



# Report on Vocational Training in Primary and Secondary Schools and consequent reorganisation



BOMBAY

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No. M-93-V.T.—1091-A.

Bombay, 9th May, 1938.

To

THE SECRETARY,

Government of Bombay,

Educational Department, Bombay.

Sir,

With reference to G. R., E. D., No. 6471, dated 10th January, 1938, appointing a Committee to advise Government on the question of vocational training for boys and girls in Primary and Secondary Schools, we, the Chairman and members of the Vocational Training Committee, submit the accompanying report.

We have the honour to be,

Sir,

Your most obedient servants,

(Signed) K. G. JOSHI.

( „ ) R. V. PARULEKAR.

( „ ) GEO. W. BURLEY.\*

( „ ) P. B. ADVANI.\*

( „ ) D. C. GUPTA.\*

( „ ) CHAS. R. GERRARD.\*

( „ ) D. R. VAIDYA.\*

( „ ) K. S. DIKSHIT.\*

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( „ ) REBECCA REUBEN.\*

( „ ) V. D. GHATE.\*

( „ ) D. N. CHAUDHARI.\*

( „ ) S. R. BHISE.\*

( „ ) INDUMATI CHIMANLAL.\*

( „ ) B. P. THAKORE.\*

( „ ) P. C. PATIL.\*

( „ ) B. S. PATEL.\*

\* Subject to Minutes of Dissent.

## RECOMMENDATIONS.

### A. PRIMARY EDUCATION.

1. After very careful consideration we have come to the conclusion that the principle of "educating children through purposeful creative activities leading on to productive work" is sound. Its adoption is best calculated to remedy the main weaknesses obtaining in the present system of education.

2. We are of opinion that a continuous course of seven years should be the minimum education for every citizen, that this course should constitute Basic Education, and should be called "Primary". Standards 1 to 4 should be called lower primary or elementary and standards 5 to 7 upper primary.

3. We recommend that the Standards of the primary course be numbered consecutively as Standards I-VII.

4. After careful consideration we have come to the conclusion that six plus should be the age of admission to schools as well as the minimum age for compulsion.

5. While we realise that, for financial reasons, it is not possible to provide immediately "Kindergarten, Montessori, or Nursery" schools for children of pre-school age, we recommend that the responsibility of the State in this respect should be steadily kept in view and necessary provision in this direction should be made as soon as practicable and that, in the meantime, properly constituted private institutions should be encouraged to organise such schools.

6. We are of opinion that fresh admissions to the lowest class, i.e., to Standard I should ordinarily be made within two months from the beginning of the school year.

7. While we realise that for financial reasons compulsion cannot at present be enforced beyond the age of 11 or Standard IV, we are of opinion that for the full attainment of the objective of Primary Education the ultimate aim should be a seven years' compulsory course for boys and girls.

8. We recommend that Local Authorities and Managements of approved Schools should be permitted, if they so desire, to introduce the shift system and other forms of part-time instruction in their schools with a view to accelerating the spread of education among the masses.

9. We are of opinion that no fundamental differentiation should be made in the courses for urban and rural schools but that the teaching should relate to the environment of the pupil.

10. We are of opinion that so far as general education is concerned there should be no fundamental differentiation in the courses for boys and girls.

11. We are of opinion that at the Primary stage not more than half the school-day should ordinarily be devoted to formal instruction in the class-room.

12. We are of opinion that among others the following should be chosen as basic crafts in the reorganised primary schools :—

- |  |    |    |    |                        |
|--|----|----|----|------------------------|
| (1) Agriculture including subsidiary occupations | .. | .. | .. | Rural area.            |
| (2) Fruit and Vegetable gardening                | .. | .. | }  | Rural and Urban Areas. |
| (3) Spinning and Weaving                         | .. | .. |    |                        |
| (4) Wood-Work                                    | .. | .. |    |                        |
| (5) Claywork                                     | .. | .. |    |                        |
| (6) Home Craft                                   | .. | .. |    |                        |

13. We are of opinion that Central Schools should essentially be schools of general education. They should be labelled neither vocational nor pre-vocational.

14. We are of opinion that the articles that are produced by School Children under the new Scheme of education should have as far as possible useable and/or marketable value.

15. In view of the fact that Hindustani is fast becoming the national language of India, it is desirable that people in the non-Hindustani Provinces should have a working knowledge of every-day spoken Hindustani. We, therefore recommend that suitable provision should be made for the teaching of Hindustani in the upper primary standards.

16. We are of opinion that special impetus should be given to the spread of education among girls and that in every scheme of compulsory education preference should be given to girls.

17. We recommend that, in view of the present schools being examination-ridden, external examinations should be abolished. Heads of Schools should hold their own examinations and make promotions after taking into account the record of the pupil's attendance, work in the class-room, farm and workshop and in general extra school activities, as also his performance in school examinations.

18. We recommend that provision should be made at suitable centres for continuation courses for the benefit of children who may leave school before completing the full primary course.

19. We are of opinion that early provision should be made for more training institutions and for an increase in the number of places in the existing women's training institutions with a view to securing more trained women teachers for lower classes of primary schools.

20. We are of opinion that for the success of the scheme of Basic Education, it is essential that provision for a four years' normal course (on a par with the Secondary School Course) for the training of teachers of basic schools should be made and that at least one such normal school should be maintained for each district.

21. We are of opinion that special training institutions for the training of teachers of Central Schools and Supervisors should be organised in all Educational Divisions and arrangements should be made in these institutions for vacation or refresher courses for teachers already in service and also for the systematic use of the Cinema, Radio, Museums, etc., as definite aids to work in schools.

22. We are of opinion that Supervisors of Primary schools should be specially trained for their work and that each such supervisor should ordinarily be in charge of about 50-60 schools with headquarters near about the centre of his beat.

### B. SECONDARY EDUCATION.

23. We are of opinion that the Secondary School Course should begin at the end of the seven years' course of Primary Education.

24. We recommend that Managements of High Schools wishing to maintain Standards V to VII of the Primary Course should be encouraged to maintain classes for the full seven years primary course.

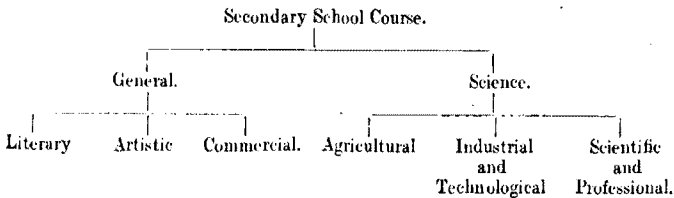
25. We recommend that the duration of the Secondary School Course should be four years, the Standards being numbered VIII, IX, X, XI in continuation of the Primary Standards I-VII.

26. We are of opinion—

(a) that the Secondary School course should be divided into two groups:—

(1) General and (2) Science.

(b) that the different courses under each head should be as under:—



(c) The four years' course should be divided into two stages:—

(1) Standards VIII and IX and (2) Standards X and XI.

For standards VIII and IX, the course should be common to all, with the exception of practical work.

We recommend that a special committee should be constituted to draw up detailed syllabuses.

27. We are of opinion that, to start with, teachers of requisite qualifications for Vocational work should be selected so far as possible from among teachers who have worked or are working in Vocational Institutions of good standing and established reputation, in consultation with a Board of experts.

28. We recommend that in Secondary Schools the mother-tongue should be the medium of instruction in all subjects except English and Hindustani.

29. We are of opinion that English should not ordinarily be introduced before the first year of the Secondary School Course, i.e., before the commencement of the work of Standard VIII. If, in any locality, there is an effective demand for the teaching of English in the higher primary stage and if thoroughly satisfactory arrangements by the appointment of a qualified teacher or teachers for instruction could be made, instruction in the language may be permitted as an optional subject from that stage without any financial obligations on Government.

30. We are of opinion that the aim of teaching English should be essentially practical.

31. As in our opinion the whole system of Secondary Education is examination-ridden, we recommend that with a view to removing the tyranny of the Matriculation Examination, Heads of Secondary Schools should be permitted to hold their own examinations and issue Secondary School Leaving Certificates on the basis of full four years' record of pupils' work in the class-room, on the play-field, in the workshop, in the social and general activities of the school, as also his performance in the school examinations.

32. We recommend that the University be moved to have the present Matriculation Examination replaced by special tests or examinations for entrance to Colleges affiliated to the University with a view to securing right type of students for University courses, none but those holding the requisite Secondary School Leaving Certificates being considered eligible for admission to the entrance tests of Colleges.

33. We are of opinion that till such time as the University decides to abolish the Matriculation examination, it should be moved to take steps to improve the Matriculation Examination by providing alternative courses of studies and by modernising the Examination generally.

34. We recommend that English-teaching Schools that are permitted to teach English from the initial stage (as the mother-tongue of the pupil is not one of the recognized languages of the Province) may continue to do so as at present provided that the schools arrange for regular instruction in one of the recognised languages of the Province and/or in Hindustani.

35. We are of opinion that the Department of Education should arrange for the periodical inspection of Vocational work in secondary schools in consultation with a Board of Experts.

## C. GENERAL.

36. We recommend that the curricula sanctioned by Government should be regarded as standard in which alterations or modifications not inconsistent with the principles and spirit of the sanctioned Course may be made to suit local or special conditions after intimation in writing to the Department of Education before the commencement of the school year.

37. We recommend that an Advisory Board of Education composed of official experts in the different branches of education and non-officials eminent in educational, vocational, business, or social activities, should be constituted. Its function should be :—

(1) To advise Government on matters of educational policy and practice.

(2) To collect information about educational activities and experiments in other parts of India as also in foreign countries.

(3) To issue bulletins disseminating modern ideas in education.

(4) To suggest ways and means for securing the co-operation of State utility services as also of commercial and industrial firms, particularly in the matter of pre-vocational training.

(5) To suggest arrangements for vocational guidance to pupils in secondary schools.

The Advisory Board should appoint sub-committees for (1) general education and (2) pre-vocational training with powers to co-opt experts.

38. We are convinced that for the success of the new scheme it is essential that a Special Publication Bureau should be constituted for the preparation of books and appliances for the use of teachers as also for village libraries, school children and literate adults.

39. We are of opinion that the emoluments of teachers in primary and secondary schools should be in accordance with the standard scales of pay that may be laid down for other public servants of similar attainments and responsibilities.

40. We recommend that the scale of grants to aided schools should be revised to enable them to employ qualified teachers on adequate scales of pay with reasonable fixity of tenure and provision for old age and also to enable them to meet the extra cost involved by the provision of practical work in primary and secondary schools.

41. We are of opinion that libraries specially meant for the benefit of children who cannot continue their school course beyond Standard IV should be organized in villages beginning with those having schools.

42. We recommend that Government should publish pamphlets giving information about careers for pupils and also about the preliminary education needed for such careers.



43. We are of opinion that part-time classes for continuation or vocational education of those who cannot avail themselves of education in day or full-time schools should be organised as suggested in the Abbott-Wood Report, wherever there is a demand for them.

44. In view of the fact that this Committee has put forward a Scheme of Primary and Secondary Education with substantial practical instruction, it is essential to provide an adequate number of specialised vocational, industrial, trade and technical institutions. We, therefore, recommend that Government should take steps for the establishment of such institutions.

#### D. TRANSITIONAL ARRANGEMENTS.

45. We are of opinion that a Special Officer not lower in rank than a Divisional Educational Inspector be appointed immediately to organise all work in connection with the initiation and development of the scheme of Basic Education, that he should act in consultation with a small Advisory Committee specially constituted for the purpose and that he be given the help of necessary Assistants.

46. We recommend that compact areas providing necessary facilities be selected in each district to try the experiment of "Basic Education". So far as possible, all schools in such areas should be transformed into schools of the new type, the full Primary Schools within the areas being organised as Central Schools i.e. schools teaching the full seven years' basic course with arrangements for instruction in two or more productive crafts.

47. We recommend that the above experiment be tried in the first instance during 1938-39, that if the results are assuring enough the scope of the experiment be extended during 1939-40, that the position be reviewed fully before the end of 1939-40 and that in the light of experience gained, arrangements for the complete reorganisation of Primary Education be made within five years.

48. The Committee is convinced that for the success of the Scheme of Basic Education it is essential that immediate arrangements for the special training of select trained teachers preferably with aptitude for productive or manual work of some kind should be made separately for each Educational Division. The emergency course of training at the start should be of about six months and the instruction should include among other things—

- (1) Training in at least two basic crafts.
- (2) Formulation and working of simple projects and schemes of correlated studies.
- (3) Inculcation of ideology of education through productive work viz. method of learning by doing, relating education to actual life, scope of initiative, sense of social responsibility, spirit of social service for national co-operative community.
- (4) A Special Course in Physical Training, Drawing and Music.

(5) A short course in Physiology, Hygiene, Sanitation, Dietetics, Social studies and Hindustani.

(6) Teaching of at least 25 lessons in the practising school under proper supervision.

These training schools should be residential institutions where the individual teachers under training have opportunities of receiving training to live a vigorous social life in an atmosphere of perfect co-operation.

49. We recommend that the supervisors for the experimental schools should be select men and women who should be specially trained to enable them to supervise and guide the work in the reorganised schools in their charge.

# REPORT ON VOCATIONAL TRAINING IN PRIMARY AND SECONDARY SCHOOLS AND CONSEQUENT REORGANISATION.

## CHAPTER I.

### APPOINTMENT OF THE COMMITTEE.

1. The Committee was appointed by Government under their Resolution, Education Department, No. 6471, dated the 10th January, 1938, to advise Government on the question of vocational training for boys and girls in Primary and Secondary Schools in the Province of Bombay, with following persons as members:—

1. Rao Bahadur K. G. Joshi, retired Educational Inspector—*Chairman.*
2. The Director of Industries.
3. Mr. B. S. Patel, Deputy Director of Agriculture.
4. Mr. D. N. Choudhari, M.L.A.
5. Mr. B. P. Thakore, M.L.A., B.A., S.T.C., Joint Principal, Proprietary High School, Ahmedabad.
6. Dr. G. W. Burley, D.Sc., M.I.M.E., M.A.S., M.R.S.T., Principal and Secretary of the Victoria Jubilee Technical Institute, Bombay.
7. Rao Bahadur Dr. P. C. Patil, M.Sc., L.Ag., D.Sc., of Kolhapur.
8. Miss Indumati Chimanlal, of Ahmedabad.
9. Dr. Abdul Hameed Kazi, M.A., Ph.D., Yawal, District East Khandesh.
10. Mr. S. R. Bhise, Principal, S. P. Hakimji High School, Bordi.
11. Mr. Hanumantrao S. Kaujalgi, Bijapur.
12. Mr. V. D. Ghate, Educational Inspector, Bombay Division—*Secretary.*

The following additional members were appointed on the Committee by Government under G. R., E. D., No. 6471, dated the 31st January, 1938:—

1. Mr. K. S. Vakil, Principal, Shri Maharani Tarabai Teachers' College, Kolhapur.
2. Mr. K. S. Dikshit, Retired Deputy Educational Inspector, Satara.
3. Mr. D. R. Vaidya, Poona.

The Committee was requested to consider the Report of the Zakir Hussain Committee, published in the *Harijan*, dated the 11th December, 1937, and was asked to submit its Report to Government within two months of its first meeting.

The Committee was empowered to co-opt members, if necessary.

2. The Terms of Reference to the Committee were as under :—

*A.—Primary Education.*

1. What changes does the Committee suggest in Primary Education arising out of the Zakir Hussain Committee's Report ?
2. Dr. Zakir Hussain Committee's Report recommends the idea of educating children through some suitable form of productive work. Central Schools will have to be opened to impart instruction on these lines. What should be the total number of these Central Schools and where should they be located ? Would it be desirable to establish Central Schools in the first instance at each Taluka Head Quarters ?
3. What should be the proportion of general education and practical work in the higher primary standards of these Central Schools ?
4. Should these Institutions be treated as prevocational or vocational or should they be encouraged to be developed in either directions as circumstances would permit ?
5. What major types of handicrafts in addition to agriculture could be introduced in these schools in rural as well as urban areas ?
6. The Committee is requested to suggest a three years' syllabus for different kinds of manual work (handicrafts).
7. Is it necessary to revise the syllabus of the lower primary grades of the Central Schools ? If so, make definite suggestions.
8. How and where should teachers for Central Schools be trained ? Should they be trained in the existing training institutions for primary teachers or in some vocational institutions ? Or should intensive Refresher Courses be organised in institutions like the College of Agriculture with special staffs ? What period may be considered as adequate for imparting training in handicrafts ?
9. What will be the cost of training teachers for Central Schools ?
10. What will be the approximate cost of maintaining Central Schools of different types ?
11. How and where can women teachers of Central Schools for girls be trained ? Will a special course of six months be sufficient for training in household arts, mothercraft and some useful cottage industries ?
12. What will be the initial cost of introducing the scheme, e.g., equipment and material required for training institutions and the Central Schools ? The Committee is requested to give a complete list of the equipment required together with the rough estimates thereof for all the different handicrafts that it might suggest.

*B.—Secondary Education.*

1. What would be the proportion of general education and vocational training in Secondary Schools ?
  2. At what stage should vocational training be introduced ? What should be its duration ?
  3. Propose syllabus for the different kinds of vocational courses which could be suitably introduced in the Secondary Schools.
  4. What would be the approximate recurring and non-recurring cost to Government as regards staff, equipment, contingencies, etc., for (a) Technical, (b) Commercial and (c) Agricultural courses to be introduced in Secondary Schools ?
  5. How should teachers for the vocational courses be recruited ? What should be their qualifications and scales of salaries ? Will it be necessary to provide any preliminary training to these teachers ? If so, in what institutions and through which agencies ?
3. Government, in their letter dated 21st January, 1938, directed the Committee that the first term of reference should be amended to read as follows :—
- “ 1. What changes does the Committee suggest in Primary Education arising out of the Abbott-Wood Report on Vocational Education in India and the Zakir Hussain Wardha Education Committee’s Report.”
4. The Committee met on the 1st and 2nd February, 1938, to co-opt additional members and to draft a questionnaire. The following members were co-opted by the Committee in their first meeting held on the 1st February, 1938 :—
1. Miss R. Reuben, Principal, Sir Elly Kadoorie High School, Bombay.
  2. Mr. R. V. Parulekar, Secretary, Schools Committee, Bombay.
  3. Mr. C. R. Gerrard, Director, Sir J. J. School of Art, Bombay.
  4. Mr. A. Khan, Deputy Educational Inspector for Urdu Schools, Poona.
  5. Mr. D. C. Gupta, Deputy Director of Industries, Bombay.
5. As the terms of Reference would show, the Committee was called upon to consider and make suitable proposals for the reorganisation of Primary and Secondary Schools and the introduction of vocational training in them. The questionnaire sent out by the Committee is attached to this Report as an appendix.
6. The Committee met from the 14th to 19th March, 1938, and from the 4th April to 9th April, 1938, (both days inclusive) and considered the various questions arising from the terms of reference and formulated their recommendations.

The Committee also met in April from the 27th to 29th to approve the draft Report which was signed by the members present in Bombay on Monday the 2nd of May, 1938. Mr. K. S. Vakil, a member of our Committee, attended the meetings up to the 9th of April, after which he left for England. He had, however, approved of the recommendations, which were sent in advance to Government.

7. The work of drafting syllabuses and working costs was entrusted to the following Sub-Committees :—

A. Agriculture—

- (1) Dr. P. C. Patil.
- (2) Mr. B. S. Patel.
- (3) Mr. S. R. Bhise.
- (4) Mr. D. R. Vaidya.

B. Wood Work—

- (1) Dr. G. W. Burley.
- (2) Mr. D. R. Vaidya.

- C. The syllabus in Clay work was prepared by Mr. D. R. Vaidya.
- D. The syllabuses in Artistic Crafts were prepared by Mr. Gerrard, the Director of Sir J. J. School of Art.
- E. A Sub-Committee consisting of Messrs. Hanmantrao Kaujalgi, D. N. Choudhari and S. R. Bhise considered the syllabuses in Spinning and Weaving prepared by the Zakir Hussain Committee.
- F. Messrs. J. C. Bahl, V. R. Patwardhan and R. S. Sadashivan, instructors of the Government Commercial Classes, Elphinstone High School, Bombay, prepared a scheme for introducing commercial training in Secondary Schools and Mr. M. J. Antia, Principal, Sydenham College of Commerce, Bombay, was kind enough to prepare a Note on the same question.
- G. Messrs. Burley and Gupta prepared syllabuses for the Science group of Secondary Schools.

8. The time at the disposal of the Committee was found to be insufficient and was extended at our request by Government by one month.

9. Our best thanks are due to the Secretary, Mr. V. D. Ghate, M.A., B.T., T.D. (Lond.), for the efficient manner in which he discharged his duties. He held the office of the Educational Inspector, B. D., in addition to the Secretaryship of this Committee, as also of the Committee appointed to consider the question of the training of primary teachers. The work was undoubtedly heavy and arduous but Mr. Ghate managed to cope with it all.

## CHAPTER II.

## STATISTICS AND SYSTEM OF EDUCATION.

*Area and Population.*

10. The British Districts of the Province of Bombay (after the separation of Sind) comprise an area of 7,721 square miles with a population of 17,992,000 in 1931. In area the province now stands sixth and in population fifth among the major provinces of India. The density of the population of the Province is 234, approximating the average density of India. In density Bombay stands sixth among the provinces of India. Of the 17,992,000 persons living in the Province, 4,203,000 or 23·3 per cent. live in towns or in urban areas and the rest 13,789,000 or 76·7 per cent. live in villages or in rural areas. Bombay is the most urbanised province in India.

*Divisions of the Province.*

11. The Province may be divided into three natural divisions :—The Deccan, Konkan and Gujarat. These natural divisions do not correspond exactly with the Revenue Divisions nor with the Educational Divisions. On linguistic basis, also, the Province is divided into three major parts.

*Languages.*

12. The four recognised Indian languages of the Province are Marathi, Gujarati, Kanarese and Urdu (styled as Western Hindi in Census Reports). The distribution of the population according to the four recognised languages as shown in the Census Report of 1931 is as under :—

Languages.	Population.	Percentage.
Marathi .. . . .	9,322,000	51·8
Gujarati .. . . .	3,445,000	19·1
Kanarese .. . . .	2,598,000	14·4
Urdu .. . . .	1,321,000	7·3
Other languages and dialects ..	1,306,000	7·4
Total ..	17,992,000	100·0

The other languages and dialects include Bhili, Konkani, Rajasthani, Telgu, Sindhi, Tamil, Malayalam, Eastern Hindi, other Asiatic and European languages.

Some Indian Christians claim that their mother-tongue is not any of the four recognised languages of the Province.

*Occupations.*

13. The following table shows the distribution of population of principal earners and working dependents according to occupations as given in the Census Report of 1931 :—

Sub-class.	Principal earners and working dependents.	Percentage to total earners and working dependents.
1. Exploitation of Animals and vegetation..	4,767,000	67·3
2. Exploitation of Minerals .. ..	10,000	·1
3. Industry .. ..	872,000	12·3
4. Transport .. ..	139,000	1·9
5. Trade .. ..	357,000	5·0
6. Public Force .. ..	47,000	·7
7. Public Administration .. ..	118,000	1·7
8. Profession and Liberal Arts ..	117,000	1·7
9. Persons living on their income ..	23,000	·3
10. Domestic Service .. ..	138,000	2·0
11. Insufficiently described occupations ..	397,000	5·6
12. Unproductive .. ..	102,000	1·4
Total (all classes) ..	7,087,000	100·0

From the above table it will be seen that agriculture is the occupation of over two-thirds of the earning population. Artisans and persons engaged in industry come next. If these two are added, they make about four-fifth of the earning population. Persons engaged in public administration, professional and liberal Arts form 3·4 per cent. of the population.



*Present System of Education.*

14. In this Province "Primary Education" is defined as education which is wholly given through the mother-tongue in any of the prescribed primary standards. The Primary course covers a period of eight years and consists of two stages, the elementary or Lower Primary stage (Infant class and standards I-IV) and the Upper Primary stage (standards V-VII). At the end of the Primary school course (in the case of girls standard VI and in the case of boys standard VII), there is a departmental examination, the passing of which qualifies a boy or a girl among other things, for admission to a Primary Training College and qualifies him or her to act as teacher in an approved Primary school. Pupils who pass the 4th standard Examination of a Primary school are eligible for admission to standard I of an Anglo-Vernacular School.

The term "Secondary Schools" is applied to those schools only in which English is taught. The course consists of seven years and the standards prescribed are called Anglo-Vernacular standards (standards I to VII). Anglo-Vernacular schools which teach the full course of seven standards leading up to the Matriculation Examination of the Bombay University are known as High Schools. Those teaching up to standard III only are known as Middle Schools.

In some Primary Schools, arrangements are made to teach English to the pupils in the Upper Primary Standards (V, VI and VII) and for this purpose separate classes known as "English classes" are attached to these standards. In addition, there are attached to certain High Schools special classes in English for pupils who have passed the Vernacular Final Examination. These classes are known as "Special Vernacular Final Classes" and follow a special intensive course for one year in English. At the end of the course, a Departmental examination is held in English and those pupils who are successful are promoted to Anglo-Vernacular standard IV.

15. The following statement shows the number of pupils (boys and girls) in Primary and Secondary Schools in 1931-32 and 1936-37 :—

*Primary Pupils.*

—				Upper Primary.	Lower Primary.	Total.
1931-32.						
Boys	..	..	..	85,521	674,903	760,424
Girls	..	..	..	10,143	227,758	237,901
Total				95,664	902,661	998,325
1936-37.						
Boys	..	..	..	100,086	753,152	853,238
Girls	..	..	..	16,702	270,359	287,061
Total				116,788	1,023,511	1,140,299

*Secondary Schools.*

	Number of schools.		Number of pupils.	
	1931-32.	1936-37.	1931-32.	1936-37.
(1) Secondary .. .. .	472	569	85,011	106,558
(2) European and English teaching.	75	70	19,341	20,529
Total ..	547	639	104,352	127,087

*Compulsory Education.*

16. One of the main objects with which the Primary Education Act of 1923 was passed was to provide for compulsory education up to the end of standard IV for children between the ages of six and eleven. The hopes, however, entertained by those who were responsible for framing and passing this Act, have not been fulfilled. The present position is that five Local Authority Municipalities have introduced compulsion for boys and girls but two of these, viz., Bombay City and Poona City have only introduced compulsion in certain parts of the Municipal area. Four local Authority Municipalities have introduced compulsion for boys only and in one of these Municipalities compulsion has only been introduced into three Wards. One District Local Board has introduced compulsion in villages which have a population of one thousand and over and also in non-Local Authority Municipalities. Since the introduction of compulsion, the number of children of compulsory age on the rolls of Primary schools in compulsory areas has increased very greatly.

17. The following statement shows the number of pupils at present in primary Schools in towns and villages and also the number of pupils for whom provision of primary education is yet to be made :—

	Number.	Popu- lation 1931.	Population 1937 (rise estimated at 6 per cent. in six years).	Number of children of school going age at 6 to 11 age (13 per cent. of 1937 population).	Number of children attending Primary Schools in 1937.	Number of children not attending Primary Schools.
Towns ..	184	4,203,000	4,455,000	579,000	446,000	133,000
Villages with Schools ..	8,599	9,452,000	10,019,000	1,302,000	694,000	608,000
Villages without Schools ..	12,885	4,341,000	4,601,000	598,000	..	598,000
Total ..	..	..	....	2,479,000	1,140,000	1,339,000

## CHAPTER III.

## PRESENT POSITION OF EDUCATION AND PRINCIPLE OF REORGANISATION.

18. The Primary and Secondary Reorganisation Committee, that investigated in 1927-29 the very question under reference to this Committee, note the following among other defects in the course of their report :—

“The present system of education is too literary in character and fitted only for those who wish to join the learned professions and occupations which do not demand the use of the hands. It is not related to life and is far too bookish. Curricula and text books are too urban in outlook. The wastage in Primary Education is great and a comparatively small proportion complete the elementary course. The teachers in Primary schools are deteriorating and full value for the money spent on education is not received. The instruction in Primary schools bears little relation to the environment of the pupils and the whole school and village atmosphere is such that the child does not realise what bearing education has on the life he is familiar with.

“The work in the Secondary Schools depends largely upon the school-leaving examination and the subjects prescribed and the examination papers set. Comparatively few join the high school course except with the object of passing the Matriculation. It is generally agreed that the importance of English in the school curriculum has been over-emphasised and that the general education of the pupils has suffered in consequence. There is unnecessary duplication of studies in part of the course, mainly as the result of the subject being taught first in the vernacular and again in English. The courses in some of the subjects are overburdened with unimportant matter, an unnecessary strain being thrown upon the pupils.”

The report is still pending the consideration of Government and the general position remains materially unaltered.

19. As already stated, over two-thirds of the population of the province live on agriculture. Our primary schools which are to cater mostly for the children in the rural area (i.e., for children of agriculturists and artisans who form the main bulk of the population) fail to appeal to an average villager. The reason is not far to seek. The village child is made to sit still for long periods at a time in the school room. The result of several years' schooling of this kind often is that the child grows into a weakling that is unable to stand the sun and the rain and is thus not of much use for hard work in the field. What little book-knowledge the child acquires does not appeal to a vast majority of the villagers, who though generally illiterate, possess a strong common sense. Brought up on books and nothing but books, the village child looks down upon manual work. Conditions in urban areas are much the same.

20. The position regarding the Secondary School boy is not very different. He begins his English education after acquiring a smattering

knowledge of his own mother-tongue and for seven long years he reads books and does little else. He is supposed to do Nature Study at the Middle School stage through observation, collection and excursion. What he really does is to read a book on Nature Study. At the High School stage in the Science laboratory he watches his teacher making some experiments and repeats them. The Secondary School provides neither optional courses, nor definite practical work. Agriculture, art crafts, technology, commerce have no place in the present stereotyped system of secondary education.

21. What is needed is reorientation of educational ideals. Education must be made thoroughly practical, both in the primary as well as secondary stages, with a view to bringing our schools into intimate touch with the life, needs and traditions of the people.

This Committee was called upon to consider two important Reports on Education, whose authors give helpful suggestions as to how education could be made more realistic and practical. Messrs. Abbott and Wood have shown how it is possible to provide diverse courses on definite practical lines at the secondary stage. This Committee have duly considered the proposals of these two specialists while making recommendations for diversified courses at the secondary stage. The Zakir Hussain Committee present a comprehensive scheme of primary education through suitable form of productive work.

22. The Zakir Hussain Committee's scheme deals mainly with the problem of mass education and thus has a special bearing on the education of the children in the rural areas where the main bulk of the people live. It envisages a seven years' course of primary education through the mother-tongue, which the Committee consider should be the minimum education necessary for every citizen. The Committee propose to impart this "basic" education through craft work. They also propose to correlate all school work with the basic craft.

