and other Institutions of higher education not previously dealt with by the Board as amended and adopted by the Board at their annual meeting in January, 1945.

At their tenth meeting held at Baroda in January 1944, the Central Advisory Board of Education appointed the following Committee to investigate the problem of the Training, Recruitment and Conditions of Service of Teachers in Universities or other Institutions of higher education not previously dealt with.

W. H. F. Armstrong, Esq., C.I.E., M.A., I.E.S., Director of Public Instruction, Punjab.

S'r Maurice Gwyer, K.C.B., K.C.S.I., D.C.L., LL.D., Vice-Chancellor, Delhi University.

A. S. Khan, Esq., M.Sc., I.E.S., Director of Public Instruction, Bihar.

Dr. Panna Lall, C.S.I., C.I.E., D.Litt., I.C.S., Adviser to H. E. the Governor of the United Provinces.

Gaganvihari L. Mehta, Esq., M.A., Ex-President, Federation of Indian Chambers of Commerce.

Mrs. Renuka Ray, B.Sc., Econ. (London), M.L.A.

John Sargent, Esq., C.I.E., M.A., Educational Adviser to the Government of India.

The Hon'ble Mr. Tamizuddin Khan, Minister for Education, Bengal.
Or

The Director of Public Instruction, Bengal.

S. C. Tripathi, Esq., M.A., I.E.S., Director of Public Instruction, Orissa.

The representatives* of the Inter-University Board on the Board.

2. The Chairman of the Board subsequently appointed the following additional members.

1. Lt.-Col. S. L. Bhatia, M.C., I.M.S., Deputy Director General, Indian Medical Service.

2. Professor Amaranatha Jha, M.A., F.R.S.L., Vice-Chancellor, Allahabad University.

3. S. Lall, Esq., C.I.E., I.C.S., Joint Secretary to the Government of India, Department of Labour.

4. The Hon'ble Justice W. R. Puranik, B.A., LL.B., Vice-Chancellor, Nagpur University.

5. Professor Sir S. Radhakrishnan, LL.D., D.Litt., F.B.A., Vice-Chancellor, Benares Hindu University.

6. S. C. Sen, Esq., B.Sc., Eng. (Glas.), Vice-Principal, Delhi Polytechnic.

7. W. G. P. Wall, Esq., M.Sc., I.E.S., Director of Public Instruction, United Provinces.

*Lt.-Col. Dr. J. C. Chatterjee, M.A., D.Litt., M.L.A., Vice-Chancellor, Agra University.

*Khan Bahadur Dr. M. Hasan, M.A., D.Phil. (Oxon.), Bar-at-Law, Vice-Chancellor, University of Dacca.

*Dewan Bahadur Dr. A. L. Mudaliar, B.A., M.D., F.R.C.O.G., F.A.C.S., Vice-Chancellor, University of Madras.

3. The Chairman of the Board appointed Sir Maurice Gwyer as Chairman of the Committee.

4. The Committee met in the Secretariat, Simla, on the 2nd, 3rd and 4th of October 1944. The following members were present :—

1. Sir Maurice Gwyer (*Chairman*).
2. W. H. F. Armstrong, Esq.
3. Lt.-Col. S. L. Bhatia.
4. Khan Bahadur Dr. M. Hasan.
5. S. Lall, Esq.
6. Dr. Panna Lall.
7. The Hon'ble Mr. Justice W. R. Puranik.
8. Professor Sir S. Radhakrishnan.
9. S. C. Sen, Esq.
10. W. G. P. Wall, Esq.

Dr. D. M. Sen, M.A., Ph.D. (London), Secretary, Central Advisory Board of Education was Secretary of the Committee.

The following members were unable to attend :—

1. Professor Amaranatha Jha.
2. Lt.-Col. Dr. J. C. Chatterjee.
3. A. S. Khan, Esq.
4. Gaganvihari L. Mehta, Esq.
5. Diwan Bahadur Dr. A. L. Mudaliar.
6. Mrs. Renuka Ray.
7. John Sargent, Esq.
8. The Hon'ble Mr. Tamizuddin Khan.
9. S. C. Tripathi, Esq.

5. The agenda which the Committee considered is set out in the annexure. The following additional papers were circulated to the members.

(1) Memorandum by the Chairman.

(2) Notes regarding Scales of Salaries of Teachers in University Departments, Arts & Science Colleges, Intermediate Colleges and Professional Colleges.

(3) Suggestions from certain eminent educationists.

A statement showing full particulars regarding the minimum qualifications and scales of salaries of teachers in Universities and Institutions of University rank was laid on the table.

6. The Hon'ble Sardar Sir Jogendra Singh, Chairman of the Board, was present to welcome the members.

7. The Committee entered upon their deliberations with the firm conviction that the teacher is the central factor in every education system and every scheme for educational reform ; and in their view no system or scheme can be either effective or efficient unless it provides for a sufficient number of properly qualified teachers selected on grounds of merit alone, and unless those teachers are adequately remunerated, have a recognised status, adequate leisure as well as opportunities for research or for self improvement and security of tenure, and enjoy such other conditions of service as may preserve their independence and self respect. The Committee regretfully admit that the teaching profession is at the present time far from possessing all these things ; it does not enjoy universally the status which it ought to have ; and by reason of its undue subjection in many instances to bodies of laymen, often ignorant of educational

matters and regarding teachers as their servants or employees rather than their partners in the cause of education, it lacks the intellectual and academic freedom without which it cannot give of its best. In these circumstances it is not surprising that the profession does not always attract recruits of a proper quality. All educational reform must begin with the teachers and their conditions of service.

METHOD OF SELECTION OF TEACHERS.

8. The Committee have no doubt that the best method of selecting teachers is through a properly constituted Selection Committee ; and an honest and independent Selection Committee is in their view an absolute essential for the due appointment of good teachers. In the case of a University Selection Committee, a combination of high character and high academic qualifications ought to be a sufficient guarantee against influence or pressure from outside ; but even University Selection Committees have not always escaped criticism. The Committee are satisfied that a strong belief exists among teachers, whether well founded or not, that appointments are not always made upon merits, and that canvassing, even where forbidden in theory, is not always discouraged in practice. A University Selection Committee ought to be above suspicion, for this is a matter in which the honour of the academic world is engaged ; and the knowledge that a Selection Committee is impervious to influence of any kind would do as much as anything to raise academic standards.

9. The Committee are of opinion that a Selection Committee ought to consist of a small number of members only, say, between five and seven. The Vice-Chancellor of the University should be the Chairman and it might contain two persons appointed respectively by the Executive and Academic Councils of the University (or whatever name they may bear) with high academic qualifications or academic experience ; and it is for consideration whether these two members should not be persons from outside. The above would form the permanent element of the Committee, with perhaps one more person whose independence was beyond question, to be appointed by the Chancellor ; but it should be reinforced by one or two other members according to the nature of the appointment for which the selection is being made ; the Head of the University Department should be present when a teacher in that particular Department is being selected ; and when the appointment of a University Professor or Reader is under consideration, some distinguished authority in that particular branch of learning might be appointed to the Committee by the Chancellor, unless it already contains among its numbers some person who can be so described. Canvassing should be strictly prohibited and it should be made known that any person seeking to evade the prohibition will be disqualified forthwith. Where it persists in spite of due warning it may be necessary to publish the names of candidates who have been disqualified for this reason. The Committee had evidence before it that persons of eminence and position, who ought to know better, have been known to "recommend" candidates to Selection Committees ; and this practice should be wholly discountenanced. A Selection Committee should be able to form a judgment upon the testimonials submitted by the candidates themselves and from such personal knowledge as they have of their qualifications, at any rate in the case of candidates for higher positions in the educational world. A Selection Committee should recommend one name, and one name only, for a vacant post, and the appointing authority should have no right to reject their recommendation in favour of any other candidate. If the appointing authority are unable to accept the recommendation made by the Selection Committee, then the matter should be referred to the Chancellor of the University, whose decision should be final. There is no reason why a Selection Committee should not, if it desires to do so, recommend a second candidate for appointment, in the event of its first choice being

unable to take up the appointment ; but it should be made clear that these are successive, and not alternative, recommendations. It is perhaps scarcely necessary to say that there should be no obligation on the Selection Committee to make any recommendation at all, if in its opinion no properly qualified candidate has presented himself. Such a situation, however, ought not to be permitted to arise, save in the most exceptional cases, and the appointing authority ought to regard it as imperative upon them in the interests of the University and of the academic world generally to accept the recommendations of the Selection Committee without question ; because for greater mischiefs are likely to arise from a rejection of the recommendation of a Selection Committee than from an occasional error of judgment on the part of the Selection Committee itself.

10. The above suggestions indicate the kind of Selection Committee which the Committee have in mind ; but its composition can be varied to suit circumstances of particular institutions. The Committee, however, recommend that its main features should be adhered to, viz., that it should be small in number, that the members should always, where possible, be persons with high academic qualifications or academic experience and of high character ; that the lay element should be reduced to a minimum ; and that appointments by University bodies should be of persons from outside the University, where the circumstances may make it desirable.

11. Appointments for posts in technical colleges should be made by a Selection Committee constituted on the lines suggested above with the necessary variations. University representatives may often in such cases be not so well acquainted with the qualifications of candidates as members of the particular profession concerned. A University representative in the ordinary course will not have much difficulty in estimating the value of any candidate for appointment in the Arts Faculty or the University, with the assistance of expert advice from a colleague who is a historian, philosopher, mathematician, or as the case may be ; but he would probably not find it so easy to judge of the merits of candidates for medical or engineering appointments. It appears to the Committee therefore that a Selection Committee in such cases should contain more members with the necessary technical knowledge or experience ; and indeed with some appointments of a technical character it may well be that the choice should be left almost exclusively to such persons, though the Vice-Chancellor, or the person who holds the position corresponding to the Vice-Chancellor, in a University, as the case may be, should always be present.

12. In the case of Colleges affiliated to or forming part of the University it would seem that the problem must be approached from another angle. There are a large number of Colleges whose Governing Bodies consist wholly of laymen, often with little or no educational experience or academic qualifications ; and the practice of leaving the appointment of teachers in their hands is one which ought not to be tolerated in the case of a College receiving a Government grant.

13. The Committee are strongly of opinion that the Governing Body of every College receiving a grant ought to contain a representative element, e.g., not less than two persons appointed by the University, and that this should in all cases be a condition of the grant. The Committee of the Governing Body which selects teachers for appointment should always include one of these members. Next, there ought to be some machinery whereby the University itself can review all appointments which are made, whether by "recognizing" the teachers so appointed, as is the case at certain Universities, or by some other suitable method. It is essential that the University should be able to prevent improper appointments ; and there is evidence that only too often in

the case of lay Governing Bodies academic considerations have been of secondary importance. The Committee are aware that in many cases Governing Bodies already include representative members, not necessarily appointed by the University; but they think it worth consideration whether even in such cases a University representative should not also be included. The Committee were also informed that the representation of the teaching staff on Governing Bodies has in the case of more than one University at least effected a material improvement in the status of the teachers; and they are of opinion that this is an example which might well be followed.

14. The Committee note that appointments to the teaching staff of Colleges directly under the management of Government are made by Provincial or Federal Public Service Commissions, and they hope that the Public Service Commission will be willing that a representative of the University having special knowledge of the subject in which the appointment has to be made should be associated with the Commission.

15. Where a College or University receive a benefaction for the purpose of establishing a Professorship, or Lectureship, as the case may be, the donor will often desire, reasonably enough, to reserve the right to nominate a member of the Selection Committee. There can be no objection to the acceptance of a gift on such terms, but the attempt which is sometimes made by donors to reserve a similar right to their children or even later descendants is to be deprecated.

QUALIFICATIONS OF TEACHERS.

16. The Committee doubt whether the prescribing of minimum qualifications for teachers in any University post is of any value, unless a really high minimum is fixed. This in their opinion ought not to be less than the possession of a first class M.A. degree of an Indian University, or a foreign degree equivalent to it, each foreign degree being considered on its merits. But to forbid without exception the engagement of any teacher who did not possess a first class M.A. degree would be unnecessarily rigid; the rule would be made sufficiently elastic if it required that no teacher should "ordinarily" be appointed unless he possessed that qualification. No one, however, with less than a second class M.A. degree should be regarded as qualified in any circumstances. The Committee admit that exceptional persons are to be found who would make admirable teachers, though they may not possess the qualifications proposed; but since there will never be any lack of persons who do possess the qualifications, they are of opinion that much more harm than good would be done by opening the door any wider than they have suggested above.

17. The preceding paragraph is to be taken as applying to Lecturers teaching degree classes, either in the University itself or in affiliated Colleges. In the case of teachers who are taking post-graduate classes it would be desirable that they should have had in addition some teaching experience; but the Committee do not think that can be rigidly insisted upon, and Selection Committees should be left to deal with each case upon the merits.

