Department of Public Instruction in Mysore.

REPORT OF THE COMMITTEE

ON THE

RE-ORGANIZATION OF SEVERAL GRADES OF EDUCATION WITH SYLLABUSES

PRINTED BY THE ...NT AT THE GOVT. PRESS

1936

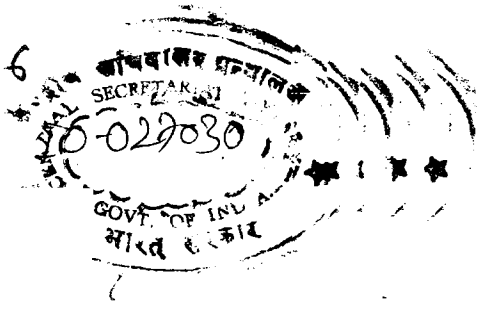


TABLE OF CONTENTS.

LIST OF MEMBERS OF THE MAIN COMMITTEE.

1. Mr. N. S. Subba Rao, M.A. (Cantab)., Bar-at-Law., Director of Public Instruction in Mysore, Bangalore (Chairman)
2. Dr. S. P. Chinnappa, M.A., L.T., Ph.D., Retd. Deputy Director of Public Instruction, Bangalore.
3. Mr. K. Srinarasimhaiya, M.A., L.T., Deputy Director of Public Instruction, Mysore.
4. ,, M. Sultan Mohiyuddin, M.A., LL.B., M.Ed., Deputy Director of Public Instruction, Bangalore.
5. ,, D. Venkataramaiya, B.A., L.T., Retd. Circle Inspector of Education Fort Centre Road, Basavangudi, Bangalore.
6. *Moin-ul-Vizarath* Mr. A. K. Syed Taj Peeran, B.A., Retd. Deputy Commissioner, Bangalore.
7. Mr. V. Venkatappa, President, District Board, Bangalore.
8. ,, G. Channappa, B.A., LL.B., President, District Board, Chitaldrug
9. ,, B. S. Puttaswamy, B.A., B.L., President, District Board, Mysore.
10. Sri B. Indiramma, M.A. (Leeds)., Superintendent, Maharani's Women's Training College, Mysore.
11. Mrs. Kamalamma H. Dasappa, B.A., Hon. Secretary, Mahila Seva Samaja, Shankarapuram, Basavangudi Post, Bangalore.
12. Dr. M. Siddalingaiya, M.A., B.T., Ph.D., A.M., Professor of Education, Maharaja's College, Mysore.
13. Mr. Mohamed Davood, B.A., District Educational Officer, Mysore.
14. ,, K. T. Sudarsana Iyengar, B.A., Retd. District Educational Officer, Bangalore.
15. Dr. K. N. Kini, M.A.* (Hons)., A.M., Ph.D., Dip-Edn., District Educational Officer, Bangalore
16. ,, K. R. Ramaswamy, M.A., D.Litt., M.Ed., District Educational Officer, Chitaldrug.
17. Mr. S. Sundara, M.A., B.T., M.Ed., Principal, Government Training College, Mysore.
18. ,, R. Jagannatha Rao, B.A., L.T., Secretary, Mysore Local Examinations Boards, Bangalore (Secretary).

LIST OF MEMBERS OF THE PRIMARY EDUCATION SUB-COMMITTEE.

1. Mr. M. Sultan Mohiyuddin (Convener).
2. Dr. M. Siddalingaiya.
3. Mr. Mohamed Davood.
4. ,, B. S. Puttaswamy.
5. Sri B. Indiramma.
6. Mr. S. Sundara.
7. ,, M. A. Narayana Iyengar, M.A., B.L., Head Master, Maharaja's High School, Mysore.
8. ,, T. S. Gopala Iyengar, B.A., School Board Officer, Mysore.
9. ,, L. Abdul Aziz Khan, M.SC., B.T., Assistant Master, Government Training College, Mysore.

LIST OF MEMBERS OF THE THREE-YEAR MIDDLE SCHOOL EDUCATION SUB-COMMITTEE.

1. Mr. D. Venkataramaiya (Convener).
2. ,, S. Srinarasimhaiya.
3. Dr. S. P. Chinnappa.
4. Dr. E. N. Kini.
5. Mr. V. Venkatappa.
6. Dr. K. R. Ramaswamy.
7. Mrs. Kamalamma H. Dasappa.
8. Sri S. Nanjamma, B.A., L.T., Assistant Mistress, Vani Vilas Institute, Fort, Bangalore.
9. Mr. M. C. Subbappa, B.A., B.T., Assistant Inspector of Education, Nelamangala.
10. ,, Ahamed Hussein, B.A., Assistant Inspector of Urdu Education, Bangalore.

LIST OF MEMBERS OF THE HIGH SCHOOL EDUCATION SUB-COMMITTEE.

1. Mr. N. S. Subba Rao (Chairman).
2. ,, M. Sultan Mohiyuddin.
3. ,, M. A. Narayana Iyengar.
4. ,, G. Channappa.
5. Dr. S. P. Chinnappa.
6. Mr. R. Jagannatha Rao.
7. Sri Nagamma, M.A., L.T., Head Mistress, Maharani's High School, Mysore.
8. Miss K. White, B.A., L.T., Head Mistress, Vani Vilas Institute, Fort, Bangalore.

LIST OF MEMBERS OF THE VOCATIONAL EDUCATION SUB-COMMITTEE.

1. Dr. K. N. Kini (Convener).
2. Mr. V. Venkatappa.
3. Mr. N. S. Sirur, L.T.M., Manager, Mysore Spinning and Weaving Mills, Bangalore.
4. ,, Devaram Shivaram, High Grounds, Bangalore.
5. ,, H. V. Visweswaraiya, M.E., Superintendent, K.G.F. Water Works, Bethamangala, Kolar District.
6. ,, M. Krishna Rao, Weaving Instructor, Bangalore.
7. ,, K. Ramiah, Proprietor, Vicbaradarpana Press, Avenue Road, Bangalore.
8. ,, T. Subramanya Iyer, Retd. Superintendent, Bangalore Press, Lake View, Bangalore.
9. ,, M. Ramachandra Rao Scindhia, Merchant, Basavangudi, Bangalore.
10. *Rao Bahadur* Mr. B. K. Garudachar, President, Municipal Council, Bangalore.
11. Mr. Mohamed Hayath, B.E. (Mech), B.S.E.E., Deputy Chief Electrical Engineer, Bangalore.
12. ,, David A. Nagavkar, L.M.E., Superintendent, Office of the Director of Public Instruction in Mysore, Bangalore.
13. Dr. Venkata Rao Badami, L.Ag., Ph.D., Deputy Director of Agriculture, Bangalore.
14. Mr. M. S. Ramachandra Rao, L.Ag., Agricultural Inspector, Office of the Director of Public Instruction, Bangalore.
15. ,, K. Krishnamurti, L.Ag., Agricultural Inspector, Office of the Director of Public Instruction, Bangalore.
16. ,, H. C. Javaraya, L.Ag., F.L.S., F.R.H.S., Superintendent, Government Gardens, Bangalore. (On deputation.)
17. ,, H. S. Govinda Rao, B.A., Superintendent of Sericulture, Mysore.
18. ,, Lieut. A. A. Monteiro, G.B.V.C., Live Stock Expert Bangalore.

REPORT OF THE COMMITTEE

We, the members of the Committee appointed by Government for considering the question of re-organization of Middle Schools with ruralised courses of study in Government Order No. E. 529—Edn. 38-32-2, dated the 31st July 1933, have the honour to submit our report, on the question referred to us.

2. We met on three occasions and the several Sub-Committees appointed by us to draw up detailed courses of studies, etc., on the basis of general lines indicated by us, met on different occasions, sometimes meeting on several days in succession. Before we proceed to our examination of the problems and our recommendations, it may not be out of place to touch briefly upon the general development of the question referred to us from its initial stage.

3. In June 1931, the General Secretary to Government forwarded to the Director of Public Instruction, copy of letter No. 1293, dated the 12th May 1931 from the Secretary, Board of Education, Mysore, regarding the development of Middle Schools with ruralised courses of study for boys and girls and called for the opinion of the Director of Public Instruction in that behalf. The letter from the Secretary, Board of Education, in summary is as follows :—

"The subject of the development of Middle Schools with ruralised courses of study, *viz.*, courses in Agriculture, Co-operation, Rural Sociology, Economics, Needlework, Cookery and Domestic Economy, etc., has been under the consideration of the Board for sometime past. A Sub-Committee appointed by the Board to consider this question recommended that any reorganization of the courses in Middle Schools implied also a change in content and method of the Primary School Course. They recommended the adoption of the "Project" method of instruction in Primary Schools. As regards Middle Schools, they recommended two types of Middle Schools, *viz.*, (1) Vernacular

Middle Schools with a 3 years' course for rural areas, and (2) Anglo-Vernacular Middle Schools with a 4 years' course in urban areas, with a 2 years' special course for such of the rural pupils as shall have taken the Vernacular Middle School Course to enable them to take the High School Course. The Sub-Committee also recommended the inclusion of subjects such as Agriculture (Theoretical and Practical, including study of soils, manures, rotation of crops, animal husbandry and agricultural implements), Rural Sociology (including Economics, Civics and Co-operation), Rural Hygiene and Sanitation for boys, and Needlework, Cookery, Domestic Economy and Rural Sociology, etc., for girls, with common courses for both boys and girls in a vernacular Language, Arithmetic, History and Geography, and Music. They proposed no change in connection with the Anglo-Vernacular Middle Schools which would continue with a 4 years' course as at present and prepare pupils for High Schools. The Board of Education considered these recommendations and resolved that while continuing the existing facilities for Anglo-Vernacular Middle School Education, efforts should be made to start Vernacular Middle Schools in as many rural centres as possible, and that facilities should be provided for such pupils who complete the Vernacular Middle Schools and are desirous of going to High Schools to get intensive course of instruction for 2 years in suitable places to make them fit to join High Schools."

4. The Director of Public Instruction promised to place the question before the Local Examinations Board and to submit to Government their views with his own opinion. The Local Examinations Board considered this question in May 1932 and resolved to request Dr. M. Siddalingaiya, in consultation with Messrs. N. S. Subba Rao and K. Srinarasimhaiya, to draft a syllabus for the proposed Vernacular Middle Schools on the following basis.—

(1) The course for the Lower Secondary Schools with ruralised courses of study should be one of 6 years, of which 3 years were to be for the Primary Course and 3 years for the Lower Secondary or Vernacular Middle School Course.

(2) Pupils should be allowed to join the First Year Lower Secondary Course at the end of the Third Year Primary Class,,

(3) The four-year Primary Course should be retained, as it is for those who desire to join the First Year Middle School Course.

5. Dr. M. Siddalingaiya sent in a note with draft syllabuses, the chief points in which are indicated below :—

The present plan of a 4-year Primary and a 4-year Middle School Course is leading to an enormous wastage inasmuch as only about 12 out of 100 pupils who enter a Primary School proceed to Middle Schools and 2 take the present Upper Primary Course, leaving 86 who drop off at the end of the Primary stage, and the major part of them will lapse into illiteracy in a very short period. Even the Vernacular Lower Secondary (or Upper Primary Course) is only a makeshift arrangement designed to meet the demand for Middle School Education only partially, and the arrangement is not working very satisfactorily since the pupils taking this course have to cover all the 4-year Middle School subjects except English in two years. The ideal course would be to provide a uniform 6-years Primary Course common to all pupils followed by 3-years Anglo-Vernacular Course preparatory to entrance to a High School. The courses of study in these schools should be revised so as to suit rural conditions. There should be two Public Examinations, one at the end of the Vernacular Primary School Course of 6 years and another at the end of the preparatory course for High School (or Anglo-Vernacular Course) of 2 or 3 years, as the case may be, the written examination of the old type being supplemented, if not altogether replaced, by the new type of examination, which would lay stress more on self-effort, initiative, clear thinking, and resourcefulness than on mere memorised bookish learning. The following should be subjects of study for the Primary School Course.

A. Examination Subjects.

(1) Vernacular : Kannada or Urdu.

(2) Arithmetic : A knowledge of the fundamental processes with elementary ideas of scale and measurement as applied to simple geometrical figures.

(3) Social Science :

(*a*) History of India with emphasis on the progress of the people in Arts, Language, Education and form of Government, etc.

(*b*) Geography—With special reference to climatic and physical surroundings and their influence upon each other and on the lives and occupations of the people. Their effect on progress and civilization.

(*c*) Civics—A study in the evolution of Government with special reference to the students' environment.

(4) Hygiene and Sanitation : With special reference to the individual and the village.

(5) Nature Study and Agriculture : Study of Nature to be non-technical in character and designed to arouse a desire for such study. Knowledge of Agriculture to be practical in character and associated closely with the locality and neighbourhood with hints on modifications and improvement.

(6) Domestic Economy and Needlework : Practical and with special reference to Indian conditions.

B. Non-Examination Subjects and other School Activities.

1. Drawing.
2. Music—Group songs, Bhajanas, etc.
3. Dramatics and Clubs.
4. Physical Exercise—Games and Drill.
5. School Excursions and Trips.
6. Village Survey—Agricultural, industrial, social, economic and health conditions.
7. School Assemblies.
8. Leisure time activities.

His note and syllabuses were considered by the Local Examinations Board at their meeting held in November 1932 and they resolved as follows :—

(1) Since the Middle Schools in the State with the exception of those in Cities like Bangalore and Mysore, are practically all in a rural environment, what is required is not so much a separate course for rural Schools but a revision of the course for Middle Schools as a whole in order to bring them into touch with the environment, necessary modifications being made for the purpose of the few urban Middle Schools.

(2) For the above purpose, it is necessary to revise the Text Books and syllabuses so as to bring them into closer touch with the environment of the pupils.

(3) It is necessary to examine the question of the distribution of the years between the entrance of a pupil into the Primary stage till the High School Course was completed in order to divide them into appropriate groups and prepare satisfactory syllabuses for each stage. This was held to be a matter for enquiry by a representative Committee.

6. The views of the Board were submitted to Government and they were pleased to constitute the present Committee in their Order, dated the 31st July 1933, quoted in the first paragraph.

It will thus be seen that what began as a limited enquiry into the desirability and possibility of differentiating courses of study in Middle Schools so as to provide a rural bias for Middle Schools in the country developed into a comprehensive enquiry over the entire range of pre-University Education spread over eleven years under the control of the Department of Public Instruction. We have considered the question from several points of view, educational, administrative, and utilitarian, urged by the several members of the Committee and have also had the benefit of written notes sent in by some of the members of the Committee, the material collected by the Department in connection with the enquiry conducted relating to improvements in High School education, the abolition or retention of the Middle School Examination, and the proceedings of the several educational Conferences, particularly of the Conference held in November 1933, of the heads of High Schools and Members of the S. S. L. C. Board, at which the Vice-Chancellor, and some of the members of the staff of the University of Mysore were present.

We shall now proceed to explain our views and make our recommendations.

7. *General Aims of Education.*—Naturally the first question that was taken up for consideration was as to the main aims that were to be kept in view in imparting instruction in our Schools in the pre-University stage. Without entering into an academic discussion on this large and wide issue, we may point out that it is generally recognised that Schools meant for the general

body of pupils should aim at several objectives, while it may be that an individual school open to a particular class of students may have a specified objective or objectives. We are here considering the schools meant for the general body of our pupils and which therefore have to satisfy many demands. We consider that the main objectives of school instruction should be defined with reference to the general environment in which the average pupil lives and has to live, the number of years that he is likely to spend in the school, the kind of vocation which the pupil is likely to engage himself in, after completing the course in the grade under consideration, and finally administrative and financial considerations, such as nature and qualifications of the staff and funds available, etc. The question is further complicated by the fact that (i) our schools are at present drawing their pupils from an ever widening circle embracing practically all sections of society, some pupils coming from homes which provide literary and intellectual environment, while a larger number have no such environment, (ii) the prevailing unemployment among the educated takes away much from the attractiveness of education, and the incentive to steady and hard work, which certainty of employment would naturally provide, is absent, and (iii) the prevailing poverty of the country forces the school to handle a large number of underfed and physically weak students. Again, for a long time past we have been mostly obsessed by the idea that a University degree is the normal end of the educational career of every pupil. Under the existing scheme of education, students with varying temperaments, aptitudes and training are forced through a common course, which is mainly bookish and academic and is further crowded with several subjects with heavy syllabuses in each, and which further is designed mainly to lead to the University Course, with the result that an increasingly larger number of students fail to complete the school course successfully and thus lead to considerable wastage of effort and money. A considerable number of children that are admitted to Primary Schools do not go through the Primary Course but drop off after putting in an irregular attendance for a couple of years, and a fairly large proportion of even those who complete the Primary Course of four years gradually lapse into illiteracy. The School and the system

may not be the sole cause for all this wastage, but the public is dissatisfied with this state of affairs and want a great deal more from the School than it is doing. The carpenter may expect his son to take on his shop and do better than he has been able to do; the agriculturist may want his son to till his land and get more out of the land than he has been able to get; the merchant may want his son to assist him in his shop and enable him to obtain greater and quicker returns from the trade than he has been able to obtain, and so the banker, the smith and the mechanic, etc. It is even more true that all these want their sons to be preferably in Government Service. The employer wants men with a certain amount of general education and sufficient technical knowledge to enable them to carry on the job to which they are put with as little apprenticeship as possible. Efforts will have to be made to meet as far as possible this composite demand, which is directly due to the present social and economic conditions. It is being increasingly recognised that for some purposes other things are more worth while than a University Degree, and that there is immediate urgency to provide a diversity of courses to suit different temperaments and aptitudes. The school course should be so organised that while no student wishing to proceed to the University is handicapped, all those that are not likely to profit by a stay in the University or cannot take the costly University Courses, can find other courses open to them which are within their capacity, intellectual or economic. Our schools should train not only those that are likely to be engaged in intellectual pursuits after school life but also the larger body of workers in the trades, industries, commerce, and professions, etc.

The above discussion may lead some to think that we have had before us only the utilitarian aspect of Education in schools, and that we have not paid regard to the other aspects of Education, *viz*,, the Moral and the Physical aspect. A word of explanation is, therefore, necessary. We fully realise that it is one of important objectives of Education to promote the physical well-being of the pupils, and we are equally conscious that the formation of character and personality is an equally important objective of Education. We have, as detailed syllabuses will show, made provision for the former, and we have not lost sight

of the need for what is generally called Moral Instruction. We believe, however, that the objective towards which Moral Instruction is directed is to be achieved not so much by direct teaching as by the whole of the activities of a school and the atmosphere that prevails in the school. We have given much prominence to the vocational aim of Education, since at the present time there is much concern over the fact that the instruction given in our schools is one-sided, and the training which the pupils receive there prepares them, if it prepares them for anything at all, for a very narrow group of occupations, and tends to keep them away from the chief occupations which contribute to the wealth of a country.

8. *The Place of Vocational Instruction in the Scheme of Education.*—It should be fairly evident from what has been said above that we consider it necessary to make definite provision for vocational instruction in our scheme of school education. The question whether vocational instruction should be provided side by side with general instruction in schools meant for general education, or should be imparted in separate institutions specially organised to impart such instruction gave rise to a considerable amount of discussion. We are agreed that it is not desirable to mix up vocational subjects with general subjects as is now being done in our Middle Schools (Practical Instruction) and High Schools (Vocational subjects). The considerations that force this conclusion on us are as follow :—

The essence of vocational education is that the person taking the course should be able actually to earn something approximating to a living wage at least at the end of the course. Judged by this standard the time given to Practical Instruction in Middle Schools or vocational subjects in High Schools is so small that within the time available it is impossible for any person to attain dexterity in the trade or the practical ability to live by the vocation. Four to six periods a week are allotted to these subjects and these periods are spread over the working days of the week. The period is more than a quarter over by the time the student settles down to work, and what he can learn in the short space of time that is available to him will hardly enable him to master even the rudiments of a trade which he is supposed to learn. The time and money spent on it are more or less a waste, since hardly any student who has taken

these courses has even tried to earn a living by a trade industry. Practical instruction or a vocational subject is one of five or six subjects which a student has to study in a school, and it is relegated to a comparatively unimportant position in the school curriculum. The little that he may learn here is absolutely of no use to him when he goes into the University classes and what little he has learnt here can be picked up in less than a couple of months by intensive work in a factory or workshop or a technical institution which he may enter later on. The work he does in the general school is hardly enough to give him any pronounced bias. So, whether judged by the utilitarian standards or by the "Bias idea" (that it gives a bias towards the vocation), the money that is spent on it is not yielding anywhere near a proportionate return. We are therefore convinced that it is absolutely necessary to separate general schools from vocational schools. It is not our idea that the schools should be different in the sense that they are held in different buildings, but our view is that the courses should be entirely different even though the two types of schools may be located in the same building, may even be managed by the same Head Master and may have common members on the staff. This does not affect the desirability of introducing into the curricula of general schools subjects related to a Vocation. They may be rightly introduced in the primary stage for the training of the hand and the eye, and in the Middle and High School stages, for the purpose of developing what is called in America "appreciation of industry". Vocational Schools should also certainly teach some general subjects, like languages, mathematics, history and geography and so on, since it is necessary even for a workman to have a working knowledge of his mother-tongue or English according to the grade of school he is in, and a sufficient knowledge of other subjects which he could apply in his vocation. But the non-language subjects in such schools should be closely correlated with the vocation which is being taught to the student. Students who are being definitely trained for a vocation need not be forced to get a knowledge of things that are of no particular use to them and conversely students who are not likely to take to any trade or industry need not be forced to waste their time and energy on a vocational subject.

The distribution of time between general and vocational subjects in vocational schools should be in the proportion of 1 : 2. Vocational education should not begin till after the primary course which should be common to all pupils, and there should be for the present two grades of vocational schools parallel to the general Middle and High Schools. There should also be post-High School Vocational Institutions that would approximate to the higher Mechanical or Electrical Engineering course in the School of Engineering. As and when funds permit, similar grades of Schools may be opened to impart instruction in other vocations such as Textiles, Cabinet-Making, Metal Work, Electric Wiring, etc.

Our proposals in regard to Vocational Middle Schools and Vocational High Schools should be visualised against the background of the economic life of the State. It is not suggested that these vocational institutions should be provided as plentifully and scattered about the State as freely as the general schools. These schools are bound to be expensive, and the training given in them should not be wasted. Therefore, we assume that before these institutions are started in one part of the State or other, some preliminary survey will have been made of the economic needs of the country and some working idea obtained as to the chances of absorbing trained recruits in one occupation or other. It is no less undesirable to let loose on the country technically trained people who will be unemployed, than to turn out large numbers of pupils from the general Schools. Therefore, the educational re-organization we have proposed should be integrated carefully to the ascertained, and possibly planned, economic activities of the country. The vocational Schools should be fitted to the needs of localities, and their number and location carefully determined. The same consideration applies to the number of pupils to be admitted to the different courses. Every effort should be made to relate supply to demand, and the necessary machinery for vocational guidance must be instituted.

9. *Grades of Schools, what should be expected from each grade of School; and their articulation with one another.*—It would be possible to have one continuous course from the lowest to the highest (pre-University) class if all the children in the State could spend the same time in schools and if it

were possible to open such schools in sufficiently large numbers and to locate them in all parts of the State. But it is well known that neither of these conditions can be secured. From a practical point of view, it will be sufficient and economical to have three grades of schools, *viz.*, (1) Primary Schools spread all over the State in as many places as possible, (2) Middle Schools—General and Vocational—located in central and populous centres, and (3) High Schools—General and Vocational—located in district headquarters and larger towns. Again, each course should be complete in itself and not be merely a pre-entrance course to the one next higher. The Primary Schools should aim at (1) preparing the pupils to enter the Middle School Course, general or vocational, as the case may be, in accordance with the choice of the pupil, and (2) enabling each pupil by the time he or she reaches the end of the Primary Course to attain such a standard of general education as to make it impossible for him or her to lapse into illiteracy even if the pupil drops off at this stage, and enable him or her to take his or her place in Society and the State as an useful member and citizen. We are of opinion that every effort should be made to keep every pupil in the school until he or she successfully completes the primary course, as we consider that this is the minimum amount of education that is necessary to ensure him or her not lapsing into illiteracy. At the Middle School stage we propose that there should be a distribution of pupils between General Middle Schools and Vocational Middle Schools in order that such of the pupils as are unable to enter a High School, either owing to want of appropriate capacity or other circumstances, may prepare themselves to enter life at a comparatively early age and earn their livelihood as skilled workmen. Similarly there should be a distribution of pupils after the Middle School Course between General High Schools and Vocational High Schools. The Vocational Middle Schools should aim at supplying skilled workmen for the several occupations, such as Carpentry, Smithy, Weaving, etc., workmen who are competent to work under direction and are capable of a certain amount of initiative. The General Middle Schools should not only prepare pupils for entry into High Schools but should also attempt to give a well-rounded education, within limits, to enable the pupil who has gone

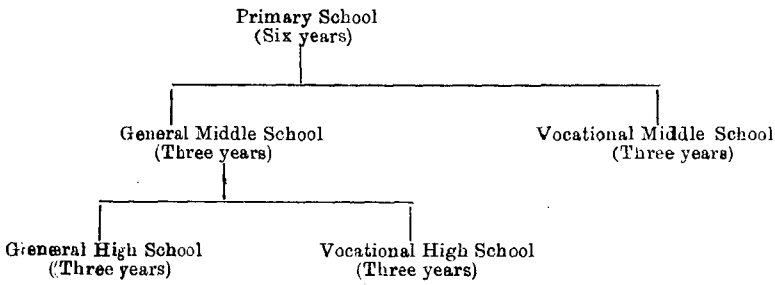
through the course, to take an intelligent interest in the affairs of the community and the State. In the High School stage again, parallel courses should be provided for general education and vocational education. The aim of the General High School should be to prepare students for entry into University, or for several departments of service requiring academic rather than ndustrial or commercial qualifications or for a life of cultured leisure. The Vocational High Schools should aim at supplying skilled workmen who with a comparatively short experience in a well equipped factory, etc., can take the place of maistries or foremen over small groups of labourers.

Thus a pupil after finishing his Primary Course may proceed either to a General Middle School or a Vocational Middle School. A pupil after finishing his General Middle School Course may proceed either to a General High School or a Vocational High School. But whether a student after finishing the Vocational Middle School Course can proceed either to a General High School or a Vocational High School is a point for consideration. Room must be obviously found for him in the General High Schools if the vocational Middle Schools are to be popular at all. But he will in the nature of things not be capable of taking the General High School Course. Some *via media* will have to be found by providing a supplementary course to enable the few that may elect to take this route to General High Schools to secure the necessary knowledge to fit them for the General High School Course. Similarly those that complete the General High School Course successfully may go into the College, and the University will have to devise Diploma or other courses for these and for those who have taken the Vocational High School Courses.

One gap in our work must be indicated. We have brought under review all stages of pre-University education, starting with the Primary stage. We have, however, not dealt with Nursery Schools, which have come into such prominence in recent years, and which are an essential link between Child Welfare and Education. We understand that the Department proposes to investigate the subject with the aid of another committee, and we need, therefore, only record our opinion here that we consider Nursery Schools an important and indispensable feature of the

educational organization of the State, both from the point of educational progress as well as of child welfare.

The chart below shows the courses of education that a pupil may take after completing each grade:—



10. *Need for Vocational Guidance.*—We have suggested in paragraph 8 that the educational re-organisation we are recommending should be carefully based on the economic occupations of the country. Even when this is done, the task of relating the work in our schools to the occupations of the country will have been done only partially. If the resources of a country in men, equipment, and effort, should not be wasted, three things are necessary for directing the flow of pupils into our schools and out of them into the larger life of the country. The first thing that has to be done is to select pupils for the different courses on the basis of their capacities and aptitudes. In the second place, both before the pupils select a specific vocational course, and also when pupils leave a school, some idea should be given to them of the occupational opportunities that lie before them in the country. Lastly, definite efforts should be made to place pupils who have received particular kinds of vocational training in the respective branches of the economic organisation of the country. In other words, vocational testing, vocational guidance and placing, are the needs of the situation, if work in the schools is to be closely related to the economic needs and possibilities of the country. It is sufficient to draw attention to the important work done in respect of these matters by institutions like the National Institute of Industrial Psychology in Great Britain and also to the extended resort in practice to vocational tests and guidance in a number of countries, among which Germany and U. S. A. are prominent. Efforts to place pupils take the form of Appointment Boards in the Universities, or Guidance Committee for a similar purpose in schools. We may

in this connection refer to the important proposals made by the Sapru Committee on Unemployment in the U. P. A beginning may be made in our State by forming a Vocational Advisory Board for the whole State, with branches for the Districts. The Board will need the services of experts in Vocational Testing and Vocational Guidance, but its primary role will be to bring together Educationists and Employers so as to establish some understanding between them.

11. *Need for differentiation of type of schools in rural and urban areas.*—We have given careful consideration to the question whether it is necessary to provide different types of schools in rural and urban areas. There is hardly any place in Mysore, except perhaps Cities like Mysore and Bangalore, the Kolar Gold Fields area and towns like Davangere, which are entirely or mainly urban in character. Even here one has only to go a very short distance to get into a rural environment. Hence we are of opinion that there is no need whatsoever to have different types of schools so far as institutions for general education are concerned. In locating vocational institutions, the particular vocation to be provided for in a school will have to be decided in the light of local conditions. In the case of Primary Schools, the necessary rural bias in schools located in purely rural areas can be secured by the methods of teaching adopted in the school rather than by differentiating the subjects taught. Individual schools may also emphasise this difference by selecting suitable kinds of handwork as part of school activity. In Middle Schools, the difference needed could be secured by the optional subjects taught in the school.

12. *The length of the pre-University Course of Education.*—The total length of the pre-University Course and its allocation among the several grades of education was another important issue that evoked considerable discussion and fairly sharp differences in opinion. As at present organised, the 11 years of pre-University work are divided into 3 sections, 4 years Primary, 4 years Middle School and 3 years High School Course. The University, as the Vice-Chancellor pointed out at the Conference of 1933, has to maintain an international standard, and during the 4 years that a student stays in the University, it has to raise him to this standard. Considering that the top level

is more or less fixed by agencies over which it has no control, the University naturally looks to the High Schools to send to it pupils sufficiently prepared to cover this gap in 4 years. From the large number of failures in the Intermediate Examination and the opinion freely expressed by the members of the University staff, it seems to be clear that the average High School student though declared Eligible for College Course of study is not up to the standard required for entrance into the University. Again, the results of the Middle School Examination where the percentage of passes varies from 45 to 47 as a result of several kinds of gracing, but is really in the neighbourhood of 30 to 35 on the basis of the actual unmoderated marks, also indicate that the length of the Middle School Course is not sufficient to enable the pupil to cover it satisfactorily. It is possible that this large failure is due not necessarily to want of time, but to some other defect in the organization of the school. We are assured by the Departmental Officers on the Committee that every effort is being made to rectify such defects, but still the belief that we could secure better results, by giving a little more time, even under the existing conditions cannot be altogether ignored. The fact that the University requires a much better type of pupil than what it is now getting also points to the necessity for having a longer course for pre-University education than at present. More than all this, it has to be remembered that the greater proportion of our school population stops with Primary Education and it is notorious that all off them do not receive regular schooling for 4 years. The result is that a large proportion of these boys and girls either do not become literate or lapse into illiteracy since the little they have learnt gives them no incentive for further study and they have no opportunities for reading further. A large majority of them belong to the agricultural class who, to repeat an oft-used phrase, are the real backbone of the nation. We do not think that much argument is necessary to convince any one of the necessity for giving a large majority of such students sufficient education to make and keep them literate and to enable them to take a living interest in the activities of the community. The schooling for a year or two extra of this large mass of students will mean a large national asset before which the expenditure that is involved, large though it may be, would be

insignificant. We are emphatically of opinion that it is absolutely necessary to strain every available resource in order to provide a minimum six year course to as large a number of pupils as possible. With this object in view we recommend that the Primary Course should be one of 6 years and that the total period of pre-University Studies should be one of 12 years.

It may be objected that our proposals increase the duration of the pre-University education by a year, and in that way not only add to educational expenditure, both public and private, but also impose a serious handicap on the cleverer pupils who may desire to enter the University at an early age in order to quallify for competitive examinations for the higher services. In reply, two things may be said. In the first place, the courses are meant for the great majority of the pupils in our State and not for the exceptional few. It is the case that by far the greater number of those that pass through our schools, as a matter of fact, spend more than 12 years in pre-University institutions before they complete the High School stage of education, if indeed they proceed so far. Therefore, in point of fact there is no increase in the duration of school-life, while the hardship and the mental depression caused by repeated failures are bound to be reduced by a longer normal course, which increases the chances of passing through the courses successfully. Further *the pivot of our proposals is the six-year Primary Course,* and it is well-known that at present a very small number of those that enter our Primary Schools complete the course of Primary Education and proceed to the next higher stage of education, and the number of the pupils in the Primary Schools is but a fraction of those that ought to be there. It is not likely that this condition of things will be altered in the near future, and our hopes of an educated body of citizens will rest entirely on the number of those that pass through our Primary Schools and on the character and the efficiency of the training given there. Therefore, *if the educational system of our State is to "deliver the goods" in respect of what must remain its most important objective, a six-year Primary Course is imperative.*

As regards the very small number of those whose prospects in the University and beyond are likely to be affected by a

needlessly longer stay in the pre-University institutions, it is not impossible to devise special means whereby the pre-University course can be reduced for them. Even now it is open for persons who are ambitious for their children to give them education of the primary stage at home and obtain their admission to a Middle School at an earlier age than would be possible for others. This, no doubt, weights the scales in favour of the well-to-do, and unaided talent will, therefore, require some other safeguard, and this can be easily provided administratively by empowering, in exceptional cases where the mental age is so obviously in advance of the physical age, promotions to a higher class than the one to which the pupils would be normally permitted.

13. *Allocation of time among the different grades of Schools.*—As regards the allocation of this period among the different grades of schools, *viz.*, Primary, Middle and High Schools, the Committee had two important alternatives to consider. Some of us were for allocating this period into 5 years' Primary, 4 years' Middle, and 3 years' High School stages. They urged that 5 years would be sufficient to give to the pupil that would drop off at the end of the Primary Course quite enough knowledge to cover the minimum required and that 4 years would be required to give to the student the rudiments of knowledge of English that would enable him to take the High School Course. But on the other side, it was urged that education for 5 years could not be considered sufficient for the average man whose schooling would stop at the end of the Primary Course and that an extra year at the Primary Course would enable the majority of pupils to complete the course with a fuller content and thus secure for the community the existence of a large number of persons with an extra year of schooling and that the year which is taken from the Middle School Education and added to the Primary School would necessarily reduce the quantity of work to be done in Middle Schools. Taking all the facts into consideration the majority of us are of opinion that the Primary Course should be one of six years, the Middle School Course—general or vocational—one of three years, and a High School Course—general or vocational—one of three years. It may be that particular vocations require a period longer than three years but such

variations as may be necessary may be made as and when occasion arises.

14. *Medium of Instruction.*—We are unanimously agreed that as far as possible, the mother-tongue should be the medium of instruction in all grades of schools, in all subjects except the English Language and in such other languages as may be included in the curricula as Second Languages. In the case of Primary and Middle Schools, the medium of instruction should be Kannada or Urdu Language, one or the other of which is the mother-tongue of practically the whole population of Mysore, teaching in Urdu being provided in separate schools as at present. In the case of High Schools, however, if it is difficult to arrange for instruction being imparted through the medium of Urdu owing to administrative or other reasons, English may be adopted as the medium of instruction. Even in this case, we are of opinion that the mother-tongue is the best medium of instruction in all pre-University classes and English need be substituted only as a last resort. If there should be in some localities a large congregation of school population with Tamil or Telugu as their mother-tongue, arrangements should, if found feasible, be made for teaching them through the medium of their mother-tongue, the medium of English being employed, if this is found difficult or disproportionately costly. There is no objection, however, to pupils of any non-Kannada group being taught through Kannada, should their parents desire it and the pupils are familiar with the language.