23. We have given very careful consideration to this scheme of Basic Education and we are in substantial agreement with the Zakir Hussain Committee as regards the fundamental principle of their scheme, viz., learning through doing. We are all agreed that education at the primary stage should be through experience rather than through formal instruction. We feel that education should minister to the all round growth of the child "by enriching experience through activities as well as by book learning. Literacy (or even skill of hand or keenness of eye) should be a by-product of satisfying activities". (Abbott and Wood.)

24. The principle of educating children through purposeful creative activities leading on to productive work is peculiarly suitable to village conditions and requirements. The children of the urban areas, too, stand in need of active or dynamic education in place of the present passive absorption of information from books. It would not be difficult to provide for them an education through purposeful creative activities.

25. The principle is also psychologically and educationally sound. It is practically education through the principle of "activity". Learning

by "doing" is certainly preferable in every way to the traditional method of passive book-learning. The productive work is to be merely a medium or method of education and not an end in itself. The Zakir Hussain Committee clearly state that "the object of this new educational scheme is not primarily the production of craftsmen able to practise some craft mechanically but rather the exploitation for educative purposes of the resources implicit in craft work". The principle only shifts emphasis from book-learning to learning by doing and observation which is not only desirable and necessary but also essential in the existing circumstances. The principle, if rightly followed, would use and direct the creative impulses of the child, provide suitable "hand and eye training", and also serve to secure an all-sided education. It should also help to cultivate a true sense of the dignity of labour. It may be noted in this connection that all creative activity—whether manual or intellectual—has a liberalising influence. There is therefore no valid ground to fear that the present aim of "liberal education" will be defeated by the adoption of the principle of education through creative purposeful activities leading to productive work.

26. The Zakir Hussain Committee claim that the adoption of the principle will increase the productive capacity of workers and will be helpful in reducing the cost of education if not, in making it self-supporting. It is this economic aspect and particularly the idea of "self-supporting basis" of education linked with it, that has evoked very severe criticism. It is true that in their report the Zakir Hussain Committee sound a note of warning and point out that the economic aspect is not to be stressed at the sacrifice of the cultural and educational objective. They have since pointed out that they do not "contemplate any connection between the teachers' salary and the proceeds from the sale of the children's products". It is needless to say that if education is to be imparted through "activity", the activity should be purposeful lest the children should get into mischief or lest the educative value of the method should be lessened. The teacher is expected to bear the purpose in mind and to direct skilfully the activities of the child so that it may learn the different processes of the productive work and also incidentally learn to observe, acquire experience, and be initiated in the processes of the three R's. Purposeful activity of school children in this way should automatically lead to the production of something useful or valuable. If children are encouraged in this way to construct useful things they come to enjoy the work and attribute a special value to it. Production of useful things serves as a training in accuracy and exactness in planning and execution. It must, however, be made perfectly clear that "self-supporting" part of the scheme is *incidental* and *not* a condition of it. While most of the persons who sent replies to the Committee's Questionnaire accept the principle as sound, they have expressed a doubt about the "self-supporting" aspect of the scheme.

27. The following extracts from the Report (May, 1937) of the Advisory Committee appointed by the Executive Committee of the

Educational Hand-Work Association, London, bear on the question under consideration :—

“According to the terms of reference the Committee was appointed to prepare and publish a report on the provision of facilities for craft teaching in junior, senior and secondary schools, excluding special schools and infant schools. Thus our enquiry does not extend to children below the age of seven or thereabouts. From this it must not be inferred that craft work is not possible for such children, but rather that by limiting the scope of the enquiry in this way we are enabled to concentrate upon that phase of craft-teaching in schools which demands more particular attention at the moment. . . . .

“In order to avoid confusion and to make our position clear, we have used throughout this report the terms craft-work and hand work, each having a definite connotation, which together completely cover the field of our enquiry without having recourse to other terms. Craft-work is the exercise of a craft, and a craft is an occupation demanding manual skill and primarily concerned with producing objects of utility or beauty or both. We take the point of view that in normal cases craft-work begins in the junior school. On the other hand the term handwork, in our nomenclature, signifies that type of practical work done mainly in the infant school, and to a less extent thereafter as the pupils grow older. . . . .

“The introduction of craft work and hand-work in its various forms into the curriculum of the school is one of the outstanding features of modern education. We do not propose to justify the inclusion of such work in the school time-table. The attitude displayed towards the subject in recent years has rendered this unnecessary. Yet we find it difficult to avoid some reference to the extraordinary appeal such practical work makes to children. It satisfies in a remarkable way the innate urge of the child to do and to create, and by so doing and creating, he develops mental and physical powers in a positive and natural way. Thus the pupil undergoes a discipline and a training, which are best described as cultural in the widest sense of the term; and concurrently acquires certain skills of utilitarian or recreative or other value. Expressed in scientific terms the justification rests on physiological, psychological, sociological and economic grounds. Nor must we forget that, when such practical work leads to fine workmanship, the acquiring of the necessary skill and the exercising of the judgment in designing and fashioning an object of beauty leads to a finer and more delicate sense of appreciation and to true aesthetic enjoyment.”

**After very careful consideration we have come to the conclusion that the principle of ‘educating children through purposeful creative activities leading on to productive work’ is sound; its adoption is best calculated to remedy the main weaknesses obtaining in the present system of education.**

28. The recommendations made in the succeeding chapters are based on the application of the above principle with a view to making education as practical as possible and removing the principal defects in the present system.

## CHAPTER IV.

## STAGES AND DURATION OF SCHOOL COURSE.

*Primary Stage.*

29. As pointed out in Chapter II, the full school course is at present divided into three stages—(1) Elementary stage of five years (the infant class and 4 standards), (2) Middle stage of three years (upper primary Standards V-VII or A. V. Standards I-III) and (3) High School stage of four years (A. V. Standards IV-VII). Though both the upper primary Standards V-VII and A. V. Standards I-III form part of general education they are treated as separate types of standards and have separate curricula, chiefly because in one English is taught and in the other there is ordinarily no provision for instruction in English. The mother tongue ought to be the foundation of general education and there is no valid ground for a differentiation made at present between the upper primary Standards and the Anglo-Vernacular Middle Standards. It is, therefore, proposed to abolish it and plan a continuous seven years' course which will provide Basic Education, i.e., minimum general education necessary for every citizen. This seven years' course will constitute the primary stage consisting of Standards I-VII—Standards I-IV forming the elementary or lower primary stage and Standards V to VII the upper primary.

**We are of opinion that a continuous course of seven years should be the minimum education for every citizen, that this course should constitute Basic Education, and should be called "Primary". Standards I to IV should be called Lower Primary or elementary and Standards V to VII Upper Primary.**

**We recommend that the Standards of the Primary course be numbered consecutively as Standards I-VII.**

*Secondary Stage.*

30. The Secondary Stage will begin at the end of the seven years' primary course and under the plan of reorganisation will extend over four years and consist of Standards VIII, IX, X and XI.

**We are of opinion that the Secondary School Course should begin at the end of the seven years' course of Primary Education.**

**We recommend that the duration of the Secondary School Course should be four years, the Standards being numbered VIII, IX, X, XI in continuation of the Primary Standards I-VII.**

31. Under the new arrangement of courses the total length of the whole school course will be reduced from 12 to 11. It may be noted in this connection that the Education Reorganisation Committee of 1927-29 after thorough investigation reached the conclusion that a reduction of

one year in the total length of the course was possible. They also noted that it was possible that the use of the better methods of teaching Reading would materially reduce the time spent in the infants class and suggested that the possibility of completing the elementary course in four years be kept in view. The Committee after careful consideration came to the conclusion that it was time that the infant class need no longer be retained in the primary stage.

#### *Nomenclature.*

32. Under the proposed reorganisation, the two stages of instruction will be designated primary and secondary. The primary stage will be divided into two sections :—(1) Elementary or Lower Primary consisting of Standards I-IV and Upper Primary comprising Standards V-VII. The Secondary Stage will consist of Standards VIII-XI. The other usual nomenclature, e.g., A. V., Middle, High School, etc., should disappear.

#### *Admissions to the lowest class.*

33. Stagnation particularly in the lowest class (i.e., the present infants class) of primary schools is a serious evil. This is mainly attributable to the practice of admission to the lowest class being made at any time of the school year. The result is that the infants class is often composed of children in 3-4 stages of instruction. The teacher is thus very much handicapped in teaching the class as a whole in a satisfactory manner. In his effort to look after the new recruits, he cannot devote his attention to those who joined the class earlier in the year. It is not, therefore, surprising that when the annual promotions come to be made as many as 50 per cent. of the pupils have to stagnate in the same class for another year in a large number of schools. This is a serious waste and has to be stopped immediately.

**We are of opinion that fresh admissions to the lowest class, i.e., to Standard I, should ordinarily be made within two months from the beginning of the school year.**

#### *Pre-Primary Education.*

34. Though under the new arrangement the Infants Class as such is done away with, it does not mean that the Committee attaches little or no importance to the teaching of infants. The real position of the infants classes in the present primary schools is worth noting. Though it is intended that they should be looked after by highly trained persons they are in practice often entrusted to the care of raw or untrained teachers. In one-teacher schools (which form about 50 per cent. of the total number of primary schools), the infants classes are usually the largest and stagnation is mostly their special feature. The infants as a rule do not receive the attention they deserve. The Committee feel keenly that systematic training of pupils of pre-school age should



be provided for by the organisation of separate Kindergarten Departments or Montessori and Nursery Schools under specially trained teachers—preferably women—instead of infants classes being linked with Primary Schools as at present. Although it is a clear obligation of the State, the Committee are not inclined, for financial reasons, to urge any immediate provision by the State in this respect.

It would, however, be necessary to provide training institutions to prepare teachers of pre-primary schools. We would, therefore, suggest that Government should give grants-in-aid to such associations as would start pre-primary training institutions. They may also consider the question of attaching pre-primary departments to their existing training institutions.

While we realise that, for financial reasons, it is not possible to provide immediately "Kindergarten, Montessori, or Nursery" Schools for children of pre-school age, we recommend that the responsibility of the State in this respect should be steadily kept in view and necessary provision in this direction should be made as soon as practicable and that, in the meantime, properly constituted private institutions should be encouraged to organise such schools.

#### *Age of Compulsion.*

35. Under the existing system, the minimum age of compulsion is 6, although there is nothing to prevent the admission to school of children of less than six. In the opinion of the majority of the Committee, children should not be admitted to school before they have completed their sixth year, and the present practice of admitting children below the age of six should be stopped. It is argued that admission of such children to schools retards the progress of the class as a whole and it often keeps out of school a number of children of six and over, who ought to be in school. Some of the members of the Committee were of opinion that five plus should be the age of admission to school; while others thought that seven plus and not six plus should be such age. The majority, however, are of opinion that six plus is the proper age for compulsion as well as for admission to schools.

After careful consideration we have come to the conclusion that six plus should be the age of admission to schools as well as the minimum age for compulsion.

#### *Period of Compulsion.*

36. We have already recorded our opinion that a continuous course of seven years should be the minimum education for every citizen and that it should constitute Basic or Primary Education. It is essential for the intelligent exercise of the vote and the satisfactory working of representative institutions. It is also necessary for the improvement of the general efficiency of citizens, as also for the attainment of permanent literacy.

As already noted in Chapter III, the present position particularly of primary education is highly unsatisfactory. The Director of Public Instruction in his report for 1935-36 (the latest available report) observes:—

“For every hundred boys in a Primary School, 31 are in the Infant Class of whom a little less than half stagnate in that class, and about 11 per cent. reach Standard IV. When it is remembered that these percentages represent the rural as well as the urban areas and include the children of the advanced classes, who almost invariably complete the Lower Primary stage of instruction, it is evident that the wastage among the rural communities is rather more than the figures actually disclose.”

In view of the appalling wastage and the highly unsatisfactory position generally, we feel that efforts should in the first instance be concentrated on arrangements to ensure that education is thoroughly well suited to the actual life, environment and needs of the pupils and that wastage is minimised—if not eliminated altogether. Introduction and extension of compulsory education is undoubtedly necessary and should be the next stage of progress.

Though the principle of seven years' universal Primary education is fully acceptable, its practicability obviously depends on the cost involved. The following figures based on the Census figures of 1931 will be found to be of general interest:—

Age group.				Percentage to population.
6-10	..	..	..	10·3
6-11	..	..	..	12·5
6-13	..	..	..	17·1

If due allowance is made for the normal growth of population (at 1 per cent. per year) the total population for 1937 may be estimated at 190 lakhs in round figures. On the basis of the percentages noted above, the distribution of the population of primary school age may be estimated in round figures as under:—

Age group.	Total children.	Children in School.	Children to be provided for.	Additional cost at Rs. 13* per pupil.
6-10 } 6-11 }	21,00,000	11,00,000	10 lakhs	1,30,00,000
6-13	32,89,000	12,00,000	20 lakhs	2,60,00,000

\*Average cost to Government for educating a pupil in a District Local Board Primary School.

From the above figures it will be seen that the additional cost of introducing compulsion for children up to 11 or Standard IV amounts to approximately Rs. 130 lakhs and that for children up to the age of 13 to Rs. 260 lakhs. The present cost of primary education to Government is almost a crore of rupees and the above figures will give an idea of the heavy extra cost involved in enforcing compulsion. Though we fully endorse the principle of seven years' free and compulsory primary education for every future citizen, in view of the heavy cost involved, it is proposed that as soon as satisfactory arrangements for the improvement of primary education and the elimination of wastage are made, attention should be directed towards introduction of compulsion and that it may be effected by stages. It is, however, absolutely necessary that the goal of seven years' compulsory primary education for boys and girls should be steadily kept in view and steady efforts should be made to reach it as soon as practicable.

While we realise that for financial reasons compulsion cannot at present be enforced beyond the age of 11 or Standard IV, we are of opinion that for the full attainment of the objective of Primary Education the ultimate aim should be a seven years' compulsory course for boys and girls.

#### *Linking of Primary and Secondary Schools.*

37. Under the reorganized school course there will be two stages :— (1) Primary, and (2) Secondary. The Primary stage will consist of Standards I-VII and the Secondary of Standards VIII-XI. The present Secondary School, however, generally consists of two sections :— (1) Middle School, and (2) High School. The present High School section corresponds in extent to the reorganised Secondary School. Under the reorganised plan there will be no course corresponding to the present middle stage, i.e., A. V. Standards I-III. It is desirable that hereafter present A. V. Schools may either be purely secondary schools teaching Standards VIII-XI or schools teaching the full school course of Standards I-XI.

In the reorganised primary stage instruction is to relate to the environment of the child and craftwork and it is desirable that existing Secondary Schools, if they choose to provide for instruction in the Basic Course, should do so from the initial stage.

**We recommend that Managements of High Schools wishing to maintain Standards V-VII of the Primary Course should be encouraged to maintain classes for the full seven years' primary course.**

## CHAPTER V.

## COURSES OF INSTRUCTION.

**Basic Course.**

38. The Committee have accepted the principle of educating children through purposeful creative activities leading on to productive work. The question of suitable craftwork that could be provided for in Primary Schools was carefully considered and the following conclusion was reached :—

We are of opinion that among others the following should be chosen as basic crafts in the reorganised primary schools :—

- |  |                    |
|--|--------------------|
| 1. Agriculture including subsidiary occupations. | } Rural Area.      |
| 2. Fruit and Vegetable Gardening.                |                    |
| 3. Spinning and Weaving.                         | } Rural and Urban. |
| 4. Wood-Work.                                    |                    |
| 5. Clay-Work.                                    |                    |
| 6. Home-Craft.                                   |                    |

In some areas, it will be found desirable to adopt other basic crafts (such as tanning, leather work, metal work and typography) which are at present practised by the local people.

Outline syllabuses supplying information regarding subjects of study and apportionment of time are attached (*vide* Appendix).

*Apportionment of Time.*

39. We have already stressed the fact that education to-day suffers from an excessive amount of bookwork. The child sits cooped up in the class-room from day to day and from year to year, conning his books and filling his note-books, reading, writing, reciting, listening to the monotonous drone of the teacher's voice, and having his head crammed with as many scraps of knowledge as possible. Instruction within the class-room is altogether divorced from the world without, and the child remains out of touch with the practical realities of life, the shadows of which he so assiduously or listlessly pursues in his books. The dull monotony of desk-work seldom rouses the living interest or the intellectual curiosity of the child. Sedentary work, continued over a long period of time, has a disastrous effect on his physique, and passive absorption of knowledge, needing little active effort on his part, kills all originality and spontaneity and cripples him, mind and soul. He is rarely called upon to tackle a living practical problem nor is he ever required to exercise his will in grappling with a practical difficulty. No wonder that after years of schooling of this kind, he grows up into an ill-balanced personality, unpractical, weak-willed, in no way fitted for the struggle that awaits him in life.

To remedy this state of affairs the Zakir Hussain Committee's recommendation is that some "Basic craft" be selected around which all school work could be centred. This would be possible to some extent with "crafts" that are really "basic", broad and fundamental, "rich in educational possibilities" and touching the life of the child and the community at all points.

What is needed is that all school education should be related to the life and environment of the child and to the life of the community.

The provision of hand-work or craft-work will not, however, solve the problem of making education practical if it means only the addition of one more subject to the already over-crowded curriculum. To every school subject there is a practical side and it is this that we want to see emphasised in our schools. Map-study and field-work in Geography, school-gardening and field-observation in Nature Study, laboratory work in Science—to mention only a few items—must find a place on the time-table.

Besides, there are other activities such as singing and games, which have also to be provided for.

All this practical work including craft work should occupy the greater part of the time spent by the child at school. Some formal instruction there has to be and a place for it must be found, but the time devoted to it should be reduced to a minimum.

**We are of opinion that at the primary stage not more than half the school-day should ordinarily be devoted to formal instruction in the class-room.**

### **Secondary Course.**

40. The great defect of the present Secondary School is that it is unduly literary and aims only at preparing candidates for the Matriculation Examination. What is badly needed is the provision of optional or alternative courses designed to provide foundational training to enable boys to proceed to special Vocational Institutions or higher University Courses (literary or vocational) or to prepare them for practical walks of life such as apprenticeships in offices, factories, the fields, etc. The idea is to make education as practical as possible. The question was very carefully discussed in its various aspects and after careful consideration, the Committee has come to the following conclusions :—

**We are of opinion—**

(a) that the Secondary School course should be divided into two groups :—

- (1) General and (2) Science  
and

DIAGRAM SHOWING THE PRESENT SYSTEM OF PRIMARY AND SECONDARY EDUCATION IN THE BOMBAY PRESIDENCY.

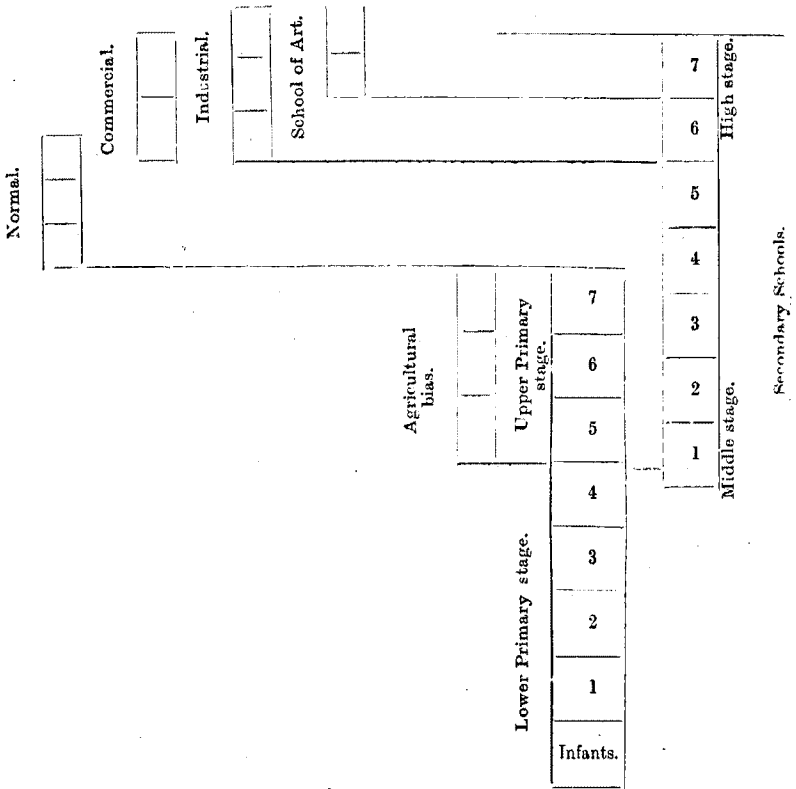
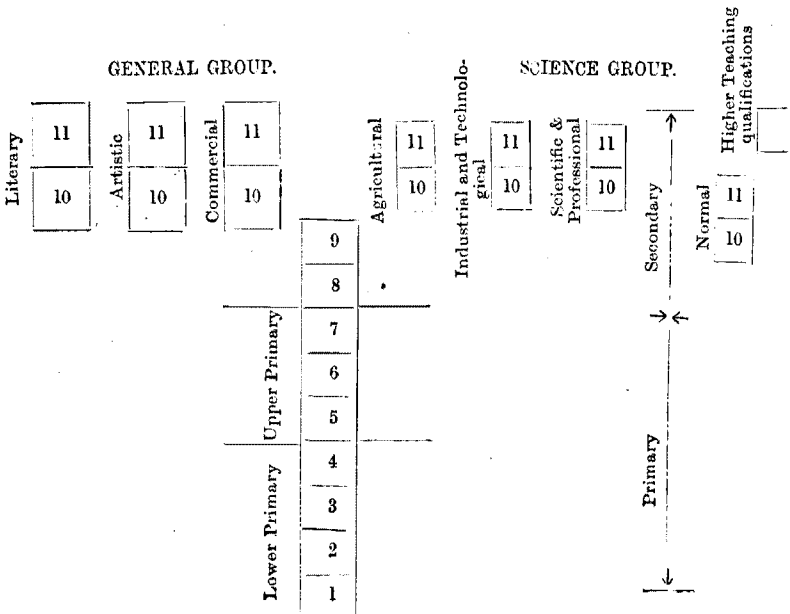
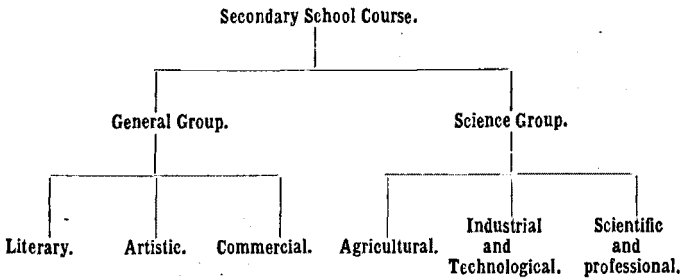


DIAGRAM SHOWING THE PROPOSED SCHEME OF PRIMARY AND SECONDARY EDUCATION IN THE BOMBAY PRESIDENCY.



(b) that the different courses under each head should be as under :—



(c) The four years course should be divided into two stages—

- (1) Standards VIII and IX and
- (2) Standards X and XI.

For Standards VIII and IX the course should be common to all, with the exception of practical work. The standard of instruction reached at the end of our Secondary course is intended to be that of the present Intermediate of the University.

Attached outline syllabuses (*vide* Appendices II to X) will supply information regarding subjects of study, apportionment of time, etc.

41. During the time available it has not become possible for the Committee to frame any more than mere out-line syllabuses.

We recommend that a Special Committee should be constituted to draw up detailed syllabuses

#### *Medium of Instruction.*

42. The Calcutta University Commission exhaustively considered the question of using the mother-tongue as the medium of instruction and came to the conclusion that premature use of a foreign language as a medium of instruction tends to produce an intellectual muddle. Messrs. Abbott and Wood note that the use of a foreign language as medium of instruction is a great handicap from which the system of education in India suffers. The Education Reorganisation Committee of 1927-29 also recommended the use of the mother-tongue as the medium of instruction in all subjects except English.

**We recommend that in Secondary Schools the mother-tongue should be the medium of instruction in all subjects except English and Hindustani.**

#### *Teaching of English.*

43. The question of the teaching of English in our schools received careful consideration. The discussion on the subject revealed wide differences of view.

Some members of the Committee are strongly of the opinion that children should not be burdened with the study of a foreign tongue in the seven years of primary education. There the study of the mother-tongue has to be consolidated and a firm foundation of general education has to be laid. The introduction of a foreign tongue like English complicates matters, over-burdens the child, and takes away time that is needed for more important work. Hindustani and handicrafts which have to be provided for will make in-roads on the time available for formal study. Under these circumstances they are of opinion that the study of English should be confined to the four years of the Secondary School course.

They believe that the *aim of teaching English should be essentially practical*, and that the study of such work-a-day English should not require more than four years.

Majority of the members of the Committee, while agreeing with the recommendation that the aim of teaching English should be essentially practical, are of opinion, that even with this limited aim, four years will not suffice to help children to gain even a working knowledge of English. They contend that even seven years' intensive study of the language to-day has very unsatisfactory results to show. If secondary education is reorganised on the new lines, Hindustani and practical work will materially reduce the time available for other studies. English will thus have a very limited amount of time at its command, and its study will suffer in consequence.

On this issue of the teaching of English, there was a third point of view represented on the Committee, as follows :—

English to-day is the medium of instruction in all University Colleges, and this will continue to be so for some years to come. One function of Secondary Education is to lay a solid foundation for higher education. A good grounding in English is an indispensable requirement for higher study in Colleges constituted as they are to-day. Any lowering of the standard of English in Secondary education will be reflected in the lowering of the standard of University education in general, with its repercussions not only in the field of education but in all fields of national life. So long as English remains the medium of instruction in higher education, so long will it be necessary to begin the study of the language at an earlier stage than is proposed. The predominance of English in our Secondary School system is surely to be deprecated, but the study of English as a second language can be given adequate time without allowing it to become an incubus. Members who advocate this view are further of opinion that selected schools in every district should be encouraged to develop into Vernacular High Schools, equal to that of the present Intermediate standard of the University, and they visualise time when these Vernacular High Schools will lead on to institutions for higher learning and for professional education, in which the medium of instruction will be the mother-tongue. In fact, there is no reason why there should not be two parallel systems of higher education, the existing University of Bombay with its medium



of English, and new Universities with the mother-tongue as the medium of instruction, or perhaps even vernacular branches of the University of Bombay.

These members are of opinion that instead of jeopardising the interests of higher studies by hasty decisions regarding the place of English in Secondary Schools, it might be wiser to leave them alone, except for such modifications as will be required to make education more practical and efficient, and instead of tinkering with an established thing of the past, to work towards the ideal of Secondary and higher education through the mother-tongue by organising or helping to organise the first of a series of Vernacular High Schools in selected central towns all over the Presidency. If private effort is encouraged a great impetus will be given, and by the time these schools are fully organised, the University might be ready with special courses and special examination for them.

After considerable discussions on these various issues bearing on the teaching of English, we are of opinion that though English should not ordinarily be introduced before the first year of the Secondary School Course, i.e., before the commencement of the work of standards VIII. If, in any locality, there is an effective demand for the teaching of English in the higher primary stage and if thoroughly satisfactory arrangements by the appointment of a qualified teacher or teachers for instruction could be made, instruction in the language may be permitted as an optional subject from that stage without any financial obligations on Government. We are also of opinion that the aim of teaching English should be essentially practical.

This will only be a concession, however, and schools availing themselves of this permission will have to do so at their own cost, as a majority of the members are of opinion that there should be no financial obligations on Government for English taught in the upper Primary Classes, if permission given to do so is availed of by any school.

44. There are some members of the Committee, however, who believe that such a regulation is bound to work as a great hardship on poorer schools, and consequently on poorer sections of the people. Schools that serve the needs of the richer classes are not dependent on Government grants. They have enough resources of their own and the withholding of a small part of the Government grant will not prevent them from introducing English in whatever lower class they desire. The poorer schools are, however, wholly dependent on Government aid. They will have to think twice before undertaking anything that means substantial extra expenditure, if no part of it, however small, is to be reimbursed to them in the shape of a Government grant. It might also have a detrimental effect on the teaching of the subject as schools might try to meet the need as cheaply as possible. Thus the very schools, perhaps, that really need a few more years of English will be heavily handicapped, and the regulation will work as a grave discrimination in their disfavour.

We further recommend that some special provision (similar to that made for pupils who at present begin their study of English after passing the Vernacular Final Examination) should be made in the transitional period for those pupils who do not begin their study of English in Standards V-VII.

*Hindustani in Primary Schools.*

45. Under provincial autonomy each Province may tend to be self-contained and it is desirable to have some means of interprovincial communication. Hindustani is well calculated to serve this purpose. It may in due course rise to the position of a *lingua franca*.

In view of the fact that under the reorganised course of Primary education time had to be found for instruction in craft work, some members doubted whether provision for an additional subject like Hindustani could be made in the course. They, however, recognised the need of such provision for some means of inter-provisional communication and proposed that Hindustani should be taught in the 5th and the 6th Standards only. A majority of the Committee, however, decided to include the subject in all the Upper Primary Standards.

In view of the fact that Hindustani is fast becoming the National language of India, it is desirable that the people in the Non-Hindustani Provinces should have a working knowledge of every-day spoken Hindustani. We, therefore, recommend that suitable provision should be made for the teaching of Hindustani in the upper Primary Standards.

*Rural and Urban Areas.*

46. As rural and urban environments are so different it would seem at first sight that the educational systems of these areas should also differ fundamentally. But the rural and urban areas are not quite clearly defined.

Moreover communities which are comparatively backward in education have begun in recent years to take considerable interest in education and their children migrate to urban areas to join Secondary Schools.

We cannot therefore divide rural and urban education in water-tight compartments. The two areas should be linked up educationally.

Some years ago special standards known as rural standards were laid down for Primary Schools in rural areas. They, however, proved a failure. The members of the Committee agree and reiterate the view of the Educational Reorganisation Committee of 1927-29 that the subjects and standards of general education should be the same for all boys whether residing in rural or urban areas.

This does not mean that the teaching should be exactly the same. The subjects should be treated differently in accordance with the environment of the children.

**We are of opinion that no fundamental differentiation should be made in the courses of urban and rural schools but that the teaching should relate to the environment of the pupil.**

## CHAPTER VI.

## OTHER TOPICS.

*Nature of Central Schools.*

47. The Central Schools, which it is proposed to organize to try the new experiment, are essentially schools of General Education. These schools will be places of work, experimentation and not of passive absorption of information. They are not intended to create craftsmen. They only use craft as a basis for sound general education and only such crafts are to be selected as have definite educative possibilities. What these Central Schools are expected to do is to take pupils out of the four walls of their class-room and away from their books. They will create in their pupils a new attitude of life. They will teach the pupils to work with their hands in workshops or farms. Some of the agricultural bias schools failed because the real work on farms was occasionally got done by hired labourers. The new schools are not vocational because their direct aim is not to prepare farmers, weavers or craftsmen but to impart general education through agriculture, weaving or other suitable craft. If in the process of doing so the schools succeed in creating new attitudes and turning out efficient farmers, weavers or craftsmen, that is certainly a consummation devoutly to be wished. The reorganized schools are fully to retain the cultural aspect of education and the question as to whether they should be pre-vocational or vocational should not arise.