18. In Teachers Training Departments the Committee are of opinion that Lecturers must have at least a second class Master's degree and have undergone a Teachers' Training course. It is not uncommon at the present time to find teachers in Training Colleges who are themselves untrained; and it must be insisted that untrained teachers should never be employed in training institutions.

19. In Colleges or Departments of Engineering and Technology, Lecturers in theoretical subjects such as Mathematics, Physics, Chemistry, etc., should ordinarily possess a first class M.A. degree. Lecturers in all applied sciences

should have a first class engineering degree or its equivalent, together with a reasonable amount of practical experience in industry.

20. In Medical Schools, Lecturers in the pre-clinical subjects, of physiology and Bio-Chemistry may be pure scientists without necessarily possessing a medical degree at all, but they should ordinarily possess, like other Lecturers, a first class M.Sc. degree or its equivalent. Medical graduates teaching pre-clinical subjects should possess at least a B.Sc. degree and Lecturers in clinical subjects, such as medicine, surgery, etc., should have at least a first or second class M.B.B.S. The Committee look forward, however, to a time in the future when these latter qualifications can be raised, though they do not feel that the present time they can go beyond the recommendations which they have made. The representative of Bengal on the Committee did not feel able to concur in the sentiment expressed in the last sentence of the paragraph.

21. Lecturers in Agriculture should possess the qualifications laid down in the Report of the Committee on Agriculture Education.

22. Only first class graduates in Law should be appointed as Lecturers in a Law Faculty or College ; and it is preferable that such Lecturers should at least possess an LL.M. degree.

23. The preceding paragraphs of this section of the report relate to Lecturers only, in which expression is included all categories of teachers below the rank of Reader, whether they are described as Junior Lecturers, Assistant Lecturers or Senior Lecturers. The case of University Professors and Readers and of the Principals of Colleges stands, however, on a different footing. The Committee recall in this connection that in 1941 the Central Advisory Board recommended that uniform designations for the teaching staff of Universities and of constituent or affiliated Colleges of the University should be adopted. According to this recommendation, the terms "Professor" and "Reader" would apply only to certain classes of teachers in Universities ; and the Committee regard it as very important that these titles should be conferred by the University alone and carry with them a University status, as distinguished from a College status. At the present time the titles are sometimes used to designate teachers in affiliated or constituent Colleges of Universities, and Universities would no doubt be unwilling to deprive each and every teacher of such a designation, no matter how long he might have enjoyed it. But so far as the future is concerned, the Committee are of opinion that the University should have a Recognition Committee which would confer the title of Reader (or even, in rare cases, Professor) on such college teachers who organise and conduct teaching of Honours or post-graduate standard, but only if in the opinion of the Recognition Committee they possess the qualifications which a Reader (or Professor) ought to have. All other Lecturers in affiliated or constituent colleges would be called Lecturer, Tutor or Demonstrator, with the prefix Junior, Senior or Assistant, as the case may be ; and on no account should the designation of "Reader", or still less of "Professor", be claimed as of right for the Heads of Departments in any Colleges.

24. Professors and Readers in University Departments and Readers in constituent Colleges should be men of more than average ability and should ordinarily have had from five to ten years' teaching experience. Research and original work should be regarded as additional qualifications ; but it does not appear to the Committee that it would be possible, or indeed desirable, to define the qualifications in any more precise terms. Those who are candidates for the post of Professor or Reader will necessarily be men who have already attained a recognised position in the academic world and their qualifications

should therefore be well known or at least becoming well known ; and the Committee do not believe it possible to define the type of man required more exactly than by saying that they should be men fitted to perform those duties which the academic world recognizes as attaching to the office of University Professor or University Reader.

25. Principals of degree colleges and post-graduate colleges require something more than academic distinction ; they require also to be men of administrative capacity. In the larger Colleges it may well be that his administrative duties will occupy the whole time of a Principal, though that is a matter on which no general rule can be laid down ; but in smaller Colleges it is probable that a Principal will always have to take substantial share in the teaching work of his College. In Engineering, Medical and Agricultural Colleges, experience has proved the utility of Principals able to devote the whole of their time to their administrative duties. In these circumstances the Committee do not think it possible to define with any great degree of precision the qualifications of the Principal of a College but it is plain, that he must possess academic qualifications of a high order, which will enable him to take his proper place in the hierarchy of the University ; and he must also be a man of high character and personality, possessed of those qualities which are generally recognized as essential in an administrator.

TEACHER'S REMUNERATION.

26. An adequate supply of properly qualified recruits for the teaching profession can only be obtained by offering reasonable salaries and reasonable conditions of service ; and if these are assured the Committee are persuaded that there will never be a lack of good teachers. In considering the question of minimum salary scales for University teachers, they have had before them a comprehensive list of salary scales prevalent in different parts of India, many of which are in their opinion quite indefensible and the disparity which exists at present cannot possibly be justified. The Committee are of opinion that the prescribing of minimum salary scales is essential, if high academic standards are to be maintained ; and after giving the best consideration they can to the matter they recommend the following minimum scales for different grades of teachers :—

(a) UNIVERSITY DEPARTMENTS.

Professors**	Readers	Lecturers	Junior Lecturers
1,000 to 1,250	500—25—800	300—20—500	210—15—300

(b) AFFILIATED AND CONSTITUENT COLLEGES.

Principal*	Readers	Lecturers	Junior Lecturers
800 to 1,000**	500—25—800	300—20—500	

(i) In Technical and Engineering Colleges and in subjects which require a certain amount of professional experience.

210—15—300.

(ii) Other Junior Lecturers ;

150—15—300.

The Committee wish to make it clear that where a College teacher is given or is allowed to retain the title of Professor this should not automatically entitle

*It appears to the Committee that Universities may find it desirable, if not necessary, to classify affiliated Colleges into two groups. The scales suggested above would be appropriate for Colleges in the Class I Group (or whatever designation may be thought suitable). For Class II Colleges a salary scale of Rs. 500—25—800 is recommended ; and if it should be thought that there should be a still further class, Rs. 450—600 would seem to be appropriate. The latter scale, however, should be confined to Colleges with not more than, say, 150 to 200 students.

**These figures do not refer to "scales" of pay, but only to a minimum pay of some amount between the two figures.

him for the salary prescribed in the case of a University Professor. It is suggested that in such cases the rate of remuneration should be settled by consultation between the University and College authorities.

The Committee recommend that no distinction should be drawn between teachers on account of their sex, the scales recommended above being applied both to men and women.

27. In Medical, Engineering, Technological and other professional Colleges, Principals and Professors might be given a salary of not less than Rs. 2,000 a month and Readers upto Rs. 1,200 according to their qualifications. It is perhaps regrettable that such distinctions should have to be made, but the Committee recognise that in these cases salaries must bear some relation to the earnings of the professions outside. The Committee desire to observe, however, that the pay of between Rs. 1,000 and Rs. 1,250 which they have recommended for other University Professors is a minimum only, and they would gladly see it raised to, say, some amount between Rs. 1,200 and Rs. 1,500, where a University is in a position to pay that amount.

GENERAL CONDITIONS OF SERVICE.

28. The Committee attach to this report a suggested model form of teachers' agreement, which follows closely the form of agreement at present in use in an Indian University. It appears to them that a teacher who had the benefit of a form of agreement on these lines would enjoy all the advantages which in their opinion a teacher ought to have and they recommend it to the consideration of Universities and Colleges. In the next succeeding paragraphs the Committee draw attention to certain points which are covered by the terms of the agreement.

29. First and foremost the Committee would put security of tenure, and some very sad cases have been brought to their notice in which College teachers, especially teachers in Colleges with a lay Governing Body, have suffered much injustice because their tenure of office was not secured. The provisions in the model agreement appear to the Committee to provide the teacher with ample safeguards without doing any injustice to the University or College in which he serves.

30. The Committee agree that a probationary period for those who are entering the profession is not unreasonable, though they think that periods of probation at the present time are often unduly extended, and in their view twelve months should be ample for the purpose of determining whether a man is likely to be a successful teacher or not. The period of probation, however, should be fixed at the time of the teacher's engagement and it should not be permissible to extend it thereafter. But the Committee do not consider that the appointment of a Professor, Reader or Principal on probation can ever be justified. The qualifications of a person who has achieved sufficient eminence in the academic world to merit consideration for a post of this kind ought to be, and in fact are, so well known that the period of probation is either unnecessary or humiliating. In the case of a Principal especially the period of probation, so long as it continues, deprives him of the greater part of the authority which he should be exercising; and it is offensive to every idea of academic dignity that bodies of laymen, as is sometimes the case, should be able to insist on a period of probation when appointing distinguished academic figures to posts of this kind.

31. Except where teachers are entitled to a pension on retirement there should be a Provident Fund for teachers in all recognized Colleges, the minimum contribution by the institution being 6-1/4 per cent. No investment of Provident Fund money should be permitted otherwise than in trustee securities. The accounts of the Fund should be audited by a qualified auditor every

year and every subscriber should be entitled to receive a copy of the audited accounts together with a certificate of the balance standing to his own credit. The Provident Funds whose rules follow those prescribed by Government enjoy certain special privileges of their own.

32. The model form of agreement sets out certain provisions with regard to sick leave which appear just and reasonable to the Committee. There seems to be difference of views on this matter, and it by no means follows that rules applicable to Government servants are equally applicable to the teaching service, where teachers enjoys regular vacations every year. A majority of the Committee were of opinion that the model agreement should not provide for privilege leave over and above the period of vacations, and that to include provisions for privilege leave would err on the generous side ; others thought that, since leave in any circumstances cannot be claimed as of right, provisions with regard to privilege leave might be included since it might be assumed that those provisions would be administered fairly and equitably and in such a way as to enable no teacher to take unreasonable or unseasonable leave during term time for purposes more appropriate to vacations. In the circumstances the Committee have thought it right to enclose the provisions in the model agreement with regard to privilege leave within brackets leaving it to Colleges and Universities to determine whether to include them or not.

33. Provision should be made for suitable maternity leave in the case of married women teacher.

34. The Committee agree that Universities and Colleges ought to be willing to give their teachers facilities for study leave, but it appears to them doubtful whether leave of this kind could be made a contractual obligation on the part of the University or College. It would, however, be desirable in their view that an attempt should be made to give a teacher study leave of the least one year in seven years' service or six months for every 3-1/2 years' service. Opportunities and facilities for study should always be afforded throughout a teacher's service.

35. The Committee recommend that the age of retirement for all teachers should be not less than fifty-five nor more than sixty, save in the case of Professors, where the age should be sixty*. It should however be possible on the recommendation of the Vice-Chancellor, where the age of retirement is fixed at fifty-five for an extension to be granted of not more than one year at a time up to the age of sixty, if the interests of the University or College so require. It should be laid down that canvassing by or on the behalf of a teacher for an extension would disqualify him from receiving an extension.

36. It will be observed that there is a provision in the model form of agreement requiring the teacher to devote his whole time to the service of the University or College and not without the permission of the appropriate authority to engage directly or indirectly in any trade of business or any work likely to interfere with the proper discharge of his duties. Teachers in professional Colleges may, however, be permitted to carry on private practice if the previous sanction of the Principal and the Governing Body has been obtained ; but the Committee are of opinion that this should not be encouraged and that as the supply of teachers in professional Colleges increases, permission should be more and more rarely accorded. They are of opinion that Law is more effectively taught by full-time teachers, though it is sometimes of value to include in a course lectures by practising Advocates of standing. In medical Colleges, Heads of Departments of clinical subjects (medicine, surgery, midwifery, gynaecology, ophthalmology, etc.) should be required to devote their whole time to teaching and should not be allowed private practice outside the

*Dr. M. Hasan of Dacca University was of opinion that the age of retirement of Professors should be the same as that of all other teachers

hospital ; in each of these departments, there should be also some wholtime assistants ; in cases of emergency, where teacher of these subjects have in fact attended patients outside the hospital, any fee received by them should be paid to the hospital funds. The Committee, however, do not wish anything that they have said in this paragraph to be taken as applying to surgeons and physicians attached to hospitals in an honorary capacity, who are often among the leading members of their profession and who put their services freely at the disposal both of the hospital patients and of the medical students who are being trained in the hospital. In Technical and Engineering Colleges teachers may be permitted to have a consultative practice, on conditions prescribed by the employing authorities.

37. As regards hours of work, the Committee are of opinion that in an ideal University any regulation of these should be unnecessary, but evidence has been put before them which shows clearly that in certain circumstances teachers require some protection against the inordinate demands of Governing Bodies and accordingly they recommend, where necessary, a maximum of 18 hours teaching work for Colleges, that is to say, work which brings the teacher into direct contact with his pupils, whether lectures or tutorial hours. The Committee would deprecate the prescribing of maximum hours for Professors and Readers since this is a matter which should be left to be regulated by the good sense of all concerned ; but if a maximum has to be prescribed, it should be less than in the case of College teachers, in order that the Professor or Reader may be afforded facilities for his own work, whether research or otherwise. The Committee have been surprised to hear that in some Universities it is a minimum rather than a maximum which is prescribed ; but they would not have a very high opinion of any teacher for whom it was necessary to prescribe that he should do a certain quantity of work every week ; and it is of course plain that a dishonest teacher, if such exist, could evade such a rule with very little difficulty. A University or a College ought not to need rules and regulations of a kind which would find a more proper place in the world of industry or commerce ; and teachers ought to be able to trust their University or College to treat them well, just as the University or College in its turn ought to be able to trust its teachers.