15. *Contents of the Courses.*—In deciding on the contents of the course, we are guided by the main objects to be kept in view in the several stages of education. We have also considered the suggestions of the Board of Education and its Sub-Committee, and the curricula of studies current in educational institutions of a parallel grade in and out of India. We are emphatically of opinion that all unnecessary multiplication of subjects should be avoided and only essentials should find a place in the school curricula, so that one may be assured that a student who has finished the course successfully has actually gone through the curricula. There are many subjects of varying utility and interest knocking at the doors of the school, and there are influential sections of the public trying to force the particular subject of their

choice into the general curricula of schools. There is always a grave danger of the school curricula being over-crowded by the claims advanced by the advocates of different subjects and the syllabuses in each subject being unduly heavy as a result of the demands of experts. We have tried to steer clear of these dangers by entrusting the work of drawing up of the syllabuses to representative Committees consisting mainly of persons actually teaching in the schools of the particular grade, the direction of the work being entrusted to experienced senior officers of the Department, assisted by persons who have specialised in particular branches of the subjects. Syllabuses in the several subjects drawn up on this basis are appended to the report.

(*a*) The following subjects (see Appendix A) are included in the Primary Course :—

1. Vernacular, Kannada or Urdu—all the 6 years.
2. Mathematics—all the 6 years.
3. Indian History—all the 6 years.
4. Civics—2 years, last two years only.
5. Geography—all the 6 years.
6. Hygiene and first aid for boys—all the 6 years.
7. Elementary Home-Craft including Personal Hygiene and Needle-work for girls—all the 6 years.
8. Nature Study and Gardening including Drawing—First 4 years.
9. Handwork—all the 6 years.
10. Music—all the 6 years.
11. Physical Training including games—all the 6 years.

(*b*) The following subjects (see Appendix B) are included in the Middle School Course—General :—

1. Moral Instruction.
2. English.
3. Vernacular—Kannada, Urdu, Tamil, Telugu, English.
4. Mathematics.
5. Indian History, Civics, Geography.
6. General Science including Hygiene.
7. Physical Training.

8. Optional subjects—one of the following :—

i. Kannada	ix. Needlework and Embroidery.
ii. Sanskrit	x. Music
iii. Urdu	xi. Painting
iv. Persian	xii. Fret Work
v. Hindi	xiii. Cotton-spinning
vi. English	xiv. Practical Drawing
vii. Rural Economics and Sociology.	xv. Engraving on Metal
viii. Domestic Science	xvi. Advanced Card-Board Work.

(*c*) The following subjects (see Appendix C) are included in the Middle School Course—Vocational :—

1. Agriculture	8. General Carpentry
2. Blacksmithy	9. Dairy Farming
3. Metal Work	10. Sheep-rearing and Wool-spinning.
4. Tailoring	11. Leather-work
5. Sericulture	12. Horticulture
6. Weaving	13. Poultry-farming
7. Lacquer Work	

Along with any one of these, a student has also to take a course in the following general subjects of a lower standard than for the General Middle School Course :—

1. English.
2. Elementary Mathematics
3. Hygiene and related Science
4. Elementary Civics and Administration
5 Geography

The allocation of time between General and Vocational subjects is in the proportion of 1 : 2.

(*d*) High School Course--General (see Appendix D):—

The S.S.L.C. Board has passed the syllabuses which have been placed before us. These were not exactly designed as a continuation course to our General Middle School Course, but

they require very little changes to make them fit into our scheme. We are generally agreed as to the general lines on which the syllabuses have been drawn up, details relating to which are explained in the note appended (Appendix 'F').

(*e*) High School—Vocational (see Appendix E):—

The syllabuses have been drawn up in the undermentioned vocational subjects, the students receiving instruction in general subjects such as English, Elementary Methematics, Elementary Science, Elementary Economics, during about one-third of the school time, the remaining two-thirds being devoted to the vocational subject proper.

Vocational subjects—

1. Wood work, 2. Building Trades, 3. Automobile Mechanics, 4. Electric Wiring and Lighting, 5. Printing and Book-Binding, 6. Textiles, 7. Photography and allied Trades, 8. Machine Shop, 9 Foundry and Pattern making, 10. Dyeing and Printing, 11. Manufacture of Electrical goods, 12. Agriculture, 13. Sericulture, 14. Horticulture.

N.B.—These may be added to as and when occasion arises.

We considered at some length the desirability and expediency off introducing English as a subject of study in the Primary Schools. Several members drew attention to the importance of English as a language in the present conditions of our country, and also to the fact that under our proposals, a pupil before he enters the University will have only six years of instruction in English, whereas now in spite of seven years of instruction, the standard attained even by those who obtain admission into the University is not high. Therefore, they proposed that in the last two years of the six year Primary course, English should be taught to the pupils. Against this position other members of the committee brought forward the well-known argument that in the primary stage it was not desirable to teach two languages. The opinion of the Committee in this respect is rather sharply divided, and the matter will need further discussion.

16. *Examinations.*—We are unanimously agreed that there should be an examination at the end of the High School

Course, the examination at the end of the General High School Course being mainly written and that at the end of the Vocational Course being mainly practical supplemented by such written papers as may be necessary.

As regards the Middle School and Primary School Courses, there is a body of opinion which holds that there should be no examination before the end of the High School Course and that students should be permitted to proceed automatically from class to class. There would have been some justification for this idea if all the three grades of schools could be in one combined institution administered as one unit and if they had been designed as one continuous unit which would be the minimum course which every boy would go through. But none of these conditions applies in the existing circumstances. Primary Schools are scattered all over the State and are under the management of Local Education Authorities and though the Middle and High Schools are under the management of the Department, they are maintained as different units. There are only 37 High Schools, fed by 323 Middle Schools. The question of admission of pupils from one grade of school into another would cause endless complications unless each grade of school is aware very definitely that a common well-known standard is to be attained by the student at the end of that School Course. In no case can promotions from one class to another even in a school itself be decided without a test. And a common test for all students who have completed one grade of education is desirable from all points of view. There may not be much difference of opinion as regards the necessity for a test, but there seems to be considerable divergence of opinion as regards the nature of the test. A test at present takes the form of a written examination, and written examinations as tests are exceedingly unpopular in certain quarters. They are supposed to encourage cramming, to encourage coaching as against educating, and to cause an unnecessary strain on candidates which would leave an indelible mark on their future health, and further, are not supposed to test the pupil's real worth inasmuch as it is not all pupils that can shine at a written examination and the results very often depend on accidents rather than on the actual attainments of the pupils and so on. There is some element of truth in some of these objections as

advanced against our present examinations. But the idea of a strain causing permanent injury which, if true, would be an argument for immediate abolition of written examinations at this stage does not appear to us to be based on facts. After all, the average age of boys taking the Middle School Examination varies from 14 *plus* to 15 *plus* and that is an age when the strain of answering written papers of 2 or 2½ hours' duration during 3 or 4 days cannot be considered particularly severe or such a strain as to cause permanent injury. The daily life is full of situations when a person has to concentrate all his powers and arrive at decisions, basing them on the sum total of his present knowledge and powers. The nature of the tests could be altered suitably by a mixture of questions that would put a crammer at a disadvantage and thus the other objections would easily be met. As has been explained above, a common test is very desirable at the end of each grade of education for purposes of deciding admission of pupils to higher courses of study or for recruitment to service, private or public, and to serve as evidence of having completed the particular grade of education The last is particularly important since on educational grounds it supplies an incentive to steady work, both to the school and to the pupil. We feel that examinations are absolutely necessary at the end off each grade of education, and that standing Bodies concerned, such as the S. S. L. C. and Local Examinations Boards can easily devise tests which would take the edge from the objections levelled against examinations and we leave to them the task of drawing up detailed scheme of examination, etc., on the subjects taught. While we are thus definitely of opinion that the examination at the end of the Middle School course should continue, we are unanimous in holding that there should be no examination on a State scale at the end of the Upper Primary course. Broadly speaking, it will suffice if an examination limited to a District or even the range of an Assistant Inspector, is held, being partly written and partly oral. It is essential that the pupils should be examined in their own schools and not be required to present themselves at a centre. Further details may be worked up by the Department, but our definite view is that there should be nothing corresponding to the present Public Examination at this stage.

17. *Resume of Recommendations.*— A brief summary of the recommendations is given below and it may be added that generally our recommendations are in agreement with the decisions of the Conference of 1933.

(i) Vocational Instruction should be given as distinct from general education and the two should not be mixed up.

(ii) There should be three grades of Schools.—

A. Primary Schools.

B. Middle Schools—

(*a*) General.

(*b*) Vocational.

C. High Schools—

(*a*) General.

(*b*) Vocational.

(iii) Advisory Boards should be set up to advise pupils and their parents as to what course the pupils may take after completing each course, and what occupations are open to them.

(iv) There is no need to make any distinction between rural and urban schools in respect of type.

(v) The length of the pre-University course of education should be 12 years.

(vi) These 12 years should be allocated as follows:—

Primary Schools	...	6 years
Middle Schools	...	3 years
High Schools	...	3 years

(vii) Medium of instruction in all non-language subjects should be the mother-tongue.

(viii) Contents of the courses and syllabuses should be as in paragraph 15 above, and in the detailed syllabuses in the appendices.

(ix) There should be Public Examinations, written and practical in the case of the Middle and High Schools, and written and oral in the case of Primary Schools.

18. *Conclusion.*—Before concluding, we desire to place on record our appreciation of the valuable services of our Secretary, Mr. R. Jagannatha Rao. We are also grateful to the several ladies and gentlemen who have so kindly served on the numerous Sub-Committees and helped us in preparing detailed syllabuses and by making valuable suggestions.

R. JAGANNATHA RAO,
Secretary.

N. S. Subba Rao
S. P. Chinnappa
K. Srinarasimhaiya
M. Sultan Mohiyuddin
D. Venkataramaiya
A. K. Syed Taj Peeran
V. Venkatappa
G. Channappa
B. S. Puttaswamy
B. Indiramma
Kamalamma H. Dasappa
M. Siddalingaiya
Mohamed Davood
K. T. Sudarsana Iyengar
K. N. Kini
K. R. Ramaswamy
S. Sundara

Members of the Committee.

REPORT OF THE VOCATIONAL EDUCATION SUB-COMMITTEE.

Introduction.

The Vocational Education Committee was appointed by the Director of Public Instruction in Mysore, in pursuance of the following resolution passed at the second meeting of the Committee appointed by the Government to consider the re-organization of Primary and Secondary Education held on Friday the 13th October 1933.

"A Committee of experts be appointed to select the particular occupations or vocations or industries in which the training may be given having regard to the local conditions, to draw up detailed schemes of study in the several vocations selected, to advise as to the grade of general education at the end of which each kind of training should be given with reference to the particular occupation, etc., and in the case of occupations in which both a post-elementary course and a post-middle school vocational course are provided, to devise means for enabling an individual who had taken a comparatively lower course to proceed to the higher course."

To have a picture of the system of vocational education obtaining in Mysore and some of the advanced countries of Europe and America for assisting the members coming to valid conclusions during discussions at the meetings of the Committee, some salient points of those systems were prepared and circulated among them. Those points have been briefly narrated at the end of this report. The Director of Public Instruction was also pleased to send to each member a copy of "Proposals for a system of Vocational Education in Mysore" by Dr. K. N. Kini wherein the growth of vocational education in Mysore has been traced in detail and proposals have been made to organize what the author considers to be a sound system of vocational education in the four main branches, namely, Industry and Trades, Agriculture, Commerce and Home Economics.

The terms of reference contained in the resolution mentioned above were analysed and the following questionnaire was prepared by the convener and circulated among the members so that the details could be clearly envisaged and discussed at the meetings.

I. COURSES AT THE MIDDLE SCHOOL OR JUNIOR SECONDARY LEVEL.

1. What is the minimum educational qualification that is necessary for organizing, on modern lines, courses for artisans, independent workers in small workshops, workers in factories, etc.?

   Would six years' elementary education be adequate or is more needed? This criterion will settle the branching off of the pupils from the general educational ladder?

2. What would be the minimum age of admission to the above courses, consistent with the physical maturity of the pupil and the need for earning in, especially, the poorer classes of pupil?

3. What are the courses that may be set up usefully at present for the benefit of the people?

4. What is the duration of each of those courses in years?

5. How many hours of work per week will they have to work and what should be the apportionment of time between (*a*) Practice of the vocation (*b*) Related Science, Mathematics, Occupational information and (*c*) General educational subjects for citizenship purposes?

6. Shall these courses be self-contained or shall they be preparatory to higher courses or shall we have both these objectives in some or all of those courses?

7. What are the detailed syllabuses for each of these courses in (*a*) practice of the vocation (*b*) related knowledge and (*c*) general educational subjects?

8. What arrangements have to be done for vocational placement of the pupils?

II. Courses at the High School or Senior Secondary Level.

Workers in skilled trades and modern industries and lower executives, foremen and supervisors.

1. Would eight or nine years of schooling do before taking up courses of this type?
2. Age of admission.
3. Which course may be organized?
4. Duration of courses, number of hours of work per week and their apportionment.
5. Shall they be self-contained, etc.?
6. Syllabuses.
7. Vocational placement.

The Committee focussed its attention upon training connected with Industry and Trades, Agriculture, Horticulture and Sericulture.

Training for occupations connected with Commerce and Home-making was not considered, since it was felt that it could better be dealt with later by a separately constituted Committee.

Stages of Vocational Education.

The scheme of vocational education within the school system was considered which would fit in with the proposed reorganization of school education on the basis of a six-year primary course, three-year middle or junior secondary course and a three-year high or senior secondary course. The Committee is of opinion that no vocational instruction be imparted to pupils in the six-year primary schools since the entire school time of the first six-years is required for their cultural training and also since the children would be too immature physically and mentally to profit by any system of organized vocational instruction. The minimum age for admission to vocational schools for artisans, workers in small workshops and in factories should be 12 years.

Organized vocational education may be imparted in schools which may run parallel to the thre-eyear middle or junior secondary course and to the three-year high or senior secondary

course and may be designated Vocational Middle Schools and Vocational High Schools each of three years' duration.

The vocational middle schools will train artisans, and workers in modern factories and workshops, and the vocational high schools will train workers in the more highly complex and skilled trades like electrical wiring and fitting, automobile repair shop, etc., and prepare foremen and managerial staff of small workshops. The post-high school courses, which this committee has not dealt with, should aim at preparing engineers, managers and higher supervising agency to serve in modern type factories and highly skilled trades.

Subjects of Study.

The Committee is of opinion that while strong emphasis should be placed on vocational practice, cultural equipment of the pupils should not be lost sight of in both the types of vocational schools. It recommends that the schools do run for 34 hours a week of which 22 hours be devoted to the practice of the vocation and to the study of related science, mathematics and drawing and 12 hours to the study of cultural subjects.

The vocational subjects recommended at the middle school level are (1) Agriculture, (2) Blacksmithy, (3) Metal work, (4) Tailoring, (5) Sericulture, (6) Weaving, (7) Lacquer work, (8) General Carpentry, (9) Dairy Farming, (10) Sheep-rearing and wool spinning, (11) Leather work, (12) Horticulture and (13) Poultry Farming.

The vocational subjects recommended at the high school level are (1) Wood work, (2) Building trades, (3) Automobile mechanics, (4) Printing and Book-Binding, (5) Textiles, (6) Agriculture, (7) Sericulture, (8) Machine shop, (9) Electric wiring and lighting, (10) Manufacture of Electrical Goods, (11) Photography and allied trades, (12) Foundry and Pattern making, (13) Dyeing and Printing and (14) Horticulture.

For working out details of the cultural subjects, a sub-committee consisting of the following gentlemen was constituted.

1. Dr. K. N. Kini, M.A., Ph.D., (Chairman).
2. Mr. B. Venkatesa Sastry, B.A., B.T.
3. Mr. K. V. Doraiswamy, M.A., B.T.
4. Mr. A. T. Govindaraj, B.A., B.T.

The subjects recommended by them at the middle school stage of education are (1) English (working knowledge) (2) Elements of Mathematics, (3) Hygiene and Science related to it (4) Civics and general administration and (5) Geography.

Vernacular is not included as a separate subject. All the subjects are to be taught, however, in the vernacular.

The cultural subjects recommended at the vocational high school level are the following .—

(1) English, (2) Elementary Mathematics, (3) Elementary Science and (4) Elementary Economics.

Detailed syllabuses in the five cultural subjects and ten of the vocational subjects for vocational middle schools were prepared and submitted to the Director of Public Instruction and are now printed under the term " Syllabuses for the Vocational Middle School Course." Detailed syllabuses in the four cultural subjects and eight of the vocational subjects for Vocational High Schools were submitted to the Director of Public Instruction and are now printed under the heading " Syllabuses for the Vocational High School Course."

Other Recommendations.

1. Two to four periods a week might be allowed for practical arts subjects in the general high and middle schools for all students with a view to giving them training for the hand and the eye as part of liberal education and not with a vocational objective and for enabling them to have some appreciation of industry and trades in this industrial and scientific age.

2. For teachers in vocational high schools, L.M.E. or L.T.M. or L.E.E. or L.Ag. or B.E. with special training in the subjects to be taught should be the minimum qualifications.

3. For teachers in the vocational middle schools, Lower Grade Engineering School Diploma or Equivalent should be the minimum qualification.

4. All vocational teachers should be successfully engaged in their respective vocations for at least two years before being employed as teachers.

5. The maximum number of boys in a batch for practicall work in any vocational subject should be 20 and in a class for instruction in theory, 40.

6. The teachers of vocational subjects do require training for teaching and therefore due provision be made for their normal training.

The convener wishes to place on record his sincere thanks to the members of the Vocational Education Committee and the members of the Sub-Committee appointed by it, for the hearty and willing co-operation they gave him in the discharge of his duties and for their arduous labours in completing the work entrusted to them.

APPENDIX A.

SYLLABUSES

FOR THE

SIX-YEAR PRIMARY SCHOOL COURSE.

SUBJECTS.

1. Vernacular—Kannada *or* Urdu *or* Telugu *or* Tamil.
2. Elementary Mathematics.
3. Indian History, Civics and Geography.
4. Hygiene and First Aid (for boys), or Elementary Home Craft including Personal Hygiene and Needle work (for girls).
5. Nature Study and Gardening, including Drawing.
6. Hand Work.
7. Music.
8. Physical Training.

Note.—Syllabuses for Telugu and Tamil will be drawn up when necessity arises.

Allotment of periods among the several subjects in Primary Schools (Six years course).

No.	Subject	I Year	II Year	III Year	IV Year	V Year	VI Year
1	Vernacular ...	12	12	12	12	12	12
2	Elementary Mathematics ...	6	6	6	6	6	6
3	History	3	3	3	3	3	3
4	Civics	...	...	...	...	3	3
5	Geography	2 *	2 *	2 *	2	2	3
6	Hygiene and First Aid for boys	2	2	2	2	3	2
7	Elementary Home Craft including Personal Hygiene and Needle work for girls ...	(2)	(2)	(2)	(2)	(3)	(3)
8	Nature Study or Gardening, including Drawing ...	4	4	4	4	...	...
9	Hand Work	4	4	4	4	4	4
10	Music	6	6	6	6	6	6
11	Physical Training including Games	6	6	6	6	6	6
	Total ...	45	45	45	45	45	45

Note I.—*Hygiene to be taught *orally* in I, II and III year classes.

Note II.—The classes will be held in two Sessions :—

Morning ... 7-30 A.M. to 10-30 A.M. with an interval of 10 minutes.
Afternoon ... 3 P.M. to 5 P.M.

All lessons are of 40 minutes duration except music (30 minutes) and Physical Training (20 minutes).

SYLLABUSES FOR THE SIX-YEAR PRIMARY SCHOOL COURSE.

1. VERNACULAR—Kannada.

I Year.

Reading—To point out and pronounce all the letters of the Alphabet and to read selections from Primers and answer simple questions on the subject matter.

Writing.—To form letters and easy words with the aid of appliances, such as, seeds, sticks, rings, etc. To transcribe short and simple sentences, in large hand on slate or black-board.

Recitation.—Select poetical pieces (about 50 lines).

Spelling and Dictation.—Writing of simple words (including Kagunitas, Ottaksharas) and sentences to dictation.

Grammar and Composition.—Formation of simple sentences. Conversation on familiar subjects.

Story-teling in relation to any topic included in the Course.

II Year.

Reading.—To read a simple Reader and to answer simple questions on the subject-matter.

Writing.—To write in large hand in ruled copy book (about 50 exercises).

Recitation.—Select poetical pieces (about 75 lines).

Spelling and dictation.—Transcription and writing to dictation, based on the reading book.

Grammar and Composition.—Main parts of a sentence: Subject, Predicate and Object. Formation of more difficult sentences (Approved books, such as, *Vachakabhodini* and *Vakyarachanakrame* to be used for lessons in Grammar and Composition). Exercses in oral reproduction of simple stories from approved books, such as *Neetichintamani, Aesop's Fables,* etc.

III Year.

Reading.—A study of the prescribed Reader with closer attention to words and phrases, and their significance.

Writing.—To write a medium hand in ruled copy books (about 50 exercises).

Recitation.—Select poetical passages (about 100 lines).

Spelling and Dictation.—To write to dictation passages of the standard of the prescribed reading book.

Grammar and Composition.—The function of Nouns, Pro nouns, Adjectives, Verbs and Adverbs with an elementary knowledge of the following *prakaranas* in Grammar :—

Samjna, Sandi, Nama, Avyaya, Samasa and Taddhita, as contained in an approved book, such as *Hosagannada Vyakarana* (Sections 1—66). Formation of Simple, Compound and Complex sentences (for models *vide* " Prabandhamanjari." pages 28—45).

Oral reproductions of stories read or told from approved books, such as *Neetichintamani, Kathasaptati and Aesop's Fables.*

IV Year.

Reading.—To study the prescribed text-book with reference to vocabulary, general construction of sentences, comprehension and amplification of subject-matter. Exercises in silent reading. Reading of ordinary manuscript. General reading with proper attention to articulation, intonation and emphasis.

Writing.—To write in small hand in single line copy books (About 50 exercises).

Recitation.—Select poetical passages with some variety in regard to subject matter and form (not less than 50 stanzas).

Spelling and Dictation.—Spelling of words peculiar in formation, and writing to dictation of passages of the standard of the prescribed text-book.

Grammar and Composition.—Parts of Speech (Revision) and an elementary knowledge of the following *prakaranas* :—

Karaka, Tutsama, Tadbhava, Dhatu, Kridanta and Prayoga (Syntax) as contained in an approved book, such as *Hosagannada Vyakarana* –(Section 67 to end).

To write with the aid of outlines 20 exercises in composition comprising the following items :—

(1) Simple letter-writing—5 exercises.
(2) Story writing (from approved books such as *Neetichintamani, Nitibodhe, etc.*)—5 exercises.
(3) Essay writing (based on subjects relating to Animal life, Plant life and Common Metals)—10 exercises.

V Year.

Prose.—(1) A detailed study of the prescribed text-book with reference to the content and the literary and linguistic aspects.
(2) Supplementary reading of not less than 75 pages.

Poetry.—A detailed study of about 75 stanzas including some good modern poetry. Oral rendering with proper expression of select poetical passages from the texts.

Writing.—Transcription (about 50 exercises)

Grammar.—A detailed study of the following *Prakaranas* :—

Samjna, Sandhi, Nama, Akhyata, Kridanta and Taddhita, as contained in an approved book like *Sabdadarsa.*

Composition.—25 written exercises comprising the following items :—

(1) Story writing ... ... 5 exercises.
(2) Essay writing (on subjects relating to Village Life, Seasons, Agriculture, and Cottage Industry, such as Spinning, Weaving, Carpentry, Smithy, etc.) "*Prabhandamanjari*" may be used for guidance ... ... 15 exercises.
(3) Letter writing ... ... 5 exercises.

VI Year.

Prose.—(1) A detailed study of the prescribed text-book with reference to the content and the literary and linguistic aspects.

(2) Supplementary reading of not less than 100 pages.

Poetry.—A detailed study of about 100 stanzas including good modern poetry. Oral rendering with proper expression of select poetical passages from the texts.

Writing.—Transcription (about 50 exercises).

Grammar.—A detailed study of the following *prakaranas* :—

Samasa, Avyaya, Tadbhava and Prayoga (Syntax), as in an approved book like *Sabdadarsa.*

Composition.—25 written exercises comprising the following items :—

(1) Story writing based on an approved book like *Kathasangraha)* ... ... 5 exercises
(2) Essay writing—Narrative and descriptive essays on subjects relating to games, festivals, travel, newspapers, libraries, excursions (using an approved book like *Prabandhamanjari* for guidance) ... ... 15 exercises.
(3) Letter-writing (Documents, etc., using an approved book, such as *Lekyabhodhini* for guidance 5 exercises.

URDU.

I Year.

Reading—To point out and pronounce all the letters of the Alphabet and to read selections from Primers and answer simple questions on the subject-matter.

Writing.—To form letters and easy words with the aid of appliances, such as seeds, sticks, rings, etc. To write short and simple sentences in large hand on a slate or black board.

Recitation.—Selected poetical pieces of about 50 lines (mostly Hymns).

Spelling and Dictation.—Writing of simple words and sentences to dictation including teaching of Hijjas.

Grammar.—Not necessary.

Composition.—Conversation on familiar subjects, story telling in relation to any topic included in the course.

II Year.

Reading.—To read a simple reader and answer simple questions on the subject-matter.

Writing.—To write a large hand in ruled copy books—about 50 exercises.

Recitation.—Selected poetical pieces about 75 lines.

Spelling and Dictation.—Transcription and writing from dictation based mainly on the reading book.

Grammar.—Main parts of a sentence—Subject, Predicate and Object to be taught orally with the help of text-book. Formation of simple sentences.

Composition.—Exercise in oral reproduction of simple stories.

III Year.

Reading.—A study of prescribed reader with closer attention to words and phrases and their significance.

Writing.—To write a medium hand in ruled copy books—50 exercises.

Recitation.—Selected poetical passages—about 100 lines.

Spelling and Dictation.—To write to dictation passages of the standard of the prescribed reading book.

Grammar and Composition.—Function of Noun, Pronoun and Verb. Formation of simple sentences. Oral reproduction of stories read or told. *Quaid-e-urdu* (Moulvi Farozuddin and Sons) or any book that is of this stand and which is to be aimed at.

Non-detailed study.—Supplementary reading. A book of about 30 pages.

IV Year.

Reading.—To study the prescribed text-book with reference to vocabulary, general construction of sentences, comprehension and amplification of subject-matter. Exercises in silent reading, oral reading with proper attention to articulation, intonation, emphasis and accentuation.

Writing.—To write a medium hand in single line copy book—about 75 exercises.

Recitation.—Selected poetical passages with some variety in regard to subject-matter and forms—not less than 100 lines.

Spelling and Dictation.—Spelling of words peculiar in formation, to writing to dictation of passages of the standard of the prescribed text-book.

Grammar and Composition.—Revision of the portion done in the III Year class and a cursory glance over syntax. *Quaid-e-urdu* (Moulvi Fanzuddin & Sons) or any book that is of this standard which is to be aimed at. Exercises in composition with the aid of outlines.

Non-detailed Study.—Supplementary reading of about 40 pages.

V Year.

Prose.—A detailed study of the text-book with reference to the content and linguistic and literary aspects.

Non-detailed study.—A supplementary reading of not less than 75 pages.

Poetry.—A detailed study of about 100 stanzas of poetry including the modern poetry. Oral rendering with proper expression of select poetical passages from the texts.

Writing.—To write a small hand in single line copy book—about 75 exercises Transcription about 25 exercises.

Grammar and Composition.—Afzalul-Oswaid Guldasta-e-mazumeen. Part I. First half *i.e.*, completion of Etymology.

VI Year.

Prose.—A detailed study of the prescribed text-book with reference to the content, literary and linguistic aspects. Supplementary reading of not less than 100 pages.

Poetry.—A detailed study of about 100 stanzas of poetry including modern poetry. Oral rendering with proper expression of sellect poetical passages from the texts.

Writing.—Transcription—about 75 exercises.

Grammar.—Afzalul-Oswaid-second half.

Composition.—Guldasta-e-mazumeen—Part II.

---

2. ELEMENTARY MATHEMATICS.

I Year.

1. Numeration from 1 to 100.

2. Numeration by increase or decrease of fixed numbers by 2, 5 and 10, mostly orally, the highest figure to be reached being 50.

3. Notation from 1 to 100.

4. Addition and subtraction of single digits, mostly y orally

5. Multiplication tables 1 x 10 to 10 x 10; to b be bui by actual counting while the numbers are being taughht. Th tables to be used in every day work.

II Year.

1. Numeration from 101 to 1,000.

2. Numeration by increase or decrease of fixed nnumbe by 1 to 6, the highest number to be reached being 1000.

3. Notation from 101 to 1,000.

4. Addition and subtraction of 2, 3 and 4 figures not exceed four lines and the final result not to exceed 1,000.

5. Multiplication tables up to 16 x 10.

6. Multiplication and division by one digit and twwo digi not exceeding the figure 16, the final figure not to exceeed 1,00

7. Tables:—Rupees, annas and pies; Kolaga, Seeru, an Pavu: Yards. Feet, and Inches.

8. Simple problems based on the first four rules, ments and practical.

III Year.

1. Notation and numeration up to 1,00,000.

2. Multiplication tables up to 20 x 10.

3. Addition and subtraction of five figures.

4. Multiplication and division of figures of 3 or 44 digit by figures of 2 digits.

5. Tables.—Rupees, annas and pies. Reduction. Simpl addition and subtraction of Rs. As. Ps.

6. Simple Fractions—$\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, Elementary idea, illustrate by concrete examples like paper cutting, etc.

IV Year.

1. Notation and numeration up to 1,000,000.

2. Multiplication and division; harder sums involvin figures of 3 to 5 digits.

3. Factors.

4. Mulitiplication and division by factors.

5. Tables. seers, viss, and maunds; seers, pallas, etc. sheets, quires, reams, etc., minutes, hours, etc.

6. Reduction of above; addition, subtraction, multipllicatior and division; Compound multiplication and division Rs. As. Ps

7. G. C. M. Limited to figures of 4 digits.
   L. C. M. ,, ,, 2 ,,

8. Simple Fractions. Addition, subtraction, multipllication and division.

9. Problems involving fractional parts.

10. Multiplication and division by shorter methods.

V Year.

1. Decinals: simple idea to enable the student to draw and measure sraight lines.

2. Simple and compound practice (simple sums--involving value in Rupees, annas and pies only) tables to be used; (*a*) maunds, viss. *b*) miles, furlongs, etc., (*c*) pallas, seers; (*d*) sheets, quirres, etc;

3. Simple proportion. Simple rule of three and compound rule of three.

Simple problems only. Recitory method only to be employed.

4. Bills.

5. Profit and Loss. Simple problems only

6. Use of mathematical instruments.

7. Measurements of Lines and Angles.

VI Year.

1. Percentages.

2. Simple interest—only direct questions.

3. Time and work do

4. Time and distance do

5. Income-Tax do

6. Construction of triangles and squares and measurements of sides and angles.

7. Drawng of Circles.

---

3. INDIAN HISTORY, CIVICS AND GEOGRAPHY—

Indian History.

I Year.

Stories of great men and women and great events selected from Indian Mythology and Legend.

II Year.

(1) Authenticated historical incidents connected with localities near about each school.

(2) Stories of eminent historical personages of India and Mysore furnishing a biographical background to the study of regular history.

III Year.

(1) Historical stories of India and other lands.

(2) An outline study of history of Mysore from the times of Raja Wadeyar.

IV Year.

A short account of the History of Mysore, mainly chronological.

V Year.

A chronological account of the main events of Indian History up to 1707, omitting all details relating to civilizations and reforms.

VI Year.

A chronological account of the main events of Indian History, from 1707 up to modern times.

---

4. CIVICS.

V Year.

(1) The family—the idea of a family. The duties and responsibilities of the members of the family.

(2) The village—A group of families. How the village is governed. The Head of the Village and Village Panchayet; relation of the Villager to the Panchayet.

(3) The Town. How a town is governed. The work of the Municipality. How a citizen can co-operate with the Municipality. Comparison of a Village Panchayet with Municipality.

(4) The State. The Mysore State. Divisions into Districts and Taluks.

VI Year.

(1) The Head of the State. Loyalty and love towards the Ruler.

(2) A simple non-technical account of the administration of Mysore.

(3) The work of the District Board, the Representative Assembly, and the Legislative Council (a simple non-technical account).

(4) The relation between Mysore and British India.

---

5. GEOGRAPHY.

I Year.

Informal Geography by means of nature lessons, excursions, observation in regard to weather, and simple geographic facts relating to day and night, seasons, land and water forms of the locality.

II Year.

A beginning of the understanding of map reading. The plan and map of the school, the village and surroundings. Important houses, gardens, roads, tanks, rivers, hills, etc., naming directions.

III Year.

11. Foodstuff—Milk, corn, sugar, coffee, vegetables, fruits, flesh, etc.
22. Our dress materials—cotton, jute, rubber, wool, silk, skin, etc.
33. Our houses
44. Fuel
55. Light
66. Seasons
77. Climate
8. Physical Features of land
9. The Continents
10. Divisions of water
11. The meeting of oceans
12. The forms of water
13. Measurements of distance, food, corn, time, etc.
14. Transport of things
15. Differences between villages and towns.
16. Simple occupations

IV Year.

1. The growth of towns
2. Journey Geography of Mysore
3. The work of rivers
4. Journey in different parts of India—Bangalore to Poona, Poona to Bombay, Bombay to Peshawar, Pehawar to Calcutta, Bombay to Calcutta; Calcutta to Madras; Madras to Bombay; Madras to Dhanushkodi; Madras to Mangalore; Madras to Travancore; Madras to Bangalore; Madras to Burma.
5. Foreign Travel:—Equipment. A tour round the World with details regarding important places, Ceylon, Aden, Arabia, Redl Sea, Suez Canal, Mediterranean Sea, Cairo, Crete, Greece, Italy, Marseilles, Mediterranean lands, Paris, London, Liverpool Southampton, Atlantic Ocean, New York, United States of America, San Francisco, Japan, China, Singapore and Australia.
6. The Polar Regions.
7. The towns and cities.
8. Natural Environment and its effects.

V Year.

The world in outline on the regional basis.

1. How people live in the hot, almost rainless country along the Nile.
2. Life in the Mediterranean lands.
3. Life in Mountainous Country—Nepal, Adrean countries
4. Life on the Temperate and Tropical Grass lands.
5. Life in Momsoon lands.
6. Life in an Industrial country.

A detailed study of Mysore and a brief study of India and Asia.

VI Year.

A brief survey of the other Continents under the following heads:—Physical features, climate, vegetation, industries, trade and population.

Relation between India and the rest of the world.

---

6. HYGIENE AND FIRST AID.

NOTE—Hygiene to be taught orally in I, II, and III Years.

HYGIENE.

IV Year.

Parts of the human body and their main functions. Necessity for fresh air, pure water, good food, light and ventilation, exercise, sleep and rest.

V Year.

1. Air—composition of air. How air becomes impure and how it is purified.
2. Water—sources of water. Pure and impure water, Characterestics of good drinking water. Purification of water.
3. Food—The chief constituents of food. The need for mixed diet with special reference to digestibility and nourishment. Rules regarding diet.
4. Bathing and cleanliness:—Diseases of the skin and how to avoid them.
5. Dress:—Materials used for clothing—cotton, wool and silk. Dress to vary according to climate, state of health, occupation, etc.
6. Exercise and rest—Nature, quality and amount.

7. Infectious and contagious diseases and their prevention. Plague, Cholera, small-pox, Malaria, Typhoid and Consumption.