**We are of opinion that Central Schools should essentially be schools of general education. They should be labelled neither vocational nor pre-vocational.**

*Shift System.*

48. The diffusion of education among the masses is most urgent and it is highly desirable that Government should take prompt measures to tackle the problem. The task is very formidable, especially in view of the heavy cost involved. As pointed out in Chapter IV above, the total cost of providing schooling for all children of school-going age will approximately go upto not less than three crores of rupees. It will of course be some time before the required amount could be found. In the circumstances it is necessary to examine the possibility of securing expansion of education without much extra cost.

The adoption of the Shift System is calculated to provide such a possibility, each pupil receiving instruction for half the school day. Under this system half the pupils attend school in the morning and the remainder in the afternoon, the same teachers attending both sessions and the same accommodation being used. In this way provision for the education of about double the number of pupils could be made without much extra cost.

In the rules of the Primary Education Act of 1923, the use of this system has been recommended. Some Local Authorities have tried the system in their desperate efforts to cope with the increasing number of children in primary schools and have been able to provide for the education of many more children without extra cost. Under the shift system the quality of instruction may not be high enough. In the existing circumstances, however, it is no use aiming at high quality particularly in the matter of spread of education among masses.

**We recommend that Local Authorities and Managements of approved schools be permitted, if they so desire, to introduce the shift system and other forms of part-time instruction in their schools with a view to accelerating the spread of education among the masses.**

#### *Continuation Classes.*

49. Although seven years' Basic Course is the goal aimed at, it will be several years before it is reached. In the circumstances, it seems both desirable and necessary to provide continuation courses for those pupils who desire to continue their education after taking full benefit of the schooling provided in the locality. To keep down cost as far as possible such arrangements may, to start with, be made in places where the number of children is sufficient.

**We recommend that provision should be made at suitable centres for continuation courses for the benefit of children who may leave school before completing the full Primary Course.**

#### *Village Libraries.*

50. It is now generally recognised that for want of suitable books for reading children who have completed their village school course often relapse into illiteracy.

Special efforts are, therefore, necessary for the retention of literacy attained. It is very desirable in the interest of maintenance of literacy that Government should launch a long-range programme of village libraries. It is advisable in the first instance to begin with those villages which have schools. The Library should be located in the school-building and the teacher should be in charge of it. Such a step would go a long way in developing rural schools into active rural community centres. What is wanted is suitable reading material in good type which will interest the villagers. It will be one of the functions of the proposed Publication Bureau to arrange for the preparation and publication of suitable literature for village libraries.

**We are of opinion that libraries specially meant for the benefit of pupils who cannot continue their school courses beyond Standard IV should be organised in villages beginning with those having schools.**

*English-teaching Schools.*

51. Communities whose mother-tongue is not one of the recognized languages of the Province are permitted to teach English from the lowest class of the primary school. There is no objection to this concession being continued provided that provision for instruction in one of the Provincial languages or in Hindustani is made in the schools meant for such communities. As a result of such provision the pupils of these schools should be able to cultivate closer relations with children of other communities—a result certainly worth aiming at.

The designation "English Teaching School" is obviously not scientific and the schools should be called either primary or secondary according to the stage of instruction provided.

**We recommend that English-teaching Schools that are permitted to teach English from the initial stage (as the mother tongue of the pupils is not one of the recognised languages of the Province) may continue to do so as at present provided that the schools arrange for regular instruction in one of the recognised languages of the Province and/or in Hindustani.**

*Purposeful Activities.*

52. We have recommended that children should be educated through purposeful creative activities. We use the word "*purposeful*" deliberately, as we believe that all activities of the child should be purposeful, i.e., full of meaning for him. Activities that lead nowhere nor satisfy the inner urge, practical work that has no practical end in view and is not concerned with results, will never call forth the best that is in the child. Stringing beads to unstring them a few minutes later will have no appeal, whereas stringing beads with the object of wearing a bead necklace for the rest of the day will give the needful zest to the child's work. Planting seeds to dig them up every other day to see how they are growing will generate a sense of unreality which cannot but mar the best scheme of practical education.

A great deal of the practical work done in our schools to-day is rendered futile because of this want of purpose behind it, and we take this opportunity to express our condemnation of the mass of crude, inartistic, useless lumber that is being produced in the name of educational hand-work. Handicraft exhibitions are crowded with fancy articles of this kind, which serve little educational purpose and represent so much waste of time, energy, material and money. Instead of making a crude, elaborately embroidered photo-frame, the child will be more usefully and pleasurably employed in ornamenting a handkerchief with a tiny spray of flowers, and instead of perpetrating an atrocity in the shape of a cardboard model of a palace, the child will find more happiness and get more value from the making of a serviceable card-board case to hold his pencils.

We believe that the hand-work done in schools should be simple and artistic and at the same time should have an utilitarian end in view. It should be related to life and to the simple needs and interests of the child. We want our children to realise how beauty and simplicity, art and utility can go hand in hand together, and would therefore urge that **the articles that are produced by school children under the new scheme of education should have as far as possible useable and/or marketable value.**

This should not, however, be understood to imply that education should be made to pay its way by means of the "productive work" done in schools. If the economic aspect is unduly stressed at the sacrifice of the cultural and educational objectives, teachers may devote most of their attention to extracting the maximum amount of labour from children to the sacrifice of the cultural and educational objectives, as noted in the Zakir Hussain Committee's Report.

## CHAPTER VII.

## GIRLS' EDUCATION.

53. With regard to girls' education, there are two sharply divided schools of thought. A large section of the public believes that as a majority of girls will eventually find their work in the home, and as education is supposed to prepare for life, girls should receive such education as will prepare them for the work that awaits them in the future. These people are of opinion that some school subjects are unnecessary or unsuitable and others too difficult for girls and hence should be dropped from the course of studies for girls so as to make it easier, and that it should be adopted to the needs of girls by the introduction of house-crafts and domestic science.

The other school of thought believes in equality of opportunity for all, and in an uniform intellectual standard for both men and women. Women are to-day expected to take part in all aspects of public life and to work side by side with men in all fields of work, and are already beginning to do so in ever growing numbers. Woman has also to be enabled to stand on her own legs and so to attain economic independence.

One great objection to the present system of educating girls, which is substantially the same as that for boys, is that it unfits a girl for life in the home and makes her an incapable house-wife. But this is, in reality, a charge against education in general. If education to-day turns out girls who prove incapable in the home, it is not because they receive the same education as boys, but because they receive a bookish education which is utterly divorced from all practical realities of life.

If a real practical bent is given to education, we shall have boys and girls, trained in mind and hand and eye, capable of fitting into any walk of life and making a success of whatsoever work they are called upon to do.

**The Committee is therefore of opinion that there should be no fundamental differentiation in the courses for boys and girls.**

Even in the selection of practical work for girls, no special difference need be made except as regards work of a heavy and arduous nature. We would not confine our girls to needlecraft, cookery and laundry but would give them really active work which entails the use of many muscles and of hand, eye and brain, and serves to develop a well-balanced personality. We would have our girls quite as familiar with the hammer and the chisel as with the scissors and the needle.

Just as the aim of education in general is not to produce so many carpenters or tailors or lock-smiths, but so to educate our children as to enable them to become better carpenters, better doctors, better agriculturists, or whatever they choose; so also in the case of girls, we aim, not at turning them into cooks, laundresses, and homewives, but at

helping them to turn out capable women who can be better cooks or better teachers or better mothers or whatever they choose to be. A course of well-planned practical work will create in the girl the right attitude towards work in general. This will go far towards removing the growing distaste for manual labour, and will make the girl more capable of tackling household problems with intelligence and originality.

**In connection with the general recommendation that there should be no differentiation between the education for boys and girls we would further recommend that if the present Vernacular Final Examinations are to be retained, the standard for girls should be the same as that for boys.**

*More training facilities for Women Teachers.*

54. We are in entire agreement with the view that the education of small children should be entrusted to women teachers who are better fitted by nature for this task. Messrs. Abbott and Wood rightly stress this point at the very beginning of their report, as a problem needing immediate attention. They are of opinion that "until a system of infant classes staffed by trained women is established in India education will remain unsound at its very foundations". There is no educationalist who will not re-echo this emphatically.

We see the need of this urgent reform but are aware at the same time of the many difficulties that stand in the way. One very important difficulty is the paucity of women teachers in the country. This is not always due to a dearth of candidates for training. The number of women coming forward is on the increase, but many a young candidate is turned down because of the limited number of places in the existing training colleges and the limited number of training colleges. **We are therefore of opinion that early provision should be made for more training institutions and for an increase in the number of places in the existing training colleges with a view to securing more trained women teachers for lower classes of primary schools.**

In order to facilitate the carrying out of this much-needed reform in elementary education we further recommend that boys and girls be taught together in the lower classes of primary schools. Apart from the educational value of co-education, this measure will make it easier to put the education of little boys into the hands of women teachers.

It will further be necessary to see that in rural areas and in out-of-way places life is made easier for women teachers, many of whom to-day experience hardships in an atmosphere of prejudice, if not of open hostility.

*Preference to Girls' Education.*

55. The urgency of giving a very prominent place to girls' education in India is now recognised everywhere. The Hartog Committee, for example, wrote, "the importance of the education of girls and women



in India at the present moment cannot be overrated. It affects vitally the range and efficiency of all education. The education of the girl is the education of the mother, and through her of her children. The middle and high classes of India have long suffered from the dualism of an educated manhood and an ignorant womanhood—a dualism that lowers the whole level of the home and domestic life and has its reaction on personal and national character”. So far as Bombay is concerned we are glad to note that in the field of Primary Education the increase in the number of girls attending primary schools in the quinquennium 1932-37 was 26 per cent. as against 10 per cent. for boys. And yet not even one out of every four girls of school-going age is under instruction. Every measure calculated to advance the spread of education amongst girls must be carefully fostered even at some extra cost. Co-education in the lower Primary Stage must be encouraged and efforts must be made to bring more girls in the existing schools for boys. For although the appointment of women teachers in these standards even in boys' school is a great necessity, it is of utmost importance to push the expansion of girls' education in spite of the lack of women teachers in sufficient numbers.

**We are, therefore, of opinion that special impetus should be given to the spread of education among girls and that in every scheme of compulsory education preference should be given to girls.**

## CHAPTER VIII.

## TEACHERS.

*Normal Schools for Basic Course.*

56. The Zakir Hussain Committee rightly observe that the proper training of teachers is the most important condition for the success of the scheme of Basic Education. The present Vernacular Final standard is regarded as very low. Candidates with a Vernacular Final Certificate are generally narrow in their outlook, have little power of independent thinking and are specially weak in their own mother-tongue. What is essential is that Training Institutions should have far better material to work upon.

A majority of the candidates of the present training institutions obtain the benefit of only one year's training. The number of places in the second year has recently been increased and a provision for a third year course has also been made. The net output of the second and the third year classes is, however, very limited. The feeling is that primary teachers are deteriorating and the general position is very unsatisfactory.

One of the defects of the present arrangement of training teachers for primary schools is that the candidates admitted to these institutions suffer from a sense of inferiority complex. It is desirable that one type of the Secondary School should serve as a normal school where our future primary teachers should receive sound general education as well as professional training. The first two years' course of this Normal School should be the same as in other types of Secondary Schools. English may or may not be taught. There is no reason why an experiment in a purely vernacular type of a Secondary School should not be made at any rate for some rural areas. In the last two years of the Normal School professional training will be added on to general education. Pupils will receive training in principles of education, class management, school organisation and also in practice lessons. It is essential that the normal schools should be residential institutions where pupils live a vigorous social life in a spirit of perfect co-operation. The ideology of the scheme of Basic Education should be thoroughly inculcated on their minds so that they should always endeavour to ensure that their school is a national co-operative community, the members of which are fired by a spirit of hard work, social service and common good.

Admissions should ordinarily be made direct by special entrance tests. When the output of the full seven years' Basic course becomes available for admission to these Normal Schools, the persons trained in them for work in reorganised primary schools would be far better equipped with general knowledge than even the present Matriculates.

To ensure success for the scheme of Basic Education, it is necessary that all teachers should be trained. To secure larger supply of trained teachers it is desirable that there should be at least one normal school for each district. The number of these normal schools may be increased further

according to requirements. Aided Secondary Schools that desire to be converted into Normal Schools or to add such departments may be encouraged to do so.

**We are of opinion that for the success of the scheme of Basic Education it is essential that provision for a four years' normal course (on a par with the Secondary School Course) for the training of teachers of Basic Schools should be made and that at least one such normal school should be maintained for each district.**

#### *Courses of Higher Training.*

57. It is necessary to make provision for advanced training particularly for the teachers of schools teaching the full basic course, as also, for Supervisors who are to guide the work of teachers. Provision is also necessary for refresher courses particularly for the benefit of teachers already working in schools. It is desirable to start special training institutions for this purpose for each Division with up-to-date modern appliances so far as possible.

**We are of opinion that special Training Institutions for the training of teachers of Central Schools and supervisors should be organised in all educational divisions and arrangements should be made in these institutions for vacation or Refresher Courses for teachers already in service and also for the systematic use of the Cinema, Radio, Museums, etc., as definite aids to work in schools.**

#### *Teachers for Secondary Schools.*

58. The present teachers in Secondary Schools are ordinarily qualified to give instruction in the literary type of education only. Some of them will have their place in our proposed scheme of secondary education. But it will be necessary to appoint new teachers with special qualifications in the new type of Secondary Schools. We are providing substantial practical work in practically all types of Secondary Schools throughout four years. We are also providing courses in Agriculture, Commerce, Industry and Technology and art-crafts in the last two years of the Secondary School. Teachers, with special qualifications and some vocational experience will be necessary for these new schools.

We propose elsewhere that an Advisory Board of Education should be instituted to advise Government on matters of educational policy and practice. We have also suggested that the Advisory Board should appoint sub-committees for (1) General Education and (2) pre-vocational training with powers to co-opt experts.

It would be possible for a Sub-Committee of this Board to advise Government as well as managements of recognised Secondary Schools in regard to the selection of the special teachers required for the reorganised Secondary Schools.

**We are, therefore, of opinion that, to start with, teachers of requisite qualifications for vocational work should be selected so far as possible from among teachers who have worked or are working in Vocational**

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**Institutions of good standing and established reputation in consultation with a Board of Experts.**

**We are further of opinion that the Department of Education should arrange for the periodical inspection of vocational work in Secondary Schools in consultation with the Board of Experts.**

The above arrangements are meant to be only provisional. To make permanent arrangements for the recruitment and training of Secondary teachers, it will be necessary to revise the system of the training of Secondary teachers. **We suggest that Government should appoint a special committee to draft detailed syllabuses for the different types of Secondary Schools proposed by us and propose suitable provision for the vocational as well as general training of Secondary Teachers.**

## CHAPTER IX.

## SPECIAL VOCATIONAL EDUCATION.

*Information on Careers.*

59. Although it is not the function of education to answer the embarrassing question, "Is there a job at all?" we are constrained to say, however, that at the very root of all reforms in education lies the baffling problem of how to assist pupils on the conclusion of their studies to select or find an occupation suited to their needs, aptitudes and abilities in the complex economic structure of the society. If the transition from schools to occupational life is to be a smooth and orderly process, we consider that it is essential that there should be some provision for the collection and dissemination of authoritative information on careers and occupations to which the perplexed parents, teachers and the pupils would have access for their guidance and decision in the matter.

**We recommend that Government should publish pamphlets giving information about careers for pupils and also about the preliminary education needed for such careers.**

*Part-time or continuation education.*

60. We realise that the majority of the elementary school leavers will be compelled by the force of circumstances to seek employment in the shop, the farm, the counting house, the factory, the studio, the office and the like. It is highly questionable if immature boys and girls at the tender age of 14 to 16 are sufficiently equipped educationally for the needs and requirements of the complex modern age. We recommend, therefore, that for their benefit there should be provision of part-time education, preferably on the lines of what is known as day continuation schools wherever practicable. While the courses of studies offered in these continuation schools will necessarily be related to vocational subjects, there is however no reason why they should not also embrace education for citizenship, health, culture, human relationships, refinement, the use of leisure time and so on whenever the organization of such courses is feasible.

**We are of opinion that part-time classes for continuation or vocational education of those who cannot avail themselves of education in day or full-time schools should be organised as suggested in the Abbott-Wood Report, wherever there is a demand for them.**

*Separate Vocational Institutions.*

61. According to the terms of reference to our Committee we were called upon to consider the problem of giving a definite practical turn to the ordinary primary and secondary education. We have kept steadily this aim in view in making all our recommendations. We are, however, conscious that a complementary system of specialised vocational

education is necessary particularly for the benefit of those who have to leave schools at the end of the Primary and Secondary Stages or in the middle of the Secondary Stage.

We are indebted to the Director of Industries for a comprehensive account of the existing provision of technical, trade and other forms of industrial education and training in this Province, its defects and shortcomings, and what he considers to be the minimum requirements for its reorganisation and expansion. We record our appreciation of the note in which he has placed his views before Government on the Abbott-Wood Report on Vocational Education in India.

**In view of the fact that we have put forward a scheme of Primary and Secondary Education with a substantial practical instruction, we feel that it is essential to provide an adequate number of specialised vocational, industrial, trade and technical institutions. We therefore recommend that Government should take steps for the establishment of such institutions.**



## CHAPTER X.

## ADMINISTRATION.

*Examinations and Supervision.*

62. The Zakir Hussain Committee aptly observe that "the system of examinations prevailing in our country has proved a curse to education". Messrs. Abbott and Wood in their report note "it is a common place to say that the High Schools of India are examination-ridden and that teachers and pupils alike are too dependent on text-books." Schools are often busy with weekly, monthly, mid-terminal, terminal, or annual examinations. The evil, however, lies not so much in the number of examinations as in their nature or character and their ultimate effect on pupils, teachers and school work generally. The Director of Public Instruction in his note on the Abbott-Wood Report observes: "Neither the present vernacular course (particularly if a child only reaches Standard IV) nor the High School course on account of the Matriculation syllabus and the tyranny of the Matriculation Examination are in the real sense of the word educative. It is certainly time to minimise so far as possible the evil of examinations." In an organised system of education, external examinations have come to be recognised as a necessary evil. What is, however, desirable and particularly necessary in the present state of education in this country is to do away with the undesirable influence exercised by external examinations on the work in schools and on education generally. The Board of Education, London, in their Hand Book of suggestions to Teachers most aptly observe:—

"It is unwise to introduce outside influences in the shape of external examinations that would almost certainly tend to stereotype methods and curriculum and to cramp the initiative of the teachers and the independent development of the School."

The undesirable influence of external examinations on our schools is distinctly noticeable and the sooner it is done away with the better.

63. An external examination will make it difficult, if not impossible, for the new type of schools to grow freely and spontaneously. The aim of the new schools is to wean the children from mere book-learning as far as possible, but an external examination will drive them back to their books. The new schools would relate general education with the basic crafts as well as with the life and environment of the child. It would be difficult for an external examiner to test attainments of such a general education and its correlation through set question papers. It would also be difficult to conduct an external examination, which will provide for an adequate and correct measurement of the practical work done by the primary school children. On broader educational grounds also it is desirable to discontinue an external examination. An examination should closely approximate to revision. The teacher who teaches is the proper person to revise the portion done and he should be the person to examine the pupils. Every school should maintain a record of the

progress of every pupil in different departments of school-work as well as in extra curricular activities. Promotions of the children should depend on their progress in the school examinations and the standard of their work on farms, in workshops and extra curricular activities. Heads of schools should issue certificates of attendance and attainment on the basis of these records. Pupils seeking admission for the entrance examination of a secondary school or any other institutions should be required to attach copies of the school certificates to their applications.

64. The external examinations that influence the work of the existing primary schools are :—(1) Standard IV Examination, (2) Inspecting Officer's examination and (3) Vernacular Final Examination. A special examination of the pupils of primary Standard IV was considered necessary to ensure the admission to A. V. Standard I of pupils who had satisfactorily completed the work of the elementary stage of instruction. It is difficult to make satisfactory arrangements for the conduct of the examination particularly in the rural areas and it is not now uncommon that in some districts certificates of Standard IV examination are based on the examination held by the school staff. The examination may now be abolished without inconvenience.

Detailed examination of each pupil by the Inspecting Officer is considered to be necessary and important particularly in the case of schools entrusted to the care of untrained teachers. The system is, however, faulty. It weakens the sense of responsibility of teachers and thus does more harm than good to the work of the school and its pupils. It impels teachers to prepare pupils for the annual examination instead of educating them. The Inspecting Officer has very inadequate time to judge properly the progress made by individual pupils in the various subjects of instruction and their different sub-heads and his examination is bound to be far from fair to several pupils, unless he is superhuman. The other drawback of the system is that the teacher often aims at securing good results in the aggregate, instead of attending to the progress of individual pupils entrusted to his care. The maintenance of records of pupils' work should enable the teacher to pay more attention to the progress made by individual pupils. It is desirable generally that this external influence of a detailed examination should be done away with. Under the new scheme all teachers would be specially trained. Till that stage is reached, the present system of detailed examinations by supervisors of existing schools may continue as a temporary measure.

Though the Vernacular Final Examination marks the close of the Primary School stage it is now found to serve little useful purpose. It provides no definite openings except for teacherships of primary schools or for admission to Vernacular Training Colleges. Heads of these Colleges generally look upon the V. F. qualification as very inadequate. An average V. F. man is found to be weak in his own mother tongue, and narrow in outlook and is ill-equipped with general knowledge. Full primary schools are busy preparing pupils for the V. F. Examination often to the neglect of the work of the lower classes. The examination as

noted above serves no useful purpose. It may be abolished without inconvenience. The maintenance of pupils' records and the issue of school-leaving certificates based on them will enable teachers to pay more individual attention and thus to show better work generally. To avoid any sudden change and to prevent any possible dislocation, the examination may continue to be held for the existing primary schools till the plan of reorganisation is fully effected. Admissions to training institutions and to lower grades of the Public Service (if any) should of course be made by entrance tests under the new scheme.

**We recommend that, in view of the present schools being examination-ridden, external examinations should be abolished. Heads of Schools should hold their own examinations, and make promotions after taking into account the record of pupils' attendance, work in the class-room, farm, and workshop and in general extra school activities, as also his performance in school examinations.**

65. If external examinations are abolished special checks must be provided. For the success of the reorganised plan of work, it is necessary that properly qualified and efficient Supervisors trained specially in the work of supervision and administration should be provided. They should be given light charges so that they may visit schools frequently, see that the records of pupils are maintained carefully and systematically and ensure that the objective of Basic Education is being steadily pursued by teachers and the requisite standard of attainment is maintained. The work of the schools should also be judged from time to time by sample achievement tests by the Educational Inspectors and the Directing Officers of the Department of Education.

**We are of opinion that Supervisors of Primary Schools should be specially trained for their work and that each such Supervisor should ordinarily be in charge of about 50-60 Schools with Head Quarters near about the Centre of his tract.**

#### *Matriculation.*

66. As pointed out above, it is generally agreed that the Matriculation Examination dominates the whole Secondary School course and that teachers are busy with preparing pupils for this examination often to the neglect of educating them in the real sense of the term. For the real reform of Secondary Education, it is essential that this external examination should be done away with. People, however, are so long used to the Matriculation Examination that to many the very thought of abolishing it seems quite impracticable. If Head Masters were selected from among tried teachers and in consultation with the Department of Education and if they were given full freedom in the internal management of schools (the Grant-in-Aid Code might suitably provide for these requirements) there should be no need of an external examination like the Matriculation. The removal of the influence of the Matriculation should serve to develop among teachers and through them among pupils

a proper sense of responsibility and consequent higher sense of duty, qualities of very high educational value and essential for real social improvement and national advancement.

In the present system, examinations are given an undue importance and a wrong place. Apart from the unwieldy character of the Matriculation and the difficulty of making satisfactory arrangements for examining the answer papers of over 18,000 candidates, the examination coming at the close of the Secondary School course stands condemned because of the baneful influence it exercises over the whole course. The Matriculation Examination is at present serving two different aims. It is a Secondary School-leaving examination and also an entrance examination for admission to the colleges. Though the University provides for collegiate courses in agriculture, engineering, commerce, medicine, etc., the passage for all these diversified courses is through the common Matriculation examination which cannot test any specialized skill, knowledge or aptitude in candidates to determine their fitness for the different courses. This stereotyped character of the Matriculation affects adversely the character of Secondary Schools, which follow the same course of studies and do the same kind of work. There is no scope for initiative nor for experiment. Though the Province is predominantly agricultural, agriculture has no place in the system of Secondary education. Though our Province stands first in India in industry and commerce our Secondary Schools take no cognizance of that fact.

These are the inevitable results of a system of education, which is not only dominated but also decided by an external examination. It is desirable and necessary that the Matriculation should be abolished. The academic and professional colleges and collegiate institutions should conduct their own entrance examinations under the general supervision and guidance of the University. Such an arrangement will encourage the Secondary Schools to introduce diversified courses leading on to collegiate courses of various types. It may be contended that the entrance tests of Colleges will continue to influence school work. Though this is true to a certain extent the influence will be much less than that exercised by the Matriculation. The specific requirements of professional colleges may, on the other hand, make Secondary education more realistic and practical and give it a more definite aim to pursue.

Moreover this arrangement is best calculated to assign specific responsibility to schools as well as to colleges. Heads of Secondary Schools will then be free to educate children in accordance with courses of instruction which they find to be most beneficial to the children in their charge and colleges will be free to choose material which they consider to be quite fit for collegiate work. Under the present system, Heads of Schools are known to shelve the responsibility for the product of their schools to the influence exercised by the Matriculation and the Heads of Colleges to the material provided by Secondary Schools. Trust begets trust. There is no better training ground for the development

of a true sense of responsibility. It is therefore most desirable that the system of keeping individual records of pupils' attendance and work should be introduced and Heads of Secondary Schools should issue Secondary School Leaving Certificates on the basis of these records.

If special care is taken to secure right type of persons for Head Master-ships of High Schools and if they are given freedom to issue Secondary School Leaving Certificates on the basis of full four years' record of pupils' work such Leaving Certificates should in due course acquire a status of their own.

**We are of opinion that the whole system of Secondary School Education is examination-ridden and recommend that with a view to removing the tyranny of the Matriculation Examination, Heads of Secondary Schools should be permitted to hold their own examinations and to issue Secondary School Leaving Certificates on the basis of full four years' record of pupil's work in the class-room, on the play-field, in the Workshop, in the social and general activities of the school, as also his performance in the school examinations.**

**We recommend that the University be moved to have the present Matriculation Examination replaced by special tests or examinations for entrance to Colleges affiliated to the University with a view to securing right type of students for University Courses, none but those holding the requisite Secondary School Leaving Certificate being considered eligible for admission to the entrance tests of Colleges.**

#### *Modernization of the Matriculation.*

67. It must be noted here that the abolition of the Matriculation may meet with considerable opposition. It may take considerable time to achieve that object. In the meanwhile it is essential that the Matriculation should be mended before it could be ended. We are proposing diversified courses at the Secondary Stage. We understand that Government have also declared their intention to convert some of their Secondary Schools into technical, commercial and agricultural institutes. The Matriculation examination will have, therefore, to be so organised as to provide for these diversified types.

It is also high time that the essay type of questions set at the Matriculation should be discontinued as far as possible and new types of questions which will test reasoning rather than memory be introduced.

We are of opinion that till such time as the University decides to abolish the Matriculation examination, it should be moved to take steps to improve the Matriculation Examination by providing alternative courses of studies and by modernising the examination generally.

#### *Grants to Aided Schools.*

68. For the success of the reorganised Schools it is essential that schools should be staffed with properly qualified and contented teachers.

Aided schools cannot secure such teachers without extra cost. Provision for instruction in craft work or workshop practice will also involve extra liability. Managements of Aided schools will not be able to meet this extra liability without some special aid from Government.

A vast majority of the Secondary Schools are aided schools and this agency has mainly to be relied upon for further expansion of Secondary Education. For the extension of Basic Education to smaller villages more use of the private agency may have to be made hereafter.

**We recommend that the scale of grant to Aided Schools should be revised to enable them to employ qualified teachers on adequate scales of pay with reasonable fixity of tenure and provision for old age and also to enable them to meet the extra cost involved by the provision of practical work in Primary and Secondary Schools.**

#### *Facilities for Experimentation.*

69. One of the common complaints against the present system of Education is its rigidity. Courses of study are prescribed and there are very few departures from the sanctioned curriculum. It is true that the Grant-in-aid Code provides that the courses laid down by Government may be modified with the sanction of the Department of Education. Modifications are, however, rarely effected and the schools continue to work almost along stereotyped lines. This plan of work has had trial for over one hundred years. What is now needed is special encouragement to experimentation. This could be secured if Head Masters had more freedom in arranging curriculum for their schools consistently with the general principles and spirit of the standard course. If on trial, the changes made are found to go beyond the spirit of the standard course the question may be investigated by the Educational Authorities and the school concerned may be called upon to discontinue them.

**We recommend that the curriculum sanctioned by Government should be regarded as standard in which alterations or modifications not inconsistent with the principles and spirit of the sanctioned course may be made to suit local or special conditions after an intimation in writing to the Department of Education before the commencement of the school year.**

#### *Salaries of Teachers.*

70. It is not possible to overemphasize the important nature of the duties that a teacher has to perform and his work in this regard to his country and countrymen can only be described as a public trust. He is charged with the sacred duty of moulding the character and careers of pupils committed to his charge and on the manner in which he carries out his responsibility depends the future of his country. India is in need of good citizens and the younger generations are looking up for guidance. It is the duty of a teacher to so train and educate the pupils committed to his charge that they will in course of time turn out to be not only good servants but also good citizens. He should be a person imbued with a high sense of duty and actuated by high ideals. He is thus an

important public servant and his emoluments should be commensurate with his qualification, the nature and importance of his work and the special responsibilities devolving on him.

**We are of opinion that emoluments of teachers in primary and Secondary Schools should be in accordance with the standard scales of pay that may be laid down for other public servants of similar attainments and responsibilities.**

*A Publication Bureau.*

71. Primary teachers generally and particularly those in charge of village schools are seriously handicapped for want of suitable books for general use or for reference. The plan of Basic Education is new and under it teaching is generally to centre round a suitable craft or productive work.

It is necessary that books on different subjects of instruction should be prepared and published for them. Teachers will of course be expected to make alterations and modifications to suit actual requirements and special needs. Village teachers are isolated and mere advice or suggestions are not very helpful. Proper grounding in the mother tongue is hereafter to be the foundation of all school education. More advanced books for use in Secondary Schools on the different subjects of instruction will also be required.