38. The attention of the Committee was directed to the question of promotion, and the age-long dispute between promotion by merit or by seniority was mooted. The Committee do not feel able to lay down any general rule ; but, broadly speaking, they are of opinion that a Junior Lecturer in Universities and Colleges should ordinarily be considered as eligible for promotion to the Senior Lecturer grade if he establishes his claim by merit and by successful teaching service.* Promotion to posts of Professor, Reader or Principal should, however, be governed exclusively by merit and seniority alone, even with a long teaching experience, should not be able to establish a claim to them.

39. Another question raised before the Committee related to the transfer of teachers from one University or College to another and whether in such circumstances the teacher should be entitled as of right to count his previous service in determining his salary or pension in the new service. Here again it seems to the Committee difficult to lay down any general rule, since one is not always dealing with comparable circumstances. Previous salary ought certainly to be taken into account ; and in ordinary practice

*Some members of the Committee would prefer a single scale for Lecturers, e.g., Rs. 210—15—300—E.B.—20—500, which would get rid of the Junior Lecturers grade altogether.

the teacher transferring from one institution to another ought not to be offered a salary less than the salary he was receiving in his previous post. All matters of this kind, however, will be much more satisfactorily adjusted by mutual arrangements between the Colleges and the Universities concerned.

40. The Committee have considered whether it was desirable to lay down any general rules as to the size of classes. It is certainly the case that teachers are sometimes required to lecture to classes far beyond the capacity of the average man to influence or even control; and to that extent the question of the size of classes is involved in the teachers' conditions of service. Here again no general rule seems feasible; but the Committee offer the following suggestions which those of their number with considerable practical experience in such matters are of opinion would be reasonable. Lecture classes in theatre lecture-rooms should not exceed 150 students at a time; lecture classes in ordinary class rooms should never be for more than 75 students at a time. For practical work in laboratories there should be one supervisor or tutor for every 20 students. For clinical work in Medical Colleges and practical work in Technical and Engineering Colleges or Departments no teacher should have more than 12 students at a time. So far as lecture classes are concerned the Committee are of opinion that it may be no less important to lay down the square space required for each student, since then the classes will limit themselves. The report of the School Buildings Committee of the Central Advisory Board of Education recommends that there should be 12 sq. ft. in the class room for every school pupil and a minimum mean height of 12 ft. where the roofs are not flat. The cubic space for College students in any class room should, if anything, be more than this and certainly in no case should it be less.

41. The Committee are strongly of opinion that there ought to be some fixed ratio between the number of students in, e.g., a College and the number of teachers in the service of that College. A ratio of 20 : 1 appears to them not unreasonable as a general rule; but for post-graduate and honours classes the ratio should be 12 : 1 or even 10 : 1 for the former and perhaps 15 : 1 for the latter. No less important is the establishment of a ratio between Lectureships and Assistant Lectureships, and the Committee are of opinion that a ratio of 2 : 3 is reasonable.

NOTE ON INTERMEDIATE COLLEGES.

42. The Committee anticipate that in course of time intermediate classes will be absorbed partly by the three year degree courses in the Universities and partly by the schools and for this reason they have not taken into special consideration teachers employed in intermediate Colleges but so long as Colleges of the intermediate standard exist, they think it right to recommend minimum qualifications, for Lecturers at such Colleges and also appropriate salary scales. Lecturers in Intermediate Colleges should in the opinion of the Committee at least have a second class M.A. degree and should be paid Rs. 150—15—255. Principals of Intermediate Colleges should be chosen not less for their administrative ability and for their academic attainments, and should be paid not less than Rs. 250—25—500.

THE FINANCIAL IMPLICATIONS OF THE COMMITTEE'S RECOMMENDATIONS.

43. The Committee realises that the recommendations which are made in this report, if adopted by Universities and Colleges, must inevitably mean a substantial increase in expenditure. They realise also that Universities and Colleges must look mainly to an increase in the Government grants which they at present receive in order to meet this expenditure. They earnestly hope that all the Governments concerned will give their earnest attention to

this vital question, since they have no doubt whatsoever that the money thus spent would bear fruit a hundredfold ; and indeed that expenditure of this order cannot be avoided if development of Universities in India is to proceed satisfactorily, so as to enable them to cope with the requirements of the time. The basis of Government grants varies with almost every University throughout India ; but the greater part of the expenditure upon education generally is upon teachers' salaries. This has been recognised by the Central Government in the case of one University, where the grant given to the constituent Colleges of the University is 50 per cent. of the sum expended on teachers' salaries, plus 20 per cent. on other approved expenditure, the teachers' salaries being on a prescribed scale. It seems to the Committee that this is an example which might well be adopted elsewhere, and they recommend it to the favourable consideration of the Governments.

44. The Committee have also observed the recommendations in the recent report of the Central Advisory Board on post-war development suggesting that the increases in the expenditure upon University education hereafter might be shared in whole or in part between the Centre and the Provinces ; and, if such a thing ever came about the 50 per cent. grant towards teachers' salaries might form a convenient basis for the calculation of a contribution from Central Government funds. The Committee realise, however, that these matters are not strictly within their terms of reference, though they believe that they will not be unduly criticised for touching upon them.

45. Lastly, the Committee desire to emphasize that nothing in their recommendations can be construed as an interference with the autonomy of any University ; and indeed the presence of a number of Vice-Chancellors as members of the Committee will be a guarantee of this. The Committee have done no more than suggest that the conditions of service if all teachers in Universities and comparable institutions should reach a certain minimum standard and should in no circumstances be allowed to fall below it ; and that there must be a minimum below which no University or College receiving Government assistance ought to be allowed to fall is, it is confidently submitted, a self-evident proposition. If the suggestions they have made with respect to the Governing Bodies of Colleges should be regarded as an interference, they can only reply that stipulations of the kind suggested are long overdue and should rather be regarded in the light of a much needed and inevitable reform. They cannot doubt that in a substantial number of Universities these or analogous conditions of service already exist, and that they are only absent elsewhere because of financial difficulties.

46. If, as the Committee hope, their proposals are endorsed by the Central Advisory Board, they believe that this report may convince Governments throughout India of the justice of the teachers' claims ; and they earnestly hope that in future it will be made a condition of every Government grant to a University or affiliated College that the conditions of service of the teachers do not fall below the standards which the Committee have thought right to recommend. If this can be done, an immense step forward will have been taken. The teachers' profession will have achieved the status which in the opinion of the Committee it ought to possess and will never in future lack a supply of properly qualified recruits, while the effect upon the educational progress of India will be almost incalculable. For these reasons the Committee very earnestly commend their proposals to all concerned and express the earnest hope that considerations of finance will not be permitted to stand in the way of their fulfilment.

ANNEXURE I.

FORM OF TEACHERS' AGREEMENT.

An Agreement made the.....day of19.. between.....(hereinafter called the teacher) of the first part and the University or.....[or the Governing Body of the.....College] of the second part.

1. The University [or the Governing Body] hereby [or, as from the.... day of.....] appoints the teacher as a member of the staff of the.... University [or College] upon the terms and conditions hereinafter set out :

Provided that the teacher shall be on probation for a period of twelve months, and shall be confirmed in his appointment on the expiration of that period, unless not less than one month before the expiration thereof the University [or Governing Body] inform him in writing of their intention not to confirm him. (This proviso shall be omitted in the case of Principals; Professors and Readers).

2. The University [or Governing Body] shall pay to the teacher during the continuance of his engagement a salary at the rate of Rs.....p.m., rising by annual increments of Rs. to a maximum of Rs.....p.m., and no increment shall be withheld without the consent of the University.

3 The teacher shall during the continuance of his engagement be entitled to the benefit of the Provident Fund maintained by the University [or Governing Body] for the teaching staff in accordance with the rules prescribed by the Government.

4. The teacher shall devote his whole time to the service of the University [or College], and shall not without the permission of the appropriate authority engage directly or indirectly in any trade or business whatsoever or in any private tuition or other work which may interfere with the proper discharge of his duties ; but this prohibition shall not apply to work undertaken with the permission of the Vice-Chancellor [or Principal] in connection with the examinations of a University, Board, or Public Service Commission.

5. The University [or Governing Body] shall be entitled summarily to determine the engagement of the teacher on any of the following grounds, that is to say :

Wilful neglect of duty ;

Misconduct or insubordination ;

Physical or mental unfitness ;

but save as aforesaid, shall not be entitled to determine the engagement of the teacher except only for incompetence or for good cause and after giving three months' notice in writing or payment of three months' salary in lieu of notice :

Provided that incompetence shall not be a ground for dismissal in the case of any teacher who has served for five years after being confirmed in his appointment.

ALTERNATIVE FORM TO PARA. 5.

The University [or Governing Body] shall be entitled summarily to determine the engagement of the teacher for misconduct, but subject as aforesaid shall only be entitled to determine the engagement after giving three months' notice in writing or payment of three months' salary in lieu of notice, and for good cause.

6 The University [or Governing Body] shall not determine the engagement of the teacher whether summarily or otherwise without informing him in writing of the grounds on which they intend to take action and giving him a reasonable opportunity of stating his case in writing, and before coming to a final decision, shall duly consider the teacher's statement and if he so desires give him a personal hearing.

7. The teacher may at any time terminate his engagement by giving the appropriate authority three months' notice in writing.

8. (1) Any dispute arising in connection with the termination of the services of the teacher, except when on probation, by the University [or the Governing Body] shall be referred to the arbitration of an Appeal Committee of three independent persons appointed by the Chancellor, who shall have power to inquire into all the facts of the case and to interpret the terms of this agreement, and their decisions shall be final and binding on both parties.

(2) The Indian Arbitration Act, 1940, shall apply to an arbitration under this clause.

9. On the termination of this agreement, from whatever cause, the teacher shall deliver up to the University [or the Governing Body] all books, apparatus, records and such other articles belonging to the College or to the University as may be in his possession.

10. The teacher shall be entitled to leave on full pay in accordance with the following provisions, save during any period after he has given or received notice of the determination of his engagement :—

(a) Casual Leave.—In case of any emergency arising from sickness in his family or other domestic reasons, for a period not exceeding 14 days in any one academic year of which not more than 10 days may be taken at a time.

*[(b) Privilege leave.—Fifteen days in any academic year on full pay or one month on half pay.]

(c) Sickness leave.—In case of sickness preventing the teacher from performing his duties, for a period not exceeding one month for every completed 12 months' service, vacations included, but not exceeding three months consecutively at a time or 18 months in all during the whole period of the teacher's engagement : provided that where a teacher is absent for more than five days on account of alleged sickness, the vice-Chancellor [or the Principal] may require him to furnish a medical certificate that he is prevented by illness from attending, and if the certificate is not furnished, the teacher shall not be entitled to sickness leave on full pay during that period of absence.

*[] Vide last sentence of para. 30 of report.

[Note :—Neither casual (nor privilege) leave can be claimed as of right.]

ANNEXURE II.

AGENDA.

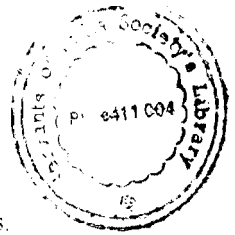
A. Training :

1. To consider the minimum educational qualifications of teachers appointed to Colleges, teaching upto :—

(a) Degree Classes.

(b) Post-graduate Classes.

(c) Teachers Training Colleges.



(d) Technical Colleges.

(e) Agricultural and other professional Colleges.

2. To consider the content of additional qualifications—research or practical training or both—to be prescribed for teachers engaged in the higher stages of education.

3. To consider the desirability of providing facilities for research or further studies for teachers in service.

4. To consider whether it is desirable that teachers of technical, commercial and professional subjects should have a period of practical experience in Industry, Commerce, etc.

B. Recruitment and Selection :

5. To consider what steps should be taken to ensure an adequate supply of recruits to the teaching profession in each of the categories mentioned above having due regard to the minimum qualifications and to the ascertainable intake in any given area.

6. To consider suitable methods for appointment and selection of professors, readers, lecturers, etc., in the higher stages of education.

7. To consider the question of exchange of professors, etc. between (a) Indian and foreign Universities and (b) among colleges and universities in India.

8. To consider whether it is desirable and practicable to set up a cadre of specialist teachers in certain subjects and utilise their services for specified periods in different institutions by rotation.

C. Conditions of Service :

9. To consider whether it is both desirable and practicable to prescribe minimum national scales of salary for teachers, men and women, in all categories.