N.B.—Emphasis should be laid on the necessity for the cultivation of good habits and the avoidance of bad ones.

VI. Year.

HYGIENE AND FIRST AID.

1. The organs in the different parts of the human body and ttheir main functions.
2. Muscles and movement.
3. Circulation of blood.
4. Respiration.
5. Digestion and assimilation of food.
6. Work of the excretory organs.
7. The nervous system.
8. First aid in accidents :—Meaning of First Aid. Treatment of cuts, bruises, and wounds. Simple fractures and the metthod of dealing with them. Bleeding and its varieties. How to sttop bleeding. Snake bite and poisoning. Fainting, Epilepsy, Drowning.

N.B.—Only an elementary knowledge of the parts of the human body and their functions is expected. The subject should be made as interesting as possible by means of picture and demonstrations.

---

77. ELEMENTARY HOME CRAFT INCLUDING PERSONAL HYGIENE AND NEEDLE WORK.

((NOTE.—(i) This Syllabus should be correlated with Hygiene).
(ii) This subject should be taught orally in I Year.

II. Year.

1. Personal cleanliness :—
   (*a*) Care of skin, hair, teeth and nails.
   (*b*) Care of clothes, books, furniture, and the class room
2. Benefits of good posture.
3. Precutions to be taken during the time of illness, such as cold, cough, fever, headache, sore eyes, and itches.
4. Needle work—
   (*a*) Pricking card board or drawing paper over pencil designs of animals, fruits and flowers and sewing over these designs in coloured cotton or wool with tacking.
   (*b*) Canvas work with blanket stitch and cross stitch.

N.B.—Attention of children should be drawn towards the keeping of the pieces of cloth or canvas supplied to them neat and clean.

III Year.

1. Personal cleanliness.—
   (*a*) Daily baths—Hot and cold baths and their benefits.
   (*b*) Clean clothing—Brushing, washing and ironing.

2. The Home.—

General ideas of keeping the house, its furniture and utensils clean and in order—dusting, sweeping, washing, and polishing.

3. The three essential requirements of life.—

Fresh air, pure water and good food.

4. Needle work —
   (*a*) Practising the following stitches and working simple designs and alphabets on pieces of canvas. Tacking running and back stitching.
   (*b*) Tacking, running and blanket-stitching on coarse cloth.

N.B.—Attention should be paid to the proper way of holding the needle, cloth and scissors and to threading the needle.

IV Year.

1. Care off the human body.
   (*a*) The necessity for personal cleanliness (bathing and care of the skin in detail).
   (*b*) The necessity for physical exercise, work and games.

2. Clothing.—
   (*a*) Injurious results of dirty and tight clothing.
   (*b*) Choice of material according to climate and seasonal conditions.

3. Food.—

Its necessity, its properties in general, the need for variety.

4. Water.—

Its sources, its uses, its purification.

5. Needle work.—
   (*a*) Hemming, back-stitching, chain-stitching, herring-boning.
   (*b*) Making dusters, small bags school bags and working names with chain-stitch.

V Year.

1. The human body—Elementary ideas of the digestive, circulatory and respiratory organs.

2. Clothing—Washing and care of cotton, silk, woollen and coloured materials.

3. Food.—Suitable for infants, children and invalids.

4. Lighting.—

(*a*) Natural and artificial light and their uses.

(*b*) Advantages and disadvantages of oil lamps, candle. gas and electric lights.

5. Needle work.—

(*a*) Revision of previous stitches, feather-stitching, patching on cotton and wool.

(*b*) Cutting out a jumper jubba from paper pattern.

(*c*) Making pillow cases, cushion covers and patch work.

VI Year.

1. The human body.—

The necessity and value of keeping physically fit.

2. The Home.—

Ventilation, lighting, drainage, orderliness, cleanliness, disposal of refuse, hygienic conditions of the kitchen, the store room, the bed room and the lavatory.

3. Care of the sick.—

The sick room.—Isolation, light and ventilation, bed and bedding, administering of medicine and diet.

4. Care of babies.—

Proper way of carrying babies.—How to keep them clean and tidy at all times—care to be observed in giving them eatables.

N.B.—1. The work done in previous years should be revised.
2. Facilities should be provided wherever possible for practical work and demonstration,

5. Needle work.—

(*a*) Revision of all the stitches.

(*b*) Cutting out from a paper pattern simple jubba and kuppasa.

(*c*) Cutting out simple jubba and kuppasa by measurement.

8. NATURE STUDY AND GARDENING INCLUDING DRAWING.

I Year.

(*a*) *Plant Life.*—

1. Recognition of common trees and shrubs, such as, Banyan, Peepul, Tamarind, Margosa, Honge, Nerale, Pomegranate, Sithapul, Matthi, Haralu, etc.

2. Simple description of stem, bark and leaves of any three of the above.

3. Caring for the plants in the School garden.

(*b*) *Animal Life.*—

1. Study of domestic animals—Cow, buffalo and goat for giving milk, sheep and goat for wool, oxen and horses for ploughing, drawing carriages, etc.

2. Study of common birds, such as crow, sparrow, parrot and pigeon.

3. Keeping one or more pets in the school.

(*c*) *Natural Phenomena.*—

1. The Sun, the Moon and stars, the day and the night, water-well, tank, pond, river, clouds and rain.

II Year.

(*a*) *Plant Life.*—

1. Recognising some wild plants of the locality. The students must be taken to the places where these plants grow and acquainted with their local names and characteristics.

2. Study of six plants or trees not studied in the previous year. A more detailed description of the parts should be attempted and the pupils asked to make simple sketches or drawings.

3. Study of the flowers of the following :—
Dasavala, Bende, Hatthi, Datturi.

4. Growing some vegetable and flower plants in the school garden and noting their changes from seed to seed. Use of simple garden tools.

(*b*) *Animal Life.*—

1 Study of cow, horse, sheep, buffalo, cat and dog. External characteristics.

2. The appearance and habits of the domestic fowl or pigeon.

3. The butter fly and the silk worm. External characteristics only.

(*c*) *Natural Phenomena.*—

1. The sun and the day, sun-rise, moon, sun-set, the cardinal points.

III Year.

(*a*) *Plant Life.*—

1. Simple observations on the nature and work of root, steem, leaf, flower and fruit.

2. Germination of seeds such as bean, bengal-gram, thogari, moolangi, paddy or maize.

3. Study of any three of the following field crops:—

Thogari, Nelagadale, Hutchellu, Jola, Ragi.

4. Garden work.—Cultivating one or more garden crops of the locality. Use of some more garden tools. Kinds of manure and their uses.

(*b*) *Animal Life.*—

1. Animals of the farm—cow, horse, sheep, goat, etc. Use of these to the farmer and the method of caring for them.

2. Life history of the butterfly and the frog.

3. Insect pests. Grass-hoppers, locusts, caterpillars, plant bugs, weevils, etc. How to eradicate these. Birds as friends of the farmer.

(*c*) *Natural Phenomena.*—

Heat and energy, the sun, the moon and the stars, clouds and rain and dew.

IV Year.

(*a*) *Plant Life.*—

1. Plants are living things. The parts of a plant, root, steem, bud, leaf, flower and fruit. Description of these in at least half a dozen different plants.

2. Germination of seeds, how seeds germinate, conditions needed for germination—life in the seed, moisture, warmth, air.

3. The absorption and assimilation of food by plants. Importance of sunlight.

4. Flowers and the work of reproduction. Relation between flowers and insects. Different ways of multiplying plants such as cutting, layering, budding, etc.

5. How seeds and fruits are scattered.

(*b*) *Animal Life.*—

1. Beneficial and harmful insects—the honey bee, the wasp, termites (white ants), the dragon fly, the mosquito, the housefly and the silk moth.

2. Life history of the mosquito and the housefly.

3. Feeding habits of animals such as cow, horse, cat, dog, cock, pigeon, frog, snail and butterfly.

4. Movement of animals.

Pigeons	...	... flight
Dogs	...	... walk
Frogs	...	... hopp
Fishs	...	... swim
Snails	...	... creep

5. Dangerous creatures :—

Scorpion, cobra, cheeta and tiger.

(*c*) *Natural Phenomena.*—

The wind and its direction in different months. Rain and its action on the soil, rivers and their uses. Clouds and how they are formed.

---

9. HAND WORK.

I. Year.

(*i*) Clay modelling—12 models.

Models connected with the Nature lesson or other lessons of the week and based on type forms such as—(1) Spherical, (2) cubical, (3) cylindrical, (4) square, (5) conical, etc., *e.g.*, ball, top roller, dumb-bells, ink-bottle etc.

(*ii*) Stick laying, string laying and ring laying :—

(*a*) Six models :—suited to the locality such as table, chair, ladder, tower, pentagon, horse, etc.

(b) Formation of alphabets.

(*iii*) Kindergarten Gifts :—

Gifts I, II, III and IV and combination of III and IV.

(*iv*) Drawings :—18 figures.

(*a*) Mechanical Drawing :—To be connected with clay modelling lessons, drawn in mass and coloured.

(*b*) Copy and memory drawing :—In outline or in mass, with or without colour, from teacher's copy or Natural objects of simple definable forms.

(*c*) Free-hand drawing—Familiar objects.

II. Year.

(*i*) Clay modelling—12 models set for drawing or dealt with in Nature Study lessons.

(*ii*) Paper folding:—12 models—forms representing common objects such as coat, trousers, tent, steps, etc.

(*iii*) Building with blocks, Kindergarten Gifts V, V-B, and VI or toy making or picture making. Six models and 6 pictures. Toys may be made out of empty card board boxes, reels, etc. Pictures may be collected or drawn, coloured, cut and mounted.

(*iv*) Drawing:—18 figures.

Mechanical Drawing—To be drawn with the help of foot-rule, familiar rectangular figures and designs.

Copy and Memory Drawing—From teacher's copy, or from models in outline or models in mass, with pencil and crayons in plain simple colours of objects connected with the lesson of the week.

Free hand drawing—Simple leaves, fruits and other objects diirect from nature, grass plants of big family and free illustrations w/ith or without colour.

III. Year.

(1) Clay modelling—12 models.

The method followed in the I and II Year classes is to be continued.

(2) Paper folding, cutting or tearing.—

Twelve models, such as scissors case, tray, book mark, basket, fan, flowers, animals, etc.

(3) Paper plaiting or flower cutting or toy making—.

Twelve models. Toys may be made with palm leaf, bamboo chips, empty boxes, reels, wood, card-board, paper, etc.

(4) Drawing.—18 figures.

Mechanical Drawing.—With the help of the instrument box. Curved figures are also to be included. Simple forms to bee selected.

Copy and model drawing.—Model drawings of type forms to be attempted in simple perspective. Colouring in crayons in simple natural colours should be attempted.

Free hand drawing—Objects connected with the lesson of the week, big trees in mass and simple views and illustrations.

IV. Year.

Free clay modelling.—12 models. Leaf forms, simple fruits and simple objects.

Paper work—12 models. Simple flowers and animals to be cut out and pasted on thick brown paper or thin card board.

Drawing.—18 figures.

Object drawing.—Leaves, fruits, twigs, pots, house, watch, tumblers, garden tools and Indian clubs.

Colour drawing with brush and water colours or coloured chalks in black and white.

V. Year.

MODELLING.

(i) (*a*) Clay—12 models. Modelling of leaves, fruits and simple birds and other objects not done in previous classes.

(*b*) In paper, card board and ply-wood—12 models. House, post-office, railway-station, engine, carriages and animals. May be cut out and pasted on stiff card-board.

(ii) Drawing—12 figures—such as book, match-box, box with open lid, lock and key, pen-knife with one of its blades open, twig showing buds and leaves, butterfly, cocoanut cut into halves, tumbler half filled with coloured water, cup and saucer, and flower pot.

VI. Year.

Modelling in clay—12 models. Fruits, birds, animals, horses and other objects. Models to be coloured with ordinary water colour mixed with gum.

In paper, card-board and ply-wood :—12 models.

1. Making of an almirah for use by infants. They may be made with empty card-board boxes.
2. Preparation of shields which are to be used to record games of each class.
3. Cutting out geometrical figures and modelling of solids.
4. Picture frames.
5. Preparation of picture books for infants.

Drawing.—18 models.

Simple flowers, birds, animals, fruits and vegetables.

---

10. MUSIC.

I, II, III and IV Year.

No technicall music should be introduced for the first four years. But simplle kindergarten and action songs from prescribed books should be taught.

V Year.

Technical music should be started with training in Seven Simple varases in *trikala* in addition to songs.

VI Year.

1. Four Janti varases in *trikala*.
2. Two Alankaras.
3. Two simple Gitas.

---

11. PHYSICAL TRAINING.

I Year.

(*a*) Infant games and drill.—Very easy exercises preceded by action songs accompanied by music.
(*b*) Kindergarten games with suitable songs.

II Year,

(*a*) Same as for Class I. The exercises may be a little more difficult than for Class I.
(*b*) Organised games.

III Year.

(*a*) Simple American or Swedish drill.
(*b*) Organised games with set rules.
(*c*) Special physical exercises.

IV Year

(*a*) Same as for Class III,
Some of the Indian games described in Mr. M. Srinivasa Rao's "Indian Games" may be selected.

V Year.

Same as for Class IV. The games and exercises may be a little more difficult than for Class IV.

VI Year.

Same as for Class V. The games and exercises may be a little more difficult than for Class V.

N.B.—Wherever possible, games for cubs and scouts may also be arranged.

APPENDIX B.

SYLLABUSES

FOR THE

THREE-YEAR GENERAL EDUCATION MIDDLE SCHOOL COURSE.

LIST OF SUBJECTS TO BE TAKEN UP BY EACH PUPIL.

B. Three-year Middle School General Education.

Compulsory.

1. Moral Instruction.
2. English.
3. One of the following Second Languages :—
   - (*a*) Kannada
   - (*b*) Urdu
   - (*c*) Tamil
   - (*d*) Telugu
   - (*e*) English.
4. Elementary Mathematics.
5. Indian History, Civics and Geography.
6. General Science including Hygiene.
7. Physical Training—(Non-Examination subject).

Optional.

8. One of the following :—
   - (i) Kannada
   - (ii) Sanskrit
   - (iii) Urdu
   - (iv) Persian
   - (v) Hindi
   - (vi) English
   - (vii) Rural Economics and Sociology
   - (viii) Domestic Science
   - (ix) Needlework and Embroidery
   - (x) Music
   - (xi) Painting
   - (xii) Fretwork
   - (xiii) Cotton Spinning
   - (xiv) Practical Drawing
   - (xv) Engraving on Metal
   - (xvi) Advanced Card Board Work.

Allotment of Periods among the Several Subjects in Middle Schools General.

No.	Subject	I year	II year	III year
1	Moral Instruction * ..	...	...	...
2	English ...	11	11	11
3	Vernacular ...	6	6	6
4	Mathematics ...	5	5	5
5	History ..	2	2	2
6	Civics ...	1	1	1
7	Geography ...	2	2	2
8	General Science including Hygiene.	3	3	3
9	Optional subjects ...	4	4	4
10	Physical Training ...	Half an hour from 4-30 P.M. to 5 P.M. each day.		
	Total periods ..	34 plus 5	34 plus 5	34 plus 5

**Note.*—The departmental book on Moral Instruction will be studied during the periods for the vernacular.

1. MORAL INSTRUCTION.

I year.

1. Duty to parents
2. Good manners
3. Truthfulness
4. Courage
5. Loyalty to comrades
6. Strength
7. Purity in speech

II year.

1. Self-restraint
2. Honesty
3. Patriotism
4. Reverence—conduct of boys towards girls of their own age, and reverence to womanhood.
5. Fair play
6. Reward and punishment.
7. Good conduct
8. Loyalty to comrades
9. Cultivation of strength

III year.

1. Duty to teachers
2. Self-restraint—control of anger and hatred.
3. Purity of mind and body
4. Chivalry
5. Social Service
6. Moral courage
7. Sportsmanship
8. Dignity of labour
9. Patriotism
10. Thrift
11. Diligence.

NOTE.—Frequent reference should be made to what is taught in the previous classes.

1. As far as possible, the lessons should be in the form of talks, which should be fully interspersed with concrete illustrations taken from the lives of heroes and heroines of India and other countries and out of the experiences of the pupils since mere disquisitional lectures on abstract notions and topics are not likely to prove very beneficial.

2. The illustrations selected should be suited to the class and should differ according to age, capacity and previous experience, etc., of the pupils.

3. The home life and the relation of women to the rest of the world should receive special attention in Girls' Schools.

4. The main aim of these lessons should be not so much to get the pupils to listen to and be able to repeat some commonplace platitudes about morality and morals but to stimulate their outlook on life and to direct their attention to the beauties of a pure and moral life.

2. ENGLISH.

I Year.

1. *Reading.*—The scope of the work to be done in the Reading Lesson should cover a Primer and half of Book I and half of Book II, the standard being as fixed in the Revised Modern Indian Readers—Primer, Book I and Book II.

2. *Recitation.*—50 lines of simple poetry from the prescribed book

3. *Writing.*—100 copies per year to be done as part of the class work.

4. *Spelling and Dictation.*—To spell the words in the Reading Lessons.

5. *Conversation and Composition.*—Oral conversation with the teacher on selected topics such as (1) Class room objects and actions, (2) Surroundings of the school, (3) Parts of the human body, (4) Names of the days and months of the year, (5) Colours, (6) Numbers, (7) Simple family relationships, (8) Simple stories already learnt by the pupils in the Vernacular, *e.g.*, the Crow and the Pitcher, The Fox and the Grapes, etc.

6. *Translation.*—As part of the Reading Lesson.

7. *Grammar.*—(*a*) Pointing out subject and predicate in a sentence.

(*b*) Recognising simple parts of speech.

II Year.

1. *Reading.*—Half of Book II and selected lessons from Book III.

2. *Recitation.*—100 lines of poetry from the prescribed Reader.

3. *Writing.*—100 copies per year to be done as part of the class work.

4. *Spelling and Dictation.*—Spelling of words in the readers and writing to dictation passages selected from the Reader.

5. (*a*) *Conversation and Composition.*—(a) Oral expressions of courtesy, *e.g.*, No Sir, Yes Sir, Thank you, Sir, the weather and the seasons of the year.

(*b*) Writing answers to short questions based on the subject-matter of detailed and non-detailed Texts.

(*c*) Reproduction of stories from the Reading Books.

(*d*) Constructing short stories when outlines are given.

20 Exercises in the year.

6. *Translation.*—Selected exercises from the prescribed

TEXT BOOKS.

7. *Grammar.*—(1) Nouns—Main Classification.
(2) Pronouns—Main Classification.
(3) Adjectives—Main Classification. Degrees of comparison.
(4) Verb—the three tenses.
(5) Adverbs—as qualifying verbs and adjectives.
(6) Preposition—its nature and use.
(7) Conjunction—its nature and use.

III Year.

1. *Reading.*—(i) A prescribed text-book for detailed study containing both Prose and Poetry and of the standard of Revised Modern Indian Readers—Book IV.

(ii) A prescribed Text Book for Non-detailed study.

2. *Recitation.*—150 lines of poetry in the prescribed book for detailed study.

3. *Writing.*—100 copies per year to be done as home exercise.

4. *Spelling and Dictation.*—Writing to dictation of (*a*) passages selected from the prescribed text-books, (*b*) simple unseen passages and (*c*) words that are commonly mis-spelt.

5. *Conversation and Composition.*—(1) Oral conversation on topics of current and general interest.

(2) Reproduction of stories from the Reading Books.
(3) Letter-writing—20 Exercises per year.

6. *Translation.*—(*a*) Exercises from the prescribed text-books.

(*b*) Translation of simple unseen passages from both Kannada and English.

7. *Grammar.*—(*a*) Further details in parts of speech.
(*b*) Uses of participles, Gerund and the Verbal Noun.
(*c*) Active and Passive Voices.
(*d*) Direct and Indirect forms of narration.
(*e*) Transformation of sentences as directed.
(*f*) Simple parsing.
(*g*) Analysis of Simple, Compound and Complex Sentences.

3. VERNACULAR—(a) Kannada.

I. Year.

Prose.—(1) A detailed study of the prescribed text-book with reference to the content and the literary and linguistic aspects.

(2) Supplementary reading of a book conveying nodern thought (About 75 pages).

Poetry.—A detailed study of about 100 stanzas ir easy Tripadi, Shatpadi and other simple metres. Oral rendering, with proper expression, of select poetical passages from the texts.

Writing.—Transcription (about 50 home exercises).

Grammar.—A more detailed study of the following *prakaranas*:—Samgna, Sandhi, Nama and Akhyata with tle help of an approved book, such as *Sabdadarsa.*

Composition.—About 25 exercises comprising the folowing items:—

(1) Story writing (based on approved books sich as Kathasangraha, Panchatantra, Aesop's Fable, etc., stories to be reproduced in brief, outlies being given) .. .. 10 exercises.
(2) Essay-writing (simple essays based on books, such as *Prabandamanjari*)... 10 do
(3) Letter-writing .. ... 5 do

II. Year.

Prose.—(1) A detailed study of the prescribed text-book with reference to the content and the literary and linguistic aspects (About 80 pages).

(2) Supplementary reading of a book conveying nodern thought (About 80 pages)

Poetry.—A detailed study of about 100 stanzas n easy Shatpadi, Ragale, Kanda and other metres. Oral rendering, with proper expression, of select poetical passages from the texts.

Writing.—Transcription (About 50 home exercises)

Grammar.—A more detailed study of the following *prakaranas*:—Kridanta, Taddhita, Samasa, Avyaya and Tadbhava, with the help of an approved book like *Sabdadarsa.*

Composition.—About 25 written exercises, comprisng the following items:—

(1) Building up of stories .. .. 10 exercises.
(2) Simple essays based on subjects, as in an approved book like *Prabandamanjari* .. .. 10 dc
(3) Letter-writing .. .. 5 do

III. Year

Prose.—(1) A detailed study of the prescribed text-book with reference to the content and the literary and linguistic aspects (About 100 pages).

(2) Supplementary reading of a narrative conveying modern thought (About 100 pages).

Poetry.—A detailed study of about 100 stanzas in Shatpadi and other simple metres. Rendering, with proper expression, of select poetical passages from the text.

Writing.—Transcription (About 50 home exercises).

Grammar.—A more detailed study of *Prayoga prakarana* (Syntax) as in an approved book, such as *Shabdadarsa*, and revision of the portions covered in I and II Years.

Composition.—About 30 exercises comprising the following items :—

(1)	Topics from the book prescribed for supplementary reading	... 10 exercises
(2)	Narrative and Descriptive Essays	... 10 do
(3)	Reflective Essays on Abstract Subjects	5 do
(4)	Letter-writing (Documents, such as Bonds, Deeds, etc.)	... 5 do

(b) URDU.

I Year.

(*a*) *Reading.*—Any Reader equal to the standard of the present II Year (3 periods a week).

(*b*) *Recitation.*—60 couplets, part of the reading lesson.

(*c*) *Writing.*—To write running hand. About 80 exercises per year, part of the Home Exercises.

(*d*) *Dictation.*—Since the boys are expected to assimilate what is already taught, at least 5 minutes in every reader lesson should be devoted for this important work.

(*e*) *Composition.*—To reproduce short stories read or heard, letter-writing, narrative and descriptive essays, letters on social and business matters (1 period a week).

(*f*) *Supplementary Reading.*—'Hamare Nabi' or any other useful book of the same standard (1 period a week).

(*g*) *Grammar.*—One-third part of the prescribed book (1 period a week).

II Year.

(*a*) *Reading.*—Any Reader equal to the standard of the present III Year (3 periods a week).

(*b*) *Recitation.*—80 couplets, part of the reading lesson.

(*c*) *Writing.*—To write running hand. About 80 exercises per year, part of the Home Exercises.

(*d*) *Dictation.*—Since the boys are expected to assimilate what is already taught, at least 5 minutes in every reader lesson should be devoted for this important work.

(*e*) *Composition.*—Writing letters, descriptive, travels, incidents, visits to places of public resort and social correspondence, essay-writing (1 period a week).

(*f*) *Supplementary Reading.*—' Hamare Rasool ' or any other book of the same standard (1 period a week).

(*g*) *Grammar.*—One-third part beyond what is covered in the I year (1 period a week).

III Year.

(*a*) *Reading.*—Text-book prescribed for the year (3 periods a week).

(*b*) *Recitation.*—100 couplets, part of the reading lesson.

(*c*) *Writing.*—To write running hand. About 80 exercises per year, part of the Home Exercises.

(*d*) *Dictation.*—Since the boys are expected to assimilate what is already taught, at least 5 minutes in every reader lesson should be devoted for this important work.

(*e*) *Composition.*—Same as II Year but the standard should be a little higher (1 period a week).

(*f*) *Supplementary Reading.*—' Nabiyun ke kaise ' or any other useful book of the same standard (1 period a week).

(*g*) *Grammar.*—One-third part beyond what is covered in the II year (1 period a week).

N.B.—The meanings of words and phrases and the subject-matter should be thoroughly impressed.

Teachers must try to bring home to the minds of the boys the principles taught when doing the reading lesson.

(c) TAMIL.

I Year.

1. *Reading.*—Tamil Reader No. 5.
   (*a*) Poetry.
   (*b*) Prose.

2. *Recitation.*—To recite select verses from out of the prescribed text-book or books of the same standard in difficulty. Special attention should be paid to the mode of delivery. About 30 verses.

3. *Writing.*—Pupils should practise writing running hand throughout the school course. Each pupil should show 50 copes per year and each exercise should be carefully corrected by the teacher. Macmillan's Copy Book 5.

4. *Dictation.*—Writing to dictation. One period per week should be devoted to this lesson and all the exercises should be graduated according to difficulty.

Letter writing. This may be utilised for composition as well.

5. *Composition* —Supplementary Reader.

Essay-writing. The exercises in the books prescribed should be supplemented with other exercises in composition based on books of Composition and Reading books.

6. *Grammar.*—A Text Book of Grammar, Book I.

II Year.

1. *Reading.*—Tamil Reader No. 6.

(*a*) Poetry.
(*b*) Prose.

2. *Recitation.*—To recite select verses from out of the prescribed text-book or books of the same standard in difficulty. Special attention should be paid to the mode of delivery. About 40 verses.

3. *Writing.*—Pupils should practise writing running hand throughout the school course. Each pupil should show 50 copies per year and each exercise should be carefully corrected by the teacher. Macmillan's Copy Book 6.

4. *Dictation.*—Writing to dictation, one period per week should be devoted to this lesson, and all the exercises should be graduated according to difficulty.

Writing letters and petitions. This may be utilised for composition as well.

5. *Composition.*—Supplementary Reader.

Essay-writing. The exercises in the books prescribed should be supplemented with other exercises in composition based on books of Composition and Reading Books.

6. *Grammar.*—A Text Book of Grammar, Book II.

III Year.

1. *Reading* —Reader No. 7.

(*a*) Poetry.
(*b*) Prose.

Selections to be prescribed by the Department from time to time.

2. *Recitation.*—To recite select verses from out of the prescribed text-book or books of the same standard in difficulty. Special attention should be paid to the mode of delivery. About 45 or 50 verses.

3. *Writing.*—Pupils should practise writing running hand throughout the school course. Each pupil should show 50 copies per year and each exercise should be carefully corrected by the teacher.

4. *Dictation.*—Writing to dictation, one period per week should be devoted to this lesson, and all the exercises should be graduated according to difficulty.

Writing letters and petitions. This may be utilised for Composition as well.

5. *Composition.*—Supplementary Reader.

Essay-writing. The exercises in the books prescribed should be supplemented with other exercises in composition based on books of Composition and Reading books.

6. *Grammar.*—A Text Book of Grammar, Book III whole

NOTE—(1) Meanings of words and phrases and the subject-matter of what is read should be thoroughly impressed.
(2) Pupils should be able to answer the questions on the subject-matter and grammar, etc,, arising out of reading books.
(3) Special attention should be paid to neatness of writing in all lessons where writing is involved.
(4) All the exercises should be carefully corrected by the teachers and some at least rewritten by the pupils.
(5) The teacher may consult " Nonnool " (in sutras) for his reference.

(d) TELUGU.

I Year.

1. *Prose.*—Selections of about 80 pages from Reader No. V (Andhra Naveena Vachakamu, Ramavachakamu, Puranavacha kamu, etc., or prose corresponding to the standard of the V Reader).

NOTE—The pupils are expected to read fluently, be able to understand the meaning of the passages read, give a summary of the content and answer questions in their own language.

Supplementary Reading.—To be encouraged out of school hours. Pupils are expected to write short essays on the Texts.

2. *Poetry.*—Poetical selections from the prescribed reader out of which 100 lines of poetry should be learnt for recitation.

3. *Grammar.*—Elementary principles of Samgna Prakaranam, Vibhakti, Lingam and Vachanam.

4. *Composition.*—Reproduction of a short story from the texts and writing letters.

5. *Hand-writing and Dictation.*—Pupils have to show at least 3 copies per week to be scrutinised by the teacher once a week. Teachers will devote about 10 minutes twice a week for dictation. Exercises have to be corrected and in all cases re-written.

II Year.

1. *Prose.*—Selections of about 80 pages from Reader No. VI (or Prose corresponding to the standard of the VI Reader.)

NOTE—The pupils are expected to read fluently, be able to understand the meaning of the passages read, give a summary of the contents and answer questions in their own language.

Supplementary Reading.—To be encouraged out of school hours. Pupils are expected to write short essays on the Text.

2. *Poetry.*—Poetical selections from the Reader prescribed, out of which 125 lines of poetry should be learnt for recitation.

3 *Grammar.*—Rudiments of Sandhi and Kriyaprakaranam.

4. *Composition.*—Reproduction of stories read or told, writing letters and short descriptive essays.

5. *Hand-writing and Dictation,*—Pupils have to show at least 3 copies per week to be scrutinised by the teacher once a week. Teachers will devote about 10 minutes twice a week for dictation. Exercises have to be corrected and in all cases rewritten.

III Year.

1. *Prose.*—Selections of about 80 pages from Reader No. VII. or selections to be prescribed.

NOTE.—The pupils are expected to read fluently, be able to understand the meaning of the passages read, give a summary of the contents and answer questions in their own language.

Supplementary Reading.—A separate text is to be prescribed. Pupils are expected to write short essays on the Text. The reading of general books has to be encouraged in addition to the prescribed ones.

2. *Poetry.*—Poetical selections from the readers to be prescribed—about 150 lines. The poems to be learnt have to be prescribed so that the pupils may be tested in the Public Examination. The pupils are expected to read fluently, recite the prescribed lines of poetry, understand the meaning and purport and answer questions thereon.

3. *Grammar.*—Revision of the first and second year portions and Samasaprakaranam.

NOTE.—The teacher may consult the following books:—
1. Andhra Sangraha Vyakaranamu—Parts I to III by A. V. K. Panthalu.
2. Sangraha Vyakaranamu by Viresa Lingam Panthalu
3. Rudiments of Telugu Grammar by Abboy Naidu.

4. *Composition.*—To sketch essays from the Texts, write letters and essays on general subjects. The exercises have to be carefully corrected by the teachers and in as many cases as possible rewritten by the pupils.

5. *Hand-writing and Dictation.*—The same methods as in the first and second years may be continued once a week. Exercises have to be corrected and in all cases rewritten.

(e) ENGLISH (Second Language).

I Year.

During the First Term, the pupils may be given plenty of oral exercises in sentence-building and word-formation. The direct method and the substitution method may both be employed.

During the Second Term a course of composition lessons like Ballard's "Fundamental English" may be prescribed for study along with a Reader (Prose and simple poems).

II Year.

Detailed study of the reader next in order to one studied in the first year.

Ballard's "Fundamental English for Composition."

III Year.

An advanced reader with poems for detailed study.

Ballard's "Fundamental English—Part III for Composition.

NOTE.—No special period for Grammar is necessary since the pupils take a few Grammar lessons in the compulsory group. One period per week might be utilised for oral composition on the line of Ballard's "Fundamental English" followed by written work. Special attention should be paid to the pupil's spelling and hand-writing.

---

4. ELEMENTARY MATHEMATICS.

I Year.

1. G. C. M. and L. C. M. Harder Examples than those prescribed for the Primary Course. Method of Factors also to be employed.

2. Fractions. Reduction and application of the first four rules. Compound fractions.

3. Fractions and problems thereon The denominators should be factorisable and contain not more than three digits. Graphical demonstrations should be largely employed.

4. Reduction of Money, Weights and Measures of Foreign Countries (especially Britain) and *vice versa*. Compound Addition, Subtraction, Multiplication and Division based on the above.

5. Rate and Exchange. (Miscellaneous problems).

6. Decimals: Nature to be explained and relation to fractions indicated. Their addition, subtraction, multiplication and division. Multiplication and division of decimals by whole numbers and by factors.

7. Simple and Compound Practice in relation to the most commonly used Monies, Weights and Measures. Some difficult problems involving the money and weights of Britain also to be taught.

II Year.

1. Decimals: Multiplication and Division by easy decimals.

2. Ratio and Proportion. Simple and Compound Rule of Three. The method of dot as also the unitary method to be taught.

3. Bills—Advanced problems.

4. Percentages and Averages.

5. Division of Property.

6. Harder Problems on Profit and Loss.

7. Straight Lines and their measurements (both in inches and centimeters).

8. Angles, their construction and measurements.

9. Circles and their parts. The use of compasses.

III Year.

1. Simple Interest (Harder sums).

2. Time and Work.

3. Time and Distance.

4. Revolution of Wheels.

5. Square Measure and problems thereon. Estimating the cost of white-washing, flooring tiles and fencing.

6. Income-tax (Harder problems).

7. Revision.

8. Bisecting Straight Lines and Angles. Setting up and dropping down, perpendiculars (practically).

9. Construction of Triangles practically, (*a*) when three sides are given, (*b*) when two sides and the included angle are given, and (*c*) when a side and the two angles that the other two sides make with it are given.

10. Graphical representation of easy problems such as, shadows cast by lamp-posts, placing of ladders against the walls and a person marching in straight lines changing his direction along the route, etc.

5. INDIAN HISTORY.

I Year.

(1) The physical divisions and physical features of India
(3) Early inhabitants of India and the Dravidians.
(3) The invasions of the Aryans and their settlements.
(4) Comparison of the civilization of the Dravidians and the Aryans.
(5) The life and work of Maha-Vira and Gautama Buddha.
(6) The northern Aryan Kingdoms and the rise of Magadha.
(7) The invasions of Darius and Alexander, the Great.
(8) The career, work and system of administration of Chandragupta Maurya.
(9) The work of Asoka, the Great.
(10) The settlements of foreign races in India from 232 B. C. to 100 A. D.
(11) The life and work of Kanishka.
(12) The rule of the Guptas—Samudragupta and Chandragupta II.
(13) The life and work of Harshavardhana.
(14) The condition of India as described by the Chinese pilgrims.
(15) The great kings of Deccan.
(16) The great kings of South India.
(17) The origin and civilization of the Rajputs.
(18) The rule of the Rajput dynasties between 650 A. D. and 1000 A. D. in North India—Their Great Kings.
(19) Life and work of Mohamed the Prophet.
(20) Muslim invasions and the Mohamedan rule of Sindh.
(21) The invasions of Muhamud Ghazni and their effects.

II Year.

(1) Conquests of Mohamed Ghori in India.
(2) The rule of the Kings of the Slave Dynasty.
(3) The Mughals and their early raids.
(4) The life and work of Allauddin Khilji.
(5) The rule of Muhamud-Bin-Tuglak and Firozshah Tuglak.
(6) The weak rule of the Kings of the Saiyed and Lodi dynasties—the invasion of Timur.
(7) The growth of the Bahamani Kingdoms of Deccan.
(8) The rise and fall of the kingdom of Vijayanagar.
(9) The independent kingdoms of Northern India in the beginning of the 16th Century. (Political Map).

(10) The life and work of Baber—his conquests in India.