Interesting and instructive books are also necessary for extra reading in primary and secondary schools and for the dissemination of useful knowledge in villages. If the want is to be supplied satisfactorily and without undue delay it is necessary that Government should take the initiative in the matter. A Publication Bureau for each of the recognised languages of the Province should therefore be constituted. It should consist of not more than five persons interested in education and well versed in the recognised language of the Division. It should be attached to the Training Institution for the higher Training of teachers of Central Schools and Supervisors. The Principal of the Training Institution should serve as ex-officio Secretary of the Bureau.

**We are convinced that for the success of the new scheme it is essential that a Special Publication Bureau should be constituted for the preparation of books and appliances for the use of teachers, as also for village libraries, school children and literate adults.**

*Advisory Board of Education.*

72. Under provincial autonomy provinces may develop on independent lines and it is very desirable that there should be a permanent Advisory Board to keep in touch with educational development in the different Indian Provinces, States and foreign countries to advise the Ministries of Education. It should include official experts and also non-officials eminent in the different walks of life. It should also obtain the co-operation of industrial firms and businessmen in the spread of Vocational Education and to secure co-ordination between the State Utility Services.

We recommend that an Advisory Board of Education composed of official experts in the different branches of Education and non-officials eminent in Educational, Vocational, Business, or Social activities should be constituted. Its function should be :—

- (1) To advise Government on matters of educational policy and practice.
- (2) To collect information about educational activities and experiments in other parts of India as also in foreign countries.
- (3) To issue bulletins disseminating modern ideas in education.
- (4) To suggest ways and means for securing the co-operation of State Utility Services as also of Commercial and Industrial firms particularly in the matter of pre-vocational Training.
- (5) To suggest arrangements for vocational guidance to pupils in Secondary Schools.

The Advisory Board should appoint Sub-Committees for (1) General Education and (2) Pre-Vocational Training with powers to co-opt experts.



## CHAPTER XI.

## TRANSITIONAL STAGE.

*Appointment of Organizing Officer.*

73. The principle of educating children through purposeful creative activities leading on to productive work is new to the people who are long used to only one type of education. As a result, this new conception of education is looked upon generally with considerable misgivings, and, in some cases, with positive hostility. A correct appraisal of the scheme of Basic Education by all concerned is the first condition of success. In order to do this it is essential that educational workers and the public generally should be made to realize the spirit of the whole scheme, the principles underlying it, its aim, and the manner in which it is proposed to train teachers to work the scheme, and to overcome the difficulties attendant on its introduction. Care must be taken to ensure that inspecting officers, teachers, managements of schools, and through them the parents and the public generally, are well posted in all these matters. Extensive propaganda will have to be undertaken before final plans are formulated for the initiation and development of the new scheme. The task, though difficult, is important. It is, therefore, necessary that it should be entrusted to a responsible Educational Officer of Government specially selected for the purpose. He should have the help of a small Advisory Committee and Assistants knowing more than one language of the province and possessing aptitude for propaganda work.

**We are of opinion that a special officer not lower in rank than a Divisional Educational Inspector be appointed immediately to organise all work in connection with the initiation and development of the scheme of Basic Education, that he should act in consultation with a small Advisory Committee specially constituted for the purpose and that he be given the help of necessary Assistants.**

*Areas for trial of the experiment.*

74. The experiment should be tried in selected areas. The area selected should so far as possible be compact and each district should have one such selected area. It should be such that facilities could be secured without much difficulty for suitable school buildings, adequate play fields, and convenient farms with necessary water supply for school garden, Nature Study and Agricultural and outdoor work generally. The object in view is to transform all the schools in the selected areas into the schools of the new type. There should be no rival system of education followed in that area which is likely to compete with the new scheme. Experience gained in developing Agricultural Bias Schools shows that it is not desirable that the school of the present type as well as of the new type should co-exist. In order to ensure the success of the scheme the experiment will have first to be tried on a very limited scale. The number of full primary schools in the area should ordinarily not exceed two or three. This should not make it very difficult for arrangements to be made for the necessary emergency training required for

teachers on whom will fall the work of initiating the scheme of Basic Education in the selected areas. The co-operation of individuals or of properly constituted private bodies who are known to have faith in the scheme of Basic Education may, wherever possible, be secured for the trial of the experiment.

We recommend that compact areas providing necessary facilities be selected in each district to try the experiment of "Basic Education". So far as possible, all schools in such areas should be transformed into schools of the new type, the full primary schools within the areas being organised as Central Schools, i.e. schools teaching the full seven years' Basic Course with arrangements for instruction in two or more productive crafts.

*Emergency Course of Training.*

75. It is the teacher that makes the school. For the success of the experiment of "Basic Education" it is essential, therefore, that the teachers required for work in the selected areas should have undergone a special course of training. For the first year of the experiment, it is necessary that trained teachers, preferably possessing aptitude for some craft or manual work of some kind, should be selected and trained in an emergency course of about six months. The training schools for this emergency course for 1938-39 should preferably be located in rural areas, so that they may keep up village contacts and be trained under conditions, in which they will ordinarily have to carry on the work of teaching. Every such training institution should have a practising school attached to it. The school should be staffed by specially competent teachers and should impart instruction according to the principles of "Basic Education." The chief aim of such a training school should be that the whole school should work as a National Co-operative community, the members of which are fired by a spirit of hard work, social service and common good. If immediate arrangements are made for the emergency course of training, the teachers trained under it should be able to put in some work in the schools of the selected areas with a view to transforming them into schools of the new type before the close of 1938-39.

The Committee is convinced that, for the success of the scheme of Basic Education, it is essential that immediate arrangements for the special training of select trained teachers preferably with aptitude for productive or manual work of some kind should be made separately for each educational division. The emergency course of training, at the start, should be of about six months and the instruction should include among other things :—

- (1) Training in at least two basic crafts.
- (2) Formulation and working of simple projects and schemes of correlated studies.
- (3) Inculcation of ideology of education through productive work, viz., method of learning by doing, relating education to actual life, scope of initiative, sense of social responsibility, spirit of social service for national co-operative community.

- (4) A special course in Physical Training, Drawing and Music.
- (5) A short course in Physiology, Hygiene, Sanitation, Dietetics, Social Studies and Hindustani.
- (6) Teaching of at least 25 lessons in the practising school under proper supervision.

These training schools should be residential institutions where the individual teachers under training have opportunities of receiving training to live a vigorous, social life in an atmosphere of perfect co-operation.

*Supervisors for Experimental Schools.*

76. The whole plan of work is new. The teachers who have undergone merely an emergency course of training will start work in the existing schools in peculiar and, may be, unfavourable circumstances. The teachers will have no previous experience to guide them in the work of the schools of the new type. In the circumstances, it is essential that teachers in each selected area should have the help and guidance of a highly trained supervisor. He should visit the schools frequently, watch and guide the work of teachers as a friend, explain to them how the difficulties they experience might be got over and ensure that the individual records of pupils are kept systematically and carefully and the spirit of the basic course is appreciated by teachers and is steadily followed.

**We recommend that the Supervisors for the experimental schools should be select men and women who should be specially trained to enable them to supervise and guide the work in the reorganised schools in their charge.**

*Programme of Reorganization.*

77. If immediate arrangements are made for the emergency courses of training, the schools in selected areas may be initiated in 1938-39 in the work of the new type. The output of teachers trained in emergency courses may be increased, as necessary, and the experiment may be extended to larger areas in 1939-40. It is desirable that the whole position may be reviewed before the close of 1939-40, and if the results are favourable a programme of transforming all schools into schools of the new type within five years may be drawn up.

**We recommend that the above experiment be tried in the first instance during 1938-39, that if the results are assuring enough the scope of the experiment be extended during the year 1939-40, that the position be reviewed fully before the end of 1939-40, and, that in the light of experience gained, arrangements for complete reorganisation of Primary Education be made within five years.**

## CHAPTER XII.

## COSTS.

78.—*Special Officer's Establishment.*

	Rs.
1. Special Officer of B. E. S. Class I, grade at Rs. 600 per mensem .. .. .	7,200
2. His Travelling Allowance .. .. .	2,000
3. Four Divisional Assistants of B. E. S. II at Rs. 200 ..	9,600
4. Two clerks : one at Rs. 60 and the other at Rs. 40 ..	1,200
5. Six peons at Rs. 18 .. .. .	1,296
6. Contingencies .. .. .	500
7. Stamps .. .. .	500
8. Office rent at Rs. 100 .. .. .	1,200
9. Furniture .. .. .	100

79.—*Training Institution for basic Education in each Educational Division. The cost worked out below is only for one unit.*

1. Principal with B. E. S. Class II grade at Rs. 300 ..	3,600
2. One general assistant with S. E. S. grade Rs. 150 ..	1,800
3. Five teachers for crafts and other subjects at Rs. 100 each per month .. .. .	6,000
4. One Clerk at Rs. 50 per mensem .. .. .	600
5. Two peons at Rs. 18 each .. .. .	432
6. Office contingency .. .. .	300
7. Rents :—	
(a) Training College at Rs. 100 per mensem.	} 3,000
(b) Hostel at Rs. 100.	
(c) Workshop at Rs. 50.	
8. Utensils .. .. .	500
9. Furniture .. .. .	1,000
10. Books and appliances .. .. .	1,000

*(Practising School.)*

11. Four teachers—two at Rs. 40 and two at Rs. 30 per mensem .. .. .	1,680
12. Rent .. .. .	100
13. Contingency .. .. .	50
14. Equipment including furniture .. .. .	500

## (Workshop.)

	Rs.
15. (a) Clay work .. .. .	300
(b) Wood-work—Recurring .. .. .	800
"      "—Non-recurring .. .. .	1,200
(c) Agriculture—Recurring .. .. .	1,250
"      "—Non-recurring .. .. .	2,000
(d) Spinning and Weaving .. .. .	As per Wardha Scheme.
16. Stipends for 80 candidates at Rs. 10 per mensem .. .. .	9,600

80.—*Cost of basic crafts in Central Schools would be the same as that worked out in the case of the practising school attached to the Training College.*

81.—*Publishing Bureau.*

Rs. 10,000 for 1939-40 would be necessary for the preparation and publication of suitable books for teachers and pupils.

*N.B.*—The income to be realised in case of the various basic crafts as worked out in the appendices should be deducted from expenditure under practising school, workshop as well as the central schools.

*N.B.*—The cost is calculated at the present scales of salaries and may be reduced, when the scales are reduced by Government.

82.—*Cost of introducing practical courses in Agriculture, Clay work, Woodwork, Light Engineering, Commerce and Technology in Secondary Schools.*

The Committee have calculated the recurring and non-recurring approximate costs of introducing the various pre-vocational courses in one school as a unit, which, it is hoped, may serve as a basis for converting secondary schools into Institutes of the various types.

1. *Agriculture for High Schools.*

Expenditure per unit .. .. .	..	.. Non-recurring	Rs.	2,000	
Do. .. .. .	..	.. Recurring	..	870	(Expenditure minus receipts).
		1st year.			
Do. .. .. .	..	.. Recurring	..	400	( Do. )
		2nd year.			

2. *Clay work.*

Expenditure per unit .. .. .	..	.. Non-recurring	Rs.	300	
Do. .. .. .	..	.. Recurring	..	60	(Teacher's pay).
		1st year.			
Do. .. .. .	..	.. Recurring	..	Nil,	as the pay of the teachers can be easily covered by the articles prepared.
		2nd year.			

3. *Wood-work.*

Expenditure per unit	..	.. Non-recurring	Rs. 1,600
Do.	..	.. Recurring	„ 800
		1st year.	
Do.	..	.. Recurring	Nil, as the expenditure can be covered by the sale of the articles prepared.
		2nd year.	

4. *Light Engineering.*

Expenditure per unit	..	.. Non-recurring	Rs. 6,895
Do.	..	.. Recurring	„ 3,000
		1st year.	
Do.	..	.. Recurring	„ 1,000
		2nd year.	

5. *Commerce.*

Expenditure per unit	..	.. Non-recurring	Rs. 3,260
Do.	..	.. Recurring	„ 2,650
		1st year.	
Do.	..	.. Recurring	„ 2,650
		2nd year.	

6. *Technology.*

Expenditure per unit	..	.. Non-recurring	Rs. 4,600
Do.	..	.. Recurring	„ 3,100
		1st year.	
Do.	..	.. Recurring	„ 3,100
		2nd year.	

## MINUTES OF DISSENT.

## 1

*Hindustani in Secondary Schools.*

The problem of teaching Hindustani was thoroughly discussed in the Committee. It also revealed difference of opinion. We think that the aim of teaching Hindustani in Secondary Schools is not only the imparting of everyday spoken Hindustani but it has also to serve some of the very important national and cultural purposes. Hindustani is the result of the contact of Hindus and Muslims in the last hundreds of years, and it is the symbol of our cultural unity. This national language is written in two scripts namely Devnagri and Urdu, therefore to have the complete knowledge of language it is necessary that the boys should know both the scripts. We did not stress this aspect of the question at the primary stage, because there any of the scripts would be sufficient to get an elementary knowledge of the language, but in secondary schools the national and cultural aspect of the question can not be ignored any more.

No two communities in any country are so ignorant of each other cultural achievements as the Hindus and Muslims are in India. The Hindus and Muslims know far more about European culture than they know of their neighbours cultural achievements. This has led to ignorance and misunderstanding of each other, which is a greatest impediment in the way of national growth. Though Urdu owes its development both to the efforts of Hindus and Muslims, but most of the literary achievements of Muslims are to be found in this language. The present growth of Hindi also does not owe less to the efforts of Musalmans but it is mainly a depository of Hindu thought and literature. If the boys who know Devnagri script, do not know the Urdu script, they would invariably study Hindi literature and Hindu thought. In the same way boys who know only Urdu script would study only Urdu literature. Hindustani which can be defined as simplified Urdu and Hindi and which is spoken by the bulk of the Hindus and Muslims of Northern India, is even to-day in a very elementary stage. Literary Hindustani does not exist; either it is Persianised Urdu or Sanskritised Hindi. If we have to evolve a common national language out of the common spoken Hindustani of the present day, which would be the vehicle of our national and cultural aspirations and if we would like to create national consciousness in our future generations, through this symbol of our cultural unity, then it is essential that Hindi and Urdu literature should influence each other and this can not be done unless both the scripts are taught to all the boys of the state at least in their secondary stage. The learning of any of the scripts does not require more than the few months at the most. The knowledge of the scripts will open to the boys a vast store house of knowledge of Hindi and Urdu literature, which otherwise remains closed and also leads to the national and cultural unity of India. This point of view has been accepted by the Governments of Bihar and United Province. The Government of India also uses both the scripts for their publications. The Indian National Congress has also adopted both the scripts with the same end in view.

The view was advanced in the Committee that in Bombay Presidency it will not be possible to do that, due to diverse languages and their scripts.

In Bombay Presidency 51 per cent. of the population speak Marathi, which is written in Devnagri script. For these boys it will not be difficult to learn one more script. The Urdu knowing boys of this Presidency even at the present day learn Devnagri script and they do not find it difficult to learn one more script.

We could have understood this difficulty in Gujrat and Karnatak, but even then after careful consideration it does not appear to be great. The boys have after all not to learn these scripts simultaneously. In lower primary stage they would learn the script of their mother-tongue, in upper primary stage they would learn either Devnagri or Urdu script in connection with their Hindustani. Only in secondary stage we expect those boys who know only Devnagri to learn Urdu script and those who know only Urdu to learn Devnagri. We have made Hindustani a compulsory subject in the first two years of our secondary schools. Time for acquainting students with Urdu script and literature and Devnagri script and Hindi literature can be easily found during the hours allotted for the teaching of Hindustani. Besides both the scripts have got their artistic values. The beautiful calligraphy in Urdu script is famous throughout the world and some of the unique manifestations of art are to be found in it.

We are very much afraid that if this suggestion of ours is not accepted the boys would only learn Urdu or Hindi. Both the languages would of course flourish and develop but in different channels without influencing each other. We shall have a developed Hindi and Urdu language, but the idea of a common national language namely Hindustani would remain a dream, perhaps never to be realised. This would lead to so many complications and we shall have to adopt two languages for our national purposes. If we are able to evolve one common language, it is just possible that with goodwill and co-operation we shall also be able to adopt one common script but with our paths different from the very beginning there is no hope for it. We do not know why the Committee should grudge a small amount of time for this purpose. The fear of learning many scripts should not frighten us so much in view of the high national objectives we have to achieve. A small country like Switzerland has got four different languages and as many scripts. Why can we not afford to have two for our national language ?

When the proposal of teaching both the scripts in Secondary Schools was put to vote, five voted in its favour while six opposed it. The remaining remained silent but some of them now approve the proposal and so have signed this minute.

(Signed) ABDUL HAMEED KAZI.

( „ ) S. R. BHISE.

( „ ) K. S. DIKSHIT.

( „ ) D. N. CHAUDHARI.

( „ ) A. KHAN.

Artistically the scripts have great value.

( „ ) C. R. GERRARD.



We are sorry that we cannot agree with the proposed estimate of expenditure in Chapter XII. India is a very poor country and because of that we are trying to make our education self-supporting. We cannot afford to spend big amounts of money on salaries at the top. If new type of education has to be introduced, a new ideology has to be brought into our educational system and administration, which should be in keeping with the economic condition of 90 per cent. of our poor millions of India. The whole of the proposed scheme can be effectively brought into execution in less than half the amount which has been proposed.

We are strongly of opinion that to reduce the expenses and to impart true national spirit in our education, the management of the training institutions for basic national education should be handed over to the different national institutions or workers in this Presidency who should work under the "All India National Educational Board" at Wardha. The Government should support them financially and supervise their activities. If new type of education has to be provided for our future generations which would make them patriotic, self-sacrificing and a model of plain living and high thinking then this noble task should be entrusted to those who are the living examples of these virtues. Education without proper men would never be sound. It is due to the efforts and sacrifices of workers in the cause of national education that we have felt the necessity of overhauling the present system and we are sure only they can impart true national spirit in our educational system.

We can submit a separate estimate of expenditure if required.

(Signed) ABDUL HAMEED KAZI.

( ,, ) D. N. CHAUDHARI.

We are unable to agree with our colleagues regarding the abolition of the matriculation examination. We think, however, that steps should be taken so that only those candidates may take this examination who have definitely decided to join an institution affiliated to the University. The examination should be reformed so that it should be possible for a candidate to take at this examination a number of alternative subjects as proposed for the new type of secondary schools in this report. The standard of the examination should be sufficiently raised to enable the successful candidates to gain admission direct to the various professional and other colleges affiliated to the University.

2. As regards Hindustani, we are in general agreement with the minute of dissent on this subject and feel that for the present both the scripts, namely Devnagri and Urdu, should be taught.

(Signed) P. B. ADVANI.

( „ ) GEO. W. BURLEY.

( „ ) D. C. GUPTA.

( „ ) C. R. GERRARD.

I agree with paragraph 1.

( „ ) REBECCA REUBEN.

It is my considered opinion that Home-Craft—the Art of Home-making and Mother-Craft—should not be included in the list of Basic Crafts for schools. My reasons for this dissent are:—

(1) Though the recommendations of the Committee do not lay down Home-Craft as specifically meant for girls, practically that will be the craft selected as a Basic Craft in the majority of girls' schools and consequently the purpose of the whole scheme will be defeated for girls (if for them Home-Craft is introduced as the Basic Craft).

(2) The considerations underlying the choice of Basic Crafts for boys and girls should be absolutely the same. The utility of any craft lies in its present educative and remunerative—or money—value. Home-Craft does not fulfil these two conditions. It is admitted by several members of the Committee that its educative value and remunerative value is negligible. But that its value lay in the fact that it develops the instincts of womanhood and motherhood and helps to make the home better. This is differentiation in principle and as such is definitely unhealthy.

(3) It is today an accepted principle that children are to be trained with three ends in view—

(a) To be useful citizens.

(b) To earn their own living.

(c) To be efficient fathers or mothers.

The second should not be shelved for the third aim for either girls or boys. For boys there is no such danger, but for girls it is a very real danger. Equal emphasis on all the three aims does not necessarily mean as some people seem to think the advocacy of the woman abandoning the home. The woman should not be forced or compelled to remain in the home by handicaps, but she must be helped to realise the responsibility and the dignity of the home and remain in the home by choice. It does mean that every girl should be equipped with an education which prepares her to earn her own livelihood, if so necessary or if so desired, and also to be a good mother. Home-Craft is clearly suitable for the third aim but is not calculated to touch the second aim.

(4) Home-Craft with all its implications of responsibility is not suitable for girls before 11 or 12.

Women, experienced in education and life consider it unwise to force the growth and instincts of a girl to womanhood and maturity—specially in India. If Home-Craft is to mean only hand work and technique in needle work and such other crafts suitable to the home it is unfair to teach girls one thing under the name of another.

(5) It is unfair to a girl that she should be compelled to make a choice between two aims when both are equally important, i.e. between Home-Craft and another Basic Craft as the values of the two crafts are different.

(6) The art of Home-making is wrongly named a craft. It does require some skill and technique of the hand but it is really a way of life. The attitude towards life and the outlook towards life are far more important than mere mechanical skill. A woman skilled in cooking, home-decoration, nursing, child care and needle-work will be a poor head of the home if she has not the necessary tact, generosity and sympathy, i.e., the Art of Home-making requires sympathy and feeling and intelligence more than technique while in other crafts, say clay work, it is not so. In Home-Craft skill is subsidiary and the general attitude of primary importance.

(7) Home-Craft if it is to be taught for seven or eleven years will have to be strained too much specially for villages.

(8) Some technical skill in Home-Craft is necessary for boys also as it will help to create a sympathetic and understanding attitude towards home work for woman and will diminish the helplessness of man—when the woman is absent. What I would suggest is that in the lower primary standards girls and boys should learn some needle-work, hygiene and cooking. Then during the next three years of the upper primary classes girls should have about  $2\frac{1}{2}$  hours or so per week for Art of Home-making and Mother-Craft. This time may be taken from the Basic Craft time. The remaining time must be given to a real Basic Craft, which has a full educative and remunerative value. About  $2\frac{1}{2}$  hours per week for three years along with general education will be quite sufficient for a complete training in home work and a little elementary Mother-Craft specially if we remember that our Indian girls have enough practice at home though it may be not on scientific lines.

In Secondary Schools girls will have a course in Mother-Craft and Home-making two or three periods a week which they will spare from the craft time. If the foundation during the Upper Primary Stage is sound two or three periods per week for four years will be quite sufficient.

This subject of Home-Craft—Art of Home-making and Mother-Craft—will have a definite syllabus but it may or may not be compulsory and it should not be University Examination Subject.

(Signed) INDUMATI CHIMANLAL.

*An Explanatory Note.*

Whether the system of imparting primary education through some basic craft should be and can be self-supporting are two main points that ought to be faced and answered squarely and definitely.

As we have been educated under the present system where manual work is conspicuous by its absence, we naturally feel uneasy at the idea of a school-child working and earning during school hours. The argument that is usually advanced against this proposal is to the effect that it would be tantamount to taking undue advantage of child-labour at the cost of its intellectual training and development. But to those of us who know that, in the rural areas, children from the age of six upwards, begin to help their families in saving and earning some income, the idea of a school-child earning something by its manual work does not look extraordinary or strange.

Of course the Zakir Hussain Committee have foreseen the obvious danger that in the working of their scheme the economic aspect may be stressed at the sacrifice of the cultural and educational objectives. They have warned the teachers against this danger and asked them not to forget that the intellectual, social and moral implications and possibilities of craft training are of higher importance than the products of the hand-craft. If, however, without jeopardising the main object of education, we find that incidentally the articles produced by the child fetch a price to cover a portion of the running expenses of the school, we should welcome such an eventuality.

In the opinion of experts, a child that learns through doing, learns much more quickly than one that learns its lessons under the present system. The intellectual equipment of the former will be equal if not superior to that of the latter. We need not entertain any fears on this head.

The Zakir Hussain Committee are stressing this point on other grounds also. At page 14 of the report they say :—“ Apart from its financial implications, we are of opinion that a measurable check will be useful in ensuring thoroughness and efficiency in teaching and in the work of the students. Without some such check, there is great danger of work becoming slack and losing all educative value. This is only too obvious from the experience of educationists who from time to time have introduced ‘ Manual training ’ or other ‘ Practical activities ’ in their school.”

Moreover when we want to make education compulsory and universal in a poor country like ours, we need not be afraid of the work “ child-labour ” if the work of the children adds to the income of the school without affecting their health and intellect.

The reasons mentioned above lead us to believe that it would be practicable and beneficial for the child if it earns while it learns, though the earning be ever so small. Whether the system would be completely or partially self-supporting is a different matter. Admitting that the earnings of the children will cover only a part of expenditure on their

education, we cannot ignore that aspect of the Wardha scheme which counts on the earnings of the children contributing at least partly towards the salaries of the teachers.

Though the committee discussed this subject in detail, it has not been able to express any definite opinion on this aspect and consequently we have been constrained to add this note to explain our view point on the subject.

The experiment suggested by the Zakir Hussain Committee is a new one, yet we think it deserves to be given a bold trial. We therefore recommend that Government as well as private institutions should be allowed and encouraged to try this experiment without any hindrance from the stereotyped syllabuses and curricula.

The time given to manual work in the secondary education is comparatively much shorter than in the primary course. Yet even there, we recommend that the above aspect should be kept in view so that the work done by the students should not be aimless.

(Signed) H. S. KAUIJALGI.

( „ ) D. N. CHAUDHARI.

( „ ) ABDUL HAMEED KAZI.

( „ ) D. R. VAIDYA.

( „ ) K. S. DIKSHIT.

( „ ) INDUMATI CHIMANLAL.

( „ ) S. R. BRISE.

*A Note by Miss R. Reuben and Messrs. Ghate, Bhise and Khan.*

It is our painful duty to record some of our differences with our colleagues on issues which we consider to be fundamental.

We shall first state categorically those differences and then give reasons in our support.

1. We are not in favour of reducing the length of the Secondary School course to four years. We think that that course should be of seven years as at present.

2. We think that the scheme of educating children through "basic" craft should be confined to the rural areas.

3. We propose that the experiment on the lines proposed by our Committee should be tried, among other schools, in the agricultural bias rural primary schools.

4. We are not in favour of maintaining separate training institutions for the training of teachers for Basic Education as a permanent arrangement.

5. We, further, propose that the draft syllabuses for primary schools prepared by the Director of Public Instruction should be introduced in primary schools after necessary modifications.

1. The Secondary School in the Province of Bombay represents a *type*, rather than a *stage* in the educational system. It admits children at about the age of 11, which is now universally admitted to be the age at which children at the primary stage should be diverted. The proposal of our colleagues to cut off the first three standards from the secondary school is not supported on any educational grounds and is contrary to our traditions. The proposal, if brought into effect, is bound to create considerable administrative difficulties including revision and reduction of grants and cause hardships to the managements of secondary schools. The primary school in towns and cities is generally a feeder school and teaches, in most cases, only four standards. Managements of Municipal primary schools will have to provide for a number of classes for the three additional standards. It is doubtful whether they will find adequate funds, accommodation and equipment to take up these new responsibilities. The proposal will, moreover, lead to children in towns and cities being taught for three years by primary teachers, instead of being taught as at present by graduates including an increasing number of trained graduates. As persons conversant with conditions in secondary schools, we do not for a moment believe that these schools are what they ought to be. But we must say that in the face of inadequate grants and low fee receipts, a great many secondary schools are honestly endeavouring to effect improvements and we cannot subscribe to a proposal which would hamper their progress. We of course fully

agree with our colleagues that there should be provision of optional courses at the secondary stage generally on the lines of the plan proposed by our Committee.

2. A seven standard primary school teaching through the mother-tongue is necessarily a rural school in our Province. Education on the proposed new lines might first be tried in these rural first grade schools where conditions are peculiarly favourable for an experiment of this character. Shriyut Aryanayakam, a member of the Zakir Hussain Committee and the Secretary of the New All-India Education Board, who discussed the Wardha Scheme with our Committee, definitely told the Committee that the scheme prepared by the Zakir Hussain Committee was in the interest of mass education and was intended only for rural areas. As the primary school in the urban areas as explained above, is generally only a 4 standard school, we think it would be advisable to restrict the operation of the scheme to villages. We would, however, urge that urban primary schools should be greatly improved and should provide a variety of activities instead of formal instruction.

3. In the course of our discussion in the Committee on craft-work and the productive nature of manual training, several speakers referred to the Agricultural Bias rural primary schools, which have anticipated many special features of the Wardha Scheme. It is, for example, a seven standard school teaching through the mother-tongue. It provides substantial practical work in agriculture as well as subsidiary occupations like spinning, weaving, carpentry and smithy. Where the agricultural teacher is painstaking and keen, this school has realised substantial income. With a few modifications and a more definite plan of correlation, the agricultural bias school can be immediately taken up in hand to introduce the proposed experiment. Our Committee, however, do not mention these schools, while making proposals for the transitional stage. We suggest that a beginning should be made, among other schools, with the agricultural bias schools. It would perhaps be necessary to give a short intensive training to the teachers from these schools.

4. Our Committee have proposed a permanent arrangement of special training institutions for teachers of Basic Education. We do not agree. We think that special provision for training of selected teachers may be made at the initial stage, but when the experiment is fairly successful, the present Training College syllabuses should be revised and the training institutions reconstituted.

5. The draft syllabuses for primary schools prepared by the Director of Public Instruction are highly satisfactory. They were introduced, as an experiment, in certain Practising Schools attached to Training Colleges and were found to be practicable and useful. It may be noted that they provide substantial practical work in the various subjects. We, therefore, propose that these syllabuses should be introduced in primary schools with necessary modifications in the light of our Committee's recommendations.



6. A Special Organising Officer is perhaps a necessity but we do not think four divisional assistants proposed by our Committee are necessary. After the Primary Education Act is amended the Administrative and Inspecting Officers will be Government men. It would be their duty to help the Special Officer and carry out his proposals.

(Signed) R. REUBEN.

( „ ) V. D. GHATE.

( „ ) S. R. BHISE.

( „ ) A. KHAN.

*Minute of Dissent by Mr. B. P. Thakor, B.A., S.T.C., M.L.A.*

I do not share the view that the importance of English in the school curriculum has been over-emphasised and that the general education of the pupils has suffered in consequence. It was so when the medium of instruction in Secondary Schools was English but with the introduction of the mother-tongue as the medium of instruction signs are not wanting to show that the general education of pupils has improved. It is no doubt true that the teaching of English takes up nearly 30 per cent. of the total time spent at schools in preparing the prescribed subjects but this is inevitable so long as the medium of instruction in all University Colleges is English. Even with this study of seven years we hear complaints from the heads of Colleges that a large number of students are unable to follow their lectures in the class room. It is absurd to believe that students will be able to learn even work-a-day English in four years. If we want to teach English we shall have to devote more time to it. Even when we accept that the aim of teaching English should be essentially practical, I am of opinion that the object will not be achieved by teaching it for four years only.