10. To consider the minimum scales of salary for principals in different types of colleges and heads of departments in universities and larger institutions.

11. To consider the question of pension or provident fund for teachers in all recognised institutions.

12. To consider the desirability of granting study leave to teachers at reasonable intervals.

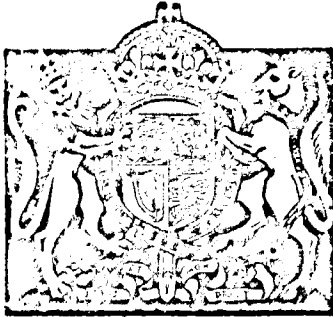
13. To consider whether in the interest of efficient instruction teachers should be permitted private practice in their professions, Engineering, Medicine, Law, etc.

14. To consider whether teachers transferred from one university or area, to another should be entitled, to count their previous recognised service in determining their salaries and pension in the new sphere of their service.

15. To consider the question of probationary period and security of tenure of teachers in all recognised institutions.

16. To consider such matters as size of classes, hours of work, sick leave, age of retirement, etc.

17. To consider any other matters relevant to the terms of reference.



REPORT
OF THE
ADMINISTRATION COMMITTEE
OF THE CENTRAL ADVISORY
BOARD OF EDUCATION 1944

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PREFACE.

Sir Maurice Gwyer, the Chairman of the Committee appointed by the Board to examine the administrative changes and adjustments that would be necessary amongst the various bodies concerned with the primary and secondary stages of education, in order to implement the scheme for post-war educational development, presented the report of that Committee. The Board adopted the report with a few modifications and decided that it should be forwarded to the Governments concerned for necessary action.

pamphlet no 29

Report of the Administration Committee of the Central Advisory Board of Education, 1944, as amended and adopted by the Board at their annual meeting in January 1945.

At their Tenth Meeting held at Baroda in January 1944, the Central Advisory Board of Education considered further the Memorandum on Post-War Educational Development in the light of observations received from the Inter-University Board in India and the Indian Public Schools Conference. The Board were of opinion that the successful operation of their plans for post-war development would require important administrative changes and that a readjustment would be necessary amongst the various bodies now concerned with the Primary and Secondary stages of education. They accordingly appointed the following Committee to examine and report on the issue :—

Sir Maurice Gwyer, K.C.B., K.C.S.I., D.C.L., LL.D., (Ex-Chief Justice, Federal Court, India), Vice-Chancellor, Delhi University.

The Hon'ble Mian Abdul Haye, Minister for Education, Punjab.

Dr. W. A. Jenkins, C.I.E., D.Sc., I.E.S., Director of Public Instruction, Bengal.

Dr. V. S. Jha, Ph.D., Divisional Superintendent of Education, Central Provinces.

S. N. Moos, Esq., C.I.E., M.A., I.E.S., Director of Public Instruction, Bombay.

The Hon'ble Khan Bahadur Saiyidur Rahman, Minister for Education, Assam.

John Sargent, Esq., C.I.E., M.A., Educational Adviser to the Government of India.

Sir Meverel Statham, C.I.E., I.E.S., Director of Public Instruction, Madras.

Dr. (Mrs.) Malini B. Sukthankar, M.B.B.S., J.P.

W. G. P. Wall, Esq., M.Sc., I.E.S., Director of Public Instruction, United Provinces.

2. The Chairman of the Board subsequently appointed the following additional members :—

1. W. H. F. Armstrong, Esquire, C.I.E., M.A., I.E.S., Director of Public Instruction, Punjab.

2. Sir V. T. Krishnamachari, K.C.I.E., Ex-Dewan of Baroda.

3. Rao Bahadur V. P. Menon, C.I.E., Reforms Commissioner.

4. K. G. Saiyidain, Esq., B.A., M.Ed., Director of Education, Kashmir State.

3. The Chairman of the Board appointed Sir Maurice Gwyer as Chairman of the Committee.

4. The Committee met at New Delhi on the 13th December 1944. The following members were present :—

1. Sir Maurice Gwyer (Chairman).

2. W. H. F. Armstrong, Esq.

3. Dr. V. S. Jha.

4. Sir V. T. Krishnamachari.

5. Rao Bahadur V. P. Menon.

6. The Hon'ble Khan Bahadur Saiyidur Rahman.

7. John Sargent, Esq.

8. Dr. (Mrs.) Malini B. Sukthankar.

Dr. D. M. Sen, M.A., Ph.D. (London), Secretary, Central Advisory Board of Education was Secretary of the Committee.

The following members were unable to attend :—

1. The Hon'ble Mian Abdul Haye.
2. Dr. W. A. Jenkins.
3. S. N. Moos, Esq.
4. K. G. Saiyidain, Esq.
5. Sir Mevereil Statham.
6. W. G. P. Wall, Esq.

5. The agenda and papers circulated to the members of the Committee are set out in Annexures.

The Committee had before them the following papers :—

(1) An abstract statement of recommendations of the Central Advisory Board of Education and of its various committees with regard to control of education at various stages.

2. A statement of the position with regard to the relationship between the Central authorities and Local authorities in respect of administration of education as obtaining in Britain and the U.S.A.

(3) A statement of administrative arrangements necessary for ensuring compulsory attendance.

(4) Extracts from "Organisation and Administration of Public Education" prepared by the Advisory Committee on Education, U.S.A., regarding (i) Relationships of Federal, State, and Local Units in the Administration of Education Functions and (ii) Suggested improvements for State and Local Organisation and Administration of Education.

6. The Committee desire to state at the outset that they have interpreted their terms of reference as requiring them to supplement the recommendations which the Board have already made on the subject of educational administration and, where necessary, to amplify them or fill in certain important details. They do not propose to restate all the features of the administrative framework a sufficiently clear outline of which is to be found in the Board's Report on Post-War Educational Development. It is against the background of that Report that the observations which the Committee have to offer should be viewed.

7. The Board have observed in their Report referred to above that the implementing of educational reconstruction will require vision and efficiency on the part of the responsible authorities. No less important will be the qualities of courage and a broad and objective outlook, in so far as many practices and conceptions which have assumed the authority of traditions will have to be discarded, and "in fact much of the present rambling edifice will have to be scrapped in order that something better may be substituted." (Board's Report on Post-War Educational Development).

8. In the light of experience it cannot, but be considered unfortunate that the administration of education, particularly in the lower stages, should have been handed over to local bodies which for various reasons have proved unable to shoulder the responsibility. The question of administration of Primary Education by Local Bodies has already been considered by the Board on several occasions. In 1937 the Board's Committee on Vernacular Education, presided over by Mr. B. G. Kher, then Premier of Bombay, reported that in regard to education under local bodies, there was "sufficient evidence that generally the administration is lax in many ways." "We are aware", the Committee proceeded to remark, "that the policy of the Government of India is 'to train the people in the management of their own local affairs and that political education of this sort must in the main take precedence of considerations of departmental efficiency', but there must be limits to the extent to which education can be allowed to form the training ground of our administrators....we

have little evidence to show that local bodies generally are developing a higher sense of civic responsibility in educational administration."

Provincial reports for years past have presented a very gloomy picture of education under local bodies, and the Board at their Eighth Meeting in 1943 were constrained to recommend that, wherever possible, Provincial Governments "should assume full responsibility for the administration of primary education." All the evidence which has been available to the Committee supports this conclusion, and bearing in mind particularly the fact that the enlarged provision contemplated for even the Junior Basic (Primary) stage of education will be wholly beyond the means of local bodies, the Committee have no doubt whatever that it will be essential for Provincial Governments to assume full administrative and financial responsibility for all stages of school education. That even the Provincial Government may find it beyond its means to meet the cost involved and may require assistance from the Central Government does not in any case invalidate the conclusion set out above.

9. The above recommendation of the Committee is based solely on considerations of efficiency and on the need to ensure that the vast sum of money involved will be spent to the best advantage. At the same time they recognise the desirability of enlisting public interest as widely as possible in the educational system. With this end in view, the ultimate object should be to entrust functions in connection with educational administration to local bodies and suitable local individuals to the utmost extent that may be practicable. This can be achieved in several ways.

While Provincial reports leave no doubt as to the generally unsatisfactory level of educational administration by local bodies, there are nevertheless some whose administration is less open to criticism. Such local bodies therefore as are considered efficient in this respect may well be authorised by the Provincial Governments concerned to continue their educational functions under such conditions as the latter may prescribe, as long as those functions are efficiently discharged to the satisfaction of the Provincial Government.

Similarly, the resumption of all powers by Government in any area in regard to educational administration need not mean that the local body or bodies of the area will be divested of those powers permanently. It is hoped that as education spreads more widely and opportunities for training in responsible self-government increase, there will come a further realisation among the public at large of the importance of an educational administration which is both efficient and unaffected by any personal or political considerations. As and when this hope is fulfilled, Provincial Governments will no doubt be ready to delegate progressively some of their educational functions to existing local bodies or to *ad hoc* bodies when it may be considered more desirable to establish these.

10. Elected public bodies cannot be expected under existing circumstances to contain any substantial proportion of members with real knowledge of and interest in education. Other means should therefore be adopted to enlist the services of such persons where they exist. It is suggested that each Provincial Government should establish for this purpose a central body with advisory functions. This body would be in constant contact with the Provincial Government and would represent to the latter the enlightened public opinion in regard to educational matters. In addition to this Provincial Advisory Board of Education, there should also be Regional Advisory Boards, which will be likely to possess a more intimate knowledge of local needs and conditions, and will therefore be better able to deal with matters which require a more detailed consideration. It may be convenient that the regions of these latter bodies and the areas of divisional inspectors of schools should be co-terminous.

It would not perhaps serve any useful purpose at this stage to attempt to prescribe the composition or define the functions of these Boards beyond saying that their members should at any rate in the early stages, all be nominated by the Provincial Government and that their purely advisory functions should be concerned with all education upto the High School stage and also with Adult Education and Youth Service. The details of their constitution, powers and functions will be determined from time to time by the Provincial Government concerned, in accordance with local needs and in the light of experience. It is, however, hoped that when these Boards have been sufficiently well established it will be possible to broaden their functions and powers as they make progress.

11. In addition to these Advisory Boards, it would be well to associate educated and influential local individuals with educational administration as managers of a school or group of schools according to local needs and circumstances. These managers or managing bodies should be appointed by the Provincial Government and should be responsible to it either through the local educational officer or through the Regional Board if so determined. Subject, however, to the ultimate full control of the Provincial Government, they should be entrusted with as wide administrative powers as may be feasible (though the Committee would not include among these powers anything to do with the appointment of teachers) and encouraged to exercise those powers with a full sense of responsibility and independence.

12. In most if not all Provinces there will no doubt be a large number of voluntary educational organisations and their relation to the administrative system will need consideration. Private enterprise can play a very valuable part in the educational field, and it is desirable therefore to give voluntary organisations the fullest encouragement, both financially and otherwise. On the one hand, they should be given financial assistance in conducting their own educational institutions, provided always that those institutions offer facilities of a standard not lower than that of comparable State institutions. On the other hand, they should be given an opportunity of assisting the State with their knowledge and experience. It is therefore suggested that, in addition to any other steps that a Provincial Government may consider desirable in this connection, the voluntary educational organisations should be given adequate representation on the proposed Provincial and Regional Advisory Boards.

13. A co-operation problem of a different kind which is likely to arise is how to secure proper co-ordination between the lower stages of education and the University stage. At the moment instruction in high schools is to large degree subordinated to the requirements of the University courses but the problem will assume much greater importance when the lower stages of education generally and high school education in particular are planned on a wider basis and the interests of those pupils who will not proceed to a University are provided for. To preserve the requisite contact with Universities it is suggested that the Provincial Advisory Board of Education should be given representation on the principal executive and academic bodies of the University or Universities of their respective areas. It should be sufficient if the Board is allowed to nominate to each body two representatives, including the Director of Public Instruction of the Province. In some cases the Director of Public Instruction is already an ex-officio member of such bodies.

14. The subject of Technical Education, including questions of organisation and administration has already been dealt with fully in the Board's Report on Post-War Educational Development and in the Report of the Technical Education Committee (1943). It is unnecessary to deal with those matters again here : but the Committee envisage the need for regional committees or councils, in addition to the All-India Council of Technical Education. The territorial jurisdiction of these councils or committees should be

determined by economic considerations rather than by existing administrative boundaries.

15. The Board's proposals for universal compulsory education if they are to be administered effectively require a new branch of the educational service, namely that of School Attendance Officers. An efficient service of School Attendance Officers is indispensable to the satisfactory working of a system of compulsory education.

At first the role of School Attendance Officers will be an unpopular one, but it is to be hoped that gradually the function of these officers will come to be less one of bringing pressure to bear on parents and prosecuting them and more one of acting as 'guides, philosophers and friends' to children and their parents. It is therefore necessary in the larger interests of education both that these officers should be very carefully selected for their tact and personality and that they should be kept separate from the inspectorate and other branches of the educational service.