(11) Humayun and his difficulties—the life and work of Sher Shah.

(12) Akbar the Great—his early life, conquests, reforms, administration and policies.

(13) The rule of Jahangir, Nurjahan and Shahjahan.

(14) The war of succession among the sons of Shahjahan.

(15) Life and work of Aurangzeb, his system of administration and policy.

(16) The rise of the Marathas under Sivaji—his life, policies, reforms and administration.

(17) The rule of the weak successors of Aurangzeb.

(18) The rule of the weak successors of Sivaji.

(19) The rise of the Sikhs.

(20) The rise and fall of the Portugese and Dutch in India.

(21) The formation of the English and French East India Companies and their settlements in India.

(22) The history of the Kingdom of Mysore up to the growth of the power of Haidaralikhan.

III Year.

(1) The rise and fall of the Peshwas—formation of the Maratha Kingdoms.

(2) The Anglo-French wars and the fall of the French.

(3) The conquest of Bengal, Behar and Orissa by Robert Clive.

(4) The career and work of Robert Clive and Duplieux —the causes for the failure of the French.

(5) The rule of Warren Hastings and the wars waged by him.

(6) The rule of Lord Cornwallis and the wars waged by him.

(7) The rule of Lord Wellesly and the wars waged by him.

(8) The Mutinies at Vellore and Travancore and the rise of the Sikhs under Rangit Singh.

(9) The rule of Lord Hastings and the wars waged by him.

(10) The important events during the time of Lord Amherst and the reforms of Lord William Bentinck.

(11) The First Afghan War and the First Sikh War.

(12) The rule of Lord Dalhousie and the wars waged by him.

(13) The causes, description and the results of the Sepoy Mutiny during the rule of Lord Canning—The Queen's Proclamation.

(14) A brief account of the rule of Viceroys from 1858 to 1884 (Mayo. Northbrook, Lytton and Ripon).

(15) A brief account of the rule of the Viceroys from 1884 to 1898 (Lord Dufferin, Lord Lansdowne and Lord Elgin).

(16) The administration of Lord Curzon and his successors.

(17) The part played by India in the World War (1914 1918).

(18) The progress of India under the British Rule.

(19) The growth of National Movement in India.

---

6. CIVICS.

I Year.

The Family, Caste, and the School.

(*a*) *The Family* :—

(i) The ties that bind the members of a family.

(ii) Varieties of families : the Hindu family, the Muhammadan family, the European family, and the Japanese family.

(iii) The rights and duties of the members of a family towards each other.

(iv) How the family fits into the life of the community.

(*b*) *The Caste* :—

(i) A larger unit like the village and town, which links the individual with the country or the nation.

(ii) The ties hold the members of a caste together.

(iii) How far the ties of caste are helpful to the life of the community as a whole.

(*c*) *The School* :—

(i) The School as a unit in the community that brings the children together, and creates in them a sense of the larger unity.

(ii) The School and its activities.

II Year.

THE VILLAGE COMMUNITY, THE TOWN, AND THE DISTRICT.

(*a*) *The Village Community* :—

(i) What the village community is and has been.

(ii) How the people in a village make their living.

(iii) How the people in a village govern themselves.

(iv) The social life of a village.

(*b*) *Town* :—

(i) What a town is.

(ii) The composition and the population of a town in modern times—variety of occupations, variety of religion, and variety of habits.

(iii) How the people of a town make their living and how their livelihood depends on the villages.

(iv) How towns are governed-the Municipal system.

(v) The place of towns in the country.

(*c*) *The District* :—

(i) The District and its component parts.

(ii) The administration of a District in relation to the administration of the country.

(iii) Administration of a District as a form of Self-Government—District Board.

III Year.

THE MYSORE STATE.

(i) Descriptive details : area, population, languages, religion, &c.

(ii) How the people of Mysore make a living or the economic occupations and trade of Mysore.

(iii) How the people of Mysore are governed : His Highness the Maharaja of Mysore, and his Government.

(iv) The different Departments of the Government of Mysore and their relation to the Central Government.

(v) Association of the people of Mysore with Government : the Legislative Council : the Representative Assembly : their composition and functions.

(vi) Relation of the Mysore to the Government of India.

---

7. GEOGRAPHY.

I Year.

Australia—Discovery—to demonstrate remoteness, exploration,, to emphasise difficulty—Climate and vegetation, mineral weallth, occupations, trade and important towns.

Africa—position and size—Relief, climate, vegetation and crops.

Regional Geography of the Atlas lands, the Sahara, the Nile basin, British West Africa, the Congo, East Africa, the Union and Rhodesia.

II Year.

Mexico, Central and South America. Significance of position and relief. Effect of altitude on modifying temperature, importance of this to human settlement. Climate and vegetation regions. Study of political units with special references to specified countries.

Trade of South America and Importance in World markets.

Note.—The study of the southern Continents brings out the similarity betweem regions in the same climatic belt. The study of the northern continents brings out contrasts. A new world offering us studies from primitive life of the Eskimos and the Indian to the story of the growth of a great Dominion and the intricate problems of a modern industrial power—Contrasting with the ancient civilizations of India and the Far East.

North America and Asia.—World position of the New World—Importance of the Panama—Climate—Topical treatment—Cotton, wheat and maize belts: forests, fisheries, mineral wealth of Canada and U. S. A.

Asia—Physical Geography with refernce to Monsoons. Importance of India, Malaya, China, Japan, and the Near East. A brief survey of South-western Asia and Siberia.

III Year.

Europe with special reference to the British Isles under the following heads—Climate, vegetation, mineral wealth, industries and manufactures, population, trade and transport. Board survey of the Continent as a whole :—

(*a*) Baltic lands.
(*b*) North sea lands.
(*c*) Central Europe.
(*d*) Mediterranean lands.
(*e*) Eastern Europe.

Trade of the World—inter-relation between India and the rest of the world.

---

8. GENERAL SCIENCE INCLUDING HYGIENE.

I Year.

How clouds and rain are formed. The three states of water and their mutual convertibility. Distinguishing properties of solids, liquids and gases.

Liquids find their level. Liquids flow. The surface of water in a tank is horizontal. Use of plumb line and spirit level. Pressure of water on the bund of a tank and of any containing

vessel. Water supply of cities, towns and villages. Percolation of water in the earth. Porosity. Springs.

Solvent power of water. Causes of pollution of well and tank water. Need for filtering and boiling water before drinking. Simple ideas of disease-carrying germs in water, food and air.

Need for having clean surroundings for dwelling places. Effect of insufficient light and ventilation in houses. Sanitation of streets, parks and other places of public resort. Cleansing effect of rain on the atmosphere and the land. Need for good system of drainage. Need for proper gradient for drains, taught practically.

Use of water in personal hygiene—washing bodies, clothes, etc.

Use of air in breathing and burning; active and inactive parts of air demonstrated by burning candle in a bell-jar over water; proportions by volume. Heating potassium chlorate and demostrating the chief properties of the gas—Oxygen.

Carbon-di-oxide gas and water formed during respiration and burning of oil or candle. Other sources of carbonic-acid-gas in air—burning limestone, fuel, putrefaction of animal and vegetable matter. How the plants purify air by their action on carbon-di-oxide and how they assimilate carbon.

Plants as source of food for man. Growth of plants demonstrated and their life history studied with respect to bean, radish or bende. Need of soil, water, sun light and manure for their growth. Different kinds of manures used locally—farm-yard and green manure, ammonium sulphate, superphosphate of lime, sodium nitrate and oil-cake.

A study of the different parts of a typical plant together with a simple account of their functions (parts—root, shoot, stem, bud, leaf, flower, fruit and seed). Dispersal of fruits and seeds. Propagation of plants by seeds, tubers, bulbs and cuttings.

II Year.

Ideas of rigidity, elasticity, porosity, pressure, solution, chemical combination, decomposition, formation of new substances, generation of heat during chemical combustion, conduction, convection and radiation of heat, temperature, evaporation and its cooling effect, and the three kinds of lever are to be developed in the course of this study showing some simple illustrative experiments.

Maintenance of health:—Air, Water, Food; some bad habits such as smoking and drinking, etc.

Classification of foods:—1. Fuel food (starch, oil and fat). 2. Muscle builders (proteins). 3. Mineral salts. 4. Vitamins. Vegetable and mixed diets. Importance of milk, vegetables and fruits in food.

Personal Hygiene :—Care of teeth, eyes, ears, nose, skin, nails and hair. Constipation, exercise, posture, rest, sleep and recreation. Clothing and dress.

Life history of an insect like the moth or butterfly and the part it plays in pollination.

Parasites of man—worms and disease germs.

Malaria and mosquito control.

Infectious diseases like enteric, small-pox, plague and cholera; how to check their spreading.

The study of the habits of common farm animals—cow, sheep, goat and poultry and their economic importance. (Reference may be made to their common diseases and their treatment. Aid of Veterinary doctors.)

III Year.

Air has weight. Pressure of air and its measurement by the barometer (reports of meteorological stations may be referred to). Variation of the barometric column with height above sea-level.

Expansion of solids, liquids and gases under heat. (Qualitative ideas with practical illustrations are to be given). Description and use of the Fahrenheit and Doctor's thermometers.

Action of dilute sulphuric acid on commercial zinc and the simple properties of Oxygen and Hydrogen. Water is formed when Hydrogen burns.

Action of dilute hydrochloric acid on limestone and simple properties of carbon-di-oxide.

An elementary study of the positions and functions of the chief organs in man—Skeleton, Heart, Lungs, Stomach, Intestines, Liver, Pancreas, Spleen, Skin, Kidneys, Muscles, Teeth, Tongue, Brain, Spinal Chord and Nerves.

A simple description of ;—

(1) Circulation of blood,
(2) Respiration,
(3) Digestion and Assimilation of Food, and
(4) Excretion,

in man.

First Aid for wounds, bleeding and broken bones.

---

9. (i) KANNADA (*Optional*).

I Year.

Poetry.—(1) About 30 stanzas from a work in 'Sangatya' metre selected from works, such as Kantirava Narasaraja Vijaya, Bharatesa Vaibhava, Karna Vrittanta Kathe or Hadibadeya Dharma by Sanchiya Honnamma.

(2) About 70 stanzas from works like Nala Charite, Ajanripa Charite and Dilipa Charite by S. G. Narasimha Iyengar, Mairavana Kalaga or Ramayana Sangraha by H. Lingaraj Urs.

Prose —About 50 pages of a book like Shakespeare Nataka-kathegalu or Greek Nataka Kathegalu.

II Year.

Poetry.—(1) About 30 stanzas from a work of 'Sataka' type such as Bharthrihari Niti Sataka by Basappa Sastri or from Sukanasa's advice as in Karnataka Kadambari or from Dharmamrita.

(2) About 75 stanzas from Kannada Bhagavata or Kumara Vyasa Bharata.

Prose.—About 60 pages from a book like Bhasa Nataka Kathegalu, Vatsaraja Kathe (Prose version of Ratnavali) by Krishnaraja III, Nagananda Nataka Kathe or Prabodhachandrodaya Nataka Kathe by Krishnaraja III.

III Year.

Poetry.—(1) About 20 stanzas from a work in 'Kanda' metre, such as Neetimanjari I and II by R. Narasimhachar or Yasodhara Charite.

(2) About 30 stanzas from a work in easy Champu style such as Girija Kalyana, Sabara Sankara Vilasa, Gada Yuddha or Durgasimha's Panchatantra; (including the intervening prose passages, if any; the number of stanzas to be reduced, if necessary, in proportion to the length of the prose passages).

(3) About 70 stanzas or one sandhi from Jaimini Bharata. (If a sandhi of about 50 stanzas is selected from Jaimini Bharata, the required number may be made up by the selection of about 20 stanzas of a descriptive nature from Chennabasava Purana.)

Prose.—About 75 pages from Sakuntala Navanataka by Krishnaraja III or Uttararama Charitra Kathe.

(NOTE.—The standard of teaching and examination in Optional Kannada for the three classes of the reorganised Middle School Course is as indicated hereunder .—

(1) Pupils to be taught to express in short paragraphs the subject-matter of the topics asked from the prescribed books.

(2) Appreciation to test the power of understanding and expressing the sub, stance of poems studied.

(3) Paraphrase of unseen simple Kannada poetry of about 8 to 12 lines.

(4) Grammar and Prosody together with the life and work of authors so far as they bear on the texts prescribed.

In order to enable the pupils to acquire a command over the language and an elementary knowledge of Indian culture, they may be encouraged to take to general reading, at home, of the important portions of the two epics, the Ramayana and the Mahabharata, in Kannada Prose, during the period of three years of the course.)

9. (ii) SANSKRIT (*Optional*).

I Year.

Text—Prose and Poetry.—(*a*) 1. Devanagari Alphabet.
2. Samskrita Balabodhini and Sanskrit First Reader by T. R. Krishnachar (Prose portion only).
3. Ramodanta—Recitation of 20 stanzas.

Grammar.—(*b*) Declension of regular nominal bases ending in vowels.

(*c*) Conjugation of the following Verbs in Parasmaipada. Present and Imperfect only—

End of the I conjugation.
End of the IV conjugation.
End of the VI conjugation.
* Bhandarkar, I Book.

Translation†.—Translation of passages in the Text into the Vernacular and *vice versa.*

II Year.

Text—Prose and Poetry.—(*a*) 1. Kathasathaka, first thirty stories.
2. Ramodanta—Recitation of twenty more stanzas in the remaining portion with meaning.

Grammar.—(*b*) Declension of regular bases including Pronouns.

(*c*) Conjugation of the following Verbs in Atmanepada Present and Imperfect only—

End of the I conjugation.
End of the IV conjugation.
End of the VI conjugation.

(*d*) Imperative and Potential forms of Verbs given under (*c*) in the I Year Class.

* Bhandarkar, I Book.

N.B.—Portions done in Grammar in the I Year are to be revised in this class.

Translation†.—Translation of passages in the Text into the Vernacular and *vice versa.*

III Year.

Text—Prose and Poetry.—(*a*) The detailed study of a text-book to be prescribed each year.

Grammar.—(*b*) Declension of Substantives, regular and irregular.

---

* Bhandarkar, Book I, may be replaced by Trivedi's "Sanskrit Teacher," part I, if rendered into Kannada.

† Passages selected for translation from the Vernacular into Sanskrit should be simple.

(c) Present Imperfect, Imperative and Potential forms of Parasmaipadi and Atmanepada roots of I, IV, VI and X conjugations; three roots in each to be selected by the teacher. Past Participle, Gerund and Infinitive. Rules of Internal and External Sandhi. Passive Voice.

* Bhandarkar, I Book (1 to 24 lessons complete).

B.—Portions done in Grammar in the II Year Class to be revised in this class.

Translation†.—Translation of passages in the Text and other passages of equal difficulty into the Vernaculr and *vice versa.*

9. (iii) URDU—(*Optional*).

I Year.

Prose.—(1) Stories aiming at or bringing forth morals, or
(2) A book of fiction of interest, or
(3) Book prescribed for II Form in the Punjab.

Poetry.—Poems in the above texts.
Grammar.—Minhajul Quwaed.

II Year.

Prose.—(1) Selections from standard authors or
(2) Text prescribed for III Form in the Punjab.

Poetry.—Poems in the above texts.
Grammar.—Minhajul Quwaed.

III Year.

Prose.—(1) Selections in prose from standard authors, or
(2) Any book of same difficulty as by Nazir Ahamed Khan or Shibly or Halli or Ghalib.

Poetry.—Selections from Ghalib or Halli or Azad or Zouq relating to concrete objects.

Grammar.—(1) Minhajul Quwaed,
(2) An easy Grammar book on prosody.

9. (iv) PERSIAN (*Optional*).

Note.—Syllabuses are under preparation.

---

* Bhandarkar, Book I, may be replaced by Trivedi's "Sanskrit Teacher", part I, if rendered into Kannada.

† Passages selected for translation from the Vernacular into Sanskrit should be simple.

III. The Social condition of our Villages.—

(i) Rural isolation and conservatism.
(ii) The social and religious classes.
(iii) Methods of improvement.

IV. The Civic condition of our villages.—

(i) The Village Government.
(ii) The Village Panchayet :—Its powers and functions and its relation to higher administrative authorities.
(iii) The meaning of citizenship.

V. The Aesthetic side of Personal and Social life.—

(i) Natural surroundings.
(ii) Home and its surroundings.
(iii) Dress.
(iv) Home Industries—Pottery, Embroidery, Silver and Gold work, etc.
(v) Folklore.
(vi) Pictures.
(vii) Drama.
(viii) Music.
(ix) Religious festivals, etc.

VI. The Sanitary condition of our Villages.—

(i) Insanitary habits—Water supply, drainage, dwelling house, night soil, etc.
(ii) Epidemics and common diseases.
(iii) Death-rate in India and in other countries.
(iv) Curative and preventive measures.

VII. The Educational backwardness of our Villages.—

(i) Primary and Adult Education.
(ii) School population.
(iii) Literacy.
(iv) Higher Education. Agricultural and Technical Education.
(v) Reading Room, Libraries, Clubs, etc.

VIII. Methods of Rural Uplift.

Books for Teachers.

S. Keshava Iyengar ... Studies in Indian Rural Economics.
Slater ... Some South Indian Villages.
D. V. Gundappa ... All about Mysore.
F. L. Brayne .. The Remaking of Village India.
The Boy Scout in the Village.
Socrates persists.
Spencer Hatch ... Up from Poverty.

9. (viii) DOMESTIC SCIENCE.

[*N.B.*—No opportunity should be lost to make the instruction thoroughly practical.]

I Year.

1. *House and its Surroundings.*—Cleaning house daily and weekly. Care of utensils, furniture and clothes. Cleanliness of compounds. Planning and maintenance of garden for flowers and vegetables. Need for ventilation and sunshine. Havoc caused by flies, fleas, mosquitoes, lice and bugs. Use of food-safes and mosquito curtains. Removal of sewage and refuse. Proper construction of latrines, bath-rooms, cow-sheds and refuse pits for manure. Lighting of houses—natural and artificial light.

2. *Water Supply.*—Sources of water supply—springs, wells, tanks, lakes and rivers—prevention of pollution of drinking water. Purifying drinking water—Filtration and boiling. Diseases communicated by polluted water.

3. *Food and Diet.*—Need for food :—To supply warmth and energy ; to build up our bodies and to repair waste. Classification of foods :—Fuel foods, body builders, mineral salts, vitamins, mixed diet, nutritive value of foods.

4. *Study of the Human Body.*—A simple description of the skeleton ; the head and the trunk and their connected organs studied in an elementary manner just to afford a background for hygiene.

5. *Needle-work.*- Samples showing tacking, running, back-stitching, hemming, felling, top-sewing, French seam, chain stitch, feather stitch, herring-bone, blanket stitch. Hem-stitch a handkerchief.

II Year.

1. *Circulation of Blood.*—Simple description of the heart arteries, capillaries and veins and their functions. Part played by air in breathing.

2. *Plants.*—How they purify air and how they get carbon. Plants as providers of food for man.

3. *Digestion.*—A simple study of the functions of the digestive organs in man and of the process of digestion of different foods.

4. *Cooking.*—Need for cooking food. Methods. Care to be taken in cooking. (The use of the chimney at the fire place.) Advantages of taking some foods raw.

5. *Clothing.*--Materials used, clothing for specific climatic conditions. Methods of washing woollen, silk and cotton clothes. Removal of stains. Mending clothes. Preservation of clothes. Thrift in clothing.

6. *Personal Cleanliness.*—Care of skin, hair, nails, teeth, throat, nose, eyes and ears and making beds.

7. *Family Medicine Chest and its proper Care and Use.*—Training needed to use these medicines. When the doctor should be called in.

8. *Needle-work.*—The three patches—flannel, print and calico. Canvas work—the alphabet in English and Kannada. Magyar frock.

III Year.

1. *First Aid.*—Use of simple bandages in sprains, bleeding and bites. First aid for bleeding through nose, burns and scalds, dress catching fire, insect sting, foreign bodies in nose, throat, eye and ear, and sunstroke. Artificial respiration.

2. *Home nursing.*—Fitting up sick room; disinfection; fresh air; doctor's instructions; rest to patient; poultices and fomentation; training needed for a nurse.

3. *Care of children.*—Proper feeding, clothing, exercise, rest, sleep and bath. Causes of high death-rate among children in India. Importance of sanitation in schools for the young. Attention to posture. Infectious diseases specially studied in a simple manner. Resistance to disease. Vaccination and inoculation and immunity.

4. *Pests.*—Common pests and how to avoid them.

5. *Economy.*—Value of money. Making a family budget. Avoiding debt and expenditure on needless ceremonies. Thrift and saving.

6. *Use of Leisure,*—Profitable hobbies like gardening, painting, photography, dress-making, etc. Reading habit, clubs.

7. *Needle work.*—Drawing on canvas. Canvas work: Numbers 1 to 10. Banians. Simple stitches in embroidery such as stem-stitch may be taught.

9. (ix) NEEDLE WORK AND EMBROIDERY.

I Year.

1. Sample showing, tacking, running, back-stitching, hemming, felling, French seam, top sewing.
2. Chain-stitch, feather stitch, herring bone, blanket stitch
3. Hem-stitch a handkerchief.
4. Darning on Canvas, button-hole.
5. Canvas Work.

II Year.

1. The three patches. Flannel, Calico and Print patch.
2. Canvas work. The Alphabet in English and Kannada
3. The Magyar Frock.
4. Knitting a Comforter.

III Year.

1. Button-hole and darning on Canvas.
2. Canvas work, marking numbers 1 to 10.
3. Banian.
4. Simple embroidery.

9. (x) MUSIC.

I Year.

Alankaras	...	...	7
Gitas	...	...	4

II Year.

Swarajates	...	...	2
Aditalavarna	..	...	1
Simple keerthanam	...	...	1

III Year.

Aditalavarna	...	...	1
Swarajates	...	...	2
Madhyama kala kirtanas	...	...	3

9. (xi) PAINTING.

I Year.

OBJECT DRAWING AND FLAT WASH.

8 *Lessons*—16 *Exercises.*

(i) Drawing familiar objects of Nature, such as fruits, leaves, flowers, etc., and also artificial articles such as flower-pots pots, tumblers, ball, etc., and painting their prominent colours with flat wash. Each article to be drawn and painted separately.

4 *Lessons*—4 *Exercises.*

(ii) Painting in colours regular figures such as, rectangle, square, circle, etc., or of irregular outline objects such as, leaf, etc., with flat wash to obtain uniform depth of colouring.

(Any of the colours such as pencil, chalk, Indian Ink, warm sepia, neutral tint, may be used for the above.)

Primary and Secondary colours.

(iii) Mixing of different colours and their use:—Gamboge, Prussian Blue, Crimson, and colours derived from the combinations of these, *viz.*, green, orange, blue, etc., and their use.

16 *Lessons*—32 *Exercises.*

(a) In the beginning, the primary colours to be used in painting; later on, the secondary colours to be used.

15 *Lessons*—30 *Exercises.*

(b) Drawing garden plants and plant parts and painting them so as to show light and shade broadly. These lessons will be related to Nature Study and common objects in use.

15 *Lessons*—30 *Exercises.*

(c) Copying of paintings of simple shape and colour and painting them. (In the beginning, the outlines are to be provided to the student for painting; later on, the student should draw the outline and paint it.)

Coloured Pictures.

Lessons relating to stories, nature study, conversation, games, etc., with coloured pictures to illustrate them.

II Year.

4 *Lessons*—4 *Exercises.*

(i) Gradation of colours —light to dark and dark to light,

Pencil, chalk, Indian Ink, warm sepia, neutral tint—any of these colours to be used to show the gradation of colours from light to dark and dark to light

12 *Lessons*—28 *Exercises.*

(ii) Painting of common objects (without shining surface or colours), to show light and shade. The objects to be kept in front of the student so that light falls on them from one side. Any of the colours named in the preceding para may be used. Students must practise to show light, shade and shadow clearly.

16 *Lessons*—32 *Exercises.*

(iii) Studies in Colours:—In addition to the colours already specified, other colours such as Cobalt blue, Yellow

Ochre, Vermillion, etc., to be used, together with combinations of these colours.

Every exercise to be done with the aid of actual objects.

32 *Exercises.*

(iv) Painting in natural colours of objects of nature of different colours, either separately or in groups of two or three. In this exercise, the main light and shade should be shown.

8 *Lessons.*

(v) Painting pictures suitable for other subjects of study iin the institution.

COPYING COLOURED PAINTINGS.

Lessons in copying given coloured pictures. The outline to be furnished to begin with and later on the student may be asked to draw the outline also.

III. Year.

BLACK AND WHITE STUDIES.

12 *Lessons*—40 *Exercises.*

(1) Lessons in black and white drawing of single objects or in groups of two or three. Different degrees of black lead pencil, Indian ink, chalk or warm sepia to be used.

10 *Lessons*—20 *Exercises.*

(2) Additional colours and mixing them. In addition to the colours already specified, the following colours and also secondary colours derived from mixing them may be used :—

Light Red, Racena, Raw Amber, Bert Amber, Chrome Yellow.

Students will also learn the proper use of the mixed colours derived from the above.

Gamboje and Prussian Blue,
Gamboje and Cobalt Blue,
Prussian Blue and Yellow Ochre,
Prussian Blue and Burnt Sienna,
Cobalt Blue and Yellow Ochre,
Crimson and Prussian Blue,
Crimson and Cobalt,
Crimson and Vermillion.

(As far as possible, solid samples of the colours explained in mixing should be used in the course of teaching the mixing of colours.)

In drawing the outlines of plants, these colours can be easily used to show flowers, fruits, leaves, etc.

Copying.

ENLARGING AND REDUCING.

3 *Lessons*—12 *Exercises.*

To enlarge or reduce a given coloured painting, and paint the colours according to the original painting.

Additional lessons in Painting relating to other studies.

4 *Lessons*—16 *Exercises.*

Colour-painting of pictures relating to Nature Study, History, Geography, Story-telling and other class work.

COLOUR PAINTING.

14 *Lessons*—42 *Exercises.*

(1) Colour-painting of a branch of a tree containing broad leaves, flowers and fruit, or a small plant; or colour painting of a group of leaves, flower and fruit put together.

(2) Drawing familiar and common objects and painting them in colours.

9. (xii) FRET-WORK.

1. What Fret-work means :

2. Tools used in fret-work and their use.

(*a*) *Saws.*—A tool about 5″ long made of fine but well-tempered steel wire and with teeth so small that a novice might hardly be aware of them unless he ran his finger up and down the cutting edge.

Experience to be gained in handling the saw in the right way to prevent breakages.

(*b*) *Grading of Saws.*—These are usually supplied in 8 different grades, the distinction numbers running from 00·1 and 1 upwards. Nos. 1 and 2 are average fine sizes.

Larger blades used for work which is bolder and more open in character.

Getting accustomed to the cutting of an average size (such as No. 2) and then work back to, say, No. 1.

3. *Hand Frames.*—Different types, advantages and disadvantages. The importance of securing the proper tension of the saw—to enable good work to be done—How a slack saw interferes in turning a corner and getting clean sharp angles.

(*a*) Fixing of saws in the frame. The teeth to face outwards and downwards, (*i.e.*, it cuts on its downward stroke).

4. Cutting Board—The object of the 'V' opening or the little circle further up.

Single and double boards, advantages and disadvantages.

5. *Drills.*—The archimedean drill. Its use in fret-cutting.

6. Other accessories, such as, glass-paper, glue, fret-work screws, nails, screw driver and a pair of pencil compasses, pliers, a light hammer, foot-rule. Blue carbon paper and transparent tracing paper are also essential.

7 *Fretwood and Designs.*—Plywood preferable and 3/16" thick. Calculation of wood required for a model. Plywood does not lend itself to finer frets—solid wood necessary for certain kinds of work.

Designs to be cut.—Prepare accurate outline drawings of animals, say—horse, cat, donkey, rabbit, pig, goat, duck, etc., and trace these by means of the carbon paper on the plywood and cut.

Mounting of these on stands. Lessons in outline drawing.

Fret-work designs are printed full size so that the worker cuts from the actual pattern. Wide selection possible.

(To remember that the apparently elaborate design is not always the most difficult to cut.)

8. Pasting, drilling and preliminary cutting.—

General Rule.—To paste the printed pattern on the wood and cut direct from the pattern. However, students should practise to trace off designs by means of carbon paper.

9. *Arranging the Design.*—In respect of the grain of wood, upright object—upright-grain, horizontal object—horizontal grain.

Economy of wood—Arrangement of design.

(Remember that diagrams are not printed in the position in which they are to be pasted. They are only schemed to come within a sheet of certain size and have usually to be separated before applying to the wood.)

As far as possible arrange the pattern so that the surplus wood is not necessarily a waste—Economise wood.

10. Pasting: The two preliminary warnings.

(*a*) Never use glue or gum for fixing down a pattern.

(Either has a tendency to draw the paper into the pores of the wood or spoils the surface.)

(*b*) Avoid paste which is watery.

(This will soak the paper and paper stretches considerably when wet.)

Use powder paste, preferably freshly made.
How to make powder-paste.

Procedure in pasting: Better to apply the paste to the wood rather than to the pattern.

Paper is more easily handled dry.

Stretching paper while pasting--great risk.

The importance of rubbing the pattern laid well in the centre and then rubbing it rapidly to each corner and then to each side finally rubbing the whole flat--This is to get rid of air bubbles.

The importance of actual pasting down to be done quickly to avoid the paste to dry or the paper to crease.

Rapid, confident rubbing in the way indicated above, is the secret of success.

With large designs, pasting is done by the pattern rolled on a ruler or cardboard tube.

Importance of letting a pasted diagram dry thoroughly before proceeding to drill or cut.

Importance also of laying the wood on which diagram is pasted under a weight to prevent it to warp, etc.

11. Tracing: Carbon paper, trace paper. Accurate tracing essential, for if the pencil copy is an indifferent one, the cutting runs a serious risk of being equally indifferent. Therefore, printed patterns recommended.

In tracing the outline direct to the wood from a printed copy, lay the carbon paper on the wood; above it place the design and screw it with drawing pins. Trace it with a hard sharp pencil, taking care to rule all straight lines and describe the circle with the compass.

When several duplicates of smaller plain diagrams have to be cut, transparent paper is a most useful medium.

Make a careful copy in pencil and paste this down in the ordinary way.

12. Drilling.--Method of drilling--The object of drilling (to give the saw access to interior parts.)

Importance of accurate drilling—how to prevent the drill bit from bursting out at the underside and carrying away a splinter of wood with it.

As far as possible, never drill close to the line.

Importance of keeping the drill stock absolutely vertical—Breakage of bits due to slantwise drilling.

No excessive pressure is required in drilling.

13. Cutting—Careful study of design first—Better to commence cutting beginning with the interior parts.

The blade should be kept vertical—a most important point.

Begin with short strokes—steady and regular--do not press the saw heavily against the wood. (The weight of the downward stroke itself will give the cut.)

Care to avoid breaks of the saw. Usually saws break at corners—reason for this—how to avoid.

14. The object of decoration being "Tied." Plural cutting —advantiges and disadvantages.

15. Filing, glass-papering and joint-cutting.

Cleaning fret-work—peeling off the design or sandpapering it off (Do not sandpaper wet wood).

Filing should rarely be necessary.

16. Joints: Tenon-joint is the most common. Accuracy essential.

Never be satisfied with an unsightly or a gaping Tenon-joint.

Halved joint } The secret of neat halved
Halved centre joint } joints.

17. Glue, Nails, Screws and Pins. The use of cramps in gluing.

18. Miscellaneous fittings. Butt hinges, Strut hinges, Flap hinges.

19 Decorative overlays.

(Fret-work is a form of flat decoration, but by the use of overlays—sometimes called "applied frets" the effect of relief can be secured).

Overlay—a plain or ornamental piece usually cut in thinner wood or Xylonite and glued to some solid portion of the main fret.

Gluing of overlays to be done with great neatness.

Immediate pressure to glued work essential. As a rule glue on your overlays in the evening, you can then leave them under pressure for at least 12 hours without the temptation of disturbing them.

20. Backing overlays. A floral overlay backed with silk or a thin venue.

21. Examples in—Puzzles, Picture-patterns, Toy, etc.

PROGRAMME.

I Year.

6 Designs from Handicrafts Design—Portfolio No. 1.
and
6 Designs from Beginners' Design—Book No. 21.

II Year.

6 Designs from Handicrafts Designs—Portfolio No. 2.
and
5 Designs Fret-work Models from Handicrafts—Book No. 29.

III Year.

10 Designs from Handicrafts Design—Bok No. 10.
Supplementary: opening to 19 and 21 (lecoration Overlays and Puzzles Pictures).

FOR THE INSTRUCTOR.

Books of Designs.

Handicrafts Nos. 22, 25, 20, 17, 18.

Handicrafts.

Fret-work Designs Nos. 366, 371, 42, 357, 5394, 5468, 279, 5527 and 348.

Clock Designs.

	No.
Small Inkstand	5509
Flower Basket	5481
Hanging Vase	328
Flower Stand	127 B
Elephant Stand	5127
Corner Bracket	402
Hanging Bookshelf	419
Trinket Casket	5253
Puzzle Money Box	5183
Cockatoo Bracket	5264
Match Box Holder	5654
Home Swat Home Bracket ...	405
Motto Bracket	297
Wall Bracket	418
Wall Frame	5641
Double Photograph Frame ...	5625
Postcard Photo Screen	379
The Jointed Horse	1007
Jig Saw Puzzle (Rescue of "Hopi-survivors").	1069
Monthly Calendar	1081
The Weather Prophet Calendar ...	1058

9. (xiii) COTTON SPINNING.

I Year.

(*a*) (1) The Takli : function of its prts: Spinning from Takli.
(2) Slivers, suitable for the Takli.
(3) Cotton, Jade Hatthi, (ಜಡೆಹತ್ತಿ) peferable.

(4) Importance of even twist to prevent wobbling.
(5) Relatin of twist to draw.
(6) How t prevent lumps in yarn.
(7) Breakges and piecing up.
(8) Gaining speed and skill up to at least 10 counts uniform in twist and evenness at 30 yards per hor.

(*b*) Spinning o the Charka.

(1) Prepaing slivers from ready-made carded cotton.
(2) Spinning up to 10 to 12 counts uniform in twist and thickness at 100 yards per hour.

(*c*) (1) Indianmeasure of weight and capacity.
(2) Weighing articles accurately.

II Year.

(*a*) Revision of the last year's portion and speed up to 50 yds. per hour 10 to 12 counts.

(*b*) Interesting acts about cotton-spinning—(In story form), Dacca muslins, etc.

(*c*) Varieties o cotton—its staple, the nature of soils conducive to its growth—its geographical distribution—especially in the Mysore State—How picked and baled for exportation.

(*d*) Ginning Adjusting the Ginner rollers, why Jal wood used for rollers Importance of drying cotton for ginning.

(*e*) Carding : the Carding Bow and its correct use. Position in carding, over carding and what it means. The importance of rubbing the gut with Jala tree leaves. The tension of the gut and how adjusted.

(*f*) Examination of different staples of cotton under the magnifying glass and the linen tester. How certain cotton like silk-cotton does not allow of being spun into yarn.

(*g*) Spinningon the charka ; in principal parts : the spindle—the fundamental part. Gaining speed up to 200 yds. 14 to 18 counts.

(*h*) The 'count of yarn—what it means and how calculated. The care and use of the 'count-finding' balance and weights.

(*i*) Marking lanks, *i.e.*,—

(1) Weight
(2) No. of yards.
(3) Count.
(4) Name of spinner.
(5) Date when finished.
(6) Storageand grading.

III Year.

(*a*) Planting and tending cotton plants, short observation. Notes by the students.

(*b*) Carding; studying all the component parts of the Bow. Bow, how fixed and hung from the ceiling. The use of the carding net. Nature of atmosphere, effect of atmosphere during carding.

(*c*) Sliver storing.