As regards examinations I do not accept the sweeping condemnation of the University Matriculation Examination. I admit that it is an examination which needs considerable modification as regards its conduct and curriculum but it gives the public an idea of the general knowledge that a student who passes the examination has acquired at the end of his school career. One such external examination at the end of the school course if rightly conducted by persons who have actually taught these subjects and not by College Professors is in my opinion necessary to have a uniform standard. Certificates issued by schools at the end of the school course will not command that confidence which a Matriculation certificate does. I think it will not be out of place if I cite the instance of the Internal Examination of the F.Y.A. classes which are at present conducted by College Professors themselves. The results of this examination vary between 40 per cent. and 90 per cent. in different colleges. With the introduction of the mother-tongue as the medium of instruction in Secondary Schools the time has come when the school-leaving or Matriculation examination can be split up according to different languages and the huge number of more than 18,000 appearing at one examination can very well be divided into satisfactorily workable groups. The efforts of Government to substitute the School Final Examination for the University Matriculation in the past have miserably failed. Mere condemnation of the Matriculation Examination would not serve any useful purpose but in my opinion the right course to adopt is for the Government and the University to work in co-operation to mend the present Matriculation Examination.

*Minute of Dissent by Miss R. Reuben.*

Though the Committee have no specific recommendation to the effect that all education should be through a "basic craft", their adoption of the term "basic craft" and the implications of some of their recommendations point to a tacit acceptance of the principle. I regret very much that I have to record my dissent on the point.

I am entirely with my colleagues when they recommend—

(a) That the child should be educated through purposeful creative activities ;

(b) That education should be less bookish and more practical ;

(c) That the child should do as much hand-work and craft-work as possible so that hand and eye and mind are trained ;

(d) And that the articles produced by children should be simple, artistic and serviceable, such as can be used by them and their friends in and out of school ; or such as might have a marketable value.

For reasons detailed below, however, I cannot accept the idea of a "basic craft" which implies that a selected craft is to be the basis of all education.

(1) There is no craft so broad and comprehensive that all school work can be centred round it. Some school subjects cannot be so correlated : correlation in others will be highly artificial. Important aspects of school subjects might find no place at all if they have to depend on correlation with the "basic craft". The teaching of general school subjects will thus be very scrappy and unsystematic and school education is bound to suffer under such a scheme. General educational experience all over the world supports the contention that correlation of school subjects should be incidental, and that it should not be the dominating factor in any scheme of education.

(2) Even if it is possible to correlate all school subjects and school activities to the "basic craft" it will need very good teachers to work out the scheme satisfactorily. The present generation of teachers as a whole, with limited knowledge and limited outlook, cannot be expected to make a success of the scheme, and it is surely not contemplated to scrap the whole lot of them as soon as the new scheme is inaugurated. Nor is there any guarantee that teachers trained on new lines will be much better fitted to implement the new scheme. It is not a safe policy to generalise from special cases, and it would be disastrous to base our scheme of education on the belief that all teachers ought to be able to do what one or two gifted enthusiasts have shown themselves capable of doing. We cannot expect from the ordinary village teacher what Gandhiji could achieve at Tolstoy Farm.

(3) A practical education means much more than learning a craft and learning a few subjects in relation to that craft. Every school

subject has its practical aspect, irrespective of whether it can or cannot be correlated to a craft. Undue stress on "basic crafts" might lead to a belief in them as the be-all and end-all of practical education and so defeat the purpose of sound educational reform.

(4) Craft-work in schools is not meant to produce carpenters or weavers or tanners, but is a cultural subject providing training for hand, eye and mind. Education through a "basic craft", on the other hand, has been described as "a kind of insurance against unemployment". The pupil is expected "to attain such reasonable skill in the handicraft chosen as would enable him to pursue it as an occupation after finishing the full primary course of seven years". Training of specific skills in particular crafts is of very little educational value and a too early stress on the "vocational" side might result in stunted intellectual growth and a limited outlook on life.

(5) A "basic craft" necessarily means one craft or at most two. This might lead to some practical difficulties. A child obliged to leave one school and join another will be greatly handicapped if he finds himself in a school with a different "basic craft". Every child in a school will perforce have to take up the craft provided, whether he has the aptitude for it or not, and a school will go on producing so many potential carpenters or smiths whether the economic condition of the country is capable or not of absorbing them.

(6) If correlation with a "basic craft" is not meant to exclude correlations with the social and physical environment of the child, it serves no purpose to focus attention on a "basic craft" as such. Not a "craft", but the life and environment of the child and the community should be the centre of interest in a school.

From this point of view, agriculture, which includes so many rural activities and occupations and touches the life of the village child at so many points, naturally falls in place as the centre of interest in rural schools. This is only because agriculture is as wide as life itself in rural areas.

In towns and cities it will be very difficult to find any one thing as broad and comprehensive as agriculture. It will be unfair to urban children to force them to concentrate the best of their attention on one or two "basic crafts" when the whole complex life of modern civilisation is calling out to them and demanding their attention on all sides. A minor craft will soon be exhausted of all its educational possibilities and sucked dry of all interest and intellectual stimulus.

(7) Craft-teaching of any kind is costly. Craft-teaching of the kind contemplated in the scheme of "basic crafts" will be a very costly affair, specially if we take into account the number of schools in which such provision will eventually have to be made.

It is hoped that part of the cost, if not the whole, will be met by the sale of articles produced by children in schools. This is problematical.

Only a very small proportion of the cost on the whole, can be met in this way. And in the natural anxiety to meet as great a proportion of the costs as possible, greater and greater stress might come to be laid on the economic aspect of the craft, in spite of all warnings and precautions. The thoroughness and efficiency of the teachers work will come to be measured by the "productive work" of the school and by the degree to which the school succeeds in making itself "self-supporting". In assessing the efficiency of a school the question asked will be "What about the profits?" instead of "What about the pupils?"

(8) The implementing of the scheme of educating children through "basic crafts" will thus either work to the inevitable detriment of education in general by stressing the economic aspect, or will mean heavy financial obligations, very little of which is likely to be met by the sale of articles made in schools. There is thus a risk of the whole scheme breaking down under its own weight, and instead of helping the expansion of education as is hoped by making it partially self-supporting, the scheme might ultimately hamper expansion because of its financial implications.

(Signed) REBECCA REUBEN.

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*Minute of Dissent by Mr. B. S. Patel.*

## CHAPTER V.

### COURSE OF INSTRUCTION.

As regards teaching of English in the Primary Schools, the Committee have passed a resolution that some schools should be allowed the option of teaching English in the last three standards of primary schools clearly on the understanding that this should be done more or less privately—perhaps by the parents themselves or by an organization started by the schools for the boys whose parents are prepared to pay and I understand this was done purely for the transitory period during which this new course is to come so that time may be allowed to adjust the courses for the students who have been taking the old course. If English is at all to be introduced in the three standards in the primary course, the main object of the course will be defeated, namely, that the primary education should be entirely in mother-tongue so that no time and money should be wasted in teaching English and the students can get good general education equal to the present matriculation through mother-tongue. If the option of teaching English is given, I am afraid the present tendency of the parents and schools is to ask for it. If this is done, then the burden of the boys will be increased because they will have to learn more in the primary course plus English. Moreover if English is to be taught in the primary schools there will be many schools, and a great deal of staff will be necessary and because of this there will be greater expenditure and teachers that are not really competent to teach English, are likely to be employed to reduce the cost. Secondly a large percentage of the students who will go through the primary course are not likely to go in for higher

courses particularly when they are taught some vocation or handicraft and the time spent on acquiring smattering knowledge of English for two or three years will be wasted. I have discussed this subject with many teachers and some educationists and I feel quite confident that if proper types of teachers are provided in the High Schools and if sufficient time is devoted, four years will be quite enough for teaching the necessary required English if the teaching is done in an intensive manner. The teaching of English in the 7th standard will involve a great deal of more expenditure and the schools cannot afford to employ competent teachers. As some of the advocates have already suggested that Government should give them grants for providing optional teaching (which was not the intention of the Committee as the Committee passed a resolution allowing some people to introduce English at their own cost) which shows that there will be a real danger to employ unsuitable men for teaching English which will nullify the special advantage, if any, of teaching English at earlier stages. Besides the students will be overburdened with other subject matters in the revised course. I am afraid there is no half way in these matters. It is most desirable that there should be one type of course for all schools and no option should be allowed for teaching English earlier. If by experience it is found that English can be taught by competent teachers in an intensive manner in the High Schools, the High school course may be extended by another year, but I do not think that will be necessary and the study of English can still be intensively carried on in the Colleges if the students go to the College. There is nothing to prevent them from putting great deal of time in the first year of the College to learn English and there will be no difficulty in studying science and other subjects in College through the medium of English. We have often found that our students learn the whole of foreign language in about a year's time to follow the scientific courses in Universities either in German or French Universities and there is no reason why our students cannot learn sufficient English after putting four years of intensive work in learning English for understanding the subject matters to be taught in Colleges.

#### CHAPTER VI.

As regards the shift system, I am afraid the resolution does not take account of the actual hours of work provided for different classes of primary schools. The course is provided with sufficient work of about five hours a day half of which is to be spent in the class and half outside, and it is doubtful whether shift system is possible unless we reduce the hours of work.

#### CHAPTER VIII.

As regards training courses, I am afraid if the boys are going to get normal training before they are 18 or 20 as it has been proposed that the training should be complete by the time they finish their secondary school course, the age of the teachers trained will not be quite suitable to get full benefit of the teaching course and the result will not be very good. Mr. Goheen of the Sangli Industrial School has definitely brought

to my notice that it has been his experience that the teachers that are not fully matured in judgment cannot benefit by the normal teacher's training. My suggestion would be that an optional course for the last two years may be provided in the High Schools to introduce the courses in training and these teachers should be employed as teachers for a few years and then after three or four years' experience of teaching in the Primary Schools, they should be given a year's special training in the Training College which may be called a Refresher Course. It is also essential that the teachers should study English to broaden their outlook to enable them to read literature not found in their mother-tongue.

#### CHAPTER XI.

As regards the Emergency Course of training referred to in Chapter XI, I am afraid the course suggested of six months is not sufficient if we are to really teach the primary course in the way in which it has been suggested by Wardha scheme and also intended by the recommendations made in this Report. They have to know a good deal more than they actually have to teach and a number of additional items have also been suggested under this chapter and it will not be possible to complete that course in 6 months. I would strongly urge that at least one year's course should be given and the course should be given in a centralized place particularly as far as agricultural subject is concerned.

I must particularly bring one fact to the notice that unless we get really good teachers, the whole scheme may fail; so we should not allow the experiment to be started without selecting proper type of teachers and giving them sufficient necessary training. For the new curriculum that is suggested we require specially good teachers both in the primary schools and in the high schools and unless these teachers are really good and they have very broad general training in the subject in which they have to teach, we will not get good results out of expenditure that the State may incur for primary education.

(Signed) B. S. PATEL.

#### *Remarks by Rao Bahadur P. C. Patil, D.Sc.*

Under the "Linking of the Primary and Secondary Schools" in Chapter IV the report recommends keeping on Anglo-Vernacular Schools, though in the earlier part of the same chapter under "Secondary Stage" it recommends abolition of the same. I am against retaining Anglo-Vernacular Schools. It is undesirable to have two rival systems, since students from these two are to come together in VIII. It will cause confusion and add to the cost of teaching. For some years to come parents will prefer Anglo-Vernacular Schools for their children as they like them to begin English Education at an early age. If two systems are allowed, there will be two kinds of students in standards VIII. The students coming through Anglo-Vernacular School will have already read

English for three years ; And so those coming from ordinary or general school (where education is given through vernacular) will be placed at disadvantage. Apart from defeating the purpose of giving basic education through mother-tongue, Anglo-Vernacular Schools will entail wastage and work as permanent handicap to children in rural areas, where Anglo-Vernacular Schools do not exist. Keeping and encouraging Anglo-Vernacular Schools will moreover unnecessarily tax State resources, as special provision will have to be made to coach student from rural area. Even if such provision is made, it will never be efficient and students coming from ordinary schools will always lag behind in English and the system will result in wastage.

I am, therefore, firmly of opinion that Government should have one continuous course from Standard I to XI (I to VII or basic or primary education and Standards VIII to XI—Secondary Education, where all children will commence reading English in Standard VIII). While discussing "Medium of Instruction" under secondary education, the Committee has come to the conclusion that "premature use of foreign language as a medium of instruction tends to produce an intellectual muddle" and supports its view by quoting Abbot and Wood Report and Hesketh Report and yet in another part it recommends keeping on the Anglo-Vernacular Schools. Some of the members think that a few Anglo-Vernacular Schools, which are catering to the needs of a small urban section should not be disturbed. I do not think that a very small (an infinitesimally small) section of the city people should spoil the general system of education and block its improvement and progress.

If it is thought that four years' study of English (i.e., only in secondary stage without making inroads of primary stage) is not enough for school leaving certificate, I have no objection to their adding fifth year. I, however, do not support the view of having two systems in the common course, in one student beginning to learn English in V and in another IX standard. If this is done, it will encourage Anglo-Vernacular Schools and give a set back to the basic course and the present wastage will continue.

(Signed) P. C. PATIL.

Shahupuri, Kolhapur, 30th May 1938.



## APPENDIX I.

## VOCATIONAL TRAINING.

*Primary and Secondary Schools.*

## Questionnaire.

*(A) General.*

1. (a) What is your opinion about the principle enunciated by the Zakir Hussain Committee in "educating the children through some suitable forms of productive work" ?

Do you recommend its application wholesale or with certain modifications in our educational system ?

What would be those modifications ?

(b) What changes do you suggest in the present system of primary and secondary education in accordance with the general principles enunciated in the Abbott Wood Committee Report ?

2. How would you reorganise the existing Primary and Secondary schools in the light of your answer to Question No. 1.

*(B) Primary Education.*

3. If Central Schools for boys and girls (i.e., special primary schools in which education of the new type is provided) are arranged for, how many such schools would, in your opinion, be needed at the start ? Where should they be located ? Should they be located at Taluka Head Quarters in the first instance ? If not, where else in each Taluka and why ?

4. Should such institutions be treated as pre-vocational or vocational or should they be encouraged to develop in either directions as circumstances permit ?

5. How would you apportion the time available at school between general education and practical work in different standards ?

6. Which types of manual work (including handicrafts and agriculture), can, in your opinion, be introduced in these Central schools ?

Which in the rural areas, which in urban areas, and which in both rural and urban areas ?

7. What would you suggest as a suitable course for the different standards of the Central Schools for boys and girls in different kinds of manual work (including handicrafts and agriculture) ?

8. What would be the approximate recurring and non-recurring cost of organising each type of Central School on the new lines ?

9. What arrangements would you suggest for the training of teachers, men and women, for the proposed Central Schools ? Should they be trained in the existing training institutions for primary teachers or in some vocational technical, industrial or professional institutions ? Should general and special training run concurrently or separately ? If separately, what period of special training in each craft would you consider necessary ? Would intensive courses (e.g., in the College of Agriculture or Engineering or V. J. T. Institute, Sir J. J. School of Art and such other institutions) be adequate for the purpose ? If so, how would you organise them ? What would be the approximate cost of training such teachers at the start ?

10. What arrangement would you suggest for the special training of women teachers in house-hold arts, mother-crafts, and some useful cottage industries ? What should be the duration of such courses ?

11. What suggestions would you make for the organisation of agencies for the periodical inspection and examination of the work of the proposed Central schools and special training institutions ?

*(C) Secondary Education.*

12. At what stage and how should vocational training be introduced in Secondary schools ? What should be its duration ? Would you make a course of vocational training a necessary part of secondary education ?

13. What, in your opinion, should be the proportion of general education and vocational training in the secondary schools for boys and girls ?

14. Would you suggest suitable syllabuses for (i) general education and (ii) vocational training for boys and girls ?

15. What would be the approximate recurring and non-recurring cost for (a) technical, (b) commercial, and (c) agricultural courses to be introduced in secondary schools ?

16. How should teachers for vocational courses be recruited ? What should be their qualifications ? Would it be necessary to provide any preliminary training for such teachers ? If so, in which institutions and through which agencies ?

17. What arrangements would you suggest for the periodical inspection and examination of the proposed vocational work in secondary schools ?

18. How would you link up the work of the reorganised secondary schools with the arts and professional colleges affiliated to the University and other institutions of higher technological and professional education like the V. J. T. Institute ?

19. What are your views about the establishment of vocational part-time classes proposed in the Abbott and Wood Report ?

## APPENDIX II.

ELEMENTARY COURSES IN AGRICULTURE OR NATURE STUDY LINES FOR  
THE FIRST FOUR STANDARDS.

## I. Observations—

1. Observations on plants (wild and cultivated) of the village :—

*Standard I.*—Stems, leaf, roots, flowers, fruit and seeds.*Standard II.*—Dispersal of seed, colour of flowers and leaves.*Standard III.*—Scent of flowers, size of fruits and taste of fruits.

2. Observations on trees of the village :—

*Standard II.*—Names of trees.*Standard III.*—Height of trees, stem and leaves, flowers and fruits of the trees, shades of trees.

3. Observations on village animals and birds :—

*Standard I.*—Animals for work.*Standard II.*—Animals supplying food.*Standard III.*—Fowls, birds (useful and harmful)

4. Observations on insects and worms :—

*Standard III.*—Observations on frogs, fish in village-pools or ponds if any.

5. Observations on general environment :—

*Standard III.*—Hills, rivers, tanks, wells, valleys, forests, gardens (fruit or flower) and fields.*Standard IV.*—Roads, railways, temples. Posts and telegraph offices. Village homes, village health and recreation. Village occupations.

6. Observations on natural phenomena :—

*Standard III.*—Sky, Sun, Moon, Stars.*Standard IV.*—Clouds, seasons, rain-fall, movement of rain-water, wind, Eclipse.

## II. Classification of plants and trees according to their economic importance to village :—

*Standard III.*—Field and garden plants, grain plants, fibre plants, fodder plants, fruit plants, vegetable plants and flower plants.*Standard IV.*—Wild plants—Weeds and bushes, trees, fruit trees and non-fruit trees.*Standard III.*—Study of plant requirements—soil, water, air and sunshine.*Standard IV.*—Study of functions of different parts of plants.

## III. Study of common field crops (local information) :—

*Standard III.*—Varieties of crops best suited to the place. Seeds of such crops good and bad and how to obtain good seed.*Standard IV.*—Yield of field crops.—Best yield of some cultivators and poor of others and chances of improvement.

*IV. Study of soils :—*

*Standard III.*—Rocks, soil formation, surface soils and sub-soils and their functions ; depth of soil, colour of soil, weight of soil.

*Standard IV.*—Soil cultivation and mulches. Soil water and its losses and uses.

*V. Standard IV.—Selection of soil for school or home gardens and planting of gardens.*

*Practical Work.*

1. How to obtain land :—

The teacher should get in touch with the parents of pupils and obtain lands for pupils to make their own garden at home. Teacher should supervise and guide work in these home gardens. Pupils who have no land may make garden at schools.

2. Growing economic plants :—

*Standard I.*— }  
*Standard II.*— } Preparing pots, sowing seeds and growing plants.

*Standard III.*— }  
*Standard IV.*— } Selecting soil, preparing pots, manuring, sowing seeds, raising seedlings, transplanting, watering, interculturing, weeding, harvesting, threshing, winnowing and storing of produce.

3. *Standard III.*—Use of manures to plants, note when to harvest crops and how to use them.
4. *Standard IV.*—Pupils should be interested in keeping a note book of observations with drawings. Older pupils may keep a note book of expenses and income of crops grown.

*V.B.—(a)* Let the pupils feel that the garden is theirs ; and interest the pupils and parents in it.

- (b) Let pupils plan the garden themselves as far as possible.
- (c) The plots should be small to enable the work to be well done.
- (d) The children should care for the plots according to the best scientific practice.
- (e) Pupils should be orderly and develop habits of neatness and responsibility.
- (f) Careful observations should be made and recorded by pupils.
- (g) School subjects should be related to the garden to make school garden of cultural and educational value to the teacher, children and parents.
- (h) Normally school garden should yield some income.

5. *Standard III.*— }  
*Standard IV.*— } Learn the use of hand tools and be familiar with field implements.

6. *Standard IV.*—To raise trees and take care of them.

7. *Standard III.*— }  
*Standard IV.*— } To take care of pet birds and animals. The teacher may arrange for this work at home by the pupil.

8. *Standard III.*— }  
*Standard IV.*— } To make a small flower garden.

9. *Standard IV.*—To rear a caterpillar.

10. *Standard IV.*—To get acquainted with common insects pests and diseases of crops.

## COURSES IN AGRICULTURE FOR STANDARDS V, VI AND VII.

*Standard V—**A—Theory.*1. *Soils—*

- (1) Origin of rocks, soil formation from rocks.
- (2) Soils and sub-soils, their constituents and their properties.
- (3) Different classes and kinds of soils and their properties.
- (4) Soil water and its functions. Water holding capacity of different kinds of soils. Conservation of moisture in soil.
- (5) Suitability of soil for irrigation.
- (6) Soil drainage.

2. *Study of plant life—*

- (1) Study of different kinds of roots, stems, leaves and their functions.
- (2) Study of different kinds of flowers—parts of flowers and their functions. Pollination and seed formation.
- (3) Fruits and seeds :—Kinds of different fruits and seeds. Parts of fruits and seeds and germination of seeds.

3. *Soil cultivation for crop production—*

Use of various implements for soil cultivation and crop production. Harrows and hoes, cost of implements.

*B—Practical Work.*

- (1) Growing of monsoon vegetable crop and flower garden (Size of plot sufficient to provide the necessary experience).
- (2) Study of suitable varieties of plants and their arrangements in the garden.
- (3) Study of successful local garden.
- (4) Plan of the garden should be drawn by each student and planting should be done accordingly.
- (5) Various village tools and their use to be noted. Crops should be protected from insects and animals. Close observations of the plants and their response to tillage manures and weather conditions should be made.
- (6) A simple record of all observations made, careful drawings and an account showing income, expense and net profit or loss should be kept.
- (7) At the close of the season the pupil will write in the note book a short composition in his own words describing each step in carrying out the work and appraising the results of his efforts.

*Standard VI—**A—Theory.*1. *Study of plant life—*

Propagation of plants :—by seeds, roots, stems and leaf. Study of a simple fungus and simple principles of plant breeding.

2. *Crop production*—(A) *Field crops* :—

- (1) Classification of field crops.
- (2) Their requirements as regards soil, manure, water and climate.
- (3) Study of important crops of the locality both dry crops and irrigated crops.

(B) *Soil cultivation for crop production* :—

- (1) Use of various common implements for soil cultivation and crop production. Ploughs, seed-drills, levellers—cost of implements.
- (2) Use of water-lifts for irrigation.
- (3) Improved implements and nature of improvements.

(C) *Manures and their use for crop production* :—

- (1) Natural manures, artificial manures, their composition, uses and costs
- (2) Compost making.
- (3) Green manuring.
- (4) Application of manures to different crops, time and method of application.

(D) *Irrigation of crops*.—Well irrigation, tank irrigation, canal irrigation whatever is in the tract. Methods of application of water. Proper layout of fields for irrigation.(E) *Diseases and pests of crops*—Common pests, their recognition and control.3. *Animal Husbandry*—(A) *Cattle* :—

- (a) Breeds of cattle in use in the village.
- (b) From where bullocks and milch animals are obtained.
- (c) What makes a good bullock? Milk yields of the cow and the buffalo. Why the yield varies with different animals? What makes a good cow or a buffalo? Goats and sheep and their use.

(B) *Fowls*.—Make survey of fowls of the village. How many are country birds? How many are improved? and how many pure-birds if any?(C) *Birds*.—Study of 6 local birds and their habits and their value to agriculture.*B—Practical Work**Field crops*—

Three chief crops of the area giving attention to the rotation to be grown. Plots should be at least 10' × 12' for each of the crops. Individual efforts and the quality of work should be stressed.

Planning cultivation, etc., should be carried out as under Standard V, except that drawings, records and composition will be more advanced.

*Standard VII—**A—Theory.*1. *Crop production—*

Local fruit crops and its requirements.

Rotation of crops and mixed crops.

Diseases and pests of crops :—Diseases and their recognition and control.

2. *Animal Husbandry—*(A) *Cattle—*

(1) Improved breeds of cattle in Bombay Province, their character, merits and defects.

(2) Cattle management :—Elementary knowledge of principles of feeding animals.

(3) Elementary knowledge of animal breeding.

(4) Dairying :—Milk and its products and their value as food.

(B) *Fowls—*

What are the differences in both improved and country birds? Production, of Deshi and improved birds. Feeding and care of fowls.

(C) Common diseases of animals prevalent in the locality, their recognition, prevention and treatment.

3. *Farm accounts.*—Items of expenditure and income—

Simple system of keeping farm accounts to find out cost of production of crops and profit and loss for each crop and for the whole farm.

*B—Practical Work.*

Growing of irrigated garden and fruit crops :—

If irrigation is not available some dry crop may be grown again.

Five or six garden crops selected and grown according to the outlines in Standard V. Also practice in culture and propagation of trees may be given.

*Note book.*—More advanced accounts and observations will be recorded. Drawings to be accurate and coloured true to life. The composition should show more mature judgment.

*N.B.*—(For all classes, viz., Standards V, VI and VII)—

- (1) Theory is to be taught with a class demonstration and observations.
- (2) Learning of practical uses of implements and water lifts might be arranged through parents at home.
- (3) Feeding and care of small pets and animals may also be arranged through parents at home.
- (4) Individual plots of land either at school or at home are preferable to common plots. Plots arranged at home should be frequently visited by the teacher and the inspecting officer will attach special importance to such home gardens.

- (5) To develop a measure of skill, pride and appreciation in craftsmanship, a practical training in one or more crafts should be provided in addition to Agriculture.
- (6) Study of agriculture will help to relate education to the life of the pupil.
- (7) For handicrafts it will be generally more desirable to use the materials available in the locality and the articles or projects made should ordinarily supply some specific home, school or community need. Very rarely an article for exhibit should be made excepting when geographical or historical models having educational values are made.

Of all the handicrafts for boys wood craft is considered superior from the stand point of educational value. With few simple tools many useful things can be made.

Courses of handicrafts are not drafted by this Committee but may be filed in afterwards.

#### *Primary Schools.*

*N.B.*—Primary Rural School's syllabus has been prepared on the following considerations. The lower rural primary class, viz., 1 to 4 years should have a plot of land measuring not less than half an acre for Agricultural work. This should be provided near the school.

The higher primary rural classes (5 to 7 standards) should have at least one acre of land to provide for practical work of the pupils. Wherever possible the land should be acquired by the school. It will be difficult to give sufficient practical work in Agriculture to all the boys in the school on the small school garden and therefore it is definitely suggested that the teacher should get in touch with the parents and obtain small plots of land for each pupil on the pupil's own farm. These home plots are to be worked by the pupils. This is possible as 14 hours' class work has been decided upon for the school. This means three hours' work a day and all students taking agriculture as basic subject can devote rest of the time for actual work either on the school or their own farm and also do work in subsidiary occupations like spinning, weaving, and wood work as we have provided for such work in the Agricultural course.

In the first four years, we have suggested 6 hours a week for spinning and weaving and the rest of the period is to be devoted to Agriculture. The Agricultural work is to be adjusted to suit the season and the other work can be done indoors in between. For the first four years all agricultural work will be done in the school garden and visits to surrounding farms will be made to get acquainted with practical farming of the locality. In the last three years, 3 hours a week may be devoted to spinning and weaving and 3 hours for carpentry and the rest of the period for Agricultural work. This time also should be arranged to suit the agricultural season as done in the first 4 years. Where possible, the pupils may also be taken as a class to private farms by arrangement for learning practical operations under the guidance of the teacher.

School hours should be fixed in such a way as to make the whole morning or afternoon half day available for practical work in the school or pupil's farm. This system is in vogue in Denmark where a class work of 18 hours a week is provided in the primary school and the rest of the time is made available for practical work at home. If this system of adjusting the school hours to suit the practical work is followed, agriculture can be introduced in all rural areas with minimum cost and fair amount of efficiency. The teacher no doubt will have to get in touch with the parents to arrange for home plots for pupils and will have to plan out the work for each pupil and supervise and guide it at regular intervals. This will mean that the teacher will be working half the day in the class and half the day in the field.

*Equipment for Agricultural work.*—A set of hand tools for plot work in the school garden will be needed as per list attached. This would cost about Rs. 200 and a sum of Rs. 100 would be required for apparatus for demonstrating the principles underlying the practical work. Besides this, a sum of Rs. 75 would be required for recurring expenditure of the school garden excluding rent of land which is expected to be acquired by the school.



The above estimates exclude expenditure required for carpentry, spinning and weaving which are supposed to be budgetted by the experts in these crafts. There would be an income of about Rs. 30 from one acre of land given to the higher standard and nothing substantial being expected from the area entrusted to children in the lower classes.

*List of tools required for Primary Schools having 30 pupils  
in each class.*

60 Khurpees.	10 hand Douch Hoe.
30 Scythes.	10 Hand rakes.
20 Khoras.	10 Watering cans.
20 pick-axes.	10 Chamelas.

## APPENDIX III.

## COURSE IN AGRICULTURE FOR HIGH SCHOOLS.

(4 years.)

*Standard VIII.—**A.—Theory.***I. Soils—**

- (1) Important rocks of the Bombay Province, their tracts and their origin.
- (2) Important minerals found in different prominent rocks, their general nature, their susceptibility to weathering and the chief ingredients they supply to soils.
- (3) Bombay soils, their general nature.
- (4) Soil and its utility to plant life.
- (5) Soil particles of different important soil classes.

**II. Plant Life—**

- (1) Plant classes—flowering, non-flowering—important sub-groups—useful and harmful. Plant parasites.
- (2) Important crop-plant families, their general characteristics.
- (3) Plant food requirements—whence and how obtained.

*B.—Practical Work.**Soils—*

- (1) Recognition of important rocks and minerals.
- (2) Hand and water method of testing soil classes (Textural).
- (3) Observing growth of five different plants in three or four different types of soils in pots.

*Plant life—*

- (1) Study (general) of fungi, common plant parasites, one of the following :—

*Bandgul, Tarfula, Bhambakhoo or Amavel.*

- (2) Observation on crop plants of the plant family such as grass, cotton, tobacco, pulse, etc.
- (3) Demonstration regarding root pressure, transpiration, absorption of  $\text{CO}_2$  and  $\text{O}$  through leaves, etc.

*Crop growing—*

- (1) Vegetable growing dry or irrigated—half guntha plot for each pupil irrigated if possible.
- (2) Three areas under three or four crops in rotation grown co-operatively by the whole class.