It is suggested that there should be a Chief School Attendance Officer for each Province and under him Regional School Attendance Officers, District School Attendance Officers and School Attendance Officers. The last mentioned should be of the status of Senior Basic (Middle) School teachers and should be paid at roughly the same rate. They will not be required to undergo the usual teacher training course but will be given a special training suited to their work.

16. Any organisation for enforcing attendance at school must aim at securing the co-operation of parents by persuasion and propaganda and should always regard legal compulsion as a last resort. It is therefore desirable to associate the parents in some way with the School Attendance organisation. It is suggested that wherever a Provincial Government is able to find suitable persons it should appoint School Attendance Committees consisting of members of local bodies or other influential local persons. Whenever a School Attendance Officer finds it necessary to take a parent to the court of law he should first submit the case to the local Committee where one has been set up, and a prosecution should be launched only after the Committee is satisfied that other means have failed.

17. It has been the general experience, particularly in this country that magistrates are often inclined to treat School Attendance cases somewhat lightly. This may perhaps be due to the fact that compulsory education is still a more or less rare phenomenon in India and there has not so far grown up an enlightened public opinion on the subject. With the introduction of universal compulsory education throughout the country, the whole community including the Magistrate will no doubt recognize the importance of seeing that it is properly enforced. A common complaint at present is the great delay which often occurs in the hearing of cases. It is most essential that this kind of case should be speedily disposed of; and the Committee suggest that special court days might be assigned for the purpose and that a rota of Magistrates should always be available for dealing with them.

18. Above all the success of the School Attendance organisation will depend upon the possession by the School Attendance Officers of the right personality. The difficulty of obtaining so many persons of the right kind, particularly in the initial stages, is not overlooked. It will be still more difficult to recruit the right type of women in the numbers required; and on account of the *purdah*, the need for suitable Lady School Attendance Officers needs special emphasis.

19. The Committee wish to call attention at this stage to an obvious truth which nonetheless needs to be reiterated and emphasised. Whatever administrative arrangements may be made they shall fail in their object unless there are capable men to give effect to them. The most skilfully devised machine must break down sooner or later if it is unskilfully driven and this applies to the educational machine not less than to others. "Since it is not uncommon", observed the Board's Committee on Recruitment of Education Officers (1942), "in India or other countries to come across people who think there is something about Education which makes it unnecessary to pay its servants properly, the Committee think it desirable to record what might otherwise appear a truism, *viz.*, that if Education is to attract as good servants as other Services it must offer comparable rewards." If, therefore, there are to be any substantial developments in the educational field the first pre-requisite will be not only to strengthen very considerably the administrative staffs of the Central and Provincial Education Departments numerically but also radically to revise current ideas in regard to the salaries which should be offered to the persons whose function it will be to give concrete shape and impetus to far reaching schemes of development.

20. The Committee on Recruitment of Education Officers has indicated the scales of salary which may normally be considered reasonable. It is, however, necessary to emphasise another important point. Not only should those in the educational service be paid reasonably well, but it is even more important that they should be treated, in regard to salary and otherwise as well as those in other services. An inferior scale of pay will mean an inferior personnel for the educational service, and a lower status will make it extremely difficult for that personnel to discharge its duties properly. "In Government Service, as in other walks of life" observed the Committee on Recruitment of Education Officers, "pay and prestige tend to be closely related and the Committee are in agreement with the Bengal Government that it will always be difficult for the Education Officer to hold his own with Officers of other services and particularly with district officers so long as they have reason to regard him as of inferior status."

21. Another point to which the Committee wish to call attention in this connection, is the fact that the Secretary to Government in the Education Department is in every Province, except the Punjab, a member of the Indian or Provincial Civil Service. This matter has already been considered by the Board and the Committee are in entire agreement with the views of the former as expressed in their Report on Post-war Educational Development in India. "The Director of Public Instruction", observed the Board, "should be responsible to Government for the general administration of education (other than University and higher Technical education) throughout the Province. For this purpose he should be Secretary for Education, if such a post is really necessary, as well as Director of Public Instruction*. There can be no possible justification for interposing an officer without an expert knowledge of education between the Director of Public Instruction and the Minister or Board to whom he should be directly responsible." The Committee record the opinion, though they feel it should hardly be necessary to do so that the Director of Public Instruction himself should always be a person who combines high academic qualifications and considerable teaching experience with a wide knowledge of educational administration.

*NOTE :—The Minister of Education, Bengal (the Hon'ble Mr. Tamizuddin Khan) desired it to be noted that he did not wish to express any opinion on this point.

22. The Committee have attempted in the foregoing paragraphs to indicate certain administrative rearrangements and readjustments which will be necessary if the Board's proposals for educational development are to be given effect to. Some of the Committee's recommendations, it should be mentioned, are equally valid and urgent with reference to the existing system. But, whatever the administrative arrangements, a large scheme of development such as that contemplated requires for its success a large measure of good will and a spirit of co-operation. It will demand an attitude of give and take and a sense of community of interest between one Provincial Government and another and between Provincial Governments and the Central Government.

It appears probable that no Provincial Government will be able to meet the total expenditure on those stages of education for which it will assume responsibility, and that the Central Government will therefore have to give financial assistance to Provinces on an adequate scale. In that event it will be open to the Central Government to attach any condition to the grant which they would make from the central revenues including, if necessary, that expenditure met from such grants should be audited on their behalf as well as on behalf of the Provincial Government, though in a single audit. In addition to this, in order to ensure satisfactory co-operation it is suggested that a committee appointed by the Central Advisory Board of Education should visit each Province in receipt of financial aid from the Central Government, once in five years or oftener, if the Provincial Government so requests or if it is otherwise necessary. The object of the visit will be to ascertain the progress which particular schemes of development are making and also to discuss with the Provincial Government any problems that may have arisen in connection with the carrying out of those schemes.

23. The Committee are reluctant to make definite recommendations as to the manner in which the Provinces should co-operate *inter se*, particularly as the same arrangements may not be equally feasible for all Provinces. They nevertheless trust that it will be possible for Provinces to devise suitable measures which will ensure fullest co-ordination and co-operation between themselves. The Committee particularly hope that inter-Provincial barriers for instance in regard to admission to Teachers' Training Colleges and other educational institutions, will progressively be broken down in the interest of co-operation.

24. The following is a summary of the Committee's main conclusions and recommendations :—

(1) Provincial Governments should assume full administrative and financial responsibility for all school education.

(2) Powers resumed by Provincial Governments may be re-delegated by them either at once or at an early date to those local bodies whose efficiency can be depended upon or to *ad hoc* bodies that may be set up for this purpose.

(3) In order to enlist public interest in educational administration, each Provincial Government should appoint—

(i) A Provincial Advisory Board of Education, which should take cognisance of the whole field of Provincial education.

(ii) Regional Advisory Boards of Education.

These Boards will be concerned with Adult Education and Youth Service also, in addition to all education upto the High School stage.

(iii) Managers or Managing bodies for individual schools or groups of schools, exercising such powers as may be prescribed, as and when suitable local persons are available.

(4) In order to link up voluntary institutions with the general system, voluntary educational organisations should be adequately represented on Provincial and Regional Advisory Boards.

(5) In order to secure co-ordination between the lower stages of education and education in the University stage, Provincial Advisory Boards should be represented on the principal executive and academic bodies of the University concerned by the Director of Public Instruction and one other member.

(6) The All-India Council of Technical Education should have regional committees which may cover the areas of one or more provinces.

(7) There should be an efficient organisation of School Attendance Officers in each Province. The need for Women School Attendance Officers requires special consideration.

(8) When and where possible, School Attendance Committees consisting of members of Local Boards or other influential local persons should be set up to decide locally what cases should be sent for prosecution.

(9) It is essential that school attendance cases should be disposed of as speedily as possible and steps should be taken, if necessary, to assign special court day for them, with a rota of Magistrates who will be available to sit.

(10) No substantial developments in the educational field are possible without a very considerable strengthening of the administrative staff of Education Departments, both qualitatively and quantitatively. It is also necessary that the salary and status of educational officers should not be appreciably lower than those of comparable Government servants in other services.

(11) In the event of the Central Government giving a grant to a Provincial Government for an approved scheme of development, the former may require as one of the conditions to be attached to the grant that Provincial accounts should be audited on behalf of the Central Government as well as the Provincial Government though in a single audit. In addition to this, in order to ensure satisfactory co-operation it is suggested that a Committee of the Central Advisory Board of Education should visit a Province once in five years, or oftener if necessary, to discuss the progress of development schemes and other matters of common interest.

(12) Suitable means should be devised to ensure the fullest co-ordination and co-operation between Provinces, and inter-Provincial barriers, e.g., in regard to admission to Teachers' Training Colleges and other educational institutions should not be allowed to impede the working of the Educational system in any province.

ANNEXURE I.

AGENDA.

To consider what arrangements or readjustments are necessary in order to improve the machinery of educational administration and hereby to facilitate the introduction of a comprehensive system of public instruction on the lines contemplated by the Central Advisory Board of Education with particular reference to the following matters :

1. Arrangements for the administration and control of different stages and types of education such as Basic (Primary and Middle) Schools, Junior Technical Schools, High Schools (Academic and Technical, including Art, Commercial and Agricultural), Universities Senior Technical Institutions and Adult Schools.

2. The extent to which it may be desirable and practicable to provide for popular representation on educational bodies and to recognise and encourage the activities of voluntary organisations.

3. The need for strengthening the administrative staffs of Education Departments, including the question of status of educational officers *vis a vis* other Government servants.
4. The administrative arrangements necessary for ensuring compulsory attendance.
5. The best way of securing essential co-operation in regard to post-war development between individual Provinces and between Provinces and the Centre.

ANNEXURE II.

SUMMARY OF THE PRESENT POSITION AND THE SUGGESTIONS MADE BY THE DIRECTORS OF PUBLIC INSTRUCTION AND SUPERINTENDENTS OF EDUCATION.

A.—Provinces.

Assam.—Primary education is subject to "Dual Control". It is partly the hands of Government and partly under the Local Bodies and Mission agencies. To remove this evil the Government of Assam have set up a Committee to advise about the spread of primary education with a view to the liquidation of illiteracy, including the question of taking over control from the Local Bodies and others.

As to Secondary Education, the 'Middle' stage is mainly a responsibility of the Provincial Government while the High School stage is controlled by the Calcutta University in many respects.

Bengal.—By the Primary Education Acts of 1919 and 1930 Primary Education was made a responsibility of (a) Municipalities and (b) District School Boards and District Boards. Government exercises no direct material control over Primary Education. It seems very improbable that the Legislature would at the moment agree to the changes which are necessary for implementing the Report on Post-War Educational Development. This would involve

(a) drastic changes in the Primary Education Act with far greater authority resting with the Provincial Government than at present, and

(b) a completely new type of Secondary Education Bill which will ensure that Government can implement the general education policy.

The bringing into operation of a plan like that proposed in the Advisory Committee's Report will be of the greatest difficulty as far as Bengal is concerned.

Bihar.—(i) *Primary Education.*—Under the Local Self Government Act District Boards have been made responsible for the maintenance and management of primary and middle schools and they have been vested with powers to control their employees and also to a certain extent the subordinate inspecting staff who are the employees of Government. This dual control leads to apathy and inefficiency amongst the subordinate inspecting staff. Primary Education should be state controlled.

The rules in the Education Code have no sanction other than refusal or withdrawal of Government grants or of recognition of the schools.

The best arrangement would be to constitute a Provincial Board for Primary Education presided over by the Education Minister or Adviser and representative of all interests. There should also be district and sub-divisional *ad hoc* committees to whom powers will be delegated by the Provincial Board. The cost of Primary Education should be met from provincial revenues with contributions from local Educational cesses. The question of better organisation of the control of Primary Education is under the consideration of the Provincial Government.

(ii) *Secondary Education*.—Secondary (High School) Education is under the dual control of Government and the University of Patna. Government discharge their responsibility mainly through the Board of Secondary Education which is a non-statutory body. But in important matters the decisions of the Board are subject to the concurrence of the University. Secondary Education should be controlled by the Government while the University should be free to hold its own Entrance Examination and to grant such exemptions as it may like to candidates passing the School Leaving Examination of the Secondary Education Board.

(iii) *Technical Education*.—This is under the control of the Industries Department except at the University stage where the academic control is by the University and the administrative control by Government. Technical Education at the secondary stage should be under the control of the Secondary Education Board which may have to work through a committee on which industrial interests should be adequately represented. The Provincial Government have in the past decided that Technical Education should be under the Industries Department, the necessary coordination between Education and Industries being obtained by the fact that both these subjects are dealt with in the same Department of the Secretariat viz. the Education and Development Department.

Bombay.—*Primary Education*.—The majority of primary schools are maintained by Local Authorities. Of the total of 20,000 primary schools, 12,000 are Local Authority Schools and 8,000 private schools receiving grants-in-aid from the Local Authority or from Government direct.