(*d*) Removal of spun yarn from the spindle—the hanking—frame explanation. Hank, Lea, Importance of twisting the hank after removal from Hank-Frame. Wetting of hanks of yarn in water to maintain twist permanently.

(*e*) Spinning on the charka at 300 yards per hour up to 18 to 25 counts.

9. (xiv) PRACTICAL DRAWING.

I Year.

1. *Hand Sketching.*—Sketching and measurement of simple geometrical models and objects. Dimensioned hand sketches of very simple models and one or two with the simplest details (6 Models).

2. *Instruments.*—Use of T.-Square, Set squares, Compasses, Dividers, Calipers, Foot-rule and Protractor. Simple methods of testing accuracy of instruments- care of instruments.

3. *Scale drawing.*—Use of squared-paper, scale drawings made from measurements of actual objects. (6 models).

4. Linear Drawing (Geometrical).

STRAIGHT LINES..

(1) To bisect a line.
(2) To draw a line parallel to another at a given distance.
(3) To divide a line into any number of equal parts.
(4) To draw a 'Tangent' to a circle at a given point.

ANGLES.

(1) To bisect an angle.
(2) To trisect an angle.
(3) To construct an angle similar to another.
(4) To construct angles of various degrees.

TRIANGLES.

(1) To construct an equilateral triangle.
(2) To construct a triangle of given dimensions.
(3) To inscribe a circle in a triangle.
(4) To construct a triangle similar to another.
(5) To construct a square in a given triangle.
(6) To construct an isosceles triangle.

SQUARES.

(1 To construct a square on a given line.
(2 To describe a square about a circle.
(3 To describe a circle about a square.
(4 To inscribe a square in any triangle.

FOUR-SIDED FIGURES.

(1) Definition concerning parallelograms.
(2) To construct an oblong of a given size.

CIRCLES.

(1) To inscribe a regular Hexagon in a circle.
(2) To inscribe a regular Octagon in a circle.

II Year.

I. Revision of the first year course together with :

Hand Sketching.—Free-hand sketching of geometrical models, simple mechanical appliances and other suitable objects. Eight models of which 4 models should be dimensioned sketches.

II. *Instruments.*—Best use of various instruments. Good and bad instruments.

III. *Scale Drawing.*—Making of drawings to scale from dimensioned free-hand sketches. (8 models).

IV. *Plane Geometry.*—Parallel line. Construction of Parallelograms, division of lines into equal parts, construction of triangles from given data. Areas of triangles.

V. Linear drawing (Geometrical).—

1. To draw a line perpendicular to another from an outlying point.
2. To measure or construct angles by means of the Protractor.
3. To inscribe an Equilateral Δ in a square.
4. To construct an Equilateral Δ of a given altitude.
5. To inscribe an Equilateral Δ in a regular Pentagon.
6. To construct a square on a given diagonal.
7. To inscribe a square in a circle.
8. To inscribe a regular octagon in a square.
9. To construct a Trapezium similar to another.
10. Definitions concerning Polygons.
11. To construct any Polygon on a given line.
12. To inscribe any Polygon in a given circle.
13. To construct a regular Pentagon on a given line.
14. To inscribe a regular Pentagon in a circle.
15. To construct a regular Hexagon on a given line.

16. To inscribe a regular Hexagon in a circle.
17. To find the centre of a circle.
18. To describe 6 equal circles about a circle.
19. To divide a circle into any number of equal parts, having the same area.
20. To draw an Ellipse by means of a string and pins.

VI. Applications of the figures in Trade and Manufactures.

1. To draw the teeth of wheels.
2. To draw a Gothic Trefoil.
3. To draw a Gothic Quatrefoil.

III Year.

1. To construct an angle containing a given number of degrees.

(The circumference of a circle is supposed to be divided into 360 equal parts, called degrees. The radius of a circle may be set off exactly six times round the circumference, hence, if an arc be described, and a portion cut off equal to the radius of the arc an angle containing 60″ will be obtained).

With a knowledge of this principle, a variety of angles may be constructed.

(1) For 60°—describe an arc and cut it with the same radius.
(2) For 120° describe an arc and set off the radius twice.
(3) For 30° obtain angle of 60° and bisect it.
(4) For 15° obtain an angle of 30° as above, and bisect it.
(5) For 45° obtain an angle of 30° and bisect the arc A B. (30°+15°=45°).
(6) For 75° draw a right angle, trisect it, and bisect the division, A.B.

Similarly, make other angles 150°=(120°+30°).
105°=(90°+15°), 135°=(90°+45°),
22½°, half 45°, 67½°=45°+22½°, etc.

2. The application of Geometry to ornamental and decorative design.

(1) Simple patterns formed by equilateral triangles
(2) Diamond chequered Patterns.
(3) Simple star forms and 8 pointed stars.
(4) The Rosette.
(5) Patterns suitable for Tiles, Linoleum, etc., found on Squares.
(6) Greek Frets and Trellis Patterns,
(7) Hexagons in a Rectangle.
(8) Elegant Inter-lacing Patterns suitable for the decoration of a square or circle.

3. Orthographic, Isometrical and oblique or Pictorial Drawings of—

(1) Mortise and Tenon-joint.
(2) Grooved and Tongued joint.
(3) Common Dove-tail joint.
(4) Nail and screw Box.
(5) Stationery case.
(6) A sign post.

4. (1) Styles of Lettering for Drawings.
(2) Shade lines and Line Shading.
(3) Sectional shading in lining for various materials: Cast Iron, Wrought-iron, Steel, Brass, White-Metal, Wood, Brick-work, Concrete, Stones, Handfibre, Rubber, and Earth.

9 (xv) ENGRAVING ON METAL.

1. What Engraving means:—

2. (*a*) Various uses of Engraving. Brass, Silver and Gold were evidently the first metals to be used for the purpose of making images, ornaments, etc. And these metals seem to have held their own for a long time until at length copper plate and wood-engraving for printing purposes were discovered.

(*b*) Copper plate engraving for the illustration of books was practised in England with great success, as also wood engraving. The latter is now almost a lost art owing to the advance made in photographic reproduction.

3. Difference between copper plate engraving and wood engraving—In copper plate engraving, the design is cut into the metal in sunk lines, while in wood engraving it is cut in relief or raised lines.

4. Advantages of wood engraving over copper ones.

(*a*) Wood cuts may be printed along with the printers' type, as it is in relief.

(*b*) Copper plate engraving requires to be printed separately.

5. Chief uses of copper plate engraving.

(*a*) Used nowadays for printing Bank notes, letter-headings, visiting and business cards, etc.

(*b*) Type Lithography, Photo Mechanical processes have to some extent superseded this art.

(*c*) Large use of copper plate engraving in the printing of calico and for printing the designs on China and Earthenware.

(*d*) General outline of an engraving machine called the Pantograph which brings the engraving by this method down to the level of a mechanical process.

6. Brass Engraving: Mostly done on door-plates, Menorial tablets, etc. Rather heavy work requiring the use of a chisel and hammer.

This kind of heavy work is usually now done on a Routing Machine, which cuts the letters cleaner, deeper and quicker than can be done by hand. This class of work is also done by photo-etching, general outline of the process.

7. Gun Engraving—Filigree and scroll work. Explanation.

8. Tools and Appliances.

(*a*) A Solid Bench made fast to the floor and placed in good light. (A north or north-eastern aspect should be chosen if possible)—Avoid glare of the sun as the strong light playing on the Metal is injurious to the eyes and makes work at times almost impossible.

(*b*) Stool of proper height to ensure comfort in working.

(*c*) Eye-glass and stand.

(*d*) Table vices, clamps, hand-vice, coin clamp, patent clutch, Engravers' Bullet with ring and screw adjustment.

(*e*) Gravers of finest steel procurable. (1) Square graver, Lozenge graver, Scalloper, Bent Graver, Scriber, Burnisher and Scraper.

(*f*) Monogram carving tool.

(*g*) Etching point or needle chisel for brass. Holding Punch Archimedean Drill. Fret-Saw, Files Hammer. Lathe, sand bag, Turkey or Arkanses oil stone, Graver sharpening appliance, spring Divider, ring spikes, etc.—also (Electric Hand router), Polishing Lathe head.

(The above to be spread over the 3 years course by the Instructor as a three years programme).

Meterials.—Preparation, using tools.

(1) Materials upon which the engraver can work—Gold, Silver, Copper, Brass, Aluminium, German-Silver, Zinc, Lead Steel, etc.

Gold.—One of the most malleable of metals according to its purity. Alloys of Gold. What is meant by carat. Twenty-two carat gold—(the English quality in common use) which means 22 parts fine gold to two parts of alloy, generally copper or silver or both—object of alloying gold.

Silver.—This is one of the metals most frequently in the hands of the engraver, by reason of its cheapness as a precious metal.

Hall mark—What it means—affixed to standard silver which is composed to 92·5 per cent pure silver and 7·5 per cent alloy—generally zinc or copper or both.

Copper.—This is a metal which comes more into the hands of copper-plate engravers and etchers for purposes of Printing. It is malleable and easily worked metal—hard and soft quality,

converting hard copper into soft. Splintering in sheet or rolled metals—soldering metal tear. Therefore choice of good metal plate of a thoroughly homogeneous character.

Brass.—One of the most frequently engraved of metals.

Alloys of Brass: (Higher the percentage of zinc or spelter the harder the metal).

Aluminium.—Being of a non-oxidising character, this metal receives a great deal of attention from the engraver. This is a metal not easy to solder.

German Silver.—It is an alloy of copper 62 parts, zinc 27 parts and nickel 11 parts. It is hard, cloggy and tough (Graver for cutting this metal should invariably be tempered for hard cutting).

Preparing Tools.—(*a*) Egg-shaped handle for gravers, sharpening them.

(*b*) Hardening and tempering a graver.
(*c*) Graver the principal tool.

Preparation for work.—The necessity for artistic ability and a knowledge of drawing essential. Design as applied to engraving, transferring prepared designs to the materials to be engraved exercises. Straight lines, wavy lines, scalloped edges, floral designs, greek scroll, greek border and tooling these.

(The teacher should prepare the designs and get enough copies printed for use of the students as no one would be able at this initial stage to draw the design. Enough practice at drawing designs should be gained by a pupil when he finishes the three years' course at engraving to be able to at least copy from original designs.)

PROGRAMME.

I Year.

1. Practice on a copper sheet 8″ sq. 16 or 17 Metal gauge: to get accustomed in the use of the various tools.

2. Preparing the copper sheet surface sufficiently smooth for working purposes.

3. Fastening the plate to the engraving block (wooden-left rough from the saw).

4. Composition of the cement (exercise care not to burn it by overheat).

5. The teacher to put upon the plate the pattern to be engraved. (From practice lines to simple designs).

(Demonstration by the instructor:—the surface of the metal to be prepared to enable the pencil to write on it, *i.e.*, covering the surface with gum, gamboge, then marking the design through the grounding with a steel point.)

CIRCLES, HATCHING LINE, ETC.

6. Placing the block upon one or more sand bags and then set to work to engrave it exactly according to the design. Use of sand-bags.

(As far as possible, it is best to set to work on a design, however simple it may be, as mere aimless chipping and carving on the metal is not conducive to progress).

CHESSBOARD PATTERN WITH THE SQUARES HATCHED.

7. When the plate is covered with simple exercises, it may be removed and reversed, when something more difficult may be tried.

Method of removing the plate from the current.

8. Engraving 20 designs (12 Minimum for the School year).

II Year.

1. Open style and close style of engraving.
2. Dot tool—Tooth Border, a wavy line wriggled with a scalloper—an effective edging. Other form of edgings—Greek Borders, scroll-borders.
3. Exercises in Matting. (The precaution to keep all the tools well sharpened and polished for ornamental work).
4. Simple monograms and crests. Cutting out a photo-frame out of sheet brass (cabinet size) and engraving with a vine border, or Gothic border, etc.

Simple lesson on soldering.

III Year.

1. Revision of the II Year portion.
2. Designing as applied to engraving (30 graded examples).
3. Lettering and inscribing (Roman, italic and script).
4. Engraving Monograms.
5. Pierced Monograms and stencil cutting.
6. Simple copper-plate engraving.

9. (xvi) ADVANCED CARDBOARD WORK.

Assuming that the students have had no opportunity of handling cardboard modelling tools, etc., the following exercises should be attempted by all.

These exercises are intended to cultivate habits of careful attention and correct observation, to train sight and judgment in the estimation of symmetry and accuracy and to practice

the hand in the manipulation of the various tools and materials. Orderly and cleanly habits of work should be encouraged and the students should be led to recognise and appreciate what is exact, symmetrical, and harmonious.

Paper cutting (Thin and stout) (1) 6″ rule, (2) Square and Rhombus $3\frac{3}{4}$″ and $3\frac{1}{4}$″ × 60° (3) Oblong and Rhomboid, $4\frac{1}{4}$″ × $3\frac{1}{4}$″ and 4″ × $3\frac{1}{2}$″ × 60° (4) Trapezium diagonals $5\frac{1}{8}$″ × $3\frac{1}{2}$″, (5) Triangles: Equilateral. $3\frac{1}{2}$″, Isosceles $3\frac{1}{2}$″ × $3\frac{3}{4}$″ height, and scalene to be (cut out without being first drawn, and then the sides carefully measured, angles as well, and the dimensions marked on the card), (6) Drawing and cutting.

(*a*) Hexagon 4″, (*b*) Octagon, $3\frac{3}{4}$″, (*c*) Six rayed star, (*d*) Picture Frame $5\frac{3}{4}$″ × $4\frac{3}{4}$″, (*e*) A few letters of the English and Kannada alphabets.

REGULAR PROGRAMME.

Text Book—Handicraft in the School Vol. II by Charles Thomas Hammond. (The Gresham Publishing Co., Strand, London, W. C.)

I Year.

1. Box with lid (page 114).
2. Fancy Stud Box (page 118).
3. Purse (page 131).
4. Octagonal Button Box (page 133).
5. Wall Tidy with side supports (page 137).
6. Book Case (page 139).
7. Double Photograph Frame (page 141).
8. Stamp case (page 145).

Supplementary Models. (1) Blotting pad (page 154), (2) Photograph Frame (page 156).

II Year.

1. Pen and Pencil Box (page 158).
2. Draught Board (page 162).
3. Picture Post card frame (164).
4. Box with lid attached (page 166).
5. Match Box Holder (page 168).
6. Cotton Reel Box (page 170).
7. Fancy Trinket Box (page 174).
8. Hexagonal Trinket Box (page 193).

SUPPLEMENTARY MODELS.

1. Combination Needle and Thimble Case (page 176).
2. Pen Tray with divisions for ink (page 191).

III Year.

1. Picture Post Card Box (page 197).
2. Match Box Tidy (page 199).
3. Octagonal Collar Box (page 218).
4. Self-supporting Photograph Frame (page 220).
5. Stationery Box (page 222).
6. Universal Calendar (page 224).
7. Hexagonal Cotton-Reel Box (page 228).
8. Hair Pin and Safety Pin Box (page 231).
9. Development of the Cube.

SUPPLEMENTRY.

1. Square Prism, (2) Triangular Prism, (3) Tetrahedron, (4) Hexagonal Prism, (5) Rectangular Prism, (6) Octagonal Tray with inclined sides.

N.B.—All models should be neatly bound on the edges.

---

10. PHYSICAL TRAINING.

I Year.

1 Swedish Drills.
2. Minor Group Games.
3. Breathing Exercises.
4. Foot-ball.

II Year.

1. Swedish Drills.
2. Team Games.
3. Athletics—High and Long Jump.
4. Foot-ball, Volley ball.

III Year.

1. Swedish Drills.
2. Easy Bhaskis and Dandahs.
3. Relay Games
4. High and Long Jump and Running.
5. Fancy Drills.
6. Foot-ball, Volley ball.

APPENDIX C.

SYLLABUSES

FOR THE

VOCATIONAL MIDDLE SCHOOL COURSE.

SUBJECTS.

Compulsory

1. English
2. Elementary Mathematics
3. Hygiene and related Science
4. Elementary Civics and Administration
5. Geography

Optional.

6. One of the following :—
   - (i) Agriculture
   - (ii) Blacksmithy
   - (iii) Metal work
   - (iv) Tailoring
   - (v) Sericulture
   - (vi) Weaving
   - (vii) Lacquer Work
   - (viii) General Carpentry
   - (ix) Dairy Farming
   - (x) Sheep Rearing and Wool-Spinning
   - (xi) Leather Work
   - (xii) Horticulture
   - (xiii) Poultry Farming

SYLLABUSES.

1. ENGLISH.

I Year.

(FOUR PERIODS OF WORK PER WEEK.)

A. PRACTICE IN SPEAKING.

One period a week.

Pupils to be familiarised stage by stage with words, phrases, and sentences in common use and those useful in vocational subjects.

Stage I.

Point out familiar objects and say their names in English. Objects like Chair, Table, Chalk, Bottle, Picture, Fan, Lamp, Head, Mouth, Hand, Log, may be used for the purpose.

The words thus introduced to be written out in big hand on the blackboard one after another and the pupils made to see them as the objects are named.

Stage II.

Introduce words denoting actions like sit, stand, lift, turn, see, talk, bend, cry, eat, kick, sleep, come, go, give, take, push, pull, tear, break, crush, stop and such other familiar ones.

Actions to be actually demonstrated. Each new word thus introduced to be put on the blackboard.

NOTE.—In stages I and II, the object of the teacher should be to familiarise the pupils with nouns and verbs without actually using the terms Noun and Verb.

Stage III.

Frame simple short sentences with the help of words learnt in stages I and II. Sentences like, I run, The lamp burns, The wheel turns, may be used.

Stage IV.

As in stages I and II, other words of the different parts of speech: Adjectives, Pronouns, Conjunctions, Prepositions, Adverbs, Interjections to be introduced and used in simple short sentences that are used in daily life. Sentences of the type, I go to school, Father returns from office, My mother cooks food, This mango is sweet, may be used.

NOTE.—In stages III and IV, the blackboard to be used as in stages I and II.

B. PRACTICE IN READING.

One period a week.

Reading to be taught by the "Look and Say" method the teacher to write on the blackboard phrases and short simple sentences composed of words already made familiar to the pupils during *Speaking* lessons and the pupils given practice in reading.

C. PRACTICE IN WRITING.

One period a week.

Practice in writing to be given with the help of Flash Cards: simple words, phrases and sentences with which the pupils are already familiar, printed or written out in bold letters on cards, to be shown to pupils for short periods and they be asked to reproduce the same in writing from memory.

D. PICTURE LESSONS AND RECITATION.

One period a week.

The aim of these lessons is to widen the vocabulary of the pupils. The pupils will hear the language during picture lessons and commit to memory passages during recitation lesssons.

Picture Lessons.

Employ pictures to familiarise the pupils (*a*) with the names of useful things, (*b*) with actions, (*c*) with incident stories with industrial and vocational activities.

NOTE I—Pictures of the type found in Dr. Michael West's THE NEW METHOD READERS may be employed in (a) and (b). Pictures given in ORAL COMPOSITION LESSONS based on PICTURES by R. W. Roses, K. and J. Cooper, Educational Publishers, Bombay and PICTURE COMPOSITION by J. N. Fraser published by the same K. and J. Cooper, may be used in (c).

Cinema reels depicting industrial and vocational activities as executed in well known centres may be employed in (c).

NOTE II.—The teacher, as he shows these pictures, will describe them in as simple language as possible. He will also give the pupils some practice in describing orally simple pictures, especially those employed in (c).

Recitation Lessons.

Simple poems of the type found in *The Caxton English Readers* may be taught orally. Poems relating to vocations of the type noted below to be also included:—

1. Wood work.
2. Agriculture.
3. Smithy.
4. Cloth production.
5. Sheep-rearing.

NOTE ON TEXT BOOKS.—The teacher to cover matter found in THE CAXTON ENGLISH READERS, I and II PRIMERS and READER BOOKS, I and II. He may also be guided by the PRIMERS, FIRST LESSONS IN ENGLISH by C. Gordon, C. Coomaraswamy Naidu & Sons, Madras.

II Year.

(FOUR PERIODS OF WORK PER WEEK.)

A. Two periods a week.

1. Reading by pupil from prescribed text books.

   The teacher to question and elicit answers based on the matter read. Special attention to pronunciation to be paid : the pupils to be asked to read out passages before the whole class, words usually mispronounced pointed out and their correct pronunciation emphasised.

2. Transcription of passages from the text book by the pupil.

   Attention to handwriting, running type, its legibility and neatness to be paid. After some lessons in the class, passages to be transcribed at home may be set. At least two exercises to be done every week, and each exercise to cover about two quarter pages.

B. One period a week.

1. Reading by the teacher before the whole class of (*a*) Newspaper advertisements, (*b*) Current incidents from daily newspapers, (*c*) Simple stories, etc., that excite natural interest in the pupils.

   The "Hindu," the Daily Post," and the Illustrated "Times of India" "Weekly," may be used for (*a*) and (*b*).

   For (*c*) a few stories may be specified. Books from which they may be selected may be stated. A small library consisting of such books may be maintained in the class room.

   The reading by the teacher to be done in such a way as to enable pupils to get a rough idea of the spirit of the passage and to enable them to get familiar with new words, and their pronunciation.

2. Dictation of phrases and sentences in their natural setting, and not isolated words.

   Each pupil to maintain a list of the correct version of words mis-spelt in his written work.

C. One period a week.

1. Grammar and Composition.

   Elicitation of names of objects, actions, and their properties, covered in the I Year, and the pupils given practice in sentence-building—Simple and Mixed.

   Names of the different Parts of Speech to be introduced.

   Practice in Simple Parsing and Analysis of short sentences to be given.

III Year.

(FOUR PERIODS OF WORK PER WEEK.)

A. One period a week.

Reading and Transcription of passages from the prescribed text books by the pupil as in the II Year Middle.

B. Two periods a week.

Grammar and Composition.

1. Stories, incidents from current newspapers, and pictures of the type found in Picture Composition books (published by K. and J. Cooper, Bombay) related, read, or described by the teacher and the pupils asked to reproduce in writing.
2. Writing simple descriptive and narrative essays
3. Letter Writing: Pupils to be specially given practice in writing business letters and to frame matter for advertisement in newspapers.

NOTE.—Before asking the pupils to write, the teacher to elicit points in proper sequence from the pupils and to put an outline on the blackboard.
The teacher to correct the exercises set in the presence of the pupils and to read out the good performances before the whole class.
Use of Punctuation marks, Simple Laws of Syntax, Syllabification, Construction of Simple and Mixed sentences to be explained during composition correction periods.
At least one exercise to be corrected per week by the teacher. Not less than 30 exercises to be done in the year.

C. One period a week.—

1. Enactment of Simple Dramatic Scenes, Dialogues, etc. Pupils to play parts as in Post office, Railway Booking Office, Railway Station Platform, Police Magistrate's Court, Business Shops, Factories, etc., and as heroes of well known stories.

NOTE.—Practice in Direct and Indirect Speech and Recitation to be given through such games.

2. Translation of simple passages in English into Vernacular and *vice versa*.

"Translation" by Sangappa Mallappa, Ankale, Part I, may be followed.

At least two exercises to be done in a month. Not less than 20 exercises to be done in the year.

2. ELEMENTARY MATHEMATICS.

I Year.

(N.B.—*Simple problems only are to be done. Problems involving £ s. d. are to be omitted.*)

1. Simple reduction.
2. Multiplication of compound quantities by vulgar fractions.

3. Simple proportion.

Ratio.—What ratio is. How a ratio is written. Each term of ratio may be multiplied or divided by the same quantity without altering its value.

Proportion.—If two ratios are equal, the four quantities are said to be in proportion. Extremes. The means. Product of means is equal to the product of extremes.

Finding the fourth proportional.

4. Simple problems involving vulgar fractions.

5. Use of linear scales.—Unit of length. Measurement of lengths. Drawing lines on graph paper and measuring straight lines.

II Year.

1. Elementary notions of decimals.

Conversion of decimal fractions to vulgar fractions and *vice versa*. (Avoid big fractions.)

2. Compound practice.

3. Easy problems on time and work. Simple application of direct and inverse proportions.

4. Geometry.—Use of mathematical instruments. Drawing perpendiculars using set squares. Measurement and drawing of angels by protractor. Use of compasses—Drawing circles. Constructing triangles given (*a*) thre sides, (*b*) two sides and included angle, (*c*) one side and two angles, and (*d*) right angled triangle.

III Year.

1. Simple interest.
2. Income-tax.
5. Profit and loss.
4. Square measure.—Area of rectangle and of a square. Problems on finding cost of paving floor, and whitewashing walls.
5. Cubic Measure.—Units. Volume of a cube. Cubical contents of a room.
6. Practical Geometry.—Area of circle by counting squares and verification, by formula, of area.

Relation between circumference and radius.

Drawing figures to scale.—Rectangle, square, triangle, circle and quadrilateral.

3. HYGIENE AND RELATED SCIENCE.

(N.B.—*The subject is to be treated from a practical point of view.*)

I Year.

1. Health and its importance. General ideas of sanitation of the home, the street, the village and town with reference to dirt, sewage, light, air, water and food.

2. The general build of the human body. The head, the trunk, and the limbs.

The body materials: bones, muscles, blood, fat, cartilage. and nerves.

An elementary study of the positions of the chief internal organs and their functions in general terms.

3. An elementary account of the chemical composition of the body: Chief body elements: Oxygen, Nitrogen, Hydrogen, Carbon, etc.

Oxygen, Hydrogen, Nitrogen, Carbon, Ammonia—a general account of their distribution in Nature, and their common properties.

4. Study of Water, and Air; their composition, properties and uses.

5. Skeleton and muscles and their uses.

Mechanism of the Skeleton—the three orders of Levers.

Effect of pressure on bones. Correct and incorrect postures in sitting, standing and walking. Physical exercise and rest.

II Year.

1. Circulation of Blood—Circulatory Organs—Cause of Blood flow.

Effect of Exercise on the organs of circulation.

Treatment of cuts and wounds.

Value of Sunlight and Fresh Air in keeping blood healthy.

2. Respiration—Respiratory Organs.

Respiration *vs.* Combustion—Release of energy, source of life.

Difference between inspired and expired air.

Products of Combustion—Simple Properties of carbonic-acid gas and methods detecting the gas.

Effects of Exercise on Respiration.

Tight clothing and its evil effects.

How air is rendered impure by breathing and burning.

How air is purified by plants, rain and sun-light.

Advantages of open air life.

Ventilation in schools and dwelling houses. Expansion of gases due to heat and their currents.

3. Digestion.—Digestive organs and digestive juices. Digestion of food.

Foodstuffs.—Their composition and fuel value. Ideas of rational feeding.

Mixed Diet.—Milk, meat, eggs, wheat, ragi, rice and vegetables.

Testing milk with Lactometer.—Principles on which it is constructed.

Teeth and their care.

Constipation, its causes, effects and cure.

Evil effects of Alcohol, Coffee, Tobacco and Tea. Uses of ærated waters.

Water.—Sources of water-supply in Nature, how water is rendered impure, how to purify water, and distillation.

Effects of drinking impure water. Hard and soft waters and their effects upon soap.

III Year.

1. Excretion—Excretory organs.

Nature of waste products and their modes of elimination.

Skin and its uses.

Importance of bathing, kinds of bath.

Care of hair and nails.

Heat and cold—Body temperature—perspiration—clothing—clothing materials.

Thermometer, principles on which constructed, its uses.

Treatment of burns and scald.

2. Nervous System and its uses—(A very simple account) Work—Play—Games—Sleep—Rest.
Care of Eyes and Ears.

3. Epidemic Diseases—Malaria, Plague, Cholera, Typhoid Influenza and Small-pox—Sources of infection.

Methods of prevention :—Inoculation, Vaccination, Disinfection.

4. Revision of portions done in the three years.

4. CIVICS.

I Year.

The Family, Caste, and the School .

(*a*) *The Family* :—

(i) The ties that bind the members of a family.

(ii) Varieties of families : the Hindu family, the Muhammadan family, the European family, and the Japanese family.

(iii) The rights and duties of the members of a family towards each other.

(iv) How the family fits into the life of the community.

(*b*) *The Caste* :—

(i) A larger unit like the village and town, which links the individual with the country or the nation.

(ii) The ties hold the members of a caste together.

(iii) How far the ties of caste are helpful to the life of the community as a whole.

(*c*) *The School* :—

(i) The School as a unit in the community that brings the children together, and creates in them a sense of the larger unity.

(ii) The School and its activities.

II Year.

THE VILLAGE COMMUNITY, THE TOWN, AND THE DISTRICT.

(*a*) *The Village Community* :—

(i) What the village community is and has been.

(ii) How the people in a village make their living.

(iii) How the people in a village govern themselves.

(iv) The social life of a village.

(*b*) *Town* :—

(i) What a town is.

(ii) The composition and the population of a town in modern times—variety of occupations, variety of religion, and variety of habits.

(iii) How the people of a town make their living and how their livelihood depends on the villages.

(iv) How towns are governed—the Municipal system.

(v) The place of towns in the country.

(*c*) *The District* :—

(i) The District and its component parts.

(ii) The administration of a District in reation to the administration of the country.

(iii) Administration of a District as a form of Self-Government—District Board.

III Year.

THE MYSORE STATE.

(i) Descriptive details: area, population, languages, religion, etc.

(ii) How the people of Mysore make a living or the economic occupations and trade of Mysore.

(iii) How the people of Mysore are governed: His Highness the Maharaja of Mysore, and his Government.

(iv) The different Departments of the Government of Mysore and their relation to the Central Government.

(v) Association of the people of Mysore with Government: the Legislative Council, the Representative Assembly: their composition and functions.

(vi) Relation of Mysore to the Government of India.

5. GEOGRAPHY.

NOTE.—Two terms or one year may be devoted for the study of the Geography of Mysore; two terms (2nd year) for Indian Geography and the third year may be devoted for the study of a commercial Geography of the World in brief and revision of the earlier portions.)

I Year.

MYSORE.

(*a*) *Position and size—Physical Features.*—Two main natural divsions, "maidan" and "malnad" (hill country and plains).

(*b*) *Mountains.*—Three chief mountain chains—(I) Kodachadri, Bababudangiri, Mullaiyyangiri, Kallahatti, Kudure-muka, etc., (II) Gopalaswamy Hill, Biligirirangana Hill, Chamundi Hill, etc., (III) Nandidurga, Kurudamale, etc.

(*c*) *Rivers.*—Kauveri, Kapini, Lokapavani, Shimsa, Hemavati, Arkavati, North Pennar, South Pennar, Palar, Thungabhadra, Sharavati.

Climate.—Three Seasons—(a) Rainy—from June to November (b) Cold—December to February. (c) Hot—March to May. Rainfall from the two monsoons—south-west monsoon opening in June, and north-east monsoon opening in October. The average rainfall for the State, and its distribution. The Meteorological Department.

The Flora and Fauna.—(i) Forest Flora (a) The evergreen belt (b) The deciduous belt (c) Dry deciduous fuel tract and scrub.

The Forest Department, its sources of income, chiefly from the sale of sandalwood and timber.

(ii) Horticulture.—Fruit trees, vegetables, etc.—The Lalbagh. Markets for the horticultural products.

Chief Crops.—Agricultural crops.

(a) Wet, *i.e.*, depending for their growth on irrigation in addition to timely rainfall—paddy, sugar-cane and wheat.

(b) Dry—Those dependent entirely on seasonal showers of rain—ragi, great millet, pegeon pea bengalgram, horsegram, greengram, blackgram, sesamon, castor, cotton, tobacco.

(c) Garden crops.—arecanut, plantain, cocoanut, cardamom, groundnut, chilly, onion, coriander, turmeric, betel vine Mulberry is cultivated both in garden and dry lands; coffee, mostly in malnad regions.

Live-stock.—Bulls, Bullocks, Cows, Calves, Sheep, Goats, Buffaloes, etc.—The Veterinary Department,

Geology and Mining.—The mineral wealth of Mysore may be grouped thus:—

(i) Metalliferous minerals including ores.

(ii) Minerals used in various industries (a) Abrasive materials (b) Refractory materials.

(iii) Materials of construction.

(iv) Miscellaneous minerals.

The locality in which each of the following is found, and its important use may be given—Antimony, Asbestos, Bauxite, Building stone, Chromite, Lead.

Gold.—Kolar Gold Fields—The Oorgaum mines, Nandidroog Mines—Champion Reef Mines, etc. The total output of gold since 1882.

Iron.—The Mysore Bhadravati Iron Works—Pig iron, acetate, cast iron pipes, steel products and tar, etc.

The Geological Department.

Language.—Kannada, Telugu, Hindustani, Marathi, etc.

The Population of Mysore and *its Distribution.*

The Government of Mysore.—Its political divisions into Districts and Taluks, etc.

Industres and Commerce.—Government and private concerns.

Governnent Concerns —Sandal Oil Factory—Krishnarajendra Mills—Soap Factory—Industrial Workshop—Chamarajendra Technical Institute—Weaving Factory—Porcelain Factory—Arts and Crafts Institute.

The work of the department of Industries and Commerce—Home Industries—Khadi centres.

Hydro Electric Works at Sivanasamudram.

(*a*) Power and lighting installation.
(*b*) Rural electrification scheme.
(*c*) Supply of power for industrial use.

The Railways.—Mileage, railborne trade, imports and exports.

Joint-stock Companies and Banking facilities.

Government Savings Bank, The Bank of Mysore, Co-operative Banks, Land Mortgage Banks, The Apex Bank, other indigenous and foreign banks in the State.

Art and Architecture.

(i) Manufacture of musical instruments, such as, the Veena, Thamburi and Thabala.
(ii) Carving on sandalwood, ivory and lacquer-ware work.
(iii) Ancient sculpture and architecture at Belur, Halebid, Somanathpur, etc.

Agriculture and Sericulture.

The Agricultural Department.—Its activities, (i) Laboratory research, (ii) Experimental and demonstration, (iii) Agricultural Schools, (iv) Improvement in agricultural implements, manures, etc., (v) Aninal husbandry and live-stock.

The Department of Sericulture.—Its work.

Irrigational facilities—reservoirs and water tanks Vanivilasa-sagara or Marikanive—Krishnarajasagara—The Irwin Canal—The Bangalore water supply scheme—Bore wells, etc.

Means of Communication and transport.

Roads.—State Fund and District Board roads.

Railways.—Lines worked by the State and Madras and Southern Mahratta Railway Company.

Posts, Telegraph and Telephone—air-route.

Foreign Trade of Mysore.

(*a*) Exports and imports from outside Mysore, but in India.

(*b*) Exports and imports with reference to foreign countries outside India.

(*c*) Market for the products of Mysore—The work of the Trade Commissioner—The Mysore Dasara Industriall Exhibition—The want of a port for Mysore—the Bhatkal project.

II Year.

INDIA.

Position—size, physical features, soils and minerals.

Position.—Physical divisions—(i) The mountain regions of the north, north-west and Burma, etc., (ii) The Indo-ganges plain, (iii) The Southern Pleateau.

Rivers.—The Indus, the Ganges, the Brahmaputra, the rivers of peninsular India.

Soils and Minerals —Laterite, alluvium, black lavas, iron and coal fields specially in Bengal, Bihar and Orissa, (The Tata Iron and Steel Works, Jamshedpur, The Bengal, Iron and Steel Company), Manganese (C. P. Madras and Mysore), Gold (Mysore), Copper (Bihar), Mica (Orissa and Bihar), Petroleum (The Punjab and Burma), Worfram and tin (Burma), Salt, etc.

Climate and the need for irrigation.

The north-east and south-east monsoons.

The cold weather and hot weather seasons.

The Distribution of Rainfall.—The rain shadow regions.

Irrigation.—To make up for Nature's deficiencies there are wells, tanks, irrigation canals, etc.—The Sutlej—Valley irrigation scheme, The Sukkur Barrage irrigation project, The Mettur project, The Krishnarajasagara project, etc.