*Standard IX.—**A.—Theory.**I. Soils—*

- (1) Texture and structure of soils—ideal soil structure.
- (2) Movement of water in soil. Capacity of soils to hold water.
- (3) Organic matter and soil colloids—their effect on soil.
- (4) “Cold” and “Warm” soils—plant growth in such soils.
- (5) Reclamation of salt lands.

*II. Soil management—*

- (1) The need or otherwise of ploughing.
- (2) Changes in soil tillage methods according to nature of soils, climatic conditions and crop-requirements.
- (3) Soil fertility—factors governing fertility—methods of improving fertility, e.g. manuring, rotation, mixtures, fallows, weed-control, levelling, bunding, irrigation and drainage.
- (4) Classes of weeds, their habits and methods of destruction.
- (5) Seed-rate per acre—spacing of plants.
- (6) Seed-beds, transplanting and depth of sowing.
- (7) Principles of dry-farming.

*III. Plant life—*

- (1) Adaptation of crops to different soils and climatic condition.
- (2) Crop improvement by selection, crossing, selection for disease resistance, high yields, quality, etc. Broad principles underlying breeding.
- (3) Budding and grafting, layering—how done; limitations, care needed for success.

*B.—Practical Work.**Soils—*

- (1) Observation of growth of rice and *bajri* in soils having different structural conditions, artificially obtained such as—puddled and well pulverised soils in pots.
- (2) Study of rise and fall of water through soils.
- (3) Observations on the water-holding capacity in soils with and without organic matter and in soils with little or high colloidal matter.
- (4) Effect of excess of water on plant growth—results of draining and opening such soils on plant growth in pots.
- (5) Washing of excessive salt from soil and effect on plant growth and soil tilth.

*Soil management—*

- (1) Effect of rain-fall on ploughed and unploughed land as regards penetration of water moisture, suitability of soil for sowing and stand of crop.
- (2) Effect of weeds on crop growth : weeds and how they increase in cropped lands. Effect of tillage on perennial and annual weeds : Control of weeds by ploughing, timely tillage combined with rotation of crops, green manuring, quick growing crops, wide sown crops, etc. Importance of prevention of weed growth.
- (3) (i) Effect of loose and firm seed-beds on the growth of cereal crops.  
(ii) Growth of root crops in heavy compact and light open soils.  
(iii) Effect of earthing and no earthing on root crops.  
(iv) Mulches and their effect on loss of moisture by evaporation.
- (4) Study of at least six important local weeds, their root system, habit of growth, propagation, life history and best means of destruction.
- (5) Observation of plants grown from (a) thick sowing and thin sowing in a row (b) wider and closer sowing in rows. Deep sowing and shallow sowing of different kinds of seeds.
- (6) Raising of seedlings, care of seedlings and transplanting.
- (7) Periodical observations on a special plot kept fully under dry farming methods in the best possible way.
- (8) Conservation of moisture by bunding and cultivation and its effect on plant growth.
- (9) Best use of available moisture for plant growth.

*Plant life—*

- (1) Observation of plants in salty patches, river-sides, rocky areas and water-logged areas.
- (2) Emasculation and cross pollination of flowers.
- (3) Budding, grafting, layering, etc.

*Crop-growing—*

- (1) Each student should grow dry crop in half a guntha plot individually.
- (2) All students to grow a crop in common area of three acres under rotations to demonstrate dry-framing methods.

*Standard X.—**A.—Theory.**Crop production—*

- (1) Methods of cultivation of important dry and irrigated crops including some vegetable and fruit crops ; cultivation—selection of land, method of propagation, spacing, care, diseases and their control. As regards fruit crops, resting, pruning and treating for seasonal fruiting. Cost of cultivation, out-turns, disposal of produce and gross returns.

*Animal Husbandry and Dairying—*

- (1) Important breeds of cattle, sheep and goats in the Province, their main characteristics regarding milk, work, wool, etc.
- (2) Feeding of animals—broad principles underlying.
- (3) Fodders—their kinds, production and comparative value. Silage and hay making. Feeds and their comparative value and ration making.
- (4) Housing of animals.
- (5) Cattle improvement by selection and breeding. Care of stud bulls. Premium bulls.
- (6) Production of clean milk. Milk products.
- (7) Value of milk and its products as human food.
- (8) Cost and prices of milk and its products.

*B.—Practical Work.**Crop production—*

- (1) Actual growing individually of one important crop from start to finish (on an area of 2 gunthas for a dry crop or 1 guntha for an irrigated crop) and keeping periodical notes and accounts of the same.
- (2) Growing by the whole class 4 acres of important crops with suitable rotations and mixtures.

*Animal Husbandry—*

- (1) Study of various breeds. Visits to fairs and farms.
- (2) Recognition of fodders and feeds. Feeding school, oxen and dairy cows, wherever possible.
- (3) Making silage and hay either on a school farm or elsewhere.
- (4) Observation of cattle sheds of farmers, suggesting improvements. Maintaining the school shed in the proper state.
- (5) Care necessary to produce clean milk and other dairy products.

*Standard XI.—**A.—Theory.**Crop production—*

- (1) Cultivation of remaining important fruit and vegetable crops as detailed in tenth year under—Theory—Crop production—item (1).

*Animal Husbandry and Dairying—*

- (1) Common ailments and diseases of cattle and their treatments.
- (2) Outbreak of cattle epidemics—precautions and care during epidemics.
- (3) Poultry keeping—important breeds, their value and feeding. Main diseases—their treatments and prevention.

*Agricultural Economics—*

- (1) Land, labour, capital, law of diminishing returns. Land tenures in the Bombay Province. Rights and privileges of cultivators.
- (2) Co-operation—general principles—co-operative societies for different purposes—co-operative financing, purchase and sale.
- (3) Grading of farm produce. Newspaper quotations, their meaning and use.

*B.—Practical Work.**Crop Production—*

- (1) Actual growing of a new important crop as in the tenth year as detailed under practical work—Crop production—item (1).
- (2) Growing four acres of crops with suitable rotations and mixtures. (Crops being different from those in the Standard X.)

*Animal Husbandry—*

- (1) Keeping a few poultry birds and doing all the work such as cleaning, feeding, egg collection, marketing, etc. The importance of cleanliness and suitable feeding for animals as well as human beings should be impressed upon the pupils.

*Agricultural Economics—*

- (1) Close study of a co-operative society nearby.
- (2) Grading of school produce and selling it (a) individually and (b) co-operatively.

**BUDGET ESTIMATES FOR AGRICULTURAL TEACHING IN THE HIGH SCHOOL COURSE.**

(20 acres farm—all dry cropping.)

Item of expenditure.	Amount.
<i>Non-recurring—</i>	
(1) <i>Buildings—</i>	Rs.
(a) Cattle shed for one pair of bullocks and one dairy cow ..	200
(b) Shed for implements, tools and store .. ..	500
(c) Shed for one permanent labourer .. ..	200
(2) <i>Implements and tools—</i>	.. ..
	Rs.
1 Iron plough, medium .. ..	30
2 Harrows—one heavier and one medium .. ..	15
2 Planks .. ..	15

					Rs.	Rs.
4 Drills	..	..	..	..	40	
4 Pairs of deshi hoes	..	..	..	..	25	
1 Shovel cultivator	..	..	..	..	35	
1 Cart	..	..	..	..	80	
8 Pick-axes	..	..	..	..	12	
12 Phawdas	..	..	..	..	18	
2 Crow bars	..	..	..	..	4	
60 Khurpies	..	..	..	..	15	
30 Sickles	..	..	..	..	30	
1 Stone roller for threshing (where needed)				..	30	
Miscellaneous	..	..	..	..	71	
					<hr/>	
					420	
					<hr/>	
(3) Poultry and pens	..	..	..	..	..	100
(4) Bullocks two and cow one	..	..	..	..	..	350
(5) Unforeseen	..	..	..	..	..	230
						<hr/>
				Total ..		2,000

*Expenditure and returns—1st year.*

	Expenditure.		Returns.	
		Rs.		Rs.
<i>Direct—</i>				
(1) Cattle feed at Rs. 12 per head			20 acres at Rs. 15 per acre	300
3 × 12 × 12 ..	432		Cow .. ..	60
(2) Poultry feed, etc. ..	25		Poultry .. ..	20
(3) Manure at the rate of 8 carts				
per acre, i.e. 20 × 8 × 1 ..	160			
(4) Labourer—one man 15 × 12	180			
(5) Seeds .. ..	25			
(6) Miscellaneous .. ..	50			
(7) Land rent—say Rs. 10 per				
acre .. ..	200			
		<hr/>		
	Total ..	1,072		

<i>Indirect—</i>		Rs.		Rs.
Depreciation on buildings at 6 per cent.	.. ..	54		
Depreciation on cattle at 8 per cent.	.. ..	28		
Depreciation on tools, etc. at 10 per cent.	.. ..	42		
Depreciation on poultry at 25 per cent.	.. ..	25	Net loss	870
		<u>1,221</u>		<u>1,250</u>
	say	1,250		

*Expenditure and returns (from 2nd year onwards).*

<i>Direct—</i>		Rs.		Rs.
			<i>Expenditure.</i>	<i>Returns.</i>
(1) Cattle feed at Rs. 6 per head per month $3 \times 6 \times 12$ (rest home feed)	.. ..	216		20 acres at Rs. 20 per acre Cow .. .. 60 Poultry .. .. 20
(2) Manures	.. ..	50		
(3) Labourers	.. ..	180		
(4) Seeds	.. ..	10		
(5) Land rent	.. ..	200		
(6) Poultry	.. ..	25		
(7) Miscellaneous	.. ..	50		
		<u>731</u>		
<i>Indirect—</i>				
Depreciation as in 1st year	.. ..	149	Net loss	400
		<u>880</u>		<u>880</u>

*Note.*—Wherever irrigation is available, the same budget might suffice by reducing the area of the farm.



## HIGH SCHOOL COURSE.

The land required for the high school course of four years will be about 20 acres to give some fair idea of practical farming and the required amount of practical work in growing crops.

If there is lift irrigation, the area of the farm may be reduced so that it can be managed by one pair of bullocks. If possible a dairy cow may be added. One permanent labourer would be necessary and he would have to be accommodated on the farm. One assistant trained primary teacher would also be necessary on the school staff to assist in the practical work.

The initial expenditure would come to Rs. 2,000 for equipping the farm. These estimates do not contain any expenses on carpentry which will have three periods a week. The expenses for the first year on a farm including depreciations, land rent, etc., would be about Rs. 1,250 with receipts of about Rs. 380 giving a net loss of Rs. 870 while in the second year, the amount of expenses would come to about Rs. 880 with an income of Rs. 480 giving a net loss of Rs. 400. To this the expenditure of the pay of an assistant teacher at Rs. 30 to 60 a month (at an average of Rs. 40 a month) i.e. Rs. 480 per annum will have to be added. The graduate teacher needed will replace a member of the school staff and there will be no additional cost for this item.

## APPENDIX IV.

PROPOSALS FOR INTRODUCING GINNING, CARDING, SPINNING AND WEAVING AS  
BASIC CRAFTS IN PRIMARY SCHOOLS.

We suggest that the syllabus proposed by the Wardha Committee in this behalf should be adopted. In this instance, we should take into consideration the following circumstances while calculating the total earnings during a term :—

(1) The Wardha Committee has assumed that there will be 144 working days in a term. But as matter stands now, we shall have to take that there will be only 125 working days in a term.

(2) The Wardha Committee allots three hours for the hand-work. We have to allot only two hours for the hand-work as the school hours are assumed to be only five, by us.

(3) The above two considerations will lessen the earnings proportionately.

(4) The above crafts together with the carpentry and smithy connected with these crafts, are possible to be introduced in rural as well as urban areas.

## APPENDIX V.

## A SECONDARY SCHOOL WITH A COMMERCIAL COURSE.

1. *Proportion of Commercial Education.*

Knowledge of the following commercial subjects is indispensable in any scheme of commercial education :—

- (i) Elements of Commerce including commercial correspondence.
- (ii) Commercial Arithmetic.
- (iii) Elements of Book-keeping.
- (iv) Shorthand and Typewriting.

The number of periods required for the above subjects should be about 15 per week (each period of 40 minutes), in each standard out of the maximum number of 42 periods a week available for school work in the Elphinstone High School, Bombay.

These commercial subjects can be conveniently substituted for the following subjects, that are at present taught in a secondary school like the Elphinstone High School.

Subjects proposed to be dropped.	Subjects proposed to be substituted in Standards VI and VII.
1. <i>Mathematics</i> —	
Algebra.	Commercial Arithmetic.
Geometry.	Book-keeping.
2. <i>History.</i>	Elements of Commerce.
3. <i>Other Language.</i>	Shorthand, Typewriting.

2. *Approximate recurring and non-recurring costs—*

## Non-recurring expenditure (Equipment)—

	Rs.
12 Typewriters : 6 new at Rs. 350 each .. ..	2,100
6 secondhand at Rs. 100 each .. ..	600
12 Typewriting tables at Rs. 10 each .. ..	120
12 Typewriting chairs at Rs. 6 each .. ..	72
1 Teacher's table and 1 chair .. ..	18
2 Cupboards at Rs. 50 each .. ..	100
Library books .. ..	250
	3,260

## Recurring Expenditure—

*Staff*: 2 members of staff—

	Rs.
(Scale of salary Rs. 100—5—140—10—200) .. ..	2,400

*Contingencies* :

Office : Stationery, books, magazines, etc. .. ..	150
Typewriting stationery : Ribbons, paper, etc. .. ..	100
	250

One of the two special teachers should be either a B. Com. with Accountancy as optional subject, or a G. D. A., or a graduate in Arts with the Bombay Government Commercial Diplomas or certificates in the subjects which he is expected to teach. The other teacher should be preferably a graduate with certificates of proficiency in Shorthand and Typewriting. If he is a graduate, he could also take up some other subjects like Commercial Arithmetic or English in addition to Shorthand and Typewriting.

*Note.*—The scale of salary has been suggested for the following reasons :—

(1) The teachers in addition to being graduates, possess additional qualifications in the subjects which they will teach.

(2) To ensure the success of the experiment of Commercial Education in Secondary Schools, it is necessary to entrust the work to teachers with a better calibre.

*Training.*—If persons with the above qualifications are available, it may not be necessary to provide for any preliminary training for them.

It is presumed that the two specialist teachers will replace at least one ordinary member of the staff.

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A Note by Mr. M. J. Antia, Principal, Sydenham College of Commerce and Economics, Bombay.

I presume that the object underlying the conversion of some of the secondary schools into Junior Technical, Junior Commercial or Junior Agricultural Institutes is to divert students from the Matriculation. This would be all to the good, but I think that at this stage it would be inadvisable to place restrictions on the choice of careers open to those who will in future pass the Matriculation Examination under the proposed bias courses. A student who will pass the Matriculation (Commercial Bias) should be allowed to join a College of Commerce, but his choice should not be restricted only to a College of Commerce, and he may, if he likes, be allowed to join an Arts or Science College. Similarly those who have passed the Matriculation with some other bias course should be permitted to join an Arts, Science, or Commerce College. I say this because it is not always easy for the parent or guardian of a boy to determine in advance the particular occupation for which the boy should be trained.

With regard to the stage at which commercial bias can advantageously be given to the secondary school course, I am of opinion that a beginning can be made at A.-V. Standard V, but this should be confined to only two subjects, viz., Commercial Arithmetic and Geography (Commercial). As regards the other subjects they should not be taught until the pupil comes to A.-V. Standard VI when he would be better fitted to understand some elementary notions of commercial practice which he would be taught at this stage. I may mention that in this matter we are not without some experience. Commercial Classes are attached to the Elphinstone High School, Bombay, and the R. S. Dalal High School, Broach, and students have been prepared for the Government Commercial Diploma and Certificate Examinations which were first instituted in 1925. Our experience has hitherto shown that even in Standard VI many boys find it difficult to grasp certain commercial subjects, and even after intensive coaching for two years they do not make satisfactory progress. For this reason I am of opinion that commercial subjects such as Elements of Commerce cannot be taught with any great advantage until the pupil comes to Standard VI, but a slight commercial bias can, I think, be given at an earlier stage, even in Standards IV and V not so much by teaching commercial subjects as by the adoption of some other methods, e.g., occasional reference by the teachers to some bits of commercial information in the course of daily instruction, wall pictures depicting industrial operations and commercial places, occasional talks on business, visits of observation to the docks or to the Fert area, etc. The teaching of Geography may begin first with the study of physical character and political boundaries of important countries of the world; but even at an early stage the commercial aspect of Geography can be emphasised by reference to maps showing trade routes, shipping lines, harbours, air mail routes, etc. In my opinion a Commercial bias can be given in the earlier stages not by the immediate introduction of commercial subjects which the pupils cannot properly grasp but by creating an "atmosphere" in the school appropriate to the studies which the pupils will have to make at a later stage and which might foster in them a liking for the commercial bias course chosen by them.

With regard to the subjects of study I attach herewith a statement showing the subjects in the present School curriculum and the subjects in the proposed commercial bias course.

I shall say a few words about each of the subjects proposed to be substituted in the new course :

(1) *English*.—This is, and should be considered to be, a subject of great importance to all students to be prepared for a commercial career. The course in English should therefore, be the same as for the present Matriculation, but elementary "Commercial Correspondence" should be taught in addition to the other subjects. Importance should be attached to handwriting. Students should be encouraged to carry on conversation in English.

(2) *Geography*.—More attention should be paid to this subject in a Commercial Bias school, as in addition to the present course Commercial Geography will have to be taught. Even in teaching Geography as usually understood, its commercial aspect may be stressed right from Standard V.

(3) *Book-keeping*.—This subject can be taught by easy stages in two years in Standard VI and VII.

(4) *Elements of Commerce*.—This is the driest and most difficult of the "Commercial" subjects, but it could be made interesting if it were taught in a descriptive way and concrete illustrations were given as far as possible.

(5) *Shorthand*.—This subject has been included on account of its great utility to those who cannot go up to a college of Commerce and would like to take up employment immediately.

As regards Typewriting, it is a useful vocational subject and provision should be made for instruction in it. But I have not included it in the regular course, because I am doubtful whether it should be made compulsory for all or whether it should be taught as an optional subject. To attain speed in typewriting constant practice is required, and if it is made a compulsory subject, a speed of about 30 words per minute will have to be prescribed and the boys may have to spend a disproportionate amount of time at school to a subject which they can easily pick up even after finishing the school course. But facilities for instruction in the subject must be provided in every commercial bias school, attendance at which should be recognised as qualifying the pupils to appear at the Government Commercial Certificate Examination in Typewriting.

As regards the other subjects the choice appears to lie between History and Science. Either subject would be suitable, but in a commercial bias course a course in History which should include some elementary economic history would in my opinion be preferable.

*Statement showing the subjects taught in the present school curriculum  
and the subjects in the proposed commercial bias curriculum.*

Subjects in the present curriculum.	Subjects in the proposed curriculum.
1. English .. .. .	1. English (Elementary commercial correspondence to be taught in addition).
2. Vernacular .. .. .	2. Vernacular.
3. Geography .. .. .	3. Geography (with special reference to its commercial aspect).
4. Other Languages .. .. .	4. Elements of Book-keeping (Standards VI and VII).
5. Mathematics { (Algebra) } .. .. .	5. Mathematics : Commercial Arithmetic, Algebra up to Standard V only.
6. History .. .. .	6. History (or Science).
7. Science Physics Chemistry .. .. .	7. Elements of Commerce (Standards VI and VII).
	8. Shorthand (Standards VI and VII).
<i>Examination.</i>	<i>Examination.</i>
Manual Training and Drawing .. .. .	Manual Training and Drawing.
Physical Training .. .. .	Physical Training.

*Note.*—It is unlikely that a school following a commercial course will provide for Manual Training. The time allotted to this work could therefore be conveniently given to Typewriting.

## APPENDIX VI.

## Syllabus for Science Group of Secondary Schools.

## I AND II YEARS.

## MATHEMATICS.

*Arithmetic.*

Review of principles; quantities and measures; the use of commercial and business forms; applications of factoring (H.C.F., L.C.M., powers, roots); square root; fractions, including decimals; the metric system; percentage, commercial discount, profit and loss, commission, insurance, taxes, customs, and excise, simple interest, partial payments on notes, bank discount, compound interest, use of interest tables, present value, mortgages, stocks and bonds, brokerage, exchange.

Oral arithmetic; new topics introduced orally; special and frequent practice to secure accuracy and rapidity; short methods.

Vulgar fractions, decimal fractions, practical measurements, square root, percentage, trade discount, profit and loss, commission, insurance, taxes, simple interest, duties and customs, bank discount, storage, marking goods, depreciation, cost-keeping, partnership, compound interest, use of interest tables, present worth, trade discount, domestic and foreign exchange, stocks.

Notes.—(1) The processes and problems in the commercial work should be such as find direct application in ordinary life.

(2) The common business forms are as follows: Orders, counter-checks, invoices, bills of goods, accounts, receipts, promissory notes, cheques, deposit slips, forms of endorsement.

(3) Regular practice in rapid calculation—exercises to cover the four simple rules, extensions of bills and invoices, percentage, interest and discount, exchange and commission.

*Algebra.*

Elementary work; factoring, H.C.F. & L.C.M., fractions, simple equations of one, two and three unknowns, solution of easy problems, extracting of roots; simple graphs, simple ratio and proportions; indices and surds; quadratics of one and two unknowns, with solutions of problems; theory of quadratics.

*Mensuration.*

Square; rectangle; parallelogram; triangle; circle, cylinder, cone, sphere, rectangular; solid, prism, pyramid; the special units of measurements; rectangular and cylindrical solids.

*Geometry.*

Before the study of formal geometry commences, it is recommended that a course in Practical Geometry extending over a period not exceeding two months be given. This course should be co-ordinated with the course in Drawing so as to provide continuous practice in the use of graded rule, compasses, protractor and set square in the accurate construction of figures and in the measurement of lines and angles.

*Practical Geometry.*

Line, circle, triangle, construction of triangle having given three sides, classification of triangles according to sides, bisection of straight lines; angles, classification of angles, construction of triangles continued, classification of triangles according to angles, dissection of angles, perpendicular to a line from a point within and from a point without, construction of special angles, e.g.,  $60^\circ$ ,  $30^\circ$ ,  $45^\circ$ ,  $22\frac{1}{2}^\circ$ , etc., mariner's compass, drawing an angle equal to a given angle, parallel lines and figures, classification of quadrilaterals, dividing a straight line into equal parts, concurrent lines about a triangle.

*Formal Geometry.*

A course embracing a selection of the leading propositions in elementary Geometry with simple exercises thereon.

*Logarithms.*

A complete course in logarithmic computations. Practical applications. Use of slide rule.

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## SCIENCE.

*General Science.*

A simple syllabus embracing the following :—

- (i) Chemical and physical properties of water, air, and some of the commoner elements and their compounds.
  - (ii) Elements of meteorology and astronomy based on simple observations.
  - (iii) Extraction of useful metals from their ores.
  - (iv) Elementary physics and mechanics profusely illustrated by simple experiments in heat, sound, light, production and application of electricity.
  - (v) Fundamental principles of biology broadly out-lining the properties of living matter, food, the processes of respiration and reproduction, the plant life, the functions of bacterial organisms and the like.
  - (vi) Elementary physiology and hygiene correlating with lessons in biology.
- 

## DRAWING.

*Freehand Drawing.*

Throughout this course, the aim is to train the powers of observation and to graphically represent objects. Much emphasis should be laid on principles of construction, on the need of accuracy and precision in drawing and of following instructions carefully.

Principles of perspective should be developed through the medium of simple models, graphic explanations and diagrams. In this connection different colours should be used for each step in the problem so that the separate phases of the problem and the respective principles involved are stressed.

After these simple constructions have been mastered the students should be led to more difficult problems of involved machine parts, magnetos, carburators, sewing machines, generators and the like. The various techniques used in the engineering fields for graphic representation and the study of various pencil and ink techniques should be developed.

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## PRACTICAL WORK.

*Woodworking.*

Growth, structure and identification of the woods used in the locality. Warping, twisting, checking; how caused and counteracted. Making of simple objects according to drawings previously prepared. Proper use of nails, screws and glue. Use of simple joints in articles made; e.g., end, half lap, centre half lap, mitre, housing. Common joints used in various kinds of woodwork,—scarfing, simple dovetail, mortice and tenon and grooved joint—their use in making objects such as boxes, drawers, tables, book-cases, etc. Fastenings with dowels, pins, cleats, wedges, etc.

Various methods of finishing wood, as staining, fuming, filling, shellacking, oiling, waxing, etc.

Use and mechanical construction of common woodworking tools as exemplified in the making of a series of useful objects. Tool sharpening. Construction of simple school apparatus. Calculations from drawings, and specifications of wood required for articles made and cost.

*Wood-turning.*

Explanation of the lathe, its action, speed, parts, care and use. The gauge, correct position, turning rough cylinder, the skew chisel, reason for grinding both sides and at an angle. Concave surfaces with skew chisel. Irregular curves and spindle work, V grooves, beads, and hollows. The introduction of hard wood and sand paper, exercises in turning handles. Face plate turning, chuck work, boxes with covers, power box, rings, gaublets, etc.

*Metal Working.*

Simple ornamental work in brass, copper and iron. The making of simple objects such as paper, knives, blotter corners, trays, bowls, etc.

Making hinges, escutcheon plate, straps, corners, etc., for use on the woodworking models.

## HOUSEHOLD MECHANICS.

1. *Building Materials.*—Names of—and how to order—the materials commonly used in building. Writing an order for wood.

2. *Building Construction.*—A study of the various parts of the building; and continuation of the study of materials.

3. *Repairs Around House.*—Such as doors, windows, shelves, gutters, steps, roofs, etc.

4. *Sharpening Tools.*—Study of the methods and practices in sharpening bevel and wedge-edge tools, saws, and lawn mower.

5. *Soldering.*—A study of the principles of soldering; and practice in the use of the soldering iron, and in making some minor utensils.

6. *Glazing.*—A study of the mixture of putty; and practice in its use.

7. *Nails and Screws.*—A study of the correct use of nails and screws; applied on some special problems under construction.

8. *Paints and Varnishes.*—Composition of good paint. Use of dryer. The principles of painting. Varnish removing. Refinishing of old furniture.

9. *Locks.*—A study of different kinds of locks, and their mechanism; with practice in the setting of locks.

10. *Hinges.*—A study of the sizes and kinds of hinges.

11. *Furniture Repair.*—Study of fastening with glue, screws, angle irons, etc., practice in the repair of the furnitures.

12. *The Water Supply.*—How the water is supplied; valves and their purposes; location of water pipes. Reading of water meter.

13. *The Range Boiler.*—Circulation of warm water, illustrated by experiments. Connections and methods of heating.

14. *Faucets.*—Types of faucets. Specifications, and repairs.

15. *Traps.*—Kinds and purposes of traps. Ventilating; with actual practice in cleaning.

16. *Flush Tank.*—Mechanical construction. Purpose. Study of minor repairs and adjustments.

17. *Electric Bells.*—Electric door bell construction; current supplied by cells or transformers. Bell wiring problems.

18. *House Wiring.*—Principal parts of house wiring system. Testing and replacing of fuses.

19. *Heating by Electricity.*—General principles of electric heating. Electric heating elements in common use—as in flat irons, toasters, etc.

20. *Motors.*—A study of a small motor, in use in carpet sweepers and washing machines with minor repairs.

21. *Fuel.*—Different kinds of fuel. Cleaning of gas burners, and adjustment of air mixture.

22. *Hot-air furnace.*—Air circulation. Regulation of drafts. Cleaning of flues and grate.



23. *Steam-heating Plant*.—A single-pipe steam-heating system; and principles of operation.

24. *Hot-water Heating Plant*.—Circulation of hot water; and principles of operation.

25. *Refrigerator*.—Principles of refrigeration. Non-conduct-materials. Drainage. Economy of maintenance.

In connection with home mechanics students should be encouraged to bring articles from home for repairs, etc.

(The course in household mechanics will also continue in the III and IV years of the Secondary Schools.)

### III AND IV YEARS.

#### MATHEMATICS.

##### *Geometry.*

The I and II Year course reviewed and extended. Further selection of the leading propositions in elementary Geometry with exercises thereon.

##### *Synthetic Geometry.*

The following topics with exercises thereon: loci; maxima and minima; the system of inscribed, escribed, and circumscribed circles of a triangle, radical axis harmonic ranges and pencils.

The following propositions in Synthetic Geometry, with exercises thereon:

To divide a given straight line internally and externally in medial section.

To describe a square that shall be equal to a given rectilinear figure.

To describe an isosceles triangle having each of the angles at the base double of the third angle.

To inscribe a regular pentagon in a given circle.

The squares on two sides of a triangle are together equal to twice the square on half the third side and twice the square on the median to that side.

If  $ABC$  be a triangle, and  $A$  be joined to a Point  $P$  of the base such that  $BP:PC = m:n$ ; then  $nAB^2 + mAC^2 = (m+n)AP^2 + nBP^2 + mPC^2$ .

In a right-angled triangle the rectilinear figure described figures on the hypotenuse is equal to the sum of the similar and similarly described figures on the two other sides.

If the vertical angle of a triangle be bisected by a straight line which also cuts the base, the rectangle contained by the sides of the triangle is equal to the rectangle contained by the segments of the base, together with the square on the straight line which bisects the vertical angle.

If from the vertical angle of a triangle a straight line be drawn perpendicular to the base, the rectangle contained by the sides of the triangle is equal to the rectangle contained by the perpendicular and the diameter of the circle described about the triangle.

The rectangle contained by the diagonals of a quadrilateral inscribed in a circle is equal to the sum of the two rectangles contained by its opposite sides.

Two similar polygons may be so placed that the lines joining corresponding points are concurrent.

If a straight line meet the sides of  $BC, CA, AB$ , of a triangle  $ABC$  in  $D, E, F$ , respectively, then  $BDCEAF$  equal to  $DCEAFB$ , and conversely (Menelaus' Theorem).

If straight lines through the angular points,  $A, B, C$  of a triangle are concurrent, and intersect the opposite sides in  $D, E, F$ , respectively, then  $BDC EAF$  equal to  $DCEAFB$ , and conversely (Ceva's Theorem).

If a point  $A$  lies on the polar of a point  $B$  with respect to a circle, then  $B$  lies on the polar of  $A$ .

Any straight line which passes through a fixed point is cut harmonically by the point, any circle, and the polar of the point with respect to the circle.

In a complete quadrilateral each diagonal is divided harmonically by the other two diagonals, and the angular points through which it passes.

*Solid Geometry.*

*Definitions.*—General description of figures in three dimensions. The following propositions, with exercises thereon :

A plane is determined by (a) a straight line and a point not on it, (b) two intersecting straight lines, (c) two parallel straight lines.

Two intersecting planes cut one another in a straight line and in no other point.

If two straight lines are parallel, any plane intersecting one of them intersects the other.

If two planes are parallel, any straight line intersecting one of them intersects the other.