Under the Primary Education Act of 1923 the administration and control of Primary Education, including inspection of schools was transferred to Local Authorities who functioned in this connection, mainly through School Board. The Act was amended in 1938 and the inspecting staff was taken over by the Education Department from the Local Authorities. The School Boards however still retain the power of determining the general policy and the budget and are thus in a position to interfere with the duties and powers of the Administrative Officer.

In the opinion of the Director of Public Instruction, Bombay, if Primary Education is to be made compulsory, it will be necessary to take over complete control of Primary Education from Local Boards by Government as the major portion of the expenditure will have to be met from taxes, Provincial or Central.

Secondary Education.—Out of the 900 Secondary Schools, 25 are maintained by Government, 200 by Local Boards and the rest by private bodies with aid from Government. The only control exercised by Government is through the Grant-in-aid Code. Most of the schools are over-crowded and ill-equipped and the conditions of service of teachers are far from satisfactory. Raising of the salaries of teachers and generous increase in grants alone can improve the condition of these schools.

Technical Education.—There is a Board of Technical and Industrial Training which looks after all Trade (Junior Technical) Schools. All Primary and Secondary Schools with a vocational bias are under the control of the Education Department.

C. P. & Berar.—The present position is as follows :—

(i) *Primary Education*.—The responsibility for provision of primary education rests on Local Bodies and private societies. Government pays grants-in-aid, employs an inspectorate to see that the prescribed standard of efficiency is maintained. It also maintains some primary schools the great majority of which are girl schools. The question of assuming full

responsibility by Government has been postponed for consideration after the restoration of the normal constitution.

(ii) *Pre-Primary Education*.—This is left to private enterprise.

(iii) *Secondary Education*.—Development and establishment of Secondary Schools are left to private enterprise, Government providing model High and Middle Schools at selected places and giving grants-in-aid to selected Private and Municipal schools. Government also employ an inspectorate to see that the prescribed standards are maintained. The High School Education Board exercises control over courses of studies and examinations.

(iv) *Technical Commercial and Art Education*.—Handicraft schools are controlled by the Department of Industries. An Engineering College affiliated to the University is maintained by the Education Department. The Education Department also provides a number of stipends for the study of Engineering and Art outside the Province.

(v) *Adult Education*.—Schemes for the establishment of adult schools by Local Bodies with the aid of Government grants have been in force, but local enthusiasm has waned. Some libraries are maintained by Local Bodies with the aid of Government grants.

N. W. F. P.—(i) *Primary Education*.—The agencies mainly concerned with primary education are—

The Local Bodies, private aided bodies like the Christian Missions and the Islamia, Khalsa and Hindu School Managing Committees, Government administration in agencies and tribal areas and some States.

No difficulty is experienced by the Education Department in exercising the requisite amount of control on primary schools, except those under Local Bodies. For the reason that the Local Bodies are given excessive executive powers with regard to appointment, transfer, dismissal etc., of school masters serving in their schools. This is particularly anomalous in view of the fact that Government meet 9/10ths of the Expenditure on primary schools and almost the entire expenditure on secondary schools incurred by District Boards. The powers given to them have not been exercised judiciously by the Local Bodies.

Primary education if it is to function efficiently should be taken over entirely by Government and the Municipalities and District Boards should make fixed contributions amounting to 15 to 20 per cent. of their gross revenues.

(ii) *Secondary Education*.—The remarks in the above paragraph hold good in respect of secondary education under Local Bodies. The entire control should be in the hands of the Provincial Government who should meet the entire expenditure except in the case of denominational and state institutions where the present system of grants-in-aid should continue. A suggestion to this effect has been made by the Director of Public Instruction and is being considered by the Local Government.

Punjab.—(i) *Vernacular Educations*.—Vernacular Education, both primary and secondary, mostly rests with the various Local Bodies, in the province. There are practically no vernacular schools directly managed by Government. Private effort too is negligible and the few schools that exist will disappear when Government schemes for compulsory education are enforced.

Instances are not wanting to show how political, social and religious prejudices of the members of Local Bodies have influenced the administrative affairs of the schools to the detriment of educational advance. There are

some bodies who have delegated some administrative powers to the officers of the Education Department but this delegation has been hedged round by provisos, which have resulted in complications. Financially the Local Bodies have reached the limit of their resources and if any advance is to be made, vernacular education must be financed on a provincial basis.

The Punjab Government being an elected democratic Government the taking over of control of primary education by Government cannot politically be regarded as a retrograde step. Or at least the delegation of adequate administrative powers by Local Bodies to educational authorities should be made compulsory and effective. This will call for amendments to the District Board and Municipal Committee Acts as well as the Punjab Education Code.

In order to keep local interest in education alive, the District Board and Municipal Committee Acts might be modified so as to enable each Local Body to organise an education committee with only advisory functions and duties. The committees may act as a kind of liaison between the Boards and the education department without interfering with administrative affairs.

(ii) *Relation of District Educational Officers to the Civil Authorities.*—The District Educational Officers should be sufficiently free and independent to carry out the educational policy of the Department without any direct interference from the heads of the civil administration of the districts or any other similar authority.

(iii) *Enforcement of compulsion.*—This requires the speedy and effective disposal of cases under the Compulsory Primary Education Act. Either the *D.E.Os. should be given magisterial powers for a summary trial after they have passed the prescribed law examination or there should be separate magistrates for this work. Their work might be reviewed annually by the District Magistrates in consultation with the Director of Public Instruction.

(iv) *High School Education.*—The management of High Schools is at present divided among (a) Government, i.e., the Punjab Education Department, (b) Local bodies, and (c) Private organisations. The administrative position of High Schools under Local Bodies and private managements is not above criticism. Government have tried in recent years to safeguard the interests of the teachers in these schools by enforcing service rules for their benefit.

The objective of a good high school system being to secure the best talent for national service, it is desirable that High Schools should be run by the state. Government will have to subsidise non Government schools also very generously in order to maintain a minimum standard of efficiency.

To meet the needs of children who fail in the selective test for High School education but whose parents may desire them to have such education, separate provision will be necessary on a no cost basis to Government.

Sind.—1. *Compulsory Education.*—There is a scheme under consideration to introduce free and compulsory education for boys between the ages of 5 and 10 within a period of 10 years by applying compulsion to 6 talukas every year.

2. Educational control has been resumed from all Local Boards except the Karachi Municipal School Board. An additional post of District Educational Inspector for Muslim Education has been created, bringing the total number to four, each being in charge of two districts.

3. The Director of Public Instruction should have the same rank as officers of the all-India services and in a small province like Sind, he should also be Secretary to Government.

4. Changes in pay and designation of the educational services together with other administrative changes will be needed when the introduction of the post-war scheme is taken-up. Local circumstances will have to be kept in mind when doing so.

B.—Local Administrations.

Ajmer-Merwara.—Present position :—

Primary Education.—Primary Education is mainly managed directly by the Government. The few private agencies in the field may disappear on account of the stoppage of the grant-in-aid hitherto paid by the District Board. All rural Primary Schools are mainly managed by Government. The contribution of the District Board is negligible. They meet a part of the contingent expenditure and the pay of 31 teachers borne on their cadre. The Municipal Committees of Ajmer and Beawar maintain certain Primary Schools and Primary and Secondary Schools respectively. The Nasirabad Cantonment Board give some aid to privately managed schools.

Secondary Education.—Secondary Schools are maintained by Government as well as private agencies. A few are managed by the Beawar and Kekri Municipal Committees, with Government aid.

Suggestions :—

(1) Government should take over all Primary Schools managed by the Municipal Committees at Ajmer, Beawar and Kekri.

(2) Government should ask these Committees to transfer their present expenditure on education to Government in the shape of their contribution towards education in the areas under their jurisdiction.

(3) The Inspecting and Ministerial staff of the Education Department need strengthening.

(4) Attendance Officers should be appointed to ensure compulsory primary education.

Bangalore.—(i) *Primary Education.*—Compulsion has not been introduced and there has been no need of it, as most parents readily send their children to school.

Of the 69 primary schools in the Civil and Military Station, Bangalore, 39 are Municipal Schools and 29 are aided. With effect from 1944-45 all municipal schools have been put in the charge of the Deputy Inspector of Schools and are under the general supervision of the Inspector. Thus the recommendation in paragraph 7 of Chapter XII of the Report on Post-War Educational Development has been given effect to.

(ii) *Secondary Education.*—The educational needs of the C. & M. Station are being met very fully so far as secondary education is concerned.

Coorg.—At present the province spends Rs. 3,05,581, on education, both primary and secondary. Of this Rs. 1,31,850 come from provincial revenues, the rest being contributed by Local Bodies, and private agencies. Primary education has been mainly the concern of the District Board. The Government give a grant of Rs. 25,740 and the Local Bodies meet out of their revenues Rs. 1,73,731. Government should take up the responsibility for primary education. Coorg is a small area and there is hardly room for two organisations in the field. Moreover, the finances of the Coorg District Board do not permit of much advance in education.

The Chief Commissioner is the head of Education as he is the head of every other branch. He is advised by the Inspector of Schools of the Bangalore Cantonment area. Immediately under the Chief Commissioner is the District educational Officer on a scale of Rs. 225—10—325—25|2—350. He is also education member for the Coorg Legislative Council. Under him there is an Assistant Educational Officer on a scale of Rs. 75—5|2—100.

The present administrative machinery needs change. In the first place the District Educational Officer does not enjoy the same status and grade as the officers of similar position in other departments.

Similarly the scales of pay of the establishment of the *D.E.O. need to be raised. The *D. E. O. should be designated Director of Public Instruction and made the adviser to the Chief Commissioner. More posts for inspection should be created.

Delhi.—Primary Education—Present position.—Primary education is mainly the concern of the Local Bodies, viz., the Delhi District Board, the Delhi and New Delhi Municipal Committees and the Notified Area Committee, Civil Station, Delhi. A number of primary schools and primary departments of secondary schools also receive grants-in-aid from the Local Bodies on the recommendation of the Education Department.

The Superintendent of Education is an *ex-officio* member of the Delhi and New Delhi Municipal Committees. The District Inspector of Schools is an *ex-officio* member of the Delhi District Board and Chairman of the Education Sub-Committee. Certain powers formerly exercised by the Chairman of the District Board have been delegated by the Board to the District Inspector of Schools, the Superintendent of Education and the Assistant Superintendent of Female Education.

The Education Department acts in an advisory capacity in all matters relating to education.

The District Inspector of Schools, on behalf of the Superintendent of Education, acts as the educational adviser to the Notified Area Committee, Delhi.

The Government inspecting staff inspect all the primary schools.

The local bodies fully co-operate with the Government Inspectors in furthering the cause of education. There has been no clash between them as is usual elsewhere.

Secondary Education.—The Education Department recognises schools up to the Middle stage. Vernacular Middle education is administered by the Education Department of Delhi whereas the Vernacular Middle Examination is conducted by the Punjab Education Department. In view of the small number of students from Delhi taking the examination, a separate examining body for the Delhi Province has not been constituted.

Secondary schools are managed variously by Government, Local Bodies and private agencies.

The High School portion of secondary schools is recognised by the Board of Higher Secondary Education, Delhi.

In addition to being inspected by the Education Department the Higher Secondary and High Schools are inspected triennially by a Special Inspecting Committee of the Board.

Suggestions.—(1) Government should take over full control of Primary Education from Local Bodies.

(2) The Inspecting and Ministerial staff of the Superintendent of Education will have to be strengthened.

(3) Attendance Officers should be appointed to ensure compulsory education. The Superintendent of Education should have magisterial powers to punish offenders.

C. INDIAN STATES.

Baroda.—Primary Education.—No change in the administrative system is necessary since primary education is already state controlled. The present compulsory age which is 7 to 12, will have to be extended to 6 to 14, involving an increase in the number of schools, inspecting staff, etc.

Secondary Education.—This is imparted partly by Government and partly by private and public enterprise. Government's policy is to give liberal grants in order to encourage private enterprise. There are only 48 Government schools, out of a total number of 156.

Administration.—All forms of education are directly administered by the Education Department. The Colleges and High Schools however which are affiliated to the Bombay University are, in academic matters subject to the rules and regulations of that University.

Although the State Government have not thought it proper to delegate any educational administrative powers to Local Bodies, there is a statutory provision of various advisory committees like the Taluka and District Education Committees consisting of non-official members nominated by Government to enlist public co-operation in the field of education. The District Committees alone have certain executive powers.

Several of the recommendations of the Board in this connection have already been implemented by the State Education Department. For those that are not yet in force, necessary adjustments will be made.

Hyderabad.—Primary Education.—Primary education is free but not compulsory. It is entirely under the control of the State and recurring expenditure is met from State Revenues. Non recurring expenditure on buildings, repairs, furniture, etc., of schools in rural areas is met by the Local Fund Department. There are also some schools which are aided from State Revenues.