Vegetation and Animal Life.

Forest—in the heavy rainfall areas—the chief forest products are timber, cinchona, eucalyptus, sandal wood, etc.

Grass land area.—cattle and sheep—wild animals

Population.

Areas of dense and sparce population—causes contributing,

Agriculture, Plantations, Pastoral work and Industries.

(*a*) *Agriculture.*—India, essentially an agricultural country with typical rural life—crops are varied and are determined by climatic and other factors—Rice regions—millet region—wheat region—oil seeds such as sesamum, castor, groundnut, etc.—Sugar-cane, Indigo, tobacco, opium, poppy, cotton, jute, coffee, cinchona, tea, lac.

(*b*) *Pastoral Work.*—

(*c*) *Industries.*—Cottage industries and indigenous factory industries such as the manufacture of textile goods—cotton, wollen and jute—steel industry, leather industry, etc.

Trade, Transport and seaports.

Export and Import.—Chief buyers of Indian Merchandise—food stuffs and raw materials and manufactured goods.

Seaports.—Absence of a large number of seaports in India, due to lack of indented coast line—importance of Bombay, Calcutta, Rangoon, Karachi and Madras, due to the rich hinter lands.

The position of Indians over seas—The Agent-General in Africa—The High Commissioner for India in London.

The Banking facilities.

The Imperial Bank of India, The proposed Reserve Bank, Co-operative Banks, The other indigenous and foreign Banks.

Means of Communication and Transport.

Roads, Railways, navigable rivers, Steamer coasted traffic Post, Telegraph, Telephone and the air-route.

III Year.

CEYLON.

A rapid study of its position, physical features, natural resources and the importance of Colombo as a great international port.

JAPAN.

Its position and physical features—agricultural products—industries and commerce—a great manufacturing country—mineral wealth—steel industry—manufacture of silk and cotton goods—porcelain and glass ware—machinery, toys—camphor lacquer work, etc.

Her trade with India.—a brief review of the marvellous progress of Japan in recent years may be stressed.

CHINA.

Essentially an agricultural country like India—in recent years she has developed industries especially cotton and silk manufactures.

Her foreign trade :—Her imports and exports.

SOUTH-EAST ASIA AND EAST INDIES.

Such as Siam, British Malaya, French Indo-China, Dutch East Indies, the Phylippines.

All these countries are famous for agricultural and plantation work, the chief exports being Coffee, Tea and Cocoa, Indigo, Spices, Cinchona, Tobacco, Rubber, etc.

THE MEDITERRANEAN LANDS OF ASIA.

Persia, Egypt, Turkey, Asia Minor.

The export and import trade of these countries.

SIBERIA.

A cold barren country but developed in recent times particularly after the completion of Trans-Siberian Railway.

BRITISH ISLES.*

* (To be taken up after the general geography of Europe is taught).

Position—size and physical features—climate and rainfall—distribution of minerals and mining centres—building materials —coal, iron, other metals like zinc, lead, etc.—distribution of manufactures and manufacturing centres. Source of power—Textile Industries—Manufacture of woollen, linen, cotton and jute goods—Iron and chemical industries connected with food and drink, preservation of food, brewing and distilling.

Means of transport and communication :—

Roads, canals, railways, ports, air-route, post, telegraph, telephone, etc.

Her Foreign Trade.--Imports- wool, flax, cotton, hemp silk, timber, rubber, minerals like iron, copper, lead, manganese, silver, gold, zinc, platinum.

Exports.—Mostly manufactured goods—cotton, woollen, silk and linen goods—machinery and chemical products.

EUROPE.

Comparison with Asia—its greatness and importance, in spite of being smaller in size—causes natural and otherwise contributing to the greatness.

Regional geography of the different countries in Europe in brief outline with special reference to economic and commercial aspects.

RUSSIA AND BALTIC LANDS.

Soviet Russia.—Her recent industrial and agricultural expansion; the chief manufactures of the country—her foreign trade.

The Mediterranean Lands.—Italy—the basin of the Po, the great rice-growing area in Europe—Italy's recent industrial developments.

Spain and Portugal.—Turkey and Greece—

The chief economic products of the country—their exports and imports.

France.—Products mineral as well as agricultural—her manufactures—her foreign trade specially with India which exports to France oil seeds, etc.

ALPINE AND DANUBIAN LANDS.

Switzerland.—Land full of water power which has been utilised for industrial purposes—difficulties in the means of transport met by the manufacture of articles of small bulk.

Austria and Czecheslovakia.—The latter has become one of the greatest industrial post-war states in Europe, the cause being the existence of mineral wealth especially coal and iron.

Bulgaria and Yugoslavia.—A great agricultural land.

Germany, Danzig and Poland.—Their minerals and manufactures—their expanding foreign trade—causes contributing to it.

Belgium.—Rich in mineral wealth, hence great manufacturing country.

Holland.—Agricultural products—ship building and diamond cutting industries.

THE SCANDINAVIAN COUNTRIES.

Denmark.—A country of dairy farmers intensely developed by the introduction of co-operative system—her exports consist chiefly of dairy and poultry products.

Norway and Sweden.—Their chief products and foreign trade.

NORTH AMERICA.

Canada.—Physical features and climate—Chief occupations of the people—growing of wheat—lumbering, ranching, mining, and fishing—The grass land area or the prairies—the rapid development in recent years—one of the great wheat lands of the world.

U. S. A.—A general study of the position, configuration, and climate—its mineral wealth and manufactures—internal communication with special reference to navigable rivers and lakes, the internal and external trade—one of the greatest and wealthiest nations of the world.

The importance of Panama Canal.

SOUTH AMERICA.

Physical and climatic conditions—heavy and low rainfall areas—products mineral and agricultural—the study of economic geography of Brazil with special reference—the export of coffee of Argentina with special reference to the production of wheat and the export of nitrate from Chille may be stressed.

AFRICA.

A backward continent, called a dark continent—why so called—British possessions in Africa—the Indian labour in Africa.

Egypt, Sudan, the Kenya Colony, the Union of South Africa:—Only a brief economic geography for these countries may be taught.

The importance of the Suez Canal.

AUSTRALIA AND NEWZEALAND.

Physical features, climate and rainfall—Australia's products mineral—gold, silver, copper, coal, iron and agricultural and dairy—wheat, meat, etc.

Her imports and exports.

Newzealand.—Chief exports—meat, butter, cheese, fruits tallow, etc.

Tasmania.—A great fruit-producing country.

NOTE.—A brief description of the systems of Government in existence in the following countries, may be referred to in the course of the study of the geography of each country:—
Great Britian, France, Japan, U. S. A., Soviet Russia, Turkey, Italy, Germany and India.

VOCATIONAL SUBJECTS.

6. (i) AGRICULTURE

I Year.

Elementary Botany.

The plant and its relation to soil and air, practice:—seed, germination and growth—study of development of roots of important crops, in relation to soil conditions and food.

Elementary Zoology and Entomology.

A broad survey of evolution of animal life. Study of common domestic animals—study of the common useful, beneficial and harmful insects.

Practice:—rearing some common insects like silk worm and the bee. In the case of the bee, only watching the various operations connected with the bee-keeping.

Agriculture.

General meteorology and the seasons—formation of soils-classification of soils—chemical composition—properties of soil in relation to water and tillage. Tillage—objects and methods, present local practices and their improvements.

Manures.

Local practices such as sheep-folding—tank-silt—green manures, local organic manures like oil cakes—important artificial manures containing Nitrogen, Phosphoric acid and Potash.

Plant Propagation.

Layering—grafting—budding.

Practice;—General cultivation of both dry and wet crops excluding work with heavy ploughs, etc., which might hurt the young boys.

II Year.

Elementary Botany.

Nutrition of plants.

Practice:—

Study of flowers—structure and classification—leaves—transpiration—Photosynthesis—general ecology.

Elementary Zoology, Entomology and Mycology.

Study of insect enemies and their control—study of common diseases of plants and their control.

Practice:—

Spraying for insects and diseases.

Agriculture.

Irrigation—sources and methods of irrigation—irrigation in relation to soils and seasons. Drainage, Methods of drainage—relation to crops and saline soils.

Seed.

Importance of good seed—production and testing of seed—various methods of sowing—improvement of crops by selection and hybridization.

Practice:—

Cultivation of important and common vegetable crops in individual plots—Budding—grafting and orchard work—growing of important fruit trees—a few exercises in hybridizing of the common flowering plants—feeding and care of cattle—milking—butter and ghee-making. Poultry rearing and bee-keeping, spraying of crops and practice in checking insect pests and diseases. Occasional visits to surrounding villages and studying rural conditions—study of the effect of good 'sire' on the improvement of cattle and sheep. Preparation of good farm-yard manure, and compost-silo and silage-making.

III Year.

Elementary Botany.

Reproduction in plants.

Practice—Seed-testing, selection and hybridization for improvement of crops.

Elementary Veterinary Science—Diseases of cattle and sheep—remedial measures.

Practice:—

Dissection of sheep.

Agriculture.

Rotation of crops—cultivation of crops—Dairying and live-stock of the farm—rational feeding and care—laying of experimental plots—general principles of labour—Economical uses of labour—selection and equipment of the farm—farm accounting—grading of products and marketing—co-operation and banking land mortgage banks—Agriculturist's relief measures.

A general recapitulation of the work of all the three years.

Practice:—As in the second year.

General Practical work for all the three years.

1. General cultivation of crops.—(a) dry, (b) wet, and (c) common fruits, vegetables and flowers, field-crops to be grown are—Ragi, jola, paddy, sugar-cane, cotton, ground-nut, gingelly and castors. Garden-crops.—Potato, chillies, tobacco, onions, garlic, turmeric and ginger, according to locality. Also plantains, areca and cocoanuts and betel vine. Fruits:—Apple, orange, figs, grape, pomegranate and guava. Vegetables:—The common local vegetables and greens, cabbage, knolkhol—tomato, Capsicums—carrot. Flowers.—The hardier ones.

2. Practice in layering, budding and grafting.

3. A few exercises in hybridizing of the common flowering plants and selection of some of the important crops and seed-testing.

4. Preparation of spraying mixtures and spraying of crops and practice in recognising and checking insect pests.

5. Preparation of farm yard manures and compost.

6. Feeding and care of live-stock—milking, and making butter and ghee—housing—preparation of feeds—use of concentrates.

7. Study of effects of good breeding bull, and in areas where sheep is important, of the ram also, on the herds of the raiyats and on the general improvement of stock.

8. Preparation of silage and of hay.

9. Poultry rearing and bee-keeping.

10. Occasional visits to the surrounding villages to study rural conditions.

NOTE :—1. The above practical work is continuous for the three years, two hours in the morning being allotted every day, by turns of batches.

2. In addition to these farm practices in general, the second year class will have individual plots for vegetable cultivation and the third year individual plots of wet and dry field crops.

3. Note books must be maintained by every pupil for his individual cultivation, observation and for all practical work.

4. The boys being quite young, they need not actually handle the larger implements and teams, and may not also actually handle the animals but they must go with the elders and watch such operations throughout the season, and take part, as far as possible, in the care and feeding of animals, making butter and ghee, etc. They may be encouraged to take part in orchard work and poultry rearing.

6. (ii) BLACKSMITHY.

I Year.

1. General properties of Iron.—

(a) Early use of Iron. (b) Source of Iron. (c) Other elements present with Iron. (d) Wrought Iron. Mild Steel and Steel.

2. The Forge—Forge Tools. The Bellows—Blower, Fuels.—Coal, charcoal, coke.—Hard coal, soft coal. The building and care of the fire. Importance of heating a bar of iron in the horizontal position. Different Working Heats.—

Dark Blood Red (black heat),
Dark Red, low red (finishing heat),
Full Red,
Bright or light red (Scaling heat),
Yellow heat,
Light Yellow heat (Good forging heat),
White heat or Welding heat (beyond this heat, the Iron will burn).

3. The Blacksmith's Tools.—The Anvil, the hand-hammer: The sledge-hammer—Tongs—Top and Bottom fullers—Top and bottom Swage—The Set hammer—The flatter—Blacksmith

punch—The Heading Tool—Swage Block—Measuring and marking tools—The Hardi—Chisels—Mandrels—The Vice.

4. Practise Exercises.—

General directions—Hints on Working heats—(The great tendency among beginners is to attempt to work the iron entirely too cold).

(The first exercise is particularly to teach proper heating, and to give familiarity with the use of the hammer and anvil.)

The correct grip of the hammer. (The hammer is grasped about two-thirds of its length from the inner face.)

(The Wrist, forearm and arm must be limber and the whole muscular system must have great freedom of action.)

Cutting Stock. Heavy stock is cut hot, using the hot chisel.

Exercise: (1) Hammer Wedges Operations:—Drawing and cutting off.

Do (2) Drawing and Forming Iron. Operations—Shouldering, forming, drawing, and pointing.

Do (3) Pointed 'S' Hook. Operations:—Drawing and Bending.

Do (4) 'S' Hook: $\frac{1}{4}$" Round Iron. Operation, Bending.

Do (5) Staples: $\frac{1}{4}$" Round Iron.

Do (6) Forging Nails. 3/8" Round. *operation*: Pointing, Drawing, Shouldering, forming, Chambering.

(The above exercises are expected to have given the student skill in handling the Hammer, Anvil and the Forge.)

Straightening Iron: Flat, angle, Tee or channel Iron. Twisting Square and Flat Iron. (Twisting means twisting the bars about their own axis.) The use of iron pipe in twisting bars. Cold twisting, preferable in small stock. Hot twisting.

5. Upsetting, Offsetting, Shouldering, Drawing, Forming and Bending.

Importance of hammer blows:—

(a) Upright Blow.
(b) Overhanging Blow.
(c) Edge to Edge Blow.
(d) Shearing Blow.
(e) Shearing—off Blow.
(f) Angle Blow.
(g) Leverage Blow.

Forging Operations;—

(a) Upsetting to increase the cross-sectional area to make heavier and to thicken stock.
(b) Offsetting: (to change the lines of the piece off centre)

(c) Shouldering: (to reduce stock at a given point).
(d) Drawing: (making a bar of iron longer and smaller by hammering or pressure).
(e) Spreading: (to increase the width of stock).

II Year.

6. Calculating the required length of stock.

Exercise. (7) Gate Hook with twisted centre: Stock 3/8" square.
Do (8) Hexagonal Head Bolt. Stock: 5/8" Round. (Cupping tool).
Do (9) Bending Circular Curves (Small and medium size rings made of flat, round or square stock.)
(10) Bending a square Cornered Angle.

7. Welding—

Definition—Condition necessary (importance of upsetting) Welding fluxes—object of these—

(a) The Lap-Weld. (Common in general practice).
(b) Angle Weld.
(c) The cleft or Fork Weld.
(d) The Split Weld.
(e) The fagot or lump or pile Weld.
(f) The Jump Weld.
(g) The Butt Weld.

Welding Angle-iron.
Forging Exercises.

Exercise: (11) Forged Bolt with welded Head. Stock 5/8" round for shank and 5/8" x $\frac{1}{4}$" flat for collar.

Operations—Upsetting, bending, Welding and Forming.
Exercise (12) Links of chain. Stock: 3/8" round.
Do (13) Making a Soldering Iron.
Do (14) Spanner wrench or Double ended Spanner.
Do (15) (a) Chain Hook.
(b) Do with swivel.
Do (16) Blacksmith's Tongs—Operations—Shouldering, drawing, forming, grooving, punching, and rivetting.

8. The Properties of Steel.—

General outline of:—

(1) The Bessemer process.
(2) The Bessemer Converter.
(3) The Open-hearth process.
(4) Tool Steel.
(5) The manufacture of Crucible Steel.
(6) High speed steel.

9. Annealing, Hardening and Tempering.

Exercises: Tempering: Cold chisels, Punch and Die, Tempering a Reamer, etc.

(1) Choosing Steels for Tools.

(2) Case—hardening.

III Year.

10. *Tool-Making*:—

Exercise (17) To make a Centre Punch. Stock: 3½" 3/8" octagonal Tool Steel. Operations: Forming, drawing, grinding and tempering

Do (18) To make a Cold Chisel, flat, Cross-cut, Diamond point, etc.

Do (19) To forge Lathe Tools.

(a) Round Nose Tool.
(b) Cutting-off Tool.
(c) Side Tools.
(d) Diamond Point Lathe Tool.
(e) Boring Tool.

Do (20) To forge Blacksmith's Tools:

(a) Punch.
(b) Hardie or Cutting-off tool.
(c) Set Hammer.
(d) Cold Chisel.
(e) Hot Chisel.
(f) Rivetting Hammer.

(The face of a rivetting hammer is tempered purple, while the pene is tempered dark blue).

N.*B.*—Boys who have exhibited a particular liking for forging and a marked ability in the work may be permitted to attempt some more advanced work such as:

1. Bending a pipe without filling.
2. Making an axe which involves Welding Steel and Iron.
3. Making and tempering a Hunters' Knife.
4. Ornamental forging.

6 (iii) METAL WORK.

I Year.

Hand processes employed in reducing a piece of metal (cold) to given form and dimension;—

Chipping and Filing.

Chipping Chisels—Flat—Cross-cut. Round-nosed and Diamond-point Chisels.

Cutting-angles of Chisels—Rounded Chisel edges—"Breaking out" (Broader chisel used for chipping cast iron and brass than for wrought iron and steel). Lubrication: (In chipping

wrought iron and copper, the chisel should be occasionally dipped in oil or soapy water). Weight of Hand-hammer—(1¾ lbs. is a good average weight for chipping)—Face of Hammer and end of chisel (head)—freedom from greese.

Filing:—Distinguishing Characteristics of files: (Length, Cut, Sectional form).

(a) Length measured exclusive of 'tang.'

(b) Cut; which relates to the character and relative degree of coarseness of the teeth.

(c) *Sectional Form*:—Variety adapted for use on every possible form of work. (Square, Flat, Round (if tapered, Rat-tail) Half-round, Double Half-round Fish Back), 3-square, knife-edge).

Parallel and Taper Files—Safe edge files. Use of files on different metals.

Fixing work in Vice:—Removal of Dirt and Scale—Cross-filing, Draw-filing—Pinning: Polishing.

Scraping:—Employed in 'trueing' up surfaces more exactly plane than can be done with the finest file.

Forms and uses of Scrapers—Testing scraped surfaces—The Surface-plate. (Scraped surfaces not to be polished)

Vices:—The leg vice—The Parallel Vice—Instantaneous Grip Vice—Height of Vice—the Hand Vice.

(The height of the Bench Vice should be such as to allow the elbow to touch the top of the jaws when the arm of the operator is bent with the hand upwards, the operator standing upright. A good average height from the floor is about 44 inches.)

Vice Clamps and Filing Boards.

Metal Clamps—Wooden Clamps—Filing Boards—Filing block.

Calipers: Centre Punch.

Scribing Block: V Blocks.

Try-Square and Foot Rule.

Outside calipers - Inside calipers—Jenny calipers—The Centre punch for 'centring' pieces for turning and for giving a lead in the drilling of holes, and for clearly defining, by a series of centre-punch dots, scribed lines.

Soldering.

Hard solders—Spelter solders—soft solders—fluxes—Preparation of 'Chloride of zinc' flux—Hard soldering or Brazing. Soft soldering.

Riveting (Cold hammered).

'Lap' and 'Butt' joints—'Chain' and 'zig-zag' Riveting-Countersinking—Proportions of Rivets—Riveting sheet-metal.

II Year.

Drilling.

The Bench Drilling Machine—The Breast Drill-brace. The Archimedean Drill Stock. Drills—Drilling n the Lathe. Points to be observed in Drilling (work to le accurately centred: 'feed' to the drill should be even: when boring wrought iron or steel, the cutting edge of the drill should be kept continuously lubricated.)

Screw Cutting.

Stocks and Dies: Method of using Stock and Dies: The Screw-plate—Taps—(The Taper-Tap, the 'Intermediate' Tap—The Plug Tap). Tapping. The cutting edges of Taps. Table of Whitworth Taps and Tapping holes.

The Simple Lathe.

The parts of the Simple Lathe—The Mandrel Head-Stock—The Mandrel Pulley—Relation between Mandrel and Driving Pulleys—Rule for calculating speed of Mandrel Pulley. Balance of the Driving-pulley.—Lathe centres. The poppet or back head stock. Connection of Head Stocks to Lathe-Bed—The T-Rest—Simple Power Lathes.

Turning.

Plain Cylindrical Turning—Centring—Proving the truth of the Centring—'Drawing over'—Face-plate and Carriers, the 'heart' Carrier or Dog-Chucks—The Four jaw Chuck—The Self-Centring Chuck. The Bell Chuck. Removal of rough Casing before turning—Annealing Steel before Turning—Turning Tools: The 3-square Tool—the Graver, the Flat tool. The Round-nosed tool. The Parting Tool—Cutting angles of Turning Tools—Sharpening—Management of the T.-Rest. Manner of holding Turning Tools. Testing Dimension and Parallelism of Turned Work. Speed of Work—Lubrication—Filing and polishing Turned work.

Screw Chasing.

Outside chasing—Lubrication—Speed relation of Tool and Work—Method of using Chaser—Lessening Diametre of Screw-thread. Finishing off of thread—Inside Chasing—Table of Screws thread.

III Year.

The Screw Cutting Lathe.

Parts of the Screw-cutting Lathe—The Mandrel-pulley—Back-gear. Effect of the use of back-gear—Relative speed of

Pulley and Work—Throwing back-gear in and out of gear. Adaption of Back-gear Lathe as Simple Lathe. The Shde-rest. The Tool-Hoder—Slide-rest tools. The leading Screw. Rack and Pinion—The use of the Slide Rest. Hand-traversing Motion.

Screw Cutting.

Relation between Leading Screw and 'Pitch' of Threaded screw. Use of change-wheels—Transmission of Motion from Change-wheels to Leading Screw—Use of Quadrant. Arrangement of Change Wheels for Cutting Right or Lefthand Screw threads. Selection of change wheels for Screw-cutting. Compound arrangement of Change Wheels. Re-commencing Thread of Screw. Comparison of Screw-cutting with Plain-turning. Taper Turning.

Forging.

Hearths—Fire Irons—'Dirt' and Clinkers. The Anvil, Tongs—The hand-hammer—The Sledge hammer—Sets—The Swage—Block, Set—Hammers. Fullers. The Flattening Hammer—Primary operations in Forging—Heats—Drawing down Upsetting or jumping up—Welding—Burning—flux—Double-handed Welding.

Annealing, Hardening, Tempering.

Manufacure of Agricultural Tools and implements such as plough share, Goddalies, Pickaxes and Rakes.

6 (iv) TAILORING.

I Year.

1. Talk on Silk, Cotton and Wool.
   (Source, growth and varieties).
2. Texture of manufactured cloths.
   (Collect different samples).
3. Cotton Materials: Bleached, half-bleached and unbleached.
   (Show actual samples.)
4. Pins needles and thimbles: The importance of using a thimble. How needles are numbered and why. The correct method of using the scissors and the needle. (Catalogue illustrations of scissors for diferent uses to be shown).
5. Canvas and specimen work showing the following stitches: (Samples).
   Tacking, running, hemming, seaming, blanket-stitch and button-hole stitch, ornamental stitches, such as chain and herring-bonning, etc.
   Removal of stitches without injuring the cloth.

6. Making cloth buttons of different sizes. Making button holes and sewing on buttons, selection of buttons and thread to match the colour of the cloth.
7. Cutting and hand-stitching of the following: Handkerchief, sewing bag, money and tobacco bag, pillow cases, chuddies and knickers, etc.
8. Stitching on the sewing machine.

II Year.

1. How to take measurements.

   To cut out by measurement garments requiring only straight and slanting lines, *i.e.*, Infants' shirts, etc. (How to read an inch tape).
2. Darning a tear on (a) cotton material, (b) a hole in a stocking or socks. (common method).
3. Gathering and pleating material. Patching (a) calico patch, (b) flannel patch, (c) print patch.

   To sew on tapes, hooks and eyes, etc. Method of joining cotton cloth and flannel.

   Patching *versus* darning.
4. Ornamental stitches (on articles made in the first year)
5. To cut and stitch the following garments: Jubbas, jackets and frocks in Magyar style.
6. Seams: Single and double—when and why used—selection of material suited to different garments.
7. Study of the sewing machine and its accessories. Its care and maintenance.
8. Methods of drafting, cutting-out and making up underclothing, household.

   Boys' shirts, ordinary close-collared coats, coats with half lining, knickers, pants, soft-collars with tabs, pillow cases with ornamental stitches.

III Year.

1. Review of work done in the previous two years.
2. Studying the mechanism of the Sewing Machine and adjustments.
3. Care of clothing: folding, brushing, pressing, hanging, etc.
4. Removing various stains, protecting clothing from insects.
5. Ironing clothes, proper methods of ironing frills and tucks.
6. Cutting out and stitching the following on the machine; Boys' trousers, waist coats, full lining coats, cut-pockets umbrella covers, repairs to garments, etc.

6 (v) SERICULTURE.

I Year.

Theory.

Mulberry Cultivation.

1. Soilsfit for mulberry.
2. Methods of cultivation.
3. Methods of extension of cultivation.

Rearing.

1. Life history of silk worms.
2. Eggs incubation and hatching.
3. External morphology of silk worms.
   Number of segments in larva, pupa and moth.
   Appendages, such as mandibles, antonnie, thorasic and abdominal legs and breathing pores.
4. Habitat of the silk worms in nature.
5. Treatment of worms in rearing rooms.
6. Protection against enemies, such as ants, lizards, etc.

Practice.

1. Preparation of soil and planting mulberry, care of mulberry, garden and cultural operations, preservation of lands, chopping of leaves, etc.
2. Harvesting of leaves.
3. Feeding worms in 4th and 5th ages.
4. Sketching tree and bush mulberry, mulberry leaf.

II Year.

Theory.

A. Mulberry Cultivation.

1. Varieties of mulberry.
2. Harvesting of leaves.
3. Storage and transport of leaves.

B. Rearing.

Rearing appliances.
Relation between the age of worms and the quality of leaves used for feeding.
Different methods of cleaning and spacing.
Precautions to be taken in the rearing rooms.
Mounting and its effects.
Several kinds of cocoon ages.
Harvesing and sorting of cocoons.
Objects of disinfection.

Practice.

1. Care of garden, cultural operations, preparation of seedings, etc.

2. Plucking of leaves for worms of different ages.
3. Rearing of worms in all ages.
4. Disinfection of rearing room.
5. Sketching rearing appliances and worms of third and fourth ages.

III Year.

Theory.

Rearing.

Racial characteristics of silk worms.

Diseases of silk worms and remedies.
Importance of good seed.
Optimum temperature and humidity in rearing rooms.
Sanitation in rearing rooms.

Grainage.

A brief outline of grainage technique.

Reeling.

A brief outline of reeling technique.

General.

A brief outline of the silk industry in the Mysore State.

Practice.

1. Garden operations, such as pruning, digging and manuring.
2. Rearing worms in all ages, rearing pure foreign races and cross breeds.
3. Selection of cocoons for seed.
4. Grainage practice.
5. Reeling practice.
6. Utilisation of bye-products.

N. B.—Every year, the students should be taken out on tour to the surrounding sericultural villages to familiarise themselves with conditions obtaining in the villages.

6 (vi) WEAVING.

I Year.

1. Piecing and different kinds of Weaver's knots and their uses.
2. Winding.—Pirn-Bobbin, Warp Bobbins and Arate.
3. Different types of Looms: Name of each and every part. Also name of tools and accessories used for Weaving.
4. Country warp and method of warping, its calculations, importance of crosses (leases).
5. Entering the warp in the healds and reeds; stretching and level of the Warp at rest.

6. Picking and mending the broken threads.
7. Explanation and rectification to keep the web in equal width to avoid uneven edges and uneven textures.
8. Kinds of healds and reeds, their use: Meaning of counts.
9. Yarn: Varieties of yarn: Testing and determining their counts.
10. Ornamenting, simple webs.
11. Weaving of Cloths relative to the above.

II Year.

1. Warping and Beaming (Sectional Warping Machine); Important observations and calculations.
2. Tying and working the Lever-motion Looms.
3. Calculating the required quantity of yarn for certain pieces of cloth.
4. Uses of design paper and the method of drafting.
5. Principles of Tappets, Pegging: Points to be observed before adjusting the tappet on a loom.
6. Country way of Brocading.
7. Sizing: when and why used, Ingredients used, required appliances time and method of sizing.
8. Weaving plain and solid border silk or cotton saries.
9. Tying for cross border.
10. Kinds of silk used for warp and weft: meaning of deniers.

III Year.

1. Methods of erecting Looms.
2. Twisting and Doubling of silk.
3. Mending and manufacturing of country Healds and Reeds.
4. Cassification of Fabrics.
5. Weaving Rip and Basket Weaves. Twill and Sateen Weawes, snall fancy weaves, mock Lenos, Huckabacks, Honeycombs, Herring Bones, Diamonds, Diapers, Dices, Spots, Damasks, Checks and small effects, compound Fabrics, Double weft faced fabrics. Double and Tabular cloth, and Turkish Towelling
6. Analysing designs, Determining the counts of Healds and Reeds and yarn used.

(NOTE.—Wherever power is available, it is desirable to install a power loom or two for demonstration and for giving training to pupils.)

6 (vii) LACQUER-WORK.

I Year—General.

(1) General study of the special variety of wood called 'HALE' that is particularly used for this class of

work. Well seasoned wood a *sine qua non* in this Industry.

(2) Study of the reciprocating-motion Lathe and its adjustment.

(3) Skilful manipulation of the Bow and simple turning tools.

(4) Preparation of Wood for Turning: The use of the Saw, splitting chisel, Hammer and Adze.

(5) Plain Turning, and exercises involving simple curves and flat surfaces.

(6) Colouring with prepared Lac. The use of the screw-pine leaf.

Details of Studies.

(1) (a) Sawing, splitting and rounding of the requisite pieces for making a plain Cylinder 8″ x 2½″ (Exercise in the manipulation of the Lathe and tools).
(b) Final finishing the piece to 6″ x 1½″.

(2) Exercises in the formation of grooves, fillets, etc., and the application of lac, using the above piece.

(3) Making the following in one or two colours:—Dice, Mallet, Tops, Calling Bell Stand, Chisel Handle, Paper Weights, Base for File Pins and ordinary shaped vessels.

N.B.—Each boy to have a Drawing Book and in it neatly fair-line all models made and as far as possible colour them with crayons.

II Year—General.

(1) Study of the general varieties of WOOD used in Turning their characteristics.

(2) General study of Lac. Its propagation—collection, refining etc.

(3) Preparation of Lac-sticks and the admixture of colours in it, the proper heat or uniform temperature to be maintained. Fresh Lac-sticks, *i.e.*, New ones better, gradual deterioration of prepared coloured lac, if stored long.

(4) More difficult exercises in Turning and Manipulation of different tools.—Tools, their care, grinding and tempering.

(5) Exercises in colour-blending.—study in the harmony of colours-Primary and Secondary colours.

(6) Work at Power Lathes.

Details of Studies.

(1) Importance of keen-edged tools--grinding, sharpening, shaping and tempering of all tools.

(2) Makeshifts for holding difficult problems in the lathe.

(3) Prices of Raw materials and estimating articles.
(4) Designing new models and working to dimensions.
(5) Simple Ornamental turnings for chairs, shelves, etc.
(6) To make the following.—Boxes with covers, toys with lids, balls, humming-tops, Rose-water Sprinkler, etc.

III Year—General.

(1) Further study of "HALE" Wood, its growth, structure, felling, etc. Field growth knotty and inferior to that growing in Forests. Other uses of the tree—its fruit, milk-juice, leaves, etc., planting.
(2) Simple smithery in the shaping and drawing of blunt tools—sharpening.
(3) Detail study of Ordinary and Power Lathes.
(4) Study in the painting of Wood for lacquer-work purposes; transfer pictures, photos—transfer of.
(5) Skilful blending and shading of Colours in models—Market prices-study in the proportion of dimensions.
(6) Effective glueing—screwing proportion dowels; preparation of glue—importance of hot glue; importance of secure joints.
(7) Study in simple Carpentry for lacquer work purposes.
(8) Turning in ivory, bone, soft stone—to be attempted with specially designed chucks.

Details of Studies.

(1) Designing models suitable for lacquer-work—fair-copying in port-folio form—drawings of important models of the 1st, 2nd and 3rd year courses.

(2) Dimensioned Sketches of Lathes and Tools of the Lacquer-work Section and noting down approximate prices for future reference.

(3) The making of more intricate models such as, Locomotives, Swing-cradles, Motor-cars, Mirror-stand, Bobbins, Chairs, etc., etc., and the following to specially suit European taste.

Skipping rope handles, Mallet and Ball (Special joint), Paper-Weights—Varieties of Scent cases, Electric Lamp Stand, Lady's Reel Companion and Pin-Cushion, Candle Stand with tin-holders and drip, Painted Powder Boxes, Varieties of Whipping Tops in coloured Woods, Vases with tin holders, Cap and Ball (Ball of linen or wool) Disc paper weights, Toy-buckets, Ball Frame (Primary and Secondary colours), Draughtsman, Soda opener and cork-screw combined, Sauce, Brandy, etc., Bottles of painted or imitation labels, Watch with paper dial lacquered, Wooden ball painted and lacquered in slices, Pastry, Rollers, Painted Napkin Rings, Menthol Cones, Egg-cups and Cruet, Ink stand with porcelain pail.

(Wherever power is available, small power driven lathes may be introduced.)

6 (viii) GENERAL CARPENTRY.

In all stages the teacher should encourage the development of initiative by allowing the students to vary, modify, or design such models or exercises as readily lend themselves for this purpose, while maintaining a high standard or craftsmanship.

I Year.

Practical.—Setting out—sawing—planing—paring, boring, bow--sawing and spoke-shaving.

Simple Objects.—Illustrating the following joints and processes. Butt joint: Halving: Housing. Bridle-joint, Open mortise and Tenon, use of glue, nails and screws.

Drawing.—Working drawings, full size and to scale of any of the above in plan and elevation.

Theoretical.—Soft Wood timbers: growth structure and defects and seasoning: Leaves of common kinds of timber.

Simple questions on the tools used. Free-hand sketches of the tools used.

II Year.

The work of the I year together with—

Practical.—Models illustrating the following joints and processes—Mortise, and tenon, oblique and mitred halving, oblique and mitred bridle-joints, dove-tail halved joints, inlaying simple gouging. Making of agricultural implements such as, kumate, seed drills and ploughs.

Drawing.--Working drawings full size and to scales of any of the above in plan and elevation. Simple sections oblique projections.

Theoretical.—Hard Wood timbers: growth structure and defects, characteristics and properties of the common kinds of timber, shrinkage and warpage and seasoning.

Questions on the mechanical principles of the tools used and the use of nails, screws and glue.

Free-hand sketches of tools and small appliances—complete with dimensions.

III Year.

The work of the I and II Years together with—

Practical.—Models illustrating the following joints and processes—Scarfed joints: common and lapped dovetailing, double and haunched joints, rebating and gouging.

Drawings.—Working drawings: full size and to scale of any of the above in plain and elevation. Sections. Oblique and isometric projections.

Theoretical.—Timber: Seasoning, conversion, commercial sizes and terms—methods of preservation—artificial seasoning. Grinding and use of wood-working tools.

6 (ix) DAIRY FARMING.

Theory.

I Year.

(1) Generel description of common village cattle, Hallikar and Bettadadana breeds.
(2) Elements of anatomy and physiology of cattle.
(3) Description of a typical dairy cow—using Mysore and local breeds or typical animals. Production capacity depends upon type, conformation and breed.
(4) How far the local breeds conform to the dairy type. Milk yielding capacity of local breeds of cows.
(5) Description of two or three breeds of buffaloes commonly kept in Mysore for milk production.
(6) Importance of buffaloes as dairy animals both from point of view of yield and quality of milk.
(7) Management of dairy stock—housing—clean and sufficient water supply—importance of healthy surroundings and wide range for grazing—care and management of cows in advanced pregnancy and young calves. How far the management of buffaloes differs from that of cows—washing and grooming.