If a straight line is perpendicular to two intersecting straight lines at their point of intersection, it is perpendicular to every straight line in their plane through their point of intersection.

Conversely, all straight lines intersecting a given straight line at a given point and perpendicular to it lie in a plane.

If one of two parallel straight lines is perpendicular to a plane, the other is also.

Conversely, if two straight lines are perpendicular to the same plane, they are parallel.

If a straight line be at right angles to a plane, any plane through the line is perpendicular to the plane.

To draw a perpendicular to a given plane from a given point.

One and only one straight line can be drawn through a given point and perpendicular to a given plane.

The perpendicular from a given point to a plane is the shortest distance from the point to the plane.

If two straight lines are parallel to the same straight line they are parallel to each other.

If two intersecting straight lines are parallel respectively to two other intersecting straight lines the contained angles are equal.

If two planes have a common perpendicular they are parallel and conversely.

If two intersecting straight lines are respectively parallel to two other intersecting straight lines, the plane of the first two is parallel to the plane of the second two.

Straight lines which are cut by three or more parallel planes are cut proportionally.

To draw a perpendicular to two given straight lines not in the same plane.

There is only one common perpendicular to two straight lines not in the same plane.

In a tetrahedron the sum of any two angles at a vertex is greater than the third ; and the sum of the three angles is less than four right angles.

In a polyhedron the sum of the number of faces and the number of corners or vertices is two greater than the number of edges.

There are not more than five regular polyhedra.

The four diagonals of a parallelepiped are concurrent and bisect one another.

The four straight lines which join vertices of a tetrahedron to the centroids of the opposite faces meet in a point which divides them in the ratio of 3 : 1 : and the three straight lines which join the middle points of opposite edges meet in the same point and are bisected there.

Any plane section of a pyramid taken parallel to the base is similar to the base, and the area of such a section varies as the square of its distance from the vertex.

The volumes of two pyramids of equal heights and equal base areas are equal.

One sphere and only one can pass through four points not in the same plane.

*Analytical Geometry.*

- Axes of co-ordinates. Position of a point in plane of reference.  
 Transformation of co-ordinate—origin changed or axes (rectangular) turned through a given angle.  
 Area of a triangle in terms of the co-ordinates of its angular points.  
 Co-ordinates of the point dividing a straight line in a given ratio.  
 The distance between two points.  
 The various forms of the equation of a straight line.  
 The angle between two given straight lines.  
 Conditions of perpendicularity and of parallelism.  
 Distance from a point to a straight line along a given direction.  
 Perpendicular distance from a point to a straight line.  
 The various forms of the equation of a circle.  
 Tangent at a point and from a point.  
 Tangent in a given direction.  
 Polar of a point.  
 If a point moves along a straight line, its polar revolves about the pole of that line.  
 The length of the tangent from a point to a circle.  
 The radical axis of two circles.  
 Easy exercises on the preceding.

*Mensuration.*

Mensuration of volumes, surfaced areas, linear measurements including the development of the formulæ, in the following:—

Prism; pyramid; cylinder; cone; frustrum of cone; pyramid or sphere; zone of sphere.

*Trigonometry.*

- Measurements of angle: the right angle and the radian.  
 Trigonometrical ratios, relations among them, ratios of certain angles such as  $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ,  $150^\circ$ ,  $210^\circ$  and  $330^\circ$ .  
 Ratios of the sum and difference of angles, deduced formulæ.  
 Relations between sides and angles of a triangle.  
 Use of logarithms.  
 Solutions of triangles, with problems.  
 Area of a triangle.  
 Circumscribed, inscribed and escribed circles.  
 Inverse functions.  
 Easy exercises on the preceding.  
 Emphasize on solution of triangles with practical applications; use of slide rule (check by law of science), demonstration of transit, level, sextant, planimeter.

*Calculus.*

Differential and Integral calculus up to the Intermediate standard of Bombay University.

## SURVEYING.

*Elementary Surveying.*

Use of scales, simple chain and compass surveying. Use of simple level. Surveying fields and roads. Plotting and contouring.

## SCIENCE.

*Chemistry.*

The following topics to be covered in the III year :

An experimental study of the following elements and their more important compounds: hydrogen, oxygen, sulphur, sodium, potassium, nitrogen, chlorine, bromine, iodine, carbon, calcium.

Special attention should be given to the properties of the foregoing elements and compounds which give them commercial value.

An experimental study of: mixtures, solutions, compound and elements; acids, bases and salts.

Fundamental laws and principles, as: conservation of weight, definite proportions, multiple proportions, proportions by volume in which gases react; experiments on the law of definite proportions; the determination of the chemical equivalent of a metal (magnesium or zinc).

The quantitative meaning and use of chemical symbols, chemical equivalent, atomic weight, molecular weight, formulæ and equations.

Chemical nomenclature; valency.

Simple problems involving the calculation of formulæ, equations and percentage composition, the laws of definite and multiple proportions and the changes in the volume of gases due to changes in temperature and pressure.

The following topics to be covered in the IV year :

Rate of reaction and conditions that effect it (including catalysis), e.g., the action of oxalic acid in the presence of sulphuric acid on a dilute solution of potassium permanganate; the souring of milk.

Reversible reactions, chemical equilibrium and the conditions that effect equilibrium, e.g.,  $\text{ice} \rightleftharpoons \text{water}$ ,  $\text{water} \rightleftharpoons \text{water vapour}$ ,  $\text{ice} \rightleftharpoons \text{water vapour}$ , a salt (sodium sulphate)

in equilibrium with a saturated solution, limestone  $\rightleftharpoons$  quicklime and carbon dioxide  
bluestone  $\rightleftharpoons$  anhydrous copper sulphate and water, ferric chloride and ammonium sulphocyanate  $\rightleftharpoons$  ferric sulphocyanate and ammonium chloride (in solution).

A study of the following elements and their compounds illustrated as far as possible by laboratory experiments and having regard to Mendelejeff's classification; hydrogen, sodium potassium, magnesium, zinc, calcium, aluminium, carbon, lead, nitrogen, phosphorus, arsenic, antimony, oxygen, sulphur, chlorine, bromine, iodine, iron, copper, silver.

#### Qualitative Analysis :

The detection of the metal and the acid radical in solutions of the following salts: Lead nitrate, silver nitrate, copper sulphate, antimony chloride, arsenic chloride, iron sulphate, aluminium sulphate, zinc chloride, magnesium sulphate, sodium sulphate, potassium carbonate, ammonium phosphate.

#### Vapour tension (pressure):

The vapour tension of (1) benzene, (2) water, (3) water and benzene as determined by introducing a few drops of the several liquids into the vacuum of a mercury barometer.

Elementary notions of dissociation (ionization as derived from such experiments as the following: The change in colour due to the gradual dilution of a water solution of copper bromide or copper chloride, the precipitation of barium chloride from a solution by of barium chloride by the addition of hydrochloric acid, electrolysis.

Hydrolysis, as illustrated in the acid reaction of a solution of copper sulphate and the alkaline reaction of a solution of washing soda.

A study of the properties and uses of the following commercially important compounds: Sodium chloride, baking soda, washing soda, caustic soda, potassium nitrate, sodium nitrate, potassium permanganate, magnesium sulphate, zinc sulphide, zinc oxide, calcium carbide, plaster of Paris, alum, white lead, ammonium nitrate, superphosphate of lime, white arsenic, lead arsenate, steel, bluestone.

The following processes in the extraction of a metal from its ore: Roasting, reducing, electrolysis, and solution, as exemplified in the extraction of iron, zinc, lead, nickel, aluminium, copper and gold.

Organic Chemistry ;

Alcohols, acids and esters (fats) ; methyl alcohol, ethyl alcohol, glycerine, acetic acid, stearic acid, ethyl acetate, tallow and lard.

Soap making.

Carbohydrates : Glucose, cane sugar, starch, cellulose.

Hydrolysis of starch.

Proteins as constituents of food such as milk.

These organic compounds should be treated from the descriptive point of view and few formulas should be used.

### *Physics.*

A course defined as follows, the topics to be presented experimentally with mathematical applications simple and direct in character in the III year.

### *Sound.*

*Vibration and Wave Motion* :—

Experiments to illustrate vibratory motion of the pendulum, strings and plates transverse and longitudinal vibrations of a brass rod, wave motion in water and rope and coil spring.

Production, Transmission, Reflection and Velocity of sound :—

Experiments to show that sound originates in a vibrating body (turning forks violin strings) and that sound travels in wood, water, air, etc., but not in a vacuum ; to show consonance and reflection of sound (echoes).

Methods of determining the velocity of sound in air. Distinguishing features of sound.

Experiments on intensity, pitch and quality.

Experiments on the law of lengths and the law of tensions of vibrating strings, and simple problems on these two laws, the four laws of vibrating strings.

Vibration of Air Columns.

Experiments on organ pipes (or other tubes) and resonance jars. Determination of pitch and velocity by means of resonance. Sympathetic vibrations.

Nodes and Loops.

Experiments with vibrating strings, plates and organ pipes.

Interference Phenomena.

Experiments on interference and the production of beats.

### *Heat.*

Nature and sources of heat :

Experiments to show the production of heat by mechanical action, by chemical action and by electrical action.

Heat from the sun.

Kinetic theory.

Temperature :

Experiments to show—the expansion and contraction of solids, liquids and gases due to changes in temperature ; the different rates of expansion of (1) solids ; (2) liquids, the temperature at which the density of water is at a maximum.

Construction and graduation of Centigrade and Fahrenheit thermometers.

Charles' law ; absolute zero.

Quantity of heat ;

Quantity of heat as contrasted with temperature ; heat unit (the calorie) ; specific heat.

Experiments to find the specific heat of a metal and of a liquid.

Change of State due to Heat.

Fusion. Experiments to determine the heat of fusion of ice.

Vaporization. Experiments to determine—the heat of vaporization of water, the effect of pressure on the boiling point of water, the rates of evaporation of water and of ether; cooling by evaporation; dew point.

Transference of Heat.

Experiments to show—conduction and convection of heat, the absorption and the emission of heat by different surfaces.

Radiant energy.

### *Light.*

Nature and Sources of Light :

The transmission of light.

Experiments to show—that light travels in straight lines, the forming of an image through a pin hole, the forming of shadows; the methods of measuring the intensity of light by means of (1) the shadow, (2) the grease spot, (3) the diffusion photometer.

The wave theory.

Reflection of light :

Experiments to show,—the law of reflection, the formation and the position of images in plane and spherical mirrors.

Drawing images of objects in any position.

Refraction of light :

Experiments : To show refraction; to measure the index of refraction; to illustrate the first law of refraction; to show total reflection.

Relation between velocity of light and index of refraction.

Experiments : To show the converging and the diverging of light by means of lenses; to determine the focal length, conjugate foci, and the formation of images by lenses.

The drawing of images formed by lenses and the relation between the size of the image and the size of the object.

Optical Instruments :

Simple microscope, camera, and projection lantern.

Colour :

Experiments with prisms to show the decomposition of white light and the combining of coloured lights to form white light, and with Newtons' disc to illustrate complementary colours.

Experiments to show the effect of the transmission, the reflections and the absorption of light in producing colours.

The rainbow.

### *Magnetism and Electricity.*

*Magnetism* :—

Experiments to show—the laws of magnetic attraction and repulsions, magnetic lines of forces, magnetic field, magnetism by induction, magnetization, magnetic permeability, terrestrial magnetism, inclination and declination of the magnetic needle, evidence that each particle of a magnetized body acts as a magnet.

*Static Electricity* :

Experiments to show,—electrical attraction and repulsion, the two kinds of electrification, conductors and non-conductors, electrification by contact and by induction the residence of electric charges on the surfaces of conductors, the distribution of an electric charge on a surface, the escape of electric charges from points (lightning rods).

Experiments with the gold leaf electroscope, the electrophorus electrical condenser and the Leyden jar.

Simple notions of electrical potential.

*Current Electricity—*

Experiments to show the production of an electric current by using cells having plates of different kinds.

Methods of determining the presence and direction of electric currents (the galvanoscope), the effects of polarization of plates.

The Leclanche, dry and gravity cells.

Simple ideas of electromotive force, current strength and resistance.

Experiments on the electrolysis of water, electroplating, the measurement of current strength by the water and the copper voltmeters.

The storage cell.

Experiments to show,—the magnetic effects of an electric current, the electromagnet, the relation between the direction of the current and the polarity of an electromagnet, the magnetic field due to an electric current.

Construction and action of the D'Arsonval galvanometer, the electric bell, the telegraph key and sounder, the D. C. Motor. Experiment to show the transformation of the electric energy into heat (the electric iron the incandiscent lamp).

Induced currents.

Experiments to show,—the production and direction of induced currents (Lenz's Law), the relation of primary and secondary currents, the electromotive force of induced currents, the construction and action of an induction coil; self-induction, the construction and action of the step-up and step-down transformer.

Long distance transmission of electricity as illustrated in the Hydro-Electric System of Ontario.

Electric measurements.

The volt, ohm, watt and watt-hour.

Ohm's Law.

Construction and action of the ammeter, voltmeter, and Wheatstone bridge.

Special forms of radiation.

Electric waves as related to heat rays, light rays, ultra-violet and X-rays.

*Mechanics of Solids.*

Metric and English units of length. Use of vernier calipers, screw-gauge, in measurement of wires, cylinders, spheres, plate, etc.; unit of time.

Motion: Velocity, uniform and variable; average velocity, velocity at a point.

Newton's first law of motion, force, inertia, and mass, metric and English units of mass.

Acceleration measurement of uniform acceleration, acceleration due to gravity, value of  $g$ .

Momentum: Newton's second law; measurement of force, metric and English absolute and gravitational units of force.

Newton's third law; Conservation of momentum; centripetal and centrifugal force with illustrations, centrifuge, cream separator, form of earth, etc.

Composition and resolution of forces; parallelogram of forces; triangle of forces, moments, couples; centre of gravity.

Friction: Laws of friction; co-efficient of friction.

Gravitation: Newton's laws of gravitation; Cavendish's experiment.

Work: Measurement of work in metric and English absolute and gravitational units; energy; measurement of energy; kinetic and potential energy; conservation of energy.

Power: Measurement of power; horse power; the watt.

Machines: Mechanical advantage; lever; wheel and axle; pulley; inclined plane; screw; wedge; simple combinations of the foregoing.

*Mechanics of Fluids.*

Pressure: Pressure at a point; Pascal's law; pressure due to gravity; equilibrium of fluids at rest; Archimedes' principle; buoyancy; hydraulic pressure; specific gravity; determination of specific gravity of solids and liquids.

Atmospheric pressure; Barometers; weight of air; pressure due to molecular motion; lift and force pumps; siphon; the use of compressed air, airbrakes, air tools.

Velocity due to pressure; Torricelli's theorem; pressure in a moving column of fluid varies with the velocity; application to explain the principle of the atomizer, the Bunsen burner, the Bunsen filter pump, forced draught, the curved flight of a ball.

Surface tension; surface force; surface energy; capillarity; practical applications.

*Transformation of Energy.*

Mechanical equivalent of heat, measured mechanically and electrically; measurement of electrical energy; the kilowatt hour.

*Mechanics.*

The principle and use of levers and pulleys and other topics.

## TECHNICAL DRAWING.

Elementary machine design. Inking, tracing, lettering, blue printing and practice in reading blue prints.

## PRACTICAL WORK.

*Household Mechanics.*

The syllabus continued and completed.

*General Metal Work.*

Significant information, problems and short experience in simple (1) soft metal casting, (2) forge and smithy work, (3) tempering and heat treatment, (4) ornamental iron work, (5) plumbing, (6) elementary machine shop practice, mainly on simple lathes and drill presses, (7) Simple servicing of a live or dead motor car.

*General Electricity.*

Fundamental principles of electricity applied to and plants commonly used in household (1) lighting, (2) heat, (3) power generation, (4) power transmission and use, (5) communication, (6) electro-chemistry, as applied to chromium and nickel plating, etc. (This course if offered in any high School should be correlated with study of electricity under the head "Physics").

*Costs.*

For 20 pupils taken at a time.

*Technical Drawing.*

				Rs.
Non-recurring cost for equipment	..	..	..	500-600



*Shop Work.*

(A) <i>Woodwork</i> —	Rs.
Benches, tools and miscellaneous .. .. .	....
Materials { (Non-recurring) .. .. .	2,000
{ (Recurring) .. .. .	600
 (B) <i>Metal Work</i> —	
Benches, simple lathes, hearths, tools and miscellaneous (Non-recurring) .. .. .	2,000
Materials (Recurring) .. .. .	400
 <i>Workshop</i> —60' × 30' for Woodwork. 60' × 30' for Metalwork.	

*Teachers.**Technical Drawing Teachers—*

Teachers must have Engineering Diplomas of the V. J. Technical Institute, Bombay, or its equivalent with one or two years' practical experience. Salary Rs. 100 to Rs. 150 per mensem.

*Workshop Teachers—*

Teachers for the above should be trained teachers with special Manual Training qualifications or skilled craftsmen with special aptitude for teaching. Salary Rs. 75 to Rs. 100 per mensem. There should be separate teachers for separate subjects such as Woodworking, Metal working, etc.

*English in Secondary Schools.*

The English taught should be of a non-literary character and essentially practical. The teaching should aim at correct expression in the English language in the simple possible way. Description writing should be encouraged.

## APPENDIX VII.

## SYLLABUS IN CLAY WORK FOR PRIMARY AND SECONDARY SCHOOLS.

	Number required	Non- recurring.	Recurring.
1. Kick wheel or Hand Power Wheel.	5	50 0 0	
2. Callipers Inside and Outside..	10	10 0 0	
3. Compasses .. ..	10	10 0 0	
4. Setsquare .. ..	10	10 0 0	
5. Moulds (bricks, tiles, pipes etc.) of each.	10	25 0 0	
6. Masons trawels .. ..	10	5 0 0	
7. Plumb .. ..	10	10 0 0	
8. Spirit-level .. ..	10	5 0 0	
9. Lifter .. ..	10	10 0 0	
10. Double and stick .. ..	10	10 0 0	
11. Spoon Shovel .. ..	10	20 0 0	
12. Open place .. .. gunthas.	20	100 0 0	
This will differ according to the locality—		265 0 0	
13. Sundry articles etc. ..		35 0 0	
		300 0 0	
14. Teacher .. ..			60 0 0
15. Waste cotton .. ..		56 lbs.	20 0 0
16. Screens .. ..	10		10 0 0
17. Fuel, leaves of trees, waste of agricultural rubbish etc.			10 0 0
			100 0 0
Recurring cost of Rs. 100 will be easily covered by the articles prepared			

Clay is practically free being the property of Government which gets in every monsoon by nature. Ordinary Khumbhar services should be secured from villages. Rs. 5 per mensem part-time.

## Main heads of clay work :—

- (1) Selection of earth.
- (2) Preparation of Mixture.
- (3) Preparation of clay.
- (4) Familiarity and uses of the implements.
- (5) Moulding carving and preparing articles.
- (6) Drying process.
- (7) Stacking the kiln.
- (8) Burning the kiln.
- (9) Selecting good material.

DISTRIBUTION OF HOURS PER STANDARD PER WEEK FOR CLAY WORK FOR PRIMARY  
AND SECONDARY EDUCATION.

*Primary.*

Stand-ard.	Practi-cal.	Drawing	Total.	
1	14	..	14	Earth, sand, alluvial soil; differentiation only; to collect from banks of stream and rivers, pools, etc.
2	12	2	14	Colours of earth. Stickiness. Simple ideas with aid of water.
3	12	2	14	Recognition of useful earth, and preparing small crude article, e.g. bricks, tiles, etc.
4	11	3	14	Preparing Bricks and Tiles of bigger size.
5	11	3	14	Preparing half round tiles, pots etc.
6	11	3	14	Setting and making them bigger by tamping process, and preparing the kiln after drying them.
7	11	3	14	Stacking and burning.

*Secondary.*

Stand-ard.	Practi-cal.	Engi-neering Drawing.	Total.	
8	8	2	10	Advanced course in the production of ornamental flat flooring tiles, Mangalore type tiles, etc.
9	8	2	10	
10	8	2	10	Carving on pottery, preparing cups, lottle, inkstands etc. and lacquering them.
11	8	2	10	

Marketable clay work articles that may be prepared under the above course :—

*Gods' images.*—Ganapati, Gauri, Hartalika.

*Fruits.*—Plantains, Mangoes, Bringals, etc.

*Birds.*—Parrot, Peacock, Hen, etc.

*Animals.*—Dogs, Cat, Rat, Bullock, Cow, etc.

*Buildings.*—Taj Mahal, etc.

## APPENDIX VIII.

## SYLLABUS IN CARD-BOARD AND WOODWORK FOR PRIMARY SCHOOLS.

*Standards I and II—Card Board and Jowar-pith work—*

(a) Thin (ruled preferred) paper cutting and folding, leading to a finished article as—

1. Envelopes.
2. Paper boxes for sweets of Sankrant.
3. Whirling wheel.
4. Paper kites.
5. Bullock carts, cycle etc. from pith of jowar.

(b) Card board (ruled) cutting folding etc.

Boxes (open, closed and with lids) square and round.

Bungalows, Houses etc.

Models of locomotives, cycle.

A complete tree with leaves flowers and fruits.

Aeroplane, Boat, Telephone, Motor Car, Crane.

*Woodwork to be introduced in Standards III, IV, V, VI and VII.*

*Standard III—Carpentry in soft wood without joints (to be assembled with nails, screws and bolts).*

Cake Board set.

Seat.

Yoking peg.

Hunter Handle.

Toy, Vitee and Dandoo.

Toy, Tipari.

Stumps.

Bat.

Ball.

Bells.

Toilet Box.

Tray.

Ink Bottle Stand.

Paper Rack.

Churning Rod.

Mallets.

Ruler.

Foot Rule.

Lathee.

Pen Holders.

File strips.

*Standard IV—Half lap joints—*

1. Cot.
2. Cradle.
3. Set Square.
4. Simple writing tables of variety.
5. Wall racks for lamps.
6. Stands for Electric Lamps.  
Stands for candles.

7. House-hold, cook room articles.
8. Agricultural easy implements etc.
9. Weaving :—handy articles.
10. Pegs.
11. Peg rack.
12. Electric fittings, small Boards, etc.

*Standard V*—First term.—

All the above articles in complicated joints.

*Standard V* (2nd term.), *VI* and *VII*—

A graduated course in the production of wooden articles involving the use of the more complicated joints, turning, fittings, polishing, varnishing and lacquery.

- | (a)                             | (b)   |
|---------------------------------|---|
| 1. Chairs.                      | 1. Cupboards.   |
| 2. Tables.                      | 2. Dressing Table.  |
| 3. Clock frames.                | 3. Almirah.   |
| 4. Ladders.                     | 4. Tables with turned legs.                                       |
| 5. Shelves.                     | 5. Boxes with dovetailed joints.                                  |
| 6. Phone Boxes.                 | 6. Sofas etc.   |
| 7. Teapoyes.                    | 7. Sets of Carpentry tools.                                       |
| 8. Drawing Boards.              | 8. Sets of Mason tools.   |
| 9. T. Squares.                  | 9. Sets of Black-smith tools.                                     |
| 10. Set Squares.                | 10. Models of locomotives etc., Vehicles on land.                 |
| 11. 12" foot rule with marking. | 11. Transport arrangement on water, Transport arrangement in air. |

*Distribution of hours per Standard per week.*

Stand-ard.	Practi-cal.	Drawing	Total.	Remarks.
<i>Primary.</i>				
I	14	..	14	Card board, Thin paper and Jowar-pith work.
II	12	2	14	Uses of Drawing instruments should be demonstrated.
III	12	2	14	Carpentry in Soft wood.
IV	11	3	14	Various models with half lap joints.
V	12	2	14	} A graduated course in the production of wooden articles involving the use of the more complicated joints, simple turning, polishing, varnishing and lacquering.
VI	12	2	14	
VII	12	2	14	
<i>Secondary.</i>				
VIII	5	1	6	Chairs and tables of ornamental type with wood carving polishing.
IX	5	1	6	Easy chair, folding and rocking, with polishing
X	5	1	6	Sofas, Almirahs.
XI	5	1	6	Dressing Tables, Cabinet making etc.

*Cost of a Unit of 15 Tables (30 Pupils).**Primary.*

Room 50' x 25' for Carpentry Class.

Room 10' x 10' for Stores.

(The cost will vary according to local conditions.)

(a) 1	Almirah.	}	Rough cost Rs. 200. Non-recurring.
2	Working benches.		
15	Knives.		
15	Scales.		
2	Iron Squares.		
15	Working Boards.		
7	Scissors.		
17	Paper Cutting knives and material.		

Recurring cost Rs. 250 of which Rs. 150 might be met from the sale of finished articles prepared.

(b) 15	Tables.	}	Rough cost Rs. 1,000. Non-recurring.
15	Saws.		
15	Planes.		
15	Triangular Squares.		
2	Screw drivers.		
1	Grinding stone.		
2	Hand drills.		
1	Set Board.		
15	Gauges.		
5	Compasses.		
40	Chisels.		
1	Pincer.		
15	Iron Scrapers.		
10	Punches and other material.		

Recurring cost Rs. 800, of which, timber cost of Rs. 500 might be met from the sale of finished articles prepared.

*Secondary.*

Same as (b) above	..	Rs.
Recurring cost	..	800
Non-recurring	..	1,000

Total Rs. 1,800

The whole recurring cost of Rs. 800 might be met from the sale of finished articles prepared.

## APPENDIX IX.

*The Course for Practical Work for Standards VIII and IX.  
(Light Engineering.)*1. *Properties of Matter* :—*Theory*.—Capillarity, Combustion and reflection of light.

Friction, Chain and wheel, Gyroscope, Crank, Efficiency of Brakes.

Gears and levers.

Boyle's Law.

Gears, Springs, Inertia.

Levers, Screw, inclined plane.

Capillarity, pumps, etc.

Pumps of all kinds.

Solubility of gases.

*Practical*.—Hurricane Lanterns, Stands, Other lamps, Cycle Lamps.

Bicycle with pump and accessories.

Sewing Machine, Pair of Scissors.

Stove, Petromax Lamp, Carbide Lamp.

Clocks, other spring toys.

Locks of all types, spanners, screw, etc.

Fountain Pens, Holders, Nibs, pencil menders, etc.

Water pump, cycle pump, foot-ball pump, Kerosene oil pump, dust pump.

Aerated water machine, Soda Capsule Bottle, etc.

2. *Electricity and Magnetism* :—*Theory*.—Resistance, cells of all kinds, accumulators, electro magnets, induced currents circuit etc.*Practical*.—Electric Lamps, Batteries, Telephones, Magnets, Radio, Electric bell, Dynamo, electric motor, Telegraph.

Electric fan, centrifugal pump, blowers of different varieties.

Electrical fittings such as renewing, fuses, wiring, fixing holders, cut-outs, switches, plugs, etc., etc.

3. *Heat* :—*Theory*.—Internal combustion, engines and steam engines, Indicator diagrams.*Practical*.—Motor Cars, Motor cycle, Locomotive, Oil engine, Steam engine, Gas engine, etc.4. *Sound* :—*Theory*.—Vibrations of membranes, Pitch, resonance, etc.*Practical*.—Gramophone, Harmonium and other musical instruments.5. *Light* :—*Theory*.—Mirrors, Geometrical optics and lenses and their combination; Principle of the prism, Reflection and Refraction.*Practical*.—Camera, Magic lantern, episcopo, epidiastroscope, binoculars, Magnifiers, Mirrors of different types.6. *Chemistry* :—*Theory*.—Combustion and flame, luminous and non-luminous flames.*Practical*.—Cycle lamp and all types of lamps.

Stoves, petromax lamps.

*Articles to be repaired in the 1st and 2nd Years of Secondary School.*

1. Hurricane lanterns, Stands, Other lamps, Cycle lamps.
2. Bicycle with pump and accessories.
3. Sewing machine, pair of scissors.
4. Stove, Petromax, Carbide lamp.
5. Gramophones, Clocks, all other spring toys.
6. Locks of all kinds, spanners, screw, etc.
7. Fountain pens, Holders, nibs, pencil menders, etc.
8. Water pump, cycle pump, foot-ball pump, Kerosene oil pump, dust pump.
9. Hand loom, Gin, Charka, Rope-making machine, etc.
10. Camera, Magic Lantern, Epidiascope, Binocular, Magnifiers, Mirrors, etc.
11. Aerated water machine, Soda Capsule Bottle.
12. Oil Hand press.
13. Sugarcane Crusher, Flour Mill, Betel-nut Machine.
14. Electric lamps, Batteries, Telephones, Magnets, Cells of all types, Radio, Bells, etc.
15. Motor Cars, Motor Cycle, Motors, Dynamo, etc.
16. Oil Engine, Steam Engine, Gas Engine.
17. Electric fan, Centrifugal pump, Blowers of varieties.
18. Plumbing, Tool, Pipe-cutters, Wrenches and their other tools.
19. Electric fittings (simple) such as renewing, fuses, wire connections, fixing holders, cut-outs, switches, plugs, etc.
20. Harmoniums.
21. Typewriter.