Secondary Education.—Bifurcation for Secondary Schools for general education and Industrial Schools begins at the end of the primary course. The academic Secondary Schools cover two stages of three years each—the Middle stage and the High School stage.

There are also Vocational and Technical Schools. The Board of Secondary Education controls the schools for general education while an Advisory Council advises on technical and vocational education. All schools, technical as well as academic, are under the control of the Director of Public Instruction.

Kashmir.—In Kashmir the control and supervision of both primary and secondary education rest entirely with the State Government. The position is, thus, in line with the recommendations of the Central Advisory Board of Education.

Mysore.—(i) Primary Education.—The Government resumed the control and administration of primary education from Local Bodies in 1941. Simultaneously with the resumption a Central Education Board for Elementary Education was set up to which each District Education Committee is entitled to elect one member. The latter have been constituted in order to retain local interest in Education. They function in an advisory capacity. The function of the Board is to consider the reports submitted by the District Education Committees and to advise upon all such matters as may be referred to it by

the Education Department. The Director of Public Instruction has been appointed by Government as the President of the Board and the Deputy Director of Elementary Education as its Secretary.

79.5 per cent. of the primary schools are established and maintained by the State while 20.5 per cent. have their own committees of management.

(ii) *Secondary Education*.—Secondary Schools are largely maintained and controlled by the State, but private effort is in greater evidence at this stage and Municipal Councils are encouraged to open High Schools. In view of the need for educational reconstruction after the war a Board of Education similar to the Central Advisory Board of Education in India and functioning on identical lines has been set up by the Government with the Minister for Education as Chairman and including representatives of all educational interests in the State.

Many of the recommendations of the Central Advisory Board of Education in this connection have been anticipated in the State. The whole system of Education is State maintained and State controlled at all stages. Private effort is stimulated in pre-university stages.

The question of the improvement of the status and emoluments of educational officers is also under consideration.

Industrial Schools in the State are under the control of the Director of Industries and Commerce.

Travancore.—Secondary and Primary Schools are mostly managed by non-official agencies, the Government maintaining and directly administering only about one-fourth of the total number. The others receive grants according to the rules laid down by Government. Primary education covering a period of 4 years is free to all. There are no Local Bodies, properly so called, engaged in managing schools. The few that were tried were not successful and there is only one such school at present. Experiments were tried to create local interest in Education by appointing school boards but this did not work satisfactorily. Some changes in this direction will be necessary in the future either in the form of an Advisory Board with Standing Committees to represent various branches of education, or separate boards for each of the important branches of education under the new scheme.

The final decision on all questions of policy and administration rests with Government. Control over educational organisations and institutions vested in the Director of Public Instruction is regulated by the Education Code. The Director of Public Instruction is not Secretary to Government (Education) as it is considered advantageous that matters affecting public interests intimately should be scrutinised from the standpoint of the general administration.

For inspection purposes the State is divided into four main Educational Divisions, with a Divisional Inspector at the head of each Division. Each Division has eight Districts, each District being under an Assistant Inspecting Officer. This *A.I.O. has control over all primary schools within his or her jurisdiction. He also inspects middle schools imparting instruction mainly in the mother tongue. Reading rooms and libraries which are the main agencies for adult education are also under the control of the Assistant Inspecting Officers. Such libraries are either maintained or assisted by Government.

Apart from ordinary schools with a vocational bias, technical schools are administered by the appropriate departments concerned, i.e., Agricultural Schools by the Director of Agriculture and Industrial Schools by the Director of Industries. Fishery Schools which are merely primary schools for the fisherfolk, are under the Education Department, Higher Technical Education

*Assistant Inspecting Officer.

is under the control of the University. There is much to be said for bringing all educational programmes of the pre-University grade under the Education Department. A special officer for the promotion of vocational and welfare work in schools has been attached to the Director of Public Instruction.

It is necessary for the State to secure representation for the Director of Public Instruction on All-India Educational Committees to enable the State to keep pace with the progress achieved outside.

The inspecting staff for separate girls' schools needs to be strengthened so that more frequent inspections may be made possible. For the same reason, the number of Divisional Inspectors needs to be increased.

On matters concerning school medical inspection the Director of Public Instruction, the Director of Public Health and the Surgeon-General take counsel and jointly advise the Government.

An Inspector of Muslim Education inspects the teaching of Arabic in schools and carries on propaganda for the extension of education among Muslims. The functions of the Protector of Backward Communities are largely educational combined with rural uplift work.

BUREAU OF EDUCATION

Pamphlet No. 44

Report of the Committee of the Central Advisory Board of Education on Air Training in relation to the educational system, together with the decisions of the Board thereon.

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PREFACE

At their thirteenth Annual Meeting held at Bombay in January 1947, the Central Advisory Board of Education considered the report of the Committee on the requirements of Air Training in relation to the educational system of the country and found themselves in general agreement with the recommendations of the Committee.

**REPORT OF THE COMMITTEE ON AIR TRAINING IN RELATION
TO THE EDUCATIONAL SYSTEM HELD AT NEW DELHI ON
NOVEMBER, 25TH, 1946.**

The Official Subjects Committee on Posts and Aviation which met on April 25th, 1945, accepted a suggestion made on behalf of the Civil Aviation Directorate, that a Standing Committee should be constituted with representatives of the Civil Aviation Directorate, Education authorities and Air Headquarters, India, to co-ordinate aviation education as a part of the educational system of the country. The proposal was submitted to the Central Advisory Board of Education at their last meeting at Mysore. The Board authorised the Chairman to appoint a Committee with representatives of the Civil Aviation Directorate, Education Department and Air Headquarters.

2. The Committee as finally constituted in consultation with Defence and Communications Departments is as follows:—

Civil Aviation Directorate.

Air Commodore E. I. Bussel, C.B.E., Director of Training and Licensing, and

Mr. G. S. Subramaniam, Aerodrome Officer (Headquarters).

Air Headquarters.

Group Captain W. C. Matthews, and

Group Captain A. M. Engineer, D.F.C.

Education Department.

Sir J. C. Ghosh, D.Sc., Director, Indian Institute of Science, Bangalore, (Chairman), and

Dr. S. R. Sen Gupta, B.Sc. (Glas.), Ph.D. (Glas.), A.M.I.E.

3. The Committee met on November 25th, 1946 in New Delhi. All members except G/C. Engineer were present. Flight/Lt. S. P. Mehta (of the Indian Air Training Corps) and Mr. C. K. Chandiramani, Assistant Educational Adviser were present by special invitation.

Dr. Akhtar Husain, Assistant Educational Adviser to the Government of India, was Secretary to the Committee.

4. The Agenda for the meeting was as follows:—

1. To consider the status and scope of the Committee.
2. To consider the preparation of material for inclusion in secondary school text-books.
3. To consider the introduction of extra-curriculum instruction on matters of aviation at Universities, chiefly by the use of films and epidioscope lectures.
4. To consider the introduction of model aircraft-flying clubs in technical schools and colleges.
5. To consider the formation of Air Scouts.
6. To consider the organisation of an Aeronautical Society in India.
7. To consider any other matter that may be raised with the consent of the Chairman.

5. The following papers were circulated:—

- (a) Record of the Second Meeting of Policy Committee No. 3-B on Posts and Aviation, held at New Delhi on 8th January, 1946. (Not printed).
- (b) Aeronautical Training and Education Brochure published by the Civil Aviation Directorate. (Not printed).
- (c) Two notes prepared by Sir J. C. Ghosh. (Annexures I and II).

*6. The Committee took into consideration the present activities of the Indian Air Training Corps and the ground which might be covered by the National Cadet Corps organisation. It was noted that it was part and parcel of the programme of the Air Training Corps and the National Cadet Corps to give instruction in general matters relating to aviation. The Training Corps might open their lectures and cinema displays to anyone in a University and not only to Corps members. The Committee was unanimous that any other organisation should take into account the facilities offered by these two organisations, so that there may not be unnecessary over-lapping or duplication of effort. It was however felt, there was room and necessity for an organisation which confined its activities to make students and teachers air-minded and familiar with the basic principles of Aeronautical Sciences. Such an organisation could also usefully look after the purely educational side of Civil Aviation and co-ordinate the work of other organisations which aimed at encouraging students to take up services in the Air Administration of the Defence Services. It was resolved that there should be a Standing Committee comprising two members nominated by each of these three Departments, thus making a total of six, to develop such an organisation.

7. As text-books were prepared by private persons and approved by Text-book Committees of the Provinces, the Committee felt that it would not be practicable to incorporate lessons on Aeronautics in the text-books. It was, however, recommended that each year a number of selected teachers from Secondary Schools and Intermediate Colleges might be given a short course of instruction in Aeronautics and that such courses should be arranged at approved centres, so that these teachers might be able to draw on their knowledge of Aeronautics to illustrate their lessons for instruction in General Science.

The Committee were also of the opinion that Aeronautical Science should be introduced as an optional subject in the science and engineering Courses in Universities.

8. The Committee noted that the Indian Air Training Corps were attending to extra-curricular instruction on matters of Aviation at Universities and resolved that this Committee should have an opportunity of reviewing periodically the work done in this connection. The Committee suggested that it would be useful, as a compliment to this activity, to form Aeronautical Societies in Universities and Colleges. If a College situated within 30 miles of an Aerodrome had one such Society, its members should be given the opportunity of getting air experience in aircrafts provided to by the Air Headquarters and for Civil Aviation Directorate. The need for inviting the attention of the Principals of colleges to the importance of formation of college Aeronautical Society was stressed. The Committee also expressed the opinion that the formation of Glider Clubs attached to educational institutions could be useful for making students air-minded and were glad to learn that the Civil Aviation Directorate was exploring the possibility of promoting a glider club in Bangalore during 1947-48.

9. Air Commodore Bussel informed the Committee that the Civil Aviation Directorate was making financial provisions for the supply of models to schools with a view to popularising the idea of model aircrafts flying clubs. With the aid of such models, students would be able to grasp essential principles of Aeronautical Science. The Committee were informed that models sufficient for establishment such clubs in 100 schools in India would be available shortly. It was suggested that representatives of the

* N. B.:—Two letters received from Capt. Engineer and Capt. Matthews commenting this para are appended to this report.

Civil Aviation Directorate and the Education Department should select 100 schools for starting these clubs, and 100 teachers, one teacher from each of these schools, for 3 months' training in the Indian Institute of Science, Bangalore. The teachers after training would be competent to look after the model flying-clubs established in their respective schools. The Committee were also informed that the Civil Aviation Directorate were making provision for recurring expenditure which should cover the cost of magazines, text-books and replacement of models. The Committee recommended that the cost of training of these school teachers should be borne by the Education Department.

10. Regarding the formation of Air Scouts, the Committee noted that the Indian Air Training Corps were attending to this activity and expressed the hope that from time to time the Committee would be kept informed of the developments in this direction.

11. The Committee considered that in view of the recommendation embodied in paragraph 8 above, it would be advisable for the time being not to start immediately an All-India Aeronautical Society to serve as a Central body to co-ordinate the work of the college Aeronautical Societies. The Committee were informed that the Civil Aviation Directorate was exploring the possibility of forming an Aeronautical Society in Delhi on the lines of the Royal Aeronautical Society of the United Kingdom.

Copy of letter dated the 10th December, 1946, from Group Captain A. M. Engineer, Air Headquarters, New Delhi.

I regret that owing to my unavoidable absence from Delhi I was unable to attend the meeting.

My detailed comments on the draft report are as follows :

- (i) The Government of India, in the Defence Department, have recently decided to set up a National Cadet Corps Organisation which would have as its aims :—
 - (a) The development leadership, character, comradeship and the ideal of Service; and
 - (b) The stimulation of interest in the defence of the country to the widest possible extent.

A Committee, to be known as the National Cadet Corps Committee, has, therefore, been constituted and has since been functioning under the chairmanship of the Hon'ble Pandit Hirdey Nath Kunzru.

- (ii) The Committee, in addition to the official representatives from the Army, Navy and Air Force, Defence and Education Departments of the Government of India, consists of distinguished educationists and representatives from Indian States. The Committee will consider the whole problem and make recommendations for the establishment on a fully national basis of a Cadet Corps Organisation, which will comprise both Schools and Colleges. The Corps will not only serve as a potential feeder organisation to the National War Academy but will also provide as a supplementary reserve in times of national emergency.
- (iii) The proposed Advisory Committee as envisaged in the draft report is being constituted to create air-mindedness and air science in schools and colleges and to co-ordinate it with any Special Air Organisations which the Air Forces and Civil Aviation might foster.