II Year.

(8) Starting a diary herd—foundation stock—evils of mixed herd—importance of raising a dairy stock of a known performance—and uniform type.
(9) Dairying—intensive form of agriculture—more labour required—regulation of labour. Dairy products valued more—regular and direct income balanced farming.
(10) Feeding—necessity for supplementing grazing with stall feeding—composition of some dry and succulant fodders—what functions in the animal the different ingredients in feeds perform—importance of succulant fodder for diary animals—preparation of hay and ensilage—kind and quantity of fodder fed to different classes of stock concentrated feeds—necessity and importance—composition and properties of some important and commonly used concentrated feed articles—preparation of feed,—necessity of salt and other mineral matter in feed. Frequency in feeding and quantity fed to different classes of stock

(11) Influence of early liberal feeding on young stock—bad effects of over fattening.

(12) Cultivation of fodder crops—Importance of rotation mixture of crops—pasture and its management shade in pasture—variety of grasses.

III Year.

(13) Brief description of the mechanism of cow's udder—secretion of milk—factors influencing the flow of milk—effect of feed on the quantity and quality of milk—composition of milk and coostrum and cows and buffaloes milk—use of lactometer—methods of milking—regularity in milking—care and cleanliness in handling and storing milk—milk testing.

(14) Butter making—Local and improved methods—Butter making appliances—manufacture of ghee—storing and preservation—utilisation of separated milk marketing of diary produce—discussions on co-operative village dairying concerns such as village creamery and butter factory—Dairy records and accounts—facts and figures in dairying.

(15) Breeding—elementary principles in breeding, selection grading cross importance of a pure and strong-blooded bull of a dairy type—when to breed—gestation period.

(16) Veterinary science—use of common bazaar drugs in the treatment of animals—treament of common diseases—symptoms and diagnosis of diseases, prevention and curative methods of treatment, common diseases of young calves and treatnent.

Practical Work for all the Three Years.

Handling and management of cattle—calf-rearing—milking—handling of separator and other appliances—butter and ghee making—half the day preferably in the morning should be devoted to practical work of all sorts in the cattle yard and dairy.

I Year	items	1 to 7.
II Year	,,	8 to 12.
III Year	,,	13 to 16.

6 (x) SHEEP REARING AND WOOL SPINNING.

I Year.

(1) General description of breeds of sheep in Mysore—woolly and hairy breeds and description of typical foreign woolly and mutton breeds

(2) Total sheep population and distribution of different breeds of sheep in the State with reference to climatic and pastoral conditions.

(3) Sheep industry, subsidiary to agriculture in Mysore—possibilities of sheep rearing as main industry—investment required.

(4) Conditions necessary for successful sheep raising—pasture—water—experienced labour, etc.

(5) Products derived out of sheep farming—their utility and value—wool bearing capacity of Mysore sheep, necessity for improvement both from the point of view of mutton and wool.

II Year.

(6) General management—feeding—feeding of young stock—housing—adequate pasture and water supply—importance of wide range of pasture—nature of pasture suitable—high land and hill pasture grazing—care of young stock.

(7) Yield of wool of various breeds in Mysore as compared with some foreign breeds—texture, staple—colour—kemp—factors influencing the growth of wool and its value in the market—shearing and dipping—grading wool, care in stocking wool—marketing—co-operative sale o sheep products—fattening—quality of mutton.

III Year.

(8) Elementary principles in breeding—selection grading cross. Importance of a pure and strong-blooded ram—when to breed—period of gestation—seasons of lanbing.

(9) Veteriary science—use of bazaar drugs in the treatment of sheep. Prevention of contagious diseases—their symptoms and treatment—parasites in sheep—their prevention—treatment of some common diseass.

Practical Work for all the three years.

Handling and management of sheep—feeding—shearing and dipping, grading wool—wool spinning.

6	(xi) Leather work	Syllabuses are under preparation.
6	(xii) Horticulture	
6	(xiii) Poultry Farming	

APPENDIX D.

SYLLABUSES

FOR THE

THREE YEAR GENERAL HIGH SCHOOL COURSE.

GENERAL.

Compulsory.

1. English
2. Second Language :— *One* of the following—
   (*a*) Sanskrit
   (*b*) Kannada
   (*c*) Tamil
   (*d*) Telugu
   (*e*) Urdu
   (*f*) Arabic
   (*g*) Persian
   (*h*) French
3. General Science including Human Physiology —
   (*a* Physics
   (*b* Chemistry
   (*c*) Biology
4. Elementary Mathematics.—
   (*a*) Arithmetic
   (*b*) Algebra
   (*c*) Practical Geometry
5. History, Civics and Geography.—
   (*a*) History of India
   (*b*) Civics
   (*c*) Geography

Optional.

6. *One* of the following Groups—

A. Humanistic Group.—
   (i) History of England
   (ii) Geography
   (iii) One of the following :
      (*a*) English
      (*b*) Sanskrit
      (*c*) Persian
      (*d*) Arabic
      (*e*) Islamic History
      (*f*) Hindi

B. Mathematics and Science Group.—

(i) Mathematics—

(*a*) Algebra
(*b*) Geometry

(ii) Science.—

(*a*) Physics
(*b*) Chemistry
(*c*) Practical Physics and Chemistry
(*d*) Biology

C. Practical Arts Group.—*One* of the following—

(i) Domestic Arts
(ii) Agricultural Arts
(iii) Industrial Arts
(iv) Commercial Arts

D. Music and Fine Arts.—

ALLOTMENT OF PERIODS PER WEEK AMONG SEVERAL SUBJECTS IN THE HIGH SCHOOL CLASSES.

Subject	Number of periods per week		
	IV Form	V Form	VI Form
1 English ...	9	8	8
2 Second Language.	4	4	4
3 Science ...	Physics 2 Chemistry 2 Biology 2	Physics 1 Chemistry 1 Biology 1	Physics 1 Chemistry 1 Biology 1.
4 Mathematics ...	Arithmetic 2 Algebra 2 Geometry 2.	Arithmetic 2 Practical Geometry 1.	Arithmetic 2 Practical Geometry
5 History ...	2	1	1
6 Civics ...	1	1	1
7 Geography ...	2	1	1
8 Optional Subjects.	...	9	9
9 Physical Training.	4-30 to 5 P.M.	4-30 to 5 P.M.	4-30 to 5 P.M.
Total ...	30 plus 5	30 plus 5	30 plus 5

I. COMPULSORY SUBJECTS.

I. ENGLISH—(8 periods).

(1) The eight periods allotted may be distributed as noted below :—

English Poetry	...	...	2
English Prose	...	...	2
English Grammar	...	...	1
General English	...	...	1
Composition including paraphrase		...	2

NOTE.—The Extra or the ninth period in the IV Form may be allotted to English Grammar or General English.

(2) Text Books to be studied shall be prescribed every year.

NOTE.—All the books prescribed shall be for detailed study only.
There shall be two question papers in English Language, the duration of the first paper being two and a half hours and that of the second, three hours.
(i) The first paper shall contain questions on Prose and Poetry in the prescribed text books and on Grammar and Idiom as applied to the portions studied Maximum marks 50
(ii) The second paper shall be on English Grammar and Composition and contain questions on Essay Writing, Paraphrase, General Composition, correction of given faulty sentences, direct and indirect narration, epitomization and other suitable methods of testing the candidate's knowledge in English Grammar and Idiom. (General English). Maximum marks 50

(3) In English Poetry, the pieces to be selected for study should be *mainly narrative and not abstract.* About 400 lines may be prescribed for the IV Form, 500 lines for the V Form and 600 lines for the VI Form every year. But the students are expected to commit to memory at least 150 lines in IV Form, 175 lines in V Form and 200 lines in VI Form.

(4) About 75 pages of English Prose may be prescribed for the IV Form, 90 pages for the V Form and 100 pages for the VI Form.

(5) Regular and systematic work must be done in all the Forms with definite schemes of lessons chalked out beforehand in General English and Composition.

Wren and Martin's English Composition may be used in the IV Form and V Form, and Walton's Synthesis in VI Form. Teachers may consult more books.

IV FORM.

(6) Grammar—

The Simple Sentence. The unit of Speech.
Statement—Affirmative and Negative. Command. Question. Exclamation. Subject. Predicate. Use of 'it' as the formal subject. Object. Rules relating

to agreement of subject and verb. Two or more words and phrases as subject or object of a simple sentence.

The Verb.—The kernel of the predicate.
The Transitive and Intransitive.
Voice—Active and Passive.
Moods.
Tenses—Indefinite, Perfect and Continuous forms of each.
Number.
Person.
Conjugation, general distinction between 'Strong' and 'Weak' verbs.
Formation of suffix in verbs (General rules).
Knowledge of the principal parts of such of the strong verbs and irregular weak verbs as occur frequently in conversation and writing.
Current forms and uses of verbs 'do', 'may', 'can', 'dare', 'ought', 'must', 'need', 'shall', and 'will.'
Verb as Noun—Infinitive—Gerund.
Verb as adjective—Present and Past participles.

The Noun.—The typical subject.
Singular and Plural. General rules for formation of plural.
Knowledge of such of the irregular plurals as occur frequently in conversation and writing.
Cases.
Proper, Common and Collective Nouns. The use of Collective Nouns with Plural verbs.
Customary modes of forming the feminine.

V Form.

The Pronoun.—Personal—Demonstrative—Interrogative—Relative (Distinct uses of 'who', 'which' and 'that')—Reflexive—Indefinite.

The Adjective.—Its use in identifying, describing and numerating Nouns.
Uses of 'a' and 'the'. (Knowledge of the most general rules regarding the use of 'a' and 'the' should be expected. This can be tested better through practical application in Composition than through theoretical statements).
Indefinite and distributive adjectives.
Formation and use of comparative and superlative.
Irregular comparison.

The Adverb.—Its use in qualifying or limiting verbs.
Adjectives and other adverbs.
Comparison—Regular and Irregular.

The Preposition.

The Conjunction.

Word building and word formation. Nouns, Adjectives, Verbs and Adverbs.

VI Form.

Revision of IV and V Form portions.

Phrases—As noun, adjective and adverb. Apposition.

Uses of the Infinitive.

Clauses—Co-ordinative and Subordinative. Clauses as subject and object.

(*a*) Noun clauses—Introduced by 'that'—Interrogative.

(*b*) Adjectival clauses.

(*c*) Adverbial clauses—Time, Place, Reason, Purpose, Result, Condition, Concession and Comparison, Indirect speech—Indirect Command.

Correct current usages of methods and tenses in complex sentences with particular reference to the use of subjective and 'should', 'would', might', etc., in conditional and concessive sentences.

The clause equivalent, *e.g.*, the Nominative Absolute.

Elements of Rhetoric.—As exemplified in the Text Books and applied in Composition.

(*a*) Structure of sentence—Number and order of words. Simplicity—Clearness.

(*b*) Structure of Paragraph—Arrangement of details, Coherence—Unity of Idea.

(*c*) Structure of essay—Exposition, Unity of Theme, Summarization.

Punctuation.—Chief Stops and their uses.

General rules relating to Orthography—Correct use of Capitals.

It is expected that special stress will be laid by the teacher on those points in which Grammatical structure and idiom are markedly different from those of the candidate's vernacular language.

Students must be asked to closely study one of the following Text books:—

(i) Manual of Advanced English Grammar,

(ii) Wren's High School English Grammar, or

(iii) Tipping's English Grammar.

The following are recommended for use by teachers:—

(i) The New English Grammar (Oxford University Press) By Sonnenschein.

(ii) Elementary lessons in English Grammar (Oxford Clarendon Press) By Henry Cecil Wild.

2. SECOND LANGUAGE—(4 Periods).

No book need be prescribed for non-detailed study in vernacular subjects but questions on Essay-writing based upon the ideas contained in the Detailed Prose Books will be given in the vernacular question paper.

2. (*a*) Sanskrit.

IV Form.

Text.—Not more than 250 lines of suitabe prose comprising short sentences and easy stories, the standard being that of T. R. Krishna Char's First Book.

About 120 lines or 60 slokas of easy poetry of the standard of Ramodanta or Ramayana Sangraha.

Grammar.—

1. Alphabet.
2. Declension of nouns ending in vowels.
3. Principal rules of vowel-sandhi.
4. Conjugation of the roots of the first, fourth, sixth and tenth classes in the present tense (Parasmaipada.)

Translation of short sentences into vernacular.

V Form.

Text.—About 350 lines of prose of Hitopadesa standard and 180 lines of easy poetry.

Grammar.—Declension of nouns ending in consonants and of pronouns.

2. Principal rules of consonant Sandhi.
3. Conjugation of roots of the first, fourth, sixth and tenth classes in present, past and imperfect tenses (Both padas).
4. First notions of compounds.
5. Parts of speech—indeclinable.
6. Simple rules of concord; subject and predicate;—Adjective and substantive; relative and the antecedent.

Translation of sentences from Sanskrit into vernacular and *vice versa*.

VI Form.

Text.—About 400 lines of prose (Panchatantra standard) and 200 lines of poetry (Raghuvamsa standard).

Grammar.—

1. Declenson of the more common irregular stems.
2. Differert types of compounds (with reference to exanples from the Text Books prescribed).
3. Conjugition of roots of first, fourth, sixth and tenth classes in the imperative and the future (sya).
4. Participles and causatives.
5. Changeof Voice (simple exercises.)

Translation ofsimple unseen passages into the candidate's vernacullar and *vice versa*.

N.B.—Grammar under the above heads is generally to be taught with reference to forms occurring in the Text Books prescribed.
Grammatica points at the end of the text books of the IV Form and V Form asprinted are more suitable than the subject-matter given in Bhaidarsar.

2. (*b*) Kannada.

Out of 4 periods allotted for the subject in each of the forms, three periods may be allotted to Prose and Poetry and one period to Kannada Grammar and Composition. Poems need not be confined to Shatpadi metre only and more varieties may be adopted in the selection of poems. Formal Grammar should be regularly taught in the Grammar periods.

IV Form.

Poetry.—About 50 stanzas in Shatpadi or other metres to be selected from such works as the following :—

Tarnasa Prabhu Charitre by S. G. Govinda Iyengar.
Srirama Charitre by M. Krishnappa.
Ramayana Sangraha by H. Chikkaraja Urs.
Ajanripa Charitre and Dilipa Charitre by S. G. Narasimha Char.
Sanksheja Ramayana by K. R. Narasimhaiya.

Prose.—About 100 pages (octavo size) from such works as the following :—

Lamb's Tales from Shakespeare by V. Lakshminarasimiaiya.
Japan Samrajya by J. Krishnasastri.
Nagegadlu by R. Narasimhachar, M.A.
Swaprayasa Phala Dipike by Vedamitraiya.
Satyavat Charitre by Kundalagiria Char.
Chandramati by Srikanta Sastry.
Life of Iwara Chandra Vidyasagar.
Alladdin and the Wonderful Lamp and Gulliver's Travels by S. G. Narasimhachar.

Sumathinadana Kumara Charitre by M. S. Puttanna, B.A.

Grammar.—As in Sabdadarsa. In addition to this, explanation of mediaval forms occurring in poetry.

Composition.—Prabandhamanjari and Lekhya Bodhini to be used as models. Short essays on familiar subjects (mostly descriptive).

V FORM.

Poetry.—About 75 stanzas in Shatpadi or other metres. These may be selected from such works as Torave Ramayana, Kannada Bharata of Kumara Vyasa and Ananda Ramayana.

Prose.—About 150 pages (octavo size) to be selected from such works as the following :—

Ananda Matha by Venkatachar.
Dharmasarmabhyudaya by Kundalagiriachar.
Panchatantra.
Rajakathavallari.
Primrose Vijaya.
Chamarajendra Rajya Vilasa.
Nagananda of Sriharshadeva.
Tale of Mrichikatika of Sudraka.
Ayurarogyatatwasangraha.

Grammar.—As in Sabdadarsa. Grammar to be taught in connection with the teaching of poetry and prose. The connection between the mediæval and modern forms to be traced.

Composition.—Prabhandavali and Prabhandamanjari to be used as models for teaching composition. Exercises to be given on topics occurring in the prescribed prose and on familiar subjects.

VI FORM.

Poetry.—About 125 stanzas in Shatpadi or other metre to be selected from Torave Ramayana, Kannada Bharata, Ananda Ramayana and Jaimini Bharata.

Prose.—About 200 pages (octavo size). To be selected from such works as the following :—

Shivaji by C. Vasudevaiya.
Aryakirthi by do
Mudramanjusha.
Kannada Translation of Ramayana by M. D. Alasingra Char.
Bhimamahimadarsa.
Surasena Charitre.
Hemachandra Rajya Vilasa by M. S. Puttanna, B.A.
Banabhatta's Kadambari (including I and II Parts).
Tale of Kalavati Parinaya.

Grammar.—Grammar should be taught to elucidate the peculiar grammatical forms in poetry.

Composition.—The same books as are recommended for the Fifth Form. Narrative and Reflective Essays on simple subjects.

2 (c). Tamil.

(ALL THE THREE FORMS).

1. A fair quantity of reading has to be provided, the far larger part of modern prose, and a certain quantity of simple poetry without archaisms, as far as possible.

2. Just enough Grammar of the modern language leaving out systematic grammar of the older language. The teacher should just point out and explain the few archaic forms as they turn up.

Messrs. Macmillan's VI and VII Readers in Tamil may be used as text books in the IV and V Forms or the corresponding Readers by Radhakrishna Iyer.

A new Grammar of the Tamil Language by G. S. Doraswamy Pillai may be used regularly.

For the VI Form, 100 stanzas of poetry from the Nala Vemba, Palamoli and works of that class, with about 150 octavo pages of prose, some suitable form of continuous narrative from Kumbakonam Bharatam, Tirumalaikkolundhu Pillai's Udyrnan Kadai, Cheluva Kesavaraya Modaliar's Essays, etc.

The same Grammar as in the earlier forms.

The questions set bearing upon these should be generally of the nature of composition, special attention being paid to capacity for expression, etc.

The following books are recommended for study :—

1. Macmillan's VI and VII Readers.
2. Radhakrishna Iyer's Readers.
3. C. Krishnamachari's III & IV Readers.
4. Armugala Navalar's IV Reader.
5. Tales from Shakespeare by S. Bhavanandam Pillai.
6. Harischandra do
7. Sakuntala do
8. Damayanti do
9. Ramonalakamanjari do
10. Tamil Essays by T. Chelvakesavaraya Mudaliar.
11. Literary reading series by C. R. Namasivaya Mudaliar.
12. Readings in Tamil by S. Anavaratavinayakam.
13. Elements of Civics for India.
14. Bharatam by M. V. Ramanujacharya.
15. Ramayana Vachanam (Kalyanarama Iyer and Co.'s Publication).
16. Panchatantra.
17. Life of Queen Victoria.
18. Bharata Saram By K. Kuppaswamy Mudaliar.
19. Bhojaraja Charitam.
20. Bharthrihari by K. Gopalacharyar.

21. Youth and Character by Venkataramana Iyer.
22. Composition.

2(d). Telugu.

(ALL THE THREE FORMS.)

Text Books to be prescribed by the S. S. L. C. Board containing selections of simple poetry and modern prose.

The Course will also include the text book prescribed on the outlines of Grammar as under.

Classification of sounds.
Nouns—their principal relations.
Verbs—verb forms.
Sandhi—where necessary and where not.
Sentence—structure.
Paragraph—structure.
Punctuation.
Prosody.

Fundamental characteristics of literary diction in poetry and in prose.

Remarks.—Grammar to be taught mainly with reference to the text books studied.

2(e) Urdu, 2(f) Arabic, 2(g) Persian.

SYLLABUSES UNDER PREPARATION FOR.

2(h). French.

(ALL THE THREE FORMS.)

(a) For the S.S.L.C. Examination, the candidate should possess a sound practical knowledge of French Accidence and Syntax as dealt with in Fasnacht's French Grammar for schools (Macmillan).

(b) Moreover, a candidate should be prepared to translate into English easy continuous passages in French prose or verse of the standard of those contained in the Second part of Siepman's Primary French Course, (Macmillan) or Seipman's French series for Rapid Reading (Macmillan) and Longman's French Text (Elementary series) edited by Bertenshaw.

(c) Finally, a candidate should be prepared to translate into French or compose in French detached sentences illustrative of the rules of Accidence and Syntax as noted above.

Courses of Reading Suggested :—

For IV Form—Teach Preliminary French Lessons by Siepman Vernois (Macmillan).

Great and special pains should be taken to teach the pronunciation of French as accurately as possible from the very beginning. In the teaching of a living language, a free but judicious use of the direct method for teacher and pupil alike and one by which the surest and quickest progress is made should be adopted. The consensus of opinion is that living languages should be first approached by this direct method. The book recommended is very suitable but the teacher must himself have a good accent. The teacher can use any book based on the direct method in due proportion at his discretion but should take the book abovementioned as his guide for quality.

For V & VI Forms, the books recommended are Mac-Millan's Progressive French Course I & II year Edited by Fasnacht.

These two books cover the whole ground of the Accidence and Syntax noted above and should be worked through partly orally and partly by written exercises.

In the V and VI Forms, for translation work, Longman's illustrated First and Second French Reading Books may be used with advantage, since they contain easy stories especially written to enforce some particular rules of Grammar.

There will be also the set text book for translation in the VI Form.

In all the Forms, correct pronunciation should receive proper attention.

3. GENERAL SCIENCE INCLUDING HUMAN PHYSIOLOGY.

(Copious illustrations from every day life should be availed of.)

(a) Physics.

IV Form—*Two Periods a week*

(*i*) Study of the general properties of matter:—Matter occupies space, transfers motion, offers resistance, has weight: divisibility, porosity, compressibility, elasticity. The three states of matter.

Special properties of solids : rigidity, tenacity, ductility, malleability, hardness.

Special properties of liquids. Definite size and no definite shape: find their level; communicate pressure equally in all directions. Water supply in rural and urban areas.

Special properties of gases: occupy all the space; have weight; exert pressure in all directions. Syringe, pentiller, cycle pump, inflator. Measuring the pressure of the atmosphere with a barometer.

(*ii*) Length: units in British and Metric systems and the relation between them.

Area: Units.

Volume: units, capacity, measuring jar, pipette. Measurement of volume by displacement. (Use of graduated jar).

(*iii*) Mass, Weight and Density:—units, measurement of mass by the common balance: measurement of weight by the spring balance. Difference between mass and weight. Meaning of density. Determination of the density of common substances.

(*iv*) Effect of heat on bodies: expansion. Temperature and its measurement. Construction of a thermometer: Centigrade and Fahrenheit scales. Clinical thermometer.

Transference of heat: conduction, good and bad conductors; thermosflask; convection, ventilation in buildings; radiation.

Simple steam engine and internal combustion engine.

V FORM—*One Period a week.*

(*v*) Light; nature; travels in straight lines; pin hole images. Shadows and eclipses.

Reflection: laws, experimental verification. Formation of an image in a plane mirror.

Refraction.—Effects of refraction, laws. Tracing rays of light through a parallel-sided slab of glass and a prism.

Refraction of light through a convex lens. Principal focus and focal length. Description and tracing the rays of light from the object to the image in the following optical instruments:—

(i) Reading lens.
(ii) Photographic camera
(iii) Magic lantern.

Eye.—short and long sight.

Dispersion.—Analysis of white light by a prism, rainbow, colour of the objects.

(*vi*) Sound.—Production by vibration, material medium necessary for propagation. Sound takes time to travel. Reflection and echoes. Simple working of gramaphone. Voice production by human beings.

VI FORM—*One Period a week.*

(*vii*) Magnetism.—Salient points about magnetism—attraction and repulsion; earth as a magnet.

(*viii*) Current Electricity.—Simple voltaic cell. Leclanche's cell, Dry cell, accumulator, magnetic effect, electric bell and electro-magnet.

Heating and lighting effect as illustrated by a glow lamp. Electrolysis of water. Electroplating with copper.

(*ix*) Statics.—Centre of gravity of a plane lamina; equilibrium. Three kinds of lever; fixed and single movable pulleys; inclined plane treated experimentally.

(b) **Chemistry.**

IV Form—*Two Periods a week.*

Physical and chemical changes. Chemical processes and operations—decantation, filtration, solution, evaporation, distillation, crystallisation.

Study of the air.—Air necessary for burning, burning of candle; uses the active part of the air, phosphorus uses oxygen of the air while burning. Rusting of iron. Magnesium gains weight on burning. Composition of air by volume 1/5 oxygen, 4/5 nitrogen.

Study of the action of heat on red oxide of mercury, potassium chlorate and manganese dioxide. Preparation of oxygen by heating potassium chlorate and manganese dioxide. Properties and uses of the gas. Combination and decomposition.

Action of sodium on water. Testing the gas collected; preparation of hydrogen by the action of dilute sulphuric acid on zinc. Simple properties and uses.

Properties and uses of carbon. Action of heat on dilute-acids on carbonates. Carbon dioxide: preparation, properties and uses. Test for the gas.

V Form—*One Period a week.*

Sulphur obtained native in nature. Study of the burning of sulphur in air. Uses of sulphur and of sulphur dioxide (bleaching and fumigation.) Properties and uses of sulphuric acid.

Simple properties and uses of Hydrochloric acid and of Chlorine.

Simple properties and uses of nitric acid and of ammonia. Effect of strong heat on ammonium chloride. Uses of ammonium chloride in tinning and smelling salts. Uses of ammonium sulphate as manure. Use of nitre in the manufacture of gunpowder.

Use of potassium permanganate, hydrogen peroxide, bleaching powder, milk of lime, carbolic acid, boric acid and soaps as disinfectants and germicides.

Carbon and nitrogen cycles in nature.

VI FORM—*One Period a week.*

General properties of acids, bases and salts.
Manufacture of:—

1. Bleaching powder.
2. Common salt.
3. Soap.
4. Cement and mortar.
5. Glass.
6. Safety matches.
7. Iron.

Properties and uses of :—

1. Ferrous sulphate (Ink manufacture).
2. Alum (Purification of water).
3. Baking soda (for acid poisoning).
4. Potassium Nitrate (fireworks, gunpowder).
5. Silver Nitrate (Medicine).
6. Magnesium Sulphate (Medicine).
7. Magnesia (Mercury poisoning).

Revision of portions done in the three Forms.

(c) Biology.

(The topics are intended to be taught from the practical standpoint and correlated with the principles of physical sciences).

IV FORM—*Two Periods a week.*

1. (*a*) The study of the parts of a typical plant together with a simple account of their functions. Bende, Dasavala or Genasu may be selected. (Parts—root, shoot, stem, bud, flower fruit and seed).

(b) The life history of the bean (reference to be made to the propagation of plants by seeds, tubers, bulbs and cuttings).

(c) Movement of sap and water.

2. The life history of the moth or butterfly.

3. (a) (i) Elementary study of the positions and functions of the chief organs in man.

(ii) Exercise, posture, rest, sleep and recreation for human beings.

(b) (i) An elementary description of the circulation of blood in man.

(ii) First aid for wounds and broken bones.

V FORM—*One Period a week.*

1. (a) The chief difference between plants and animals, parasitism and symbiosis.

(b) Simple experiments with germinating seeds to show that plants breathe.

2. Breathing in fish.

3. (a) (i) An elementary knowledge of the process of digestion and assimilation of food in man.

(ii) Dificiency diseases, constipation. Care of teeth.

(iii) Parasites of man; worms and mosquito; infectious diseases.

(b) (i) Respiration in man.

(ii) Ventilation. Deep breathing. Dust. Diseases of respiratory organs. First aid in drowning.

VI Form—*One Period a week.*

1. Adaptation of structure to mode of life.
   (*a*) teeth of cat and cow.
   (*b*) feet and beaks of birds.
   (*c*) protective colouration.

2. (*a*) (i) Excretion in man. Skin and kidneys.
   (ii) Regulation of temperature. Thyroid and other glands. Hygiene of the skin and hair. Toxins. Antitoxins. Ordinary poisons.

   (b) (i) The general appearance and the main functions of the three parts of the brain and spinal cord in man.
   (ii) Care of eyes, ear, nose and throat.

(C) First Alternative Syllabus in Biology.

The subject is intended to be taught from a practical standpoint; personal observations of living animals and plants being made by the students in the class room and, where possible, in the field. Careful record should be kept of these observations and of the experiments done by the students themselves or demonstrated to them. Correlation should be made with such portions of elementary Chemistry and Physics as are necessary for the proper understanding of the subject matter. It is also expected that reference to personal Hygiene and other Human Welfare aspects will be made as occasions arise.

A knowledge of the microscopic structure of objects is not required, but demonstration under the microscope of certain features like the capillary circulation of blood, the appearance of the blood, the epidermis of the leaf, etc., should be made.

IV Form.

The parts of typical plant like the mustard. Root, Stem, Bud, Leaf, Flower, Fruit and Seed.

The structure and germination of the bean seed.

The soil: demonstration of its constituents—sand, clay and humus. Water and air in the soil. Water holding capacity of soils. The work of earth worms in the formation of soil.

Storage organs in plants. Vegetative reproduction. Cuttings, bulbs, tubers, rhizomes.

The external features, habits, food and life history of (1) the butterfly or moth and (2) the frog.

The parts of the human body and a simple account of the functions of the chief organs.

The circulation of blood in man.

V Form.

The more important physiological processes of the plant illustrated by simple experiments.

(*a*) Osmosis (the work of root hairs).
(*b*) Conduction of water (the work of stem).
(*c*) Photosynthesis.
(*d*) Transpiration.
(*e*) Respiration.

An elementary account of the alimentary canal and digestion in man.

The feeding habits and the character of the teeth in the sheep and the dog.

Parasitism in plants and animals, illustrated by Loranthus and the round-worm.

The respiratory organs in man and the mechanism of respiration. Respiration in the fish.

VI Form.

The parts of a flower and their functions. Flowers and insects. The formation of fruits. Fruit and seed dispersal.

The functions of the kidney and skin without details of minute structure. The maintenance of body temperature in man.

The position of the organs of the central nervous system. An elementary account of their functions. A simplified account (without details) of the eye and the ear.

(C) Second Alternative Syllabus in Biology—Compulsory Group.

IV Form—*2 Periods a week,*

1. The subject matter of Biology; its two divisions, living and non-living things. Characteristics of living things:—Assi-

milation, growth, reproduction, etc., Protoplasm; Cells; Tissues. The cell as the unit of life; Amoeba and other similar 'lowly' organisms, Anabolism, Katabolism, Metabolism. Cf. with man; Organisation, differentiation. Various branches of Biology.

2. The Human Body—the various systems. The body cf. to a city; the cell—the citizen; metabolism of the cell.

(*a*) *The Digestive System.*—Kinds of nutrients, sources of and purpose served by each; differences between Carbohydrates, fats and proteins in composition and purpose; proportion in which they should be eaten; a balanced ration; deficiency diseases; vitamins; food stuffs that can supply these vitamins; use of unpolished rice, green vegetables, tomatoes, oranges, milk, etc.

(*b*) The nature and purpose of digestion; alimentary canal-general arrangement and structure of parts. The process of digestion and absorption. Methods of eating that aid and hinder the flow of the digestive juices; habits that aid in the regular discharge of waste from the canal; the structure and care of the teeth; cooked and uncooked food, vegetarianism; effect of fasting. Coffee, tea and alcohol upon the organs of digestion.

3. The Respiratory System: Organs of external respiration and means of transferring oxygen from the air to the blood and carbon-di-oxide from the blood to the air; structure and location of lung, thorax, pleura; air passages and means for keeping them clean and open; taking up of oxygen and giving off of Co_2 by cells (internal respiration). Advantages of breathing through the nostrils; dust; deep and full breathing *versus* shallow breathing; colds; adenoids. Ventilation, open-air cult. Nature and cause of tuberculosis; how the disease is communicated; the sanatorium treatment; Artifical respiration.

4. The Circulatory Systems.

(*a*) The blood circulatory system; the main conducting system—The Railway system of the body, its main functions, the nature and composition of blood, the red corpuscle—the oxygen carrier, the white corpuscle—the soldier and scavenger, the devouring action of the white corpuscles, Metchnikof, the incessant fight against disease germs, pus, treatment of wounds, A septic and antiseptic surgery, lister, the plasma, its functions, its defensive function, the germ theory of disease, koch, the ubiquitous and prolific bacteria, the defensive forces of the body, natural immunity, acquired immunity, involuntarily acquired and voluntarily acquired or artificial immunity, active immunity, Jenner and Vaccination, Ancient Hindu Custom of Vaccination, the story of Pasteur, inoculation, Passive immunity, toxins and antitox ns, Diphtheria, Roux and Behring, Serum therapy.

(*b*) This 'vital fluid,' nature and purpose of coagulation, calcium deficiency, organs for the circulation of blood, the double-heart, location and structure, the work of the heart, how

performed, kinds of vessels and purpose of each kind, purpose of elasticity in arteries, the pulse and what it tells, the purpose of valves in the veins and the heart, structure and functions of capillaries, the cause of blood flow, blood pressure, First aid in bleeding, effect of alcohol and tobacco upon the heart.

(*c*) Anæmia and its treatment, transfusion. The Lymphatic system of vessels, the lymphatic glands and their functions.

5. The difference between animals and plants, the distinguishing features, method of feeding, plants and animals carry on the same basic functions, the nutritive organs of plants, the food of plants, photosynthesis, the food organs of plants, the leaf, the laboratory of food manufacture for the world, structure of the leaf well suited for its function, broad and thin, stomata, midrib and veins, mesophyll protected by the epidermis, petiole and stipule, translocation of food and digestion. The stem lifts up, on branches, the leaves. Structure of the stem, nodes and internodes, axil, leaf buds, stem tip, leaf buds which help the plant to grow taller, to spread wide. The root, functions and corresponding structure, the guyrope like root branches, and deeply penetrating main root to stay the plant, the root hairs, the absorbing tissue, how the root hair works, osmosis, nitrogen for the plant body, soil and manure, fixation of atmospheric nitrogen, nitrifying bacteria, symbiosis.

6. The Respiratory system; the need for liberating energy for work as in animals, the process of breathing the same in both, experiments with germinating seeds to show that plants breathe, the mechanism of respiration, compare photosynthesis and respiration.

7. The Circulatory System or the conducting system. The life of the plant at a lower level, and not so many reasons for the existence of a conducting system. Vascular bundle and xylen and sieve tubes. Experiments to show ascent of sap, the forces responsible for this ascent.

V Form.

1. The excretory system: waste, how and where formed; organs that remove waste from the body; Lungs; Waste removed by the lungs Kidneys; Structure and connection with the large blood vessels and the bladder; waste substances separated by them;—diabetes. Skin; structure and functions; sweat glands and the waste products they separate; work of skin in regulation of body temperature and in protection from disease germs. Hygiene of skin and hair; baths; water as a curative agent. Clothing; Liver; structure and functions; connection with the circulation and with the food canal; censor of digested food. Habits of living that aid in the removal of waste; effect of exercises and cleanliness; overeating and its effects.

2. The Skeletal System: Properties and composition of bones in children and adults; Bone-building food; shape of bone depends upon its functions; study of important bone groups; the limbs; the trunk; the backbone; the hub of the skeleton; its functions; skeletal deformities, effect of improper positions in sitting, standing, walking, running; effects of tight clothing; unequal development of muscles; the skeleton of the head; joints; treatment of fractures, sprains and dislocations.

3. The Excretory System: the plant life of a less active sort than that of the animal; there is not much waste produced; and the plant is economical; these are made harmless and stored away or converted into useful substance again. Transpiration and its uses, how the plant adjusts itself to different environments.

4. The Skeletal system: the Mechanical or the supporting system, stiffness due to sufficiency of water, thickened walls, liquified primary xylem on the formation of secondary xylem from the cambium layer, a network of veins.