*Equipment of Workshop for Light Engineering in Secondary Schools.*

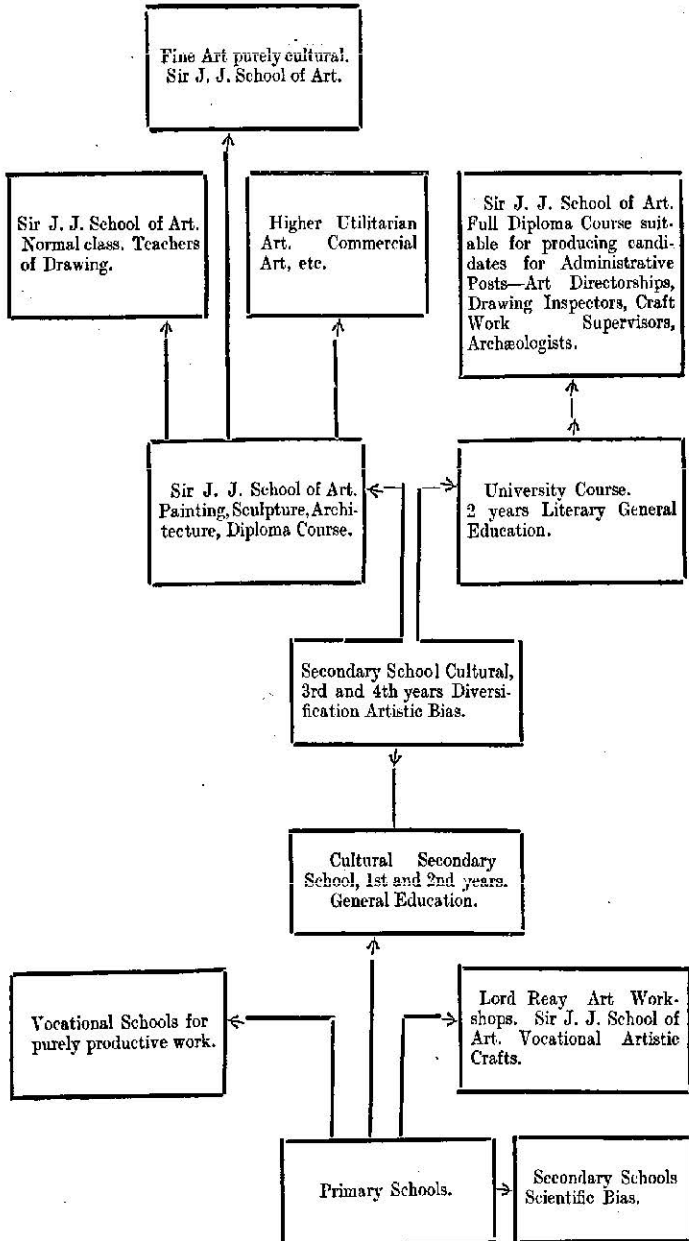
				Cost.	
				Rs.	
1.	Oil Engine, 10 Horse Power	..	..	2,000	
2.	Lathes, three	..	..	2,500	
3.	Drilling machine	..	..	200	
4.	Circular saw	..	..	200	
5.	16 Carpenters' benches	}			
6.	32 Vices of wooden jaws				
7.	32 Bench hooks				
8.	32 Wooden mallets				
9.	8 Rip saws				
10.	8 Smoothing planes				
11.	8 Claw hammers				
12.	8 Bevil gauges				
13.	8 Oil stones and cans				
14.	8 Screw drivers		..	..	1,200
15.	Chisels assorted (128)				
16.	8 Glue pots				
17.	1 Power grinding stone				
18.	Marking gauge (32)				
19.	Tri-square (32) 1" x 9"				
20.	2 Foot-rules (32)				
22.	Jack planes, 12" long (32)				
23.	16 Country lathes				
24.	2 Axes				
25.	2 Adzes				
26.	Pair of caliper (16)				
27.	Turning chisels, assorted (96)				
28.	Power blower, one	..	..	160	
29.	8 Black-smith forges	..	..	200	
30.	8 Anvils	..	..	200	
31.	8 Sledge hammers	..	..	25	
32.	16 Hand hammers	..	..	15	
33.	A Cupola	..	..	100	
34.	8 Sets of moulds	..	..	50	
35.	8 Sets of moulders' tools	..	..	80	
36.	Kettle. (4) Crucibles, assorted	..	..	25	
<b>Total</b>				6,895	

*Recurring Cost.*

	Rs.	Rs.
1 Superintendent (Foreman)	.. 80 per mensem	1,000
1 Black-smith and Carpenter (joint)	.. 40 "	500
1 Hammerman	.. 8 "	100
1 Moulder	.. 40 "	500
1 Fitter	.. 40 "	500
		2,600
Materials	.. ..	400
<b>Total</b>		3,000
Recurring cost for the first year	.. ..	3,000
Do. do. second year	.. ..	1,000

## APPENDIX X.

CHART SHOWING THE VARIOUS STAGES OF ART EDUCATION FROM THE PRIMARY SCHOOL LEADING UP TO THE SIR J. J. SCHOOL OF ART, BOMBAY.



## ART IN PRIMARY AND SECONDARY EDUCATION.

*General Remarks.*

*The Basic Craft.*—Under the new scheme of Primary and Secondary Education, Art Education in the Schools must necessarily be given a prominent part. The Primary Education which has for its main frame work an education based upon some basic craft, necessarily calls for greater attention to be given to the "Art Lesson", which might incidentally be better termed the "Drawing Lesson". Because art which will be given in the schools will be a more practical and preliminary nature—the main object in view being to lead up to some creative activity—and ultimately to productive work. Therefore drawing should be recognised in the first instance by the teachers, as an essential subject correlated not only with all other subjects taken in the School, but also to enable a pupil to go through a course of instruction leading up to productive work through the various selected crafts. The term "productive" must not be specifically taken as meaning that teachers should aim for purely saleable work, irrespective of its educative possibilities. When we speak of educating children through purposeful creative activities leading on to productive work, the teacher must fully comprehend its significance, and never lose sight of the real educative purpose in view. By such means it might be possible to make education eventually partly self-supporting. It should be the aim of every teacher to encourage work of a utilitarian character whenever and wherever possible. Crafts may conveniently be divided into two groups. Those which are purely practical such as spinning, bee-keeping, etc., and those which are both utilitarian and artistic. The former leads directly to purely vocational work. The latter also takes into consideration the cultural aspect. Both groups provide the necessary material upon which a basic education can be developed. It should be possible for a pupil who drops out at the end of the primary stage to be equipped with a working knowledge of at least one craft, and to take his place as a useful artisan. The Primary Education as envisaged by the new scheme, should be a means of cultivating observation, perception, and a power to express graphically as well as verbally through a basic craft. This is the main educative purpose in view, and the drawing lessons should be devised accordingly. The pupil should as a result of his primary and secondary education be an asset to the community and eventually be a means of improving the crafts in India.

*"Team work"*.—Team work should be encouraged wherever possible to carry out more elaborate work. This develops the pupil's sense of responsibility, and each individual pupil taking part in such work, feels that he has achieved something. Such a method fosters pride in the work done.

The necessary arrangements and equipments should be given in the Primary Schools, for developing the following artistic crafts, which have a practical productive value.

Modelling (Plasticine is preferable for young pupils) relative to pottery.

Pottery.

Woodwork, wood-carving, canework and bamboo work.

Lacquer work.

Metal engraving and shape-making.

Stencilling.

Hand block printing.

Raffia work and basket-making.

Needle craft for girls.

Textile designing.

Home craft for girls.

Weaving.

Paper machine work.

Lace-making.

Toy-making.

Leather-work.

In the Secondary School, elementary architecture, house decoration, and enamelling should be additional subjects. It is very important that the particular crafts selected by any school should be those which are suitable to the locality.

The competent craftsman must essentially be both draughtsman and designer. The art of the future Indian craftsman must be developed, and this can only be accomplished if the new generation of craftsman receive greater encouragement which the new scheme basic education promises.

The basic principle of all education is that it should mould the character of the student, to prepare him for after life, not only in the direction of manipulative skill, but also to foster a keen desire to appreciate the best in life, which would lead up to its full enjoyment, consistent with a sense of good citizenship. It is therefore important that the cultural side of a child's education should be fostered from an early age to carry out the true spirit of educative work in view, much experimental work is necessary, especially in the transitional stages, Finished work to any appreciable extent of a saleable character can be reasonably expected from the pupils at the end of their Primary stage. Saleable work of artistic value can reasonably be expected at the end of the Secondary stage.

The aim of all good craftsmanship should recognise the following three points :—

No. 1. *Utility*.—That is, the object whatever it may be, must have a useful purpose, and is the primary consideration.

No. 2. *Design*.—The general form of the object should be considered from the point of view of its good proportions, its shape and its colour.

No. 3. *Suitability to the material used*.—This concerns the proper and natural use of a given material to any specified purpose. Many things are more suitably made in wood than metal, then again the particular varieties of wood and metal should be given due attention.

It will be found that any piece of work which complies with the three requirements mentioned above, will necessarily produce a piece of good craftsmanship.

In the training of the future Indian craftsman the pupils should be made aware of the possibilities of the many new materials at hand. He should explore them with the object of developing his creative faculties for a general improvement in the artistic crafts.

There are at least five factors which account for the lamentable conditions which at present exist regarding the present-day Indian craftsman.

No. 1.—Illiteracy.

No. 2.—Sometimes his work does not come up to the standard of the best traditional Indian work of the past; this is perhaps due to his confused ideas caused by contact with the many articles produced by machine mass production methods. The craftsman is often influenced by mechanical finish, which indeed often fascinates him, and he not only tries to imitate such finish, but also attempts the impossible feat of competing in its speed and price.

No. 3.—Lack of efficient organisation in distribution, and sale of work.

No. 4.—Vested interests, that is, wholesale buyers who control the low prices, and output of work in a specified time, and who finally reap the harvest.

No. 5.—Certain crafts of a more primitive nature should retain their primitive traditional characteristics, if they are to flourish, and should not be influenced by passing fashions, except in the case of those objects of more modern usage, which lend themselves to a more modern treatment, in which case, simplicity should be the aim, and incidentally this may be the beginning of a new school of Indian design. Such objects call for much experimental work on the part of the modern Indian craftsman, and opens up a new creative field. It should be remembered that although it is necessary for the craftsman to keep one eye on tradition, and the other eye on modern design, according to requirements, it is most essential for him occasionally to keep both eyes on the importance of modern psychology in placing his goods before the public. A little showmanship and a dash of good window-dressing is an effective way of creating a demand.

## SYLLABUS IN DRAWING FOR PRIMARY SCHOOLS FOR STANDARDS I TO IV.

The subjects in the drawing and handwork lessons from Standards I to IV (lower Primary) should be similar but graded, and should be distinct and separate from those in the upper primary Standards V to VII. The lower primary art course would generally consist of general drawing lessons, colour work, and correlated with as much hand work as possible, the chief aim throughout should be to stimulate the pupils' imagination by means of work which should invariably be in the nature of recreation, therefore no syllabus need be rigidly observed, until after the IV year. The media for drawing and colour work in these early classes should consist of soft materials such as pastel or crayon, and a B pencil should be used. The ruler should not be encouraged, as free drawing is advisable. From the early stages the pupils should be trained to draw with a free movement of the arm from the shoulder, and not to hold the pencil as they would in writing. Toned paper with coloured chalk forms a suitable media for young pupils.

*Free Expression Drawing.*—e.g. stories and illustrating incidents, taken from every day Indian domestic life. Nature Drawing in water colour or crayon, simple large fruits such as pumpkins, melons or fairly large leaves which have strongly defined junctions to the main stem.

*Freehand.*—Exercises in copying from large reproductions, of broad simple designs selected from Indian traditional ornaments. The purpose of this lesson should be to develop the pupil's ability in judging masses, proportions, and the distribution of parts relatively correct.

*Object Drawing.*—The exercises should consist of objects of every day usage, having simple forms and as far as possible such forms should conform to the simple geometric solids, such as the sphere, cube, triangular prism and cone, etc., and should be drawn at different levels. The object drawing for young pupils (Standards I to IV) should not be hampered by the theories or the principles of perspective. Demonstration should preferably be given by example. Apart from the necessary exercise in drawing from groups of objects, the main purpose of this lesson should be to develop sufficient skill to readily sketch in freehand perspective, any object which is to be made. Such practice and ability to represent an object by means of a sketch is invaluable for the pupil in order that he may realise the general appearance of an object to be made, and helps him considerably to visualise the work before it is actually carried out. The things selected for this lesson should be of the simplest kind, that is to say the contours should be definite, and when groups are arranged they should be easily recognisable in their different proportions and shapes. It is essential that the objects selected for the lesson should be based upon the simple geometrical solids such as the cube, triangular prism, cone or sphere, etc. Complicated mouldings or irrelevant detail should be avoided.

*Design.*—This subject can best be taught to young pupils through some practical simple hand work, such as raffia work, weaving, paper cutting, etc.

*Craftwork.*—The nature of the craft work in the Standards I to IV to consist of making simple objects of interest such as coloured toys in wood, wool or rag, Plasticine modelling of simple fruit forms and toys familiar to the pupils. Paper tearing and cutting, weaving plaits, with strips of coloured paper, these are good exercises for producing original designs. Basket work and weaving mats in colour in various materials will also provide scope for teaching elementary design.

The theory and principles of design should not be laboured. It will be found that design evolved naturally by repetition, and arrangement of simple units, and no undue mental effort should be necessary in order to achieve originality. Design should happen by accident, and should not be solved such as a puzzle. Subjects such as making models of small houses—setting out a miniature garden, dolls house, etc., may be given.

*Nature study.*—It must be borne in mind that the purpose of this lesson is to give pupils a knowledge of good form and colour as can be found in nature. Very often unfortunately, it happens that the aim of nature study in many schools is an end in itself. This notion is entirely wrong. Nature study can only serve its purpose if pupils can adopt the beauty in nature to craftwork. The lesson should essentially lead up to the crafts as with the lessons in Design.

This subject should be executed in the following media. Purely pencil renderings of a flowering plant also wash drawings with special reference to colour combinations in nature.

*Design.*—Nature study should be closely connected with the lessons in Design. Natural forms based upon previous nature study with exercises in conventional treatments. The design lesson would be incomplete if no consideration is given to the study of suitable treatment of conventional forms of nature as adapted to the various materials in which students will work in their craftwork. Forms in design are governed by the material in which they are to be worked. Exercises in the filling of simple geometric shapes, floral or abstract. Interlacing, and simple shapes such as sari borders are very good exercises.

### PRIMARY SCHOOL (*Upper*).

#### STANDARDS V TO VII.

##### *Drawing.*

This course should devote considerable time to practical drawing leading up to work to be carried out, such as setting out practical working drawings. Drawing lessons are of little value unless they are adaptable to creative activities as expressed in craftwork,

##### *Subjects.*

1. *Object Drawing.*
2. *Nature Study.*
3. *Design.*—To be related as far as possible to something which is to be made by the pupil in the craft class. Natural forms based upon previous nature study with exercises in conventional treatments should be adapted according to the limitations imposed by the materials of any specific craft.
4. *Geometry.*—Plane and Solid. Simple scales.
5. *Freehand.*—Exercises from large ornamental details from Indian architecture ; also studies of free curves as in paper scrolls.
6. *Memory.*
7. *Lettering.*—Based upon the Roman and Vernacular alphabets.
8. *Colour work.*
9. *The theory of Colour.*—Harmony and Contrast. Mixing of various pigments.

### PRIMARY SCHOOL (*Upper*).

#### STANDARDS V TO VII.

##### *Artistic Crafts.*

1. *Metal work.*—Household articles made in wire, also a general knowledge of the various metals and their special qualities.
2. *Engraving.*—This lesson should be linked up with the lettering and design lessons.

3. *Shape making*.—This subject is the basis of practically all artistic metal work, and is essential for any pupil taking metal work as a craft.
4. *Stencilling*.
5. *Needle craft*.—For girls.
6. *Hand block printing* for textiles. Sari borders etc.
7. *Pottery*.—Throwing shapes on the Potter's wheel. Making and decorating tiles. Firing.
8. *Modelling*.—This work should be closely related to pottery. Modelling in this early stage should not be confused with sculpture proper.
9. *Paper mache work*.—Making models related to the Geography lessons. Contours etc., Charts. The cost of materials required is practically negligible.
10. *Wood-work*.—Various joints used in carpentry. Making simple objects of household furniture, making picture frames; also bamboo and cane work.
11. *Toy making*.—Toys in wood painted in Enamel. This subject could be developed on the line of a small local industry.
12. *Home Crafts for girls*.—Laundry work. Cooking. Nursing, etc.

#### ART IN SECONDARY SCHOOLS (4 YEARS).

##### *General Remarks.*

Under the proposed Scheme of Education the secondary schools will consist of two types, e.g., scientific and cultural. In each case the first two years will, to a greater extent be devoted to general education. Diversification takes place in the 3rd year. The course in the scientific group should in addition to the usual drawing subjects, emphasize the subject of practical drawing, e.g., geometry plane and solid and the setting out of working drawings for the various experiments taken in the school and related to other lessons.

*Cultural Secondary School*.—In this type of School, during the first two years, the time allotments should be 7 periods drawing, and 7 periods practical work (art craft). During the 3rd and 4th years the time allotments should be, Drawing 8 periods, Practical Work (art crafts) 8 periods.

In the transitional stage a good working knowledge of English is essential throughout both types of secondary schools. Neglect of the English language would prove a serious handicap to those who eventually wish to follow through to the higher courses. It is however assumed, and hoped, that eventually the mother tongue will be the universal language throughout all schools. It is essential that drawing master in the Cultural Secondary School should be one who has at least gained his drawing certificate, through the Sir J. J. School of Art, Bombay.

The cinema—the moving picture—should be introduced in all types of schools for the purpose of explaining the various methods in the making of things. A "slow motion" picture would be invaluable, in which the manipulation of the hands and the behaviour of materials under varying conditions could be shewn. The 'Radio' would also be a great advantage from both the point of interest as well as instruction. If every school were fitted with a small cinema and Radio the expenditure would certainly bring in a substantial return from the educational point of view. For the successful carrying out of the above, it would be necessary to have some co-ordinating and directing authority to deal with the scheme to decide suitable pictures and lectures.

SECONDARY SCHOOL, 1ST AND 2ND YEARS (*Cultural*).

*Drawing.* 6 periods per week.

The character of the drawing lessons in the first two years should consist of similar subjects as in the upper primary, but would of course be of a more advanced nature. They should be regarded as continuation lessons of the earlier studies.

The subjects to be given would be as follows :—

1. *Object Drawing* in line wash, and in light and shade.
2. *Geometry* plane and solid, scales.
3. *Nature study.*
4. *Lettering.*
5. *Design* for a specific artistic craft.
6. *Memory Drawing.*
7. *Perspective.*
8. *Freehand.*—The study of Indian traditional ornament.

SECONDARY SCHOOL, 1ST AND 2ND YEARS (*Cultural*).

*Artistic Crafts.*—6 periods per week. The new generation of craftsmen should be well acquainted with the possibilities of the many new materials in use today. He should explore them with the object of the developing the Indian crafts. It must also be noted that lack of nature study leads to stagnation in Design. Mere stereotyped copying of good traditional forms and motives is not enough. It is neither progressive nor educational and pupils under the new scheme of Education should be made aware of it.

The following are the artistic Crafts recommended :—

1. *Modelling.*—This subject should be closely related to pottery.
2. *Pottery.*—Throwing shapes on the potter's wheel. Knowledge of the various clays.
3. *Woodcarving.*
4. *Needle craft* for girls.
5. *Hand block printing* for textiles.
6. *Leather work.*
7. *Printing* (Artistic layout work.)
8. *Enamelling.*—Cloisonne, Champléve.
9. *Metal work.*—Engraving, Shapemaking and Embossing.
10. *Home Crafts* for girls, laundry work, cooking, sewing.



OUTLINE SYLLABUS FOR DRAWING IN THE 3RD AND 4TH YEAR  
SECONDARY SCHOOL (CULTURAL) 3 PERIODS PER WEEK.

1. *Object drawing*.—In line or wash.
2. *Nature Study*.—Its decorative conventional treatment relative to the limitations of the various crafts. Lack of nature study produces stereotyped designs. The mere copying of good traditional motives is neither progressive nor educational.
3. *Design*.—Related to crafts, working drawings, etc.
4. *Geometry*.—Plane and solid, simple solids.
5. *Memory drawing*.
6. *Painting*.—Water colour.
7. *Freehand*.—Of ornamental details selected from Indian architecture.
8. *Lettering*.—Constructed letters and direct pen stroke letters with the goose or turkey quill or scribe pen, based on the standard Roman alphabet, and the other various types taken from the vernacular alphabets.
9. *Commercial Art*.—Designing simple posters, show cards, etc.
10. *Elementary Architecture*.—Making measured drawings of details taken from Indian buildings of historic and local interest.

The study of mouldings, and their applications to the various materials used in the practical crafts.

SECONDARY SCHOOL, 3RD AND 4TH YEARS (Cultural).

8 PERIODS PER WEEK.

*Crafts.*

1. *Wood-work*.—General carving, making picture frames and carving them. Preparing a Gesso treatment to picture frames. Furniture.
2. *House decoration*.—Study of the various media used for practical work e.g. Oil medium.  
Distemper colour.  
Turpentine as a thinner. The use of driers and varnishes. The use of gold leaf and gold transfers.  
Spray painting, graining and marbling on wood panels.  
The practical application of ply wood, and mesonite for panelling and painting the special treatment for surfaces to be painted.
3. *Stencilling*.—The practical use of stencil work in repetition work.
4. *Leather-work*.—Artistic work, e.g. handbags, cases, blotters etc. Making articles composed of stripes and strings, Lacing, Colouring in leather-work.
5. *Textile designing*.—Using the hand-made blocks.
6. *Needle craft* for girls.

7. *Batik work*.—Dyeing in various designs for saris, scarves etc.
8. *Carpet weaving*.—Including dyeing.
9. *Modelling*.—This work should be closely related to pottery.
10. *Pottery*.—Throwing shapes on a potter's wheel. Casting shapes from mould.
11. *Lacquer work*.—For furniture and other purposes such as decorative boxes etc.
12. *Home Crafts for Girls*.—Lace work. Braid and lace weaving. Sewing. Tailoring. Laundry work. Cooking.
13. *Metal work*.—Wrought iron work. Engraving repousse work. Embossing. Shape making. Forged and cast work. Electro plating.
14. *Enamelling*.—Cloisonné, Champlevé as applied to artistic metal objects.

IN ADDITION TO THE GENERAL PRACTICAL WORK IN WOOD, METAL, AND CLAY SUGGESTED FOR THE PRIMARY BASIC COURSE, THE FOLLOWING ARTISTIC BASIC CRAFTS ARE ALSO RECOMMENDED FOR PRIMARY SCHOOLS.

*Artistic wood-work—*

Carving, and the making of simple objects of artistic furniture.

Inlay work etc.

*Artistic metal-work—*

Shape making.

Engraving.

Enamelling.

*Artistic Pottery—*

Thrown shapes on the potter's wheel.

Decorating in, under and over glaze painting.

'Cast' pottery.

Modelling.

The recurring and non-recurring expenditure given elsewhere is approximately the minimum annual expenditure for the introduction and maintenance of a village class of 30 boys. It should be noted that in view of the importance which Art Education will play in connection with the new scheme of Education, and the relative importance which will be given to drawing and craftwork, it is strongly recommended that full advantage should be taken of utilising the facilities and equipment which already exist at the Sir J. J. School of Art, Bombay, and it is further recommended that the Sir J. J. School of Art, Bombay, is admirably situated as a centre for Elementary and Higher Art instruction and for the training of Drawing and Craft Teachers, and the organisation of the courses for artistic crafts. The Director should be left free to devise or readjust the above mentioned art and craft courses from time to time, and to make such changes in the light of experience gained, to meet the main requirements of art instruction as enunciated by the Zakir Hussain Scheme.

ARTISTIC POTTERY AS A BASIC CRAFT FOR PRIMARY SCHOOLS FOR A VILLAGE SCHOOL  
TO TEACH 30 STUDENTS.

				<i>Non-recurring.</i>		Rs. a. p.
1 Muffle Kiln	..	..	..	..	15	0 0
1 Motor	..	..	..	..	3	0 0
1 Potter's wheel	..	..	..	..	15	0 0
6 Enamel basins	..	..	..	..	5	0 0
Sieves	..	..	..	..	5	0 0
				Total	..	43 0 0

*Recurring Expenditure.*

Every boy will at least require 1 cwt. of clay per year.

				<i>Raw-Materials.</i>		Rs. a. p.
¼ Ton Ball Clay	..	..	..	..	7	8 0
1 Cwt. China Clay	..	..	..	..	2	0 0
1 Cwt. Flint	..	..	..	..	2	0 0
1 Cwt. Felspar	..	..	..	..	2	8 0
1 Ton Red Clay	..	..	..	..	5	0 0
				Total	..	19 0 0

				Rs. a. p.	
Raw Material of Glaze	..	..	..	..	15 0 0
Raw material for colours (oxide)	..	..	..	..	5 0 0
				<hr/>	
				20 0 0	
Firewood or coal	..	..	..	..	20 0 0

				Rs. a. p.	
Non-recurring	..	..	..	..	43 0 0
Raw materials	..	..	..	..	19 0 0
Raw materials of glazes	..	..	..	..	20 0 0
Firewood or coal	..	..	..	..	20 0 0

				<hr/>	
				112 0 0	
				<hr/>	
Raw Plaster of Paris	..	..	..	..	10 0 0

ART METAL WORK BASIC PRIMARY.

ENGRAVING AND ENAMELLING CLASS.

*Expenditure necessary for setting up of Enamelling Class for 30 students for one year.*

Non-recurring.		Rs.	a.	p.	Recurring.		Rs.	a.	p.
Tiling Kiln (Enamelling Furnace) Coal or Kerosine $8\frac{3}{4}'' \times 3\frac{1}{2}''$	..	150	0	0	Copper Sheet (16 gage)	.. 1 sheet	30	0	0
1 Chair for a teacher	..	15	0	0	Engraving tools	.. 8 Doz.	32	0	0
1 Table for a teacher	..				Enamel colours	.. 10 lbs.	75	0	0
10 Drawing Boards	..	60	0	0	Hydrochloric acid	.. 4 Oz.	6	0	0
					Nitric acid	.. 5 lbs.	2	8	0
					Sulphuric acid	.. 2 lbs.	0	4	0
					Working benches, $6' \times 11\frac{1}{2}'$ —10	..	125	0	0
					Sitting benches $6' \times 1'$ —10	..	60	0	0
					Agate Mortars with pestals $4''$ —1	..	27	0	0
					Corborandum sticks $6'' \times \frac{1}{2}''$ —8	..	8	0	0
		225	0	0	Files $12''$	.. 2 Doz.	30	0	0
					Wooden blocks	.. 30	30	0	0
					Muslin cloth	.. 6 yards	1	8	0
					Pumice Stone	.. 15 lbs.	7	8	0
					Polish papers	.. 2 Gross	12	0	0
					Emery papers	.. 2 Gross	18	0	0
					Cocconut oil	.. 14 lbs.	3	0	0
					Rithe (soap nut)	.. 6 lbs.	1	2	0
					Tissue papers	.. 6 Doz.	1	8	0
					Wooden handles	.. 6 Doz.	3	12	0
					Chalk boxes	.. 2	1	0	0
					Emery machine	.. 1	10	0	0
					Saucers small	.. 2 Doz.	1	0	0
					Drawing papers	.. 1 Gross	9	0	0
					Pencils	.. 30 Doz.	22	8	0
					Rubbers	.. 30 Doz.	22	8	0
The teacher can be available for Rs. 50 to Rs. 55 per month	..	600	0	0					
Non-recurring and recurring expenditure <i>plus</i> teacher's pay	..	1,365	0	0					
						Total	540	0	0

SHAPE MAKING CLASS.

*Expenditure necessary for setting up of shape making class for 30 students for one year.*

<i>Non-recurring.</i>				<i>Recurring.</i>			
			Rs. a. p.				Rs. a. p.
Round Kharvai	..	1	6 0 0	Sulphuric acid	..	6 Bottles	1 8 0
Square Kharvai	..	1	6 0 0	Borax	..	2 lbs.	1 0 0
Badami Kharvai	..	1	6 0 0	Salamonic	..	2 lbs.	0 8 0
Hammers assorted shapes	..	8	10 0 0	Surya Khar	..	2 lbs.	0 8 0
Badami Ubale	..	2	2 0 0	Wire brush	..	1 Doz.	4 8 0
Flat Ubale	..	2	2 0 0	Rithe	..	6 lbs.	1 0 0
Anvil	..	1	8 0 0	Resin	..	1 Qr.	2 0 0
Table vice	..	1	5 0 0	Charcoal	..	12 bags	24 0 0
Hand vice	..	1	1 0 0	Kerosine oil	..	2 tins	6 0 0
Lathe	..	1	40 0 0	Iron wire	..	7 lbs.	2 0 0
Compass straight	..	3	2 0 0	Cocanut oil	..	10 lbs.	2 0 0
Compass round	..	2	1 0 0	Wooden mallet	..	2	1 8 0
Compass inside	..	1	1 0 0				
A pair of Scissor	..	2	12 0 0				
Pincers	..	2	1 0 0				
Pincers	..	2	2 0 0				
Steel foot rule	..	1	1 0 0				
Files	..	12	9 0 0				
Wooden blocks	..	2	1 8 0				
			<hr/>				
			116 8 0				<hr/>
							46 8 0
							<hr/>

## SHAPE MAKING CLASS—contd.

Expenditure necessary for setting up of shape making class for 30 students for one year—colt .

<i>Non-recurring.</i>		Rs. a. p.	<i>Recurring.</i>
Bellows	.. 1	5 0 0	
Tongs	.. 5	4 0 0	
Stove Blow	.. 1	6 0 0	
Drill machine (hand)	.. 1	4 0 0	
Right angles	.. 2	2 0 0	
Mortar and pestal	.. 1	1 8 0	
Water stone	.. 1	2 0 0	
Oil stove	.. 1	5 0 0	
Copper sheet	.. 2	30 0 0	
Brass sheet	.. 2	30 0 0	
Hand saw	.. 2	3 0 0	
Chisel	.. 3	1 0 0	
Paykhod	.. 1	2 0 0	
Handles for hammers	.. 24	2 0 0	
Handles for Files	.. 6	1 0 0	
		215 0 0	
		215 0 0	
The teacher can be available for Rs. 50	..	600 0 0	
Non-recurring and recurring expenditure plus teacher's pay		861 8 0	

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PRIMARY BASIC—WOOD CARVING BASIC.

*Expenditure necessary for setting up of Wood Carving Class for  
30 Students for one year.*

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PRIMARY BASIC.

WOOD CARVING BASIC.

*Expenditure necessary for setting up of Wood Carving Class for 30 Students for one year.*

<i>Non-recurring.</i>			<i>Rs. a. p.</i>	<i>Recurring.</i>			<i>Rs. a. p.</i>
1 Chair for a teacher	..	..	.. 8 0 0	5 Gross carving tools	..	..	.. 180 0 0
1 Table for a teacher	..	..	.. 15 0 0	1 Doz. Gauges with handles	..	..	.. 18 0 0
7 Working benches	..	..	.. 105 0 0	30 Hammers, wooden	..	..	.. 14 0 0
7 Sitting benches	..	..	.. 77 0 0	3 Drill machines	..	..	.. 15 0 0
1 Cupboard, double	..	..	.. 80 0 0	1 Emery wheel machine	..	..	.. 10 0 0
1 Lathe	..	..	.. ....	6 G-Clamps	..	..	.. 18 0 0
1 Fret saw machine big	..	..	.. 80 0 0	3 Oil slips	..	..	.. 15 0 0
1 Do. A-1	..	..	.. 40 0 0	1 Glue pot	..	..	.. 3 0 0
6 Vices table	..	..	.. 25 0 0	1 Oil can	..	..	.. 1 0 0
1 Doz. compass, big	..	..	.. 18 0 0	2 Doz. Marpha files	..	..	.. 10 0 0
3 Spring compass	..	..	.. 9 0 0	14 Chisels	..	..	.. 16 0 0
9 Foot rules, wooden	..	..	.. 7 0 0	1 Doz. Drills set	..	..	.. 3 0 0
9 Hammers	..	..	.. 6 0 0	1 Water stone	..	..	.. 2 0 0
6 Hand saws	..	..	.. 20 0 0	1 Doz. Enamel bowls	..	..	.. 3 0 0
12 Marking gauges	..	..	.. 15 0 0	Teakwood	..	..	.. 50 0 0