- (iv) It will thus be observed that the terms of reference of both the Committees are not fundamentally different but on the other hand, seem to overlap in some respects which obviously will not produce the desired results. On the other hand advice from two different sources will lead to confusion.
- (v) There are already too many organisations in schools and colleges such as Boy Scouts, St. John Ambulance Association, University Officers' Training Corps, Indian Air Training Corps and Special Air Classes. The proposed inauguration of Glider Clubs, Model Aircraft Clubs, Aeronautical Societies, as separate **entities**, will lead to unnecessary overlappings and duplications, entail lot of confusion and heavy expense to the Government. It is considered that these activities should be introduced and co-ordinated as a part of the 'Air Force Wing' of the National Cadet Corps Organisation. This will simplify administration, ensure efficient training and encourage the idea of unity, rather than rivalry between the different organisations.

In view of the circumstances explained above, it is felt that no useful purpose will be served by the constitution of a separate Advisory Committee at this stage.

I, therefore, strongly recommend that Education Department and Director General of Civil Aviation may be requested to forward their tentative proposals on this matter to the National Cadet Corps Committee so **that full** consideration be given by all the members of the Committee.

Copy of letter No. AHQ(O)/08805/11/ED, dated the 11th December, 1946, from Group Captain W. T. MATTHEWS, Air Headquarters, New Delhi.

As I pointed out at the meeting there does seem to be an undesirable overlap with the function of the National Cadet Corps Organisation, in spite of the statement made in para. 6 of the report. Since the Advisory Committee was formed in response to a request made by the Civil Aviation Directorate, long before the National Cadet Corps Organisation was thought of, this overlapping is understandable. I have been G/Capt. Engineer's reply to you which elaborates these points.

As the report states it is premature to form a learned society of the status of an Institution of Aeronautical Engineers or an Aeronautical Society. When however these are formed and firmly established they would take an active interest in training for a professional career. Many members of these institutions would naturally come from the Royal Indian Air Force. It seems to me therefore that what is envisaged at present would be adequately covered by the National Cadet Corps Organisation when it is established.

ANNEXURE I.

A NOTE

ON

A PROPOSED SCHEME OF MAKING INDIAN YOUTH AIR-MINDED BOARD OF GERMAN MODEL.

To make the Indian youth air-minded, facilities for learning to fly should be given to the students in the Universities and other training institutions. Physically fit young men should be encouraged to take to flying by giving them not only free training in this field but also instituting a scheme of insurance for compensation in case of accidents which are likely to occur. In addition to this, attractions such as preference in employment in the Indian Air Force, attractive uniforms supplied free and some allowance when such students take intensive training in summer or winter camps should be offered to popularise flying.

In the schools a certain amount of interest in aviation should be created in the minds of the young boys. An excellent method for this purpose is to show the boys sound pictures giving the thrills and explaining the mysteries of powered and powerless flight. A number of such pictures are available from film Corporations producing educational films. The equipment for projection of 16 mm. sound pictures is not very expensive to-day and can be had at a cost of Rs. 2,800, such a projector is capable of showing a picture on a screen of 8' x 10' and has a sufficient sound intensity to make an audience of 100 to 150 hear the sound clearly and comfortably.

In the Universities and institutions of higher training the training in flying can be based on the same principles as the training of U.T.C. men. All boys found fit after a rigid physical examination by a board of medical men, should be eligible for the Air Training scheme. The training should be gradual and should be so arranged as not to interfere with their normal work. In working time flying lessons can be given once or twice a week and intensively every day for a month or so in summer vacations camps. The entire training period should be about four years which is the usual time required in Indian Universities, for a bachelor's degree.

In the first two years gliding and soaring flight should be undertaken. This way of flying is found to be less expensive and very instructive to a student who proposes to take up to powered flight later on. In the first instance students go up short periods roughly about half a minute in duration in elementary training gliders and learn to handle the controls without the aid of an instructor. The hazards for such a flight are not very great as these elementary gliders seldom go beyond, a few feet in height. The student afterwards is introduced to secondary training glider which is capable of remaining in air for a slightly longer period and it teaches him the simple manoeuvres like turning to the left or to the right. This training is then followed by a glider which can under favourable circumstances have a duration of flight ranging from half an hour to one hour in suitable places and can enable a man to master the complete manipulation of controls and give him a very delicate sense of handling the machine. Gliding is also a very fine sport and those who are found to be gifted can then be encouraged to take to flying in higher performance soaring gliders which can do practically anything if weather conditions are suitable and the pilot has developed a sort of air sense. This sort of advanced soaring flight is however not necessary for the training scheme, but can be instituted as a specialised line for a few gifted persons. The entire period for gliding can be 2 years following the same method of lessons, once or twice a week during working periods and continuously for a month or so during long vacations.

In the last two years of the University life the boys can be then allowed to take to flying in powered airplanes and train them till they can fly solo and

satisfy the normal requirements of a pilots license. This can either be achieved by having a small aerodrome attached to the Universities or in cooperation with the airforces if they happen to have aerodromes in the vicinity. However, it should be borne in mind that the pilot instructors used in this training scheme should be obtained from a class of highly capable and academically trained men so as to create confidence in the minds of the young students. The usual methods followed in the Airforce may appear too rough at this stage and though the training may be of a better type the students may not feel attracted due to the harder conditions generally prevailing in service.

A very interesting scheme was in practice in Germany before the war, where the student of Universities and other Institutions were allowed to form a flying group and these groups were subsidised to a great extent by the state. However, the money spent in such cases was not large as the students were encouraged to build their own gliders and the amount of work (physical and design) was counted as a sort of payment in the period of flying which students had. This served the double purpose of creating a practical training in design and construction of such small glider also of making them more careful in using these machines as they had to repair the planes when they were damaged. It would be possible to institute some such scheme in a couple of places where training in Aeronautical Engineering is given, so that the students have their practical training combined with entertainment and useful lessons in flight with their own machines. In places where students are trained either in Aeronautical engineering or in ground engineering it should be made obligatory for those students to learn flying to a certain standard unless prevented by physical fitness. For these purposes a small number of airplanes and gliders should be bought initially and the boys then should be encouraged to build their own things as far as possible as the scheme progresses.

The expenditure for such a scheme in the University for a period of four years would cost on the average Rs. 1,550/- per boy. This figure is a very rough estimate and should be taken with a very great caution. For schemes of the second type, meant for institutions where aeronautical training is given would cost roughly about seven to eight hundred rupees per boy per year.

ANNEXURE II.

NOTE ON AIR TRAINING AND INDIAN UNIVERSITIES.

Students of Indian Universities could develop their interest in flying through activities both within the University itself and outside it.

Within the University they could join a civilian Society or an air branch of the O.T.C. Lectures could be given by Air Force officers and scientists, discussions should be held and social functions arranged. Sound films would provide in attractive addition.

Science and engineering students may be encouraged by introducing elementary aeronautical illustrations and ideas into their usual academic studies. This is possible in engineering, mathematics, and physics. In appointing a new staff in these subjects, a qualification in aeronautics might be recognised by a preference in selection and/or a subsidised increment in salary. Existing staff could be deputed on leave to a course in aeronautics.

Outside the University, facilities could be offered for flights now and then from a near aerodrome and for annual vacation camps for a few consecutive weeks. Members of the O. T. C. would go to Air Force aerodrome and live under service conditions. Civil camps would present more difficulty. Camps should provide education in ground engineering through observation and/or practice, as well as opportunities for passenger flights.

Training to fly is a separate problem. There could be civil flying clubs and gliding clubs—distinct from aeronautical societies—under proper instructors. Students could build their own gliders and, in some cases, light aeroplanes. In clubs associated with an institution providing aeronautical education, they could even design their own aeroplanes and gliders, as in Germany and, to a less extent, in England. Members of the O.T.C. should be taught elementary flying, at their option. This could be done at week-ends in some cases, or in annual camp. Those who fly, civilians included, should be given facilities for periodic practice, say for a few consecutive weeks per annum.

Students should travel by air, where facilities exists, to distant camps and aerodromes.

Students engaging in these activities could be given subsidised reduced rates for air travel on private journeys. Civil staff of the British Air Ministry used to get reduced fares from Civil air lines.

Students flying as passengers or pilots should be adequately covered against flying risks.

They might be given certain preferences in Government appointments, whether aeronautical or other appointments.

Students should not contribute to the costs. These might be estimated as follows:—

Flying training :	Rs. 1,000—1,500.
Camp costs :	Rs. 40 per fo-tnight.
Travel to camp : 2nd class	Rs. 12 per 100 miles (return).
University Societies : Travel costs of (1½ first class return)	cturinggvestc. Rs. 36 per 100 miles.
Increments in appointments :	Rs. 603 per annum (50 p.m.)
Air travel reductions :	Rs. 2 to 10 per 100 miles.
Flying clubs :	D. G. C. A. will have accurate figures.

(SDO) S. C. GHOSH.

LIST OF PUBLICATIONS OF THE BUREAU OF EDUCATION, INDIA

Serial No.	Names of Publications	Year of publication
1	Report on Vocational Education in India (Delhi, the Punjab and the United Provinces) (E. H. L. 34)	1937
*2	Report of the Women's Education Committee on primary education of girls in India 1936	1937
*3	Report of the Women's Education Committee of Central Advisory Board of Education to consider curriculum of Girls' Primary School in India	1937
*4	Report of the Vernacular Education Committee of the Central Advisory Board of Education appointed to consider certain questions connected with the administration and control of Primary Education	1937
5	Report of the First Committee of Central Advisory Board of Education appointed to consider the Wardha Education Scheme (E. H. L. 40)	1938
6	Report of the 2nd Wardha Education Committee of the Central Advisory Board of Education (App. IV to 5th meeting proceedings)	1940
7	Report of the Adult Education Committee of the Central Advisory Board of Education, 1939 (E. H. L. 46) (App. III to 5th meeting proceedings)	1940
†8	Report of the Social Service and Public Administration Committee of the Central Advisory Board of Education in India, 1940, together with the decisions of the Board thereon (E. C. 6)	1941
9	Report of the Joint Committee appointed by the Central Advisory Board of Health and Central Advisory Board of Education on the Medical Inspection of School Children	1941
10	Report of the Scientific Terminology Committee of the Central Advisory Board of Education in India, 1940, together with the decisions of the Board thereon (E. C. 5)	1941
11	Proceedings of the 6th Meeting of the Central Advisory Board of Education held at Madras on 11th and 12th January 1941 (E. C. 4 VI)	1941
12	Proceedings of the 7th Meeting of the Central Advisory Board of Education in India held at Hyderabad, Deccan, on 14th and 15th January 1942 (E. C. 4 VII)	1942
13	Report of the School Building Committee (E. C. 8)	1942
14	Report of the Uniform Braille Code Committee (E. C. 7)	1942
15	Report of the Examination Committee, 1942 (E. C. 12)	1942
16	Report of the Expert Committee on a Uniform Braille Code for India with the Braille charts printed in Indian Alphabets, 1942, as subsequently modified	1942
17	Proceedings of the 8th Meeting of the Central Advisory Board of Education held at Lucknow (E. C. 4 VIII)	1943
18	Report of the Joint Committee of the Central Advisory Board of Education the relation of the School Leaving Certificate Examination to the Matriculation Examination, 1942 (E. C. 9)	1943
19	Report of the Committee of the Central Advisory Board of Education on the training, recruitment and conditions of service of teachers (E. C. 10)	1943
20	Report of the Committee of the Central Advisory Board of Education appointed to consider the question of the recruitment of the Education Officer, 1942, together with the decisions of the Board thereon (E. C. 11)	1943
21	Report of the Examination Committee	1943
22	Proceedings of the 9th and 10th Meetings of the Central Advisory Board of Education in India held in October 1943 and January 1944 respectively (E. C. 4 IX & X)	1944
23	Report of the Technical Education Committee, 1943 (E. C. 16)	...
24	Report of the Text Book Committee, 1943, (E. C. 15)	1944
25	Report of the Examination Committee (Technique of Examinations), 1943 (E. C. 17)	1944
26	Report of the Committee of Central Advisory Board of Education appointed to consider the question of training, recruitment and condition of service in universities, etc. together with the decisions of the Board thereon (E. C. 22)	1945

* Not published previously, but proposed to be included in future reprints.

† Published by the Central Advisory Board of Health.

Serial No.	Names of Publications	Year of publication
27	Report of the Central Advisory Board of Education on Post-War Educational Development in India, 1944 (E. C. 13)	1945
28	Volume containing reports of the Committees of the Central Advisory Board of Education (E. C. 14)	1945
29	Report of the Administration Committee of the Central Advisory Board of Education	1945
30	Proceedings of the 11th Meeting of the Central Advisory Board of Education (E. C. 4 XI)	1945
31	Report of the Agricultural Education Committee of the Central Advisory Board of Education, 1944 (E. C. 20)	1945
32	Proceedings of the 12th Meeting of the Central Advisory Board of Education held at Mysore in January 1946	1946
33	Report of the Religious Education Committee of the Central Advisory Board of Education	1946
34	Development of Higher Technical Institutions in India (Interim Report of Sarkar's Committee)	1946
35	Report of the Committee of the Central Advisory Board of Education on selection of pupils for Higher Education	1946
36	Report of the Committee of Central Advisory Board of Education on conditions of service of teachers	1946