5. The Reproductive System: The flower made up of floral leaves modified shoot; the different parts of a flower; the functions of the various parts; how pollination is effected wind-pollinated flowers; insect pollinated flowers; interdependence; colour and smell of petals; nectaries; fertilisation; changes after fertilisation; the unripe and the ripe fruit; the colour and taste of fleshy fruits; seed-dispersal by various means; various kinds of fruits and seeds—adapted to the method of dispersal; Interdependence.

6. Propagation of plants; germination of a bean seed; vegetative propagation by bulbs; tubers and cuttings; Improving a variety; Horticulture.

VI Form.

I. The Muscular system. The muscle tissue; its special characteristics; contractility. The Skeletal muscles; voluntary muscles; tendons; some important groups of Skeletal muscles in the body; Involuntary muscles and their importance. The importance of health; movement and a power of great endurance in life. All dependent on vital organs and muscles; how these can be strengthened by improved circulation through regulated exercise; The many sided good effects of exercise; muscle culture and physical culture; size of muscle not an indication of health; the Yogic System of exercise; the Surya-namaskar; fatigue; over exercise; games and athletics Gymnasium exercise; the normal height and weight; passive exercises, massaging; the need for relaxation; rest; sleep; sleeplessness; cause and cure.

II. The Nervous system: The Telephone or the telegraph system of the body; examples to show the quick sympathy

between the different parts of the body, the integrating function of the Nervous system; comparable to the telephone system; the need for the Central nervous system; the nerve endings; impulses and nerves; lower nerve centres and higher nerve centres in the central nervous system; Reflex action; its nature and purpose; study of familiar reflex actions. The Central Nervous system; two kinds of matter; structure and function of spinal cord; The Brain and its parts; Automatic or Secondary reflex actions; Voluntary actions, converting voluntary actions into reflex ones; habits; how they are formed; why difficult to break; 'Habit is second nature', the need for forming good habits early in life; education of the nervous system; good breeding is being brought up among people of refined habits; the will power and how habits can be changed; importance of self-control; hygienic value of cheerfulness and harmonious relations with one's fellows. Effect of drugs; alcohol and tobacco on the nervous system; tonics; natural stimulants.

3. Another integrating system; the postal system of the body; Secretion; The Ductless glands and their secretions; the thyroid; the Parathyroid; the thymus; the suprarenals; the pituitary; the pineal; the pancreas insulin and diabetes; Gland therapy; the spleen and its functions.

4. Sensations and Sensory Organs: Sensations; the means for the intelligent direction of the body; response to different stimuli; Ear as an instrument for the detection of sound waves; path of the transmission of sound waves; balancing with the ear; purposes of pinna; auditory canal; membranatympani; bridge of bones; eustachian tube, air in the middle ear and liquid in the internal ear. Hygiene of the ear; effect of rough handling; temporary deafness from earwax and relief of same.

5. The Eye.—Light waves as sensation stimuli; the eyeball as an instrument for focussing light from objects upon a sensitive nervous surface; function of cornea; iris; crystalline lens; retina; coats of eyeball; ciliary muscle and conjunctiva; accommodation and regulation of the amount of light entering the eyeball. Lachrymal apparatus and protection of the eyes; simple rules for using the eyes; necessity for cleanliness; removal of irritating objects from the eyes; defects in focussing and their remedy; relation of eyestrain to nervousness; headache, sleeplessness and general debility.

6. Motor organs.—Movement a fundamental property of protoplasm; the streaming of protoplasm inside a cell; movement and locomotion; plants that have locomotion and animals that have no locomotion. Movement in animals brought about by the contractile tissue—the muscle tissue. Bose's experiments; other explanations.

7. The Nervous system.—Sensitiveness; response to stimulus; usually by visible movement; not common in plants;

the sensitive plant; the order of movement; how the impulse travels; Explanations offered; Bose's Experiments and explanations.

8. The fundamental unity of all life; unity behind the diversity; the same protoplasm; endowed with the same properties; diversity due to different habits.

4. ELEMENTARY MATHEMATICS.

(a) Arithmetic.

IV FORM—*Two Periods per week.*

1. Arithmetical tables including the metric system.
2. Decimals—excluding recurring decimals. Approximations.
3. Percentages.
4. Averages.
5. Profit and Loss.
6. Ratio and Proportion.
7. Square Measure, Square root and formulæ connected with areas.
8. Cubic measure, and formulæ for the volumes of cube, cylinder, pyramid, cone and sphere.

V FORM—*Two Periods per week.*

1. Proportional Parts.
2. Partnership.
3. Alligation and Mixtures—Simultaneous equations of two unknowns.
4. Time and Work.
5. Simple Interest.
6. Compound Interest and formulæ connected with interest problems.

VI FORM—*Two Periods per week.*

1. Discount and Bills of Exchange.
2. Stocks and Shares.
3. Exchange.
4. Annuities and Equation of Payments.
5. Statistical Graphs.

(b) Algebra.

IV FORM—*Two Periods per week.*

1. Symbolic expressions.
2. Negative quantities and use of brackets.
3. The four fundamental operations of simple algebraic terms.

4. Simple equations and problems leading thereto.
5. Straight line graph.

In V and VI Forms, there is no formal Algebra. These principles may be applied to Arithmetical problems.

(c) Geometry.

IV Form—*Two Periods per week.*

Practical Geometry comprising the following problems :—

1. To bisect a given angle.
2. To bisect a given straight line.
3. To draw a straight line perpendicular to a given straight line at a given point in it.
4. To draw a straight line perpendicular to a given straight line from a given external point.
5. At a given point in a given straight line to make an angle equal to a given angle.
6. Through a given point to draw a straight line parallel to a given straight line.
7. To divide a given straight line into any number of equal parts.
8. To construct a triangle given (*a*) the lengths of the three sides, (*b*) two sides and the included angle, (*c*) two angles and one side.
9. To construct a triangle having given two sides and an angle opposite to one of them.
10. To construct a right-angled traingle having given the hypotenuse and one side.
11. Problems on heights and distances.

V Form—*One Period per week.*

Practical Geometry comprising the following problems : —

1. To construct quadrilaterals, for example, given the lengths of the four sides and one angle.

2. To construct a parallelogram having given (*a*) two adjacent sides and the included angle (*b*) two adjacent sides and a diagonal—to study the simple properties of a parallelogram practically.

3. To construct a square on a given side.

4. Problems based on the properties of right-angled traingles, *viz.*, the square on the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other two sides.

5. To find graphically the square roots of integral numbers.

6. Area of (1) a triangle, (2) a trapezium, (3) a parallelogram, and (4) a quadrilateral—Field Book.

VI FORM—*One Period per week.*

Practical Geometry comprising the following problems:—

1. Given an arc of a circle, to find its centre.
2. To bisect a given arc.
3. Angle in a semicircle is a right angle. To draw a tangent to a circle from a given external point.
4. To draw common tangents to two circles.
5. To circumscribe a circle about a given triangle.
6. To inscribe a circle in a given triangle.
7. To draw an escribed circle of a given triangle.
8. To draw a regular polygon (i) *in* and (ii) *about* a given circle.

5. HISTORY, CIVICS AND GEOGRAPHY.

(a) History of India.

IV FORM—31 *Lessons.*

(*Two periods a week.*)

(*a*) Introductory (4 Lessons.)

1. Geography of India and its influence on the course of History.
2. The races that occupied India up to 1000 A.D.
3. The rise and fall of Hindu Empires up to 650 A.D. (a general survey).
4. The political condition of India between 650 A.D. to 1000 A.D.

(*b*) The early Mohamedan Invasions (4 Lessons.)

1. Mohamed—the Prophet and Islam.
2. The spread of Islamic rule in different countries.
3. The conquest of Sindh by the Mohamedans; the conquests of Mohamed of Ghazni.
4. The conquest of Mohamed Ghori and causes of early Muslim victories.

(*c*) India under the Afghan Dynasties (7 Lessons.)

1. The slave Dynasty;
2. The Khiljis—Allaudin, the first Mohamedan Emperor of India;
3. The Tugalaks and the rise of Independent kingdoms;
4. The origin and progress of the Bahamani kingdom;
5. Progress and civilization of the Vijayanagar kingdom;
6. The fight between the two kingdoms and its results;
7. The spread of Afghan Civilization in India.

(*d*) The Moghul Period (8) Lessons.)

1. Iaber, the founder of the Moghul Dynasty.
2. Humayun—Shershah and his administration.

3. Akbar—extension of the Moghul Empire—his policies, reforms and administration—his greatness.
4. The rule of Jehangir and Shahjahan.
5. Aurangzeb—his wars, his policies and the beginning of the downfall of the Moghul Empire—his character.
6. The rise of the Mahratta kingdom under Sivaji—his career and administration, his greatness.
7. The downfall of the Moghul Empire after the death of Aurangzeb—its causes.
8. The progress of Moghul civilization.

(*e*) The progress of the Maharatta Empire and its downfall (4 Lessons.)

1. The weak successors of Sivaji and the formation of the Mahratta Confederacy.
2. The extension of the Mahratta Empire under the first three Peshwas—administrative changes.
3. The third battle of Panipat and its consequences.
4. A general survey of the stages of the downfall of the Mahratta Empire after 1761—its causes.

(*f*) The settlement of and conflict between the European races in India (4 Lessons.)

1. India's commerce with the West from the earliest times; the early European traders—the Portugese and the Dutch.
2. The progress of the English and French East India Company—the policies and character of Duplieux.
3. The three Karnatic Wars—the character of Robert Clive.
4. The conquest of Bengal, Behar and the suburbs.

V FORM—*17 Lessons.*

(*One period a week.*)

(*a*) The settlement of and conflict between the European races in India (2 Lessons.)

1. Robert Clive, his achievements and reforms—the results of his work.
2. The Kingdom of Mysore and its progress under Hyder Ali Khan.

(*b*) The expansion of British Rule over the whole of India (9 Lessons).

1. Warren Hastings—His reforms; Regulating Act and its defects; History of the Mahrattas from 1761 and the First Mahratta War; the First and Second Mysore Wars.
2. Pitt's India Bills—Lord Cornwallis, the Permanent Revenue Settlement and its effects. The Third Mysore War.

3. Wellesley—the Subsidiary Alliance; the Fourth Mysore War: the Second Mahratta War.
4. Lord Minto—his treaty with foreign powers—rise of the Sikhs under Ranjit Singh.
5. Lord Hastings—Last Mahratta Wars and the fall of the Mahratta power—the Nepali Wars; the suppression of the Pindaris. His achievementes.
6. The three Burmese Wars and the three Afghan Wars. (A brief survey).
7. Lord William Bentinck—his annexations and reforms.
8. Lord Dalhousie—His reforms, the Doctrine of Lapse: his annexations and the two Sikh Wars.
9. The causes, events and results of the Great Indian Mutiny.

(*c*) The Progress of India under the Viceroys (3 Lessons).

1. The Viceroys from Lord Canning to Lord Elgin II, their policies and important events during their rule (a general survey).
2. The changes in the administration after the proclamation of Queen Victoria up to the time of Lord Curzon.
3. Lord Curzon and his successors—his policies, reforms and their political consequences.

(*d*) The Recent Political Movements of India (3 Lessons).

1. Political—Ilbert Bill and the Local Self-Government—The awakening of National consciousness—Growth of the representative institutions—The part played by the National Congress—Minto-Morley and Chelmsford Reforms—The Great War and the growth of National consciousness—Agitation for Dominion status—The Round Table Conference.
2. Economic Development—Railways—Industries—Mines-Plantations and Trade—Famine Relief.
3. Educational—Wood's Despatch—Rise of Universities in India.

VI Form—*22 Lessons.*

One Period a week.

(*a*) Prehistoric India upto 600 B. C. (4 Lessons).

1. The early races; the Dravidians and their civilization.
2. The invasions of the Aryans; their settlements and civilization in the Vedic and Epic periods.
3. The Caste system—its advantages and disadvantages.
4. The origin and progress of Buddhism and Jainism in India.

(*b*) Rise and Fall of the Mauryan Empire (5 Lessons).

1. The sixteen Northern Kingdoms and the rise of Magadha.

2. The Persian and Greek invasions.
3. The Empire of Chandragupta Maurya and his administration.
4. The spread of Buddhism under Asoka, his policies and administration.
5. The coming of the Sakhas and the Kushans—Kanishka and Buddhism.

(*c*) Rise and Fall of the Gupta Empire (4 Lessons).

1. The progress of the Gupta Empire.
2. The Golden Age of the Guptas.
3. The fall of the Gupta Empire and the invasion of the Huns.
4. Harsha and the Kingdom of Kanuj—Buddhism in his time.

(*d*) Hindu Kingdoms between 650 A.D. & 1100 A.D. (4 Lessons).

1. The Rajputs and their Kingdoms in the Northern India.
2. The Rajput Dynasties of Daccan—the Great Kings.
3. The Tamil Kingdoms of the South.
4. The Great Religions and Social Reformers of Mediæval India.

(*e*) Revision of the portions of the IV & V Forms (5 Lessons).

1. Afghan India
2. Moghul India
3. The rise and fall of the Mahratta Empire.
4. The stages of British conquest and supremacy in India
5. The Rule of the Viceroys.

Text Books.—The Oxford Student's History of India for all forms. By Vincent A. Smith.

For Teachers.—

1. Thompson's Senior History of India
2. M. S. Ramaswamy Iyengar's History of India
3. School History of India by P. A. Wadia
4. A History of India by Shafat Ahmed Khan

(b) Civics.

Directions.—

(1) Topics not included in the syllabuses but treated in detail in books recommended for the pupils reference should not be taught.

(2) The teachers are expected to refer to portions—paras or chapters—which the pupils can profitably read with out being troubled with needless details.

(I) IV Form—*46 Lessons.*

One Period a week.

(*a*) *Introductory Topics.*

1. Man is a social being—comparison with birds and animals.
2. The different social groups and their inter-dependence (point out how each student is a member of his family, caste, village community, state, nation and empire).
3. The characteristic features of a social group (explain with examples, division of labour, rights and duties of individuals, Government, love and co-operation).
4. The advantages of being a member of family, caste and village community.
5. The advantages of being a member of State, Nation and Empire.

(*b*) *The Indian Village Community—Social aspect.*

6. The description of the ancient Village Communities of India.
7. Historical causes for the decay of the Indian Village Communities in Modern times.
8. The general features of a Modern Indian Village ; Kinds of Villages.
9. The members of an Indian family, their relations and duties to one another.
10. The joint family system of Hindu families, their merits and defects.
11. Why and how all members of the family should develop healthy and strong bodies.
12. Why and how they should develop healthy and strong minds.
13. Culture and self-culture for all the members of the family.
14. Methods of earning by the members of the family and principles of family expenditure.
15. The historical origin of caste system in India, its advantages and disadvantages.
16. The present degenerated condition of castes and communities in India.
17. The necessity for and methods of developing healthy communal life in India today.
18. The system of marriages in India ; their merits and defects.
19. The village feasts ; their merits and defects.
20. The village social customs and social recreations.
21. The Village temples ; their defects and advantages.

22. The abolition of untouchability in all its aspects—the urgent work in India.
23. The village schools, their aims, management and extra-curricular activities.
24. The virtues to be developed during corporate school life. (Explain with examples, courtesy, firmness honesty, devotion to learning, etc.)
25. Scouting in village and town schools, opportunities for social life and social service.

(c) *The Indian Village Community—Economic Aspect.*

26. Factors governing increase and decrease of population in villages.
27. The different kinds of soils in Indian villages and manures applied to them.
28. The agricultural products produced in Indian villages.
29. The different kinds of mineral resources of India.
30. The vegetable life and animal life in Indian villages and forests.
31. The methods of Agriculture adopted in Indian villages at present; their defects and merits.
32. Manufactures in ancient and mediæval India; causes of their decay.
33. The chief small industries of Indian villages today.
34. Some suggestions for the improvement of small scale industries and present.
35. Classification of articles of consumption in Indian villages; the necessities and grades of comfort of villagers.
36. Facilities for means of communication in rural parts of India; suggestions for improvement.
37. Differences between barter and exchange through the medium of money; the advantages of the latter; antiquity of money in India.
38. The indebtedness of the villagers; methods of relieving their difficulties: general ideas relating to rural co-operative societies.
39. The village trade in India; simple reasons for the rise and fall of prices. General suggestions for decreasing the profits of middlemen.
40. The system of division of property among descendants: their advantages and disadvantages.
41. A general description of the systems of Land-Tenure in Indian villages.
42. Kinds of wages in Indian Villages; Causes for their rise and fall; general suggestions to improve the conditions of the labourers.
43. The special features of small Indian towns (the head-quarters of districts) not found in villages.

44. The special features of Indian cities not found in Indian villages and towns.
45. A comparison of the Indian cities with those of Western Countries and of ancient India.
46. Increasing diseases in villages and towns and methods to improve their sanitation.

V FORM—*23 Lessons.*

One Period a week.

(*A*) *Introductory Topics.*—

1. The meaning of Government, Administration and Civics (give examples from the School and Mysore Government).
2. The early and modern forms of Government—Monarchy, Aristocracy, Democracy, Dictatorship, Constitutional Monarchy, and Republic explained with historical examples.
3. The main policies of Government—Individualism, Paternalism and Socialism (to be merely illustrated and not explained in abstract).
4. The Primary Functions of Government—A brief survey: protection from outside enemies, maintenance of internal peace, collection of revenue, passing laws, settlements of disputes and public works.
5. The secondary functions of Government—A brief survey: Educational Development, Sanitation, Services and Social betterment.
6. The departments of Government—Enumeration of these with examples from Mysore Government.

(*B*) *Our State and its Administration.*—

7. The area and population of Mysore, its comparative position in relation to other States and Provinces. The distribution of population according to communities and districts.
8. The Administrative Divisions of Mysore—Districts and Taluks. How the taluks, districts and the State are ruled? The chief items of revenue and expenditure.
9. The Government of His Highness the Maharaja of Mysore—The powers of the Dewan and the Executive Council—The Secretariat.
10. The powers and prestige of His Highness the Maharaja of Mysore; his relations with the Paramount Power.
11. The Legislative Council and the Representative Assembly in Mysore.

12. The Local Bodies in Mysore—District Boards, Municipalities and Village Panchayets.
13. How a Mysorean can help the Government and the Representative Institutions.

(*C*) *Our Motherland and its Greatness.*—

14. The area and population of India—Variety of physical features, natural resources, people, languages, religions, social customs and grades of civilization in India today.
15. The bonds of union promoting the National Unity of India in the past and today.
16. Pre-British Empires in India and the Great Emperors; their position in the world during their days.
    (*a*) The greatness of India in the Mauryan period.
    (*b*) The greatness of India in the Gupta period.
    (*c*) The greatness of India in the Moghul period.
    (*d*) The greatness of Mysore during the time of Chikka Devaraja Wadeyar.
    (*e*) Brief description of the progress in administration, trade, industries, agriculture, science, literature, fine arts, religion, philosophy and social institutions in each of the above periods.

(*D*) *The British Empire and its Greatness.*—

17. The area and component parts of the British Empire today; historical development of the Empire.
18. The greatness of the British Empire as compared with the other Empires of the World.
19. The Government of Britain and its relation with its dominions, protectorates and dependencies.
20. The Imperial Conference and the place of India in the British Empire today.
21. Rights of Citizenship in the Empire.
22. Duties and responsibilities of Citizenship in the Empire.
23. The bonds of and training for Citizenship.

VI FORM—*26 Lessons.*

One Period a week.

(*E*) *The Functions of Government (in more detail).*—

1. The Divisions of Laws of a Country.
2. How the laws are passed and enforced.
3. The Law Courts and principles of punishment for offences.
4. The police and military Departments, commercial and political relations with other countries,

5. Principles of Taxation; kinds of taxes, how they are collected.
6. The grades of Education—Mass Education.
7. Sanitation and Hospitals.
8. The Public Works, Railways, Posts and Telegraphs.
9. Encouragement to Agriculture, Industries, Trade and Transport.
10. Special attempts to promote the welfare of the people, *e.g.*, Co-operative movement, Famine Relief, Poor Relief, encouragement to useful social and religious institutions, etc.
11. Creation of common facilities for the enjoyment of all the people in villages and cities—Museums, Libraries, Parks, etc.
12. Attempts to promote the spirit of Nationalism and Inter-Nationalism among the people.

(*F*) *The structure of the Government of India.*—

13. The administrative division of India—British Indian Provinces and Native States (with a map).
14. The classification of the Native States; their Government and relations with the Paramount Power.
15. The classification of the British Indian Provinces; their Governments and relations with the Government of India.
16. The Representative Institutions in Provincial Governments; their main features and influences of the people on the Governments.
17. The Local Bodies in British India—District Boards, Municipalities, Taluk Unions, Village Panchayets and their functions generally. Compare with Mysore.
18. The control of Government over the Local Bodies.
19. The Government of India. The Viceroy and his Council Departments.
20. The Government of India in England—The Secretary of State and his Council.
21. The control of the Government of Britain over the Government of India.
22. The main differences between the types of Dominion Governments and the Government of India.
23. The aims of the Indian National Congress and its work.
24. The Round Table Conferences and their work.
25. The New India Act; the essential features of the Provincial Autonomy and Indian Federation.
26. The League of Nations; Origin, main achievements, its strength and weakness.

(N.B.—The teachers are expected to refer to portions, paras or chapters which the pupils can profitably read without being troubled with needless details).

Books recommended for pupil's reference.—

(1) Community Civics—By E. Chenna Reddy and R. E. Robinson.

(2) Indian Civics—By K. Krishna Iyengar.

Books recommended for teacher's reference.—

(1) Elementary Civics and Administration—By Manmohan and Daruwalla.

(2) A study of Indian Economics by Pramathanath Baneriji, M.A.

(c) Geography.

IV FORM—*Two Periods a week.*

(*A*) *Indian Empire—General Survey.*

(1) Position and size; position in the globe.

(2) Physical features—Coast line; their influence on man and his activities; Soil and Mineral Wealth.

(3) Climate—influences affecting the climate of place: causes of winds and rain; Monsoon and its importance to India.

(4) Natural vegetation—definition of a Natural Region.

(5) Importance of Agriculture in India; conditions for the cultivation of rice, sugar-cane, millets, cotton, jute, tea and coffee.

(6) Irrigation.

(7) Animal life and live stock.

(8) Occupations of the people; industries and manufactures; Trade.

(9) Means of communication; chief ports and their hinterlands.

(10) Distribution of population.

(*B*) *Indian Empire—Political Divisions* (*Detailed treatment*).

(1) Assam and Burma.

(2) Himalayan Region and Western Frontier.

(3) The Punjab and Sindh.

(4) United Provinces.

(5) Behar and Orissa.

(6) Bengal.

(7) Bombay.

(8) Madras.

(9) Deccan Region—Mysore, Hyderabad, etc.

(10) Ceylon.

(*C*) *The Continent of Asia—Physical.*

(1) Position, size and extent.

(2) Relief—(*a*) Surface features and their influence on life activities.

(*b*) Coastline and seas; resulting harbours.

(3) River—River Systems and drainage areas—Arctic, Pacific, Indian, Atlantic and Inland.

(4) Climate—Factors influencing the climate of Asia—Winds; Monsoons; Distribution of rainfall; Climatic areas and their characteristics.

(5) Vegetation and animal life—Vegetation regions and important animals; important cultivated crops and other products; their commercial Geography.

(6) Minerals—Distribution of chief minerals and their importance in world economy.

(*D*) *The Continent of Asia—Economic.*

(1) Industries—importance of India and Japan in manufacturing: Necessary conditions for manufacturing and World distribution of Silk Industry; Fishing districts in Asia.

(2) Trade and Commerce—Outstanding facts in connection with imports and exports as shown by the more important countries—Japan, India, China, French Indo-China, Siam, Dutch East Indies and South Western Asia.

(3) Density of population—connection between rainfall and density of population.

(4) Methods of Transport—

(*a*) Caravan routes;
(*b*) Water transport
(*c*) Railways—the Trans-Siberian, the Trans-Caspian and the overland route to India
(*d*) Air routes—Continental and World.

(*E*) *The Continent of Asia—Political.*

(1) Political Divisions—

(*a*) Independent countries;
(*b*) European Colonies; and dependencies;
(*c*) Mandated territory.

(2) A brief account of the Governments and the people of important countries of Asia.

(3) Important Towns and harbours of Asia.

(*F*) *The Continent of Asia—Special Topics.*

(1) Asia is a continent of diversity or contrasts.

(2) The greatness and glory of Asia.

(3) Conditions that cause Asia to be less influential in the World to-day.

V FORM—*One Period a week.*

(*A*) *Britain—detailed treatment.*

(1) British Isles—Situation, size and shape
(2) Relief and coast; their effects
(3) Climate and their effects
(4) Natural vegetation—plants and animals
(5) Products and industries
(6) Communications and Trade
(7) People
(8) Natural Regions—Scotland, England and Wales and Ireland.

(*B*) *The Continent of Europe—Physical.*

(1) European leadership—what geographic factors have helped to make Europe the leading continent?
(2) Position and surface features.
(3) Rivers.
(4) Coast line—Characteristics of.
(5) Climate—Factors affecting the climate of Europe, climatic regions and their characteristics; wind systems; cyclones.
(6) Natural vegetation Belts; important animals.
(7) Cultivated plants—Wheat, oats, barley, rye, vine, fruits and plants; commercial geography of sugar, beet and flax; sugar beet *versus* sugar-cane.
(8) Minerals—Chief minerals; commercial geography of coal and iron.

(*C*) *Continent of Europe—Economical.*

(1) Industries and manufactures—Why is Europe the leading manufacturing continent? Contrast between Western and Eastern Europe; handicaps of the Mediterranean countries.
(2) Trade and Commerce—characteristics of—as illustrated from the trade and commerce of leading countries with statistical data.
(3) Population—reasons for distribution as contrasted with countries of Asia.
(4) Transportation—Roads, railways and waterways, air-routes continental and world.

(*D*) *Continent of Europe—Political.*

(1) Political Divisions—Importance of the great nations of Europe; their possessions in other parts of the World.
(2) A brief account of the Governments and people of important countries of Europe.
(3) Important cities and harbours of Europe.

(*E*) *Continent of Europe—Special topics and problems.*

(1) Importance of Europe and Europeans in the world now.
(2) It is the most productive country in the world.
(3) How has Denmark become the world's teacher in dairy industry.
(4) Why is Belgium called one of the workshops of Europe?
(5) Why is Czechoslovakia called the "Keyland" of Central Europe?
(6) Why has France never become one of the greatest manufacturing and commercial nations?
(7) Why is manufacturing important in Germany?
(8) Switzerland is a high mountainous country. How does she support such a dense population?
(9) What has been the cause of the lack of progress in the Balkan Peninsula?
(10) How have the physiographic regions of Russia affected the development of the people?

VI FORM—*One Period a week.*

(*A*) *Africa—the continent of European exploitation.—A brief account of its discovery and exploration.*

(1) Size, extent, relief, rivers and lakes; Rift-valley.
(2) Climate—latitudinal belts and climatic factors underlying each; wind system; causes of rain; deserts—kinds and formation of.
(3) Vegetation belts and animals; cultivated crops—commercial geography of cacao.
(4) Chief minerals, world distribution of gold and diamonds; why is Africa backward in economic development and industries.
(5) Trade and commerce—Main imports and exports, overseas communications; Population—areas of dense and sparse population and reasons for same.
(6) Methods of Transport—From the most primitive to most advanced found in the continent, namely—(*a*) Human porterage; (*b*) animal transport—caravan routes; (*c*) Motor transport; (*d*) Railways—Why South Africa has a network; (*e*) Air routes; (*f*) Suez Canal—an important trade highway.
(7) Political divisions—European nations owning land in continent and possessions of French—English and Italian Territory; advantages and disadvantages of each.
(8) Important cities and harbours.

(9) Interesting problems—Why was Africa long considered to be a dark continent; corresponding climatic belts in North and South of Equator; European interests in Africa.

(*B*) *North America—A continent comparable to Europe in its economic and political development.*—

(1) A brief account of its discovery and settlement; position and importance; size and extent; surface features; lakes, rivers and coast line.

(2) Climates of North America—temperature conditions; winds and rainfall; influence of ocean currents.

(3) Natural vegetation, animals and aboriginal peoples.

(4) Agriculture.

(*a*) The wheat belt.—Kinds of wheat and areas where it is grown; position of Canada and U. S. A. in the world production of wheat; important towns of the wheat belt;

(*b*) The maize belt—Maize grown more for livestock than for human food.

(*c*) The cotton belt—Commercial geography of cotton.

(*d*) Other crops—Oats, tobacco, sugar, beet, sugar-cane, coffee, bananas.

(*e*) Fruits.

(5) Industries—

(*a*) Animal industries—Rearing of cattle, sheep horses and hogs; dairy farming.

(*b*) Lumbering—areas where lumbering is carried on; important centres.

(*c*) Fishing—Sea and river (along New Foundland banks and British Columbia).

(*d*) Mining—important minerals and their distribution; position of Canada, U.S.A. and Mexico in the mineral resources of the world.

(*e*) Other chief manufactures of North America.

(6) Trade and Commerce—Chief imports and exports; Reasons for increasing commerce of the United States and Canada; effect of the Panama Canal on the Uranian trade; strategic value of the Canal.

(7) Density of population—Waterways, roads and railways in Canada and U.S.A. Air routes.

(8) Political divisions of North America; possessions of U. S. A. Causes for the leadership of the latter.

(9) Important cities and harbours of North America.

(10) Present position of North America in industries, wealth, power, etc.

(C) *South America—Problem of tropical development.*

(1) A brief account of discovery and exploration; why South America is still backward? Conditions essential for its future development.

(2) (*a*) Position, size and extent; (*b*) Surface features; (*c*) The great rivers—The Atlantic and Pacific rivers compared and contrasted; (*d*) Coast line—Nature and extent (How does South America compare with North America in these respects).

(3) (*a*) Climate—Factors affecting the climate of South America; wind system aud rainfall; (*b*) Natural vegetation—regions (*c*) Products and occupations.

(4) Industry and commerce—commercial geography of (*a*) Coffee, (*b*) Rubber plantation *versus* natural rubber, (*c*) Cacao—World distribution of, (*d*) Nitrate—Tin and Petroleum, (*e*) meat and grain.

(5) Methods of transport—Waterways, Trans-Andean and other railways; air routes—value of air service to South American countries; the Panama Canal and its importance.

(6) (*a*) The peoples and races—Indian, Negroes, mixed races, whites and Asiatics; Japanese and Indians; regions of European settlement; obstacles to close settlement. (*b*) Density of population and its distribution—Why highland regions are chosen?

(7) (*a*) Political divisions; (*b*) Latin America (Mexico and Central America); (*c*) European possessions—Munroe Doctrine; (*d*) Important cities and harbours.

(8) Some interesting problems of South America.

(i) Why is manufacturing comparatively unimportant in South America?

(ii) What countries will probably develop manufacturing in the future?

(iil) Why should U. S. A. plan to increase her trade with South America?

(iv) Can South America provide homes for overcrowded people of Europe and Asia?

(*D*) *Australia and New Zealand—the people of isolation.*

(1) A brief account of its discovery and settlement in it; White Australian policy; its isolated position and importance.

(2) (a) Size and extent. (b) Surface features. (c) Rivers—Inland drainage. (d) Coast line—nature and extent.

(3) Climate—Factors affecting the distribution of climate of Australia; wind systems and irregular distribution of rainfall: Artesian Wells and irrigation works; hardships of climate in the Northern Area causing scarcity of white labour. Immigration laws restricting importation of Asiatic labours.

(4) (a) Vegetation belts and animals—Variety and peculiarity of animal life. (b) Minerals—distribution of chief minerals; gold, the first attraction.

(5) Industries and manufactures; (a) Animal industries and conditions favouring them; cattle district, sheep area and dairying area; horse breeding. (b) Agricultural industries—Wheat, fruits, sugar and cotton. (c) Forestry. (d) Fishing. (e) Manufacturing—Principle of self-sufficiency.

(6) (a) Methods of transport—Railways; trans-continental railways; battle of gauges; air routes—Continental and world. (b) Trade and Commerce—preponderence of animal products; other products; service of refrigeration; overseas communications *via* the Suez and Panama canals.

(7) (a) The Common Wealth—States forming same; Federal capital; (b) Density of population—Why population is concentrated in the six large cities; (c) Important cities and harbours.

(8) New Zealand—How it compares and contrasts with Australia. A brief general survey of New Zealand as indicated under Australia.

(*E*) *Polar Regions*—

A brief survey of each Polar Region with a short account of discovery and exploration work; Human, plant and animal resources; differences between the two regions.

(*F*) *World in general and position of India*—

(1) Definition of a natural region.

(2) Major Natural Regions of the World.

(3) Northern Continents, compared and contrasted.
(4) A comparative study of Southern Continents.
(5) India—Inter-relation of India and the rest of the World; Indians overseas; their occupations and disabilities.

Text Books for students—
Murray "The World"—G. Bell & Sons.

Teacher's Reference—
1. Columbus Regional Geography Book—London University Press.
2. Dell—The Countries of the World. Harrap and Company.

Additional Suggestion Regarding Syllabus in Geography—Compulsory Group.

Geography.

IV Form.—Principles of Physical Geography may be taught as a preliminary to give a scientific background to the facts of Geography already learnt. Otherwise the IV Form portion will, in effect, be a repetition of the facts already learnt by the pupils, and will cease to interest them. A draft syllabus for the same is given below.

IV Form.

Principles of Physical Geography as applied to India.

1. "The function of Geography."

The relation between Man, his activities and the climate of the Region.

The study of Geography has climate as its foundation.

2. *Climate.*—

The ocean of air that surrounds us. Its pressure—Barometers, Altimeters.

The structure of the atmosphere—water vapour and dust particles, their importance.

The changes observed in the atmosphere—with regard to its temperature and motion, and moisture contents.

3. How the climate of a place is determined.—

Climate—weather—weather bureaus. Their services to the country.

4. Climate—Temperature.

How the thermometers are used to measure temperature in the observatories. Average Temperatures. Monthly and annual.

5. The factors that control the temperature of a region.

Examples from India and elsewhere.

Isotherms—Isothermal lines—how drawn.

6. Pressures—Isobars. Winds—How they are caused.

The winds of the world in general.—The winds that blow over India—Monsoon winds and how they are caused.

7. Rainfall. How clouds are formed—their structure—their classification. When does rain occur? What are the other forms of precipitation—Examples from India. How is rainfall measured? Rainfall graphs—Isohyets.

8. A Survey of India applying the above principles in greater detail. The proposed syllabus (India complete) omitting Asia may be taken up and it is comprehensive enough.

In the study of simple Regional Geography, South America, Africa and Australia (the southern continents) may be grouped together (for V form) and the other continents, *viz.*, North America, Europe and Asia (the northern continents—for the VI Form).

OPTIONAL SUBJECTS.

A. HUMANISTIC GROUP.

(i) History of England.

V FORM—*Three Periods a Week.*

(*A*) *General survey up to the Tudor period.*

(1) Chief characteristics of the pre-Roman and Roman Britain.

(2) England in the Dark Ages from Alfred the Great to the battle of Hastings.

(3) England in the Middle Ages :—

(*a*) The rule of Norman kings and Crusades.

(*b*) Wars with Scotland and France.

(*c*) Feudal system, Magna Carta and the growth of Parliament.

(*d*) The Wars of the Roses up to the battle of Bosworth.

(*e*) The relation between the English kings and Roman Church.

(4) The beginnings of Modern Age :—

(*a*) The Renaissance and its effects.

(*b*) The growth of Absolute Monarchy in Europe; the relations of England with the Continent.

(*c*) The disappearance of Serfdom; the growth of the Middle Classes.

(*d*) The invention of Printing Press and the growth of learning.

(*e*) The spirit of adventure; voyages and discoveries.

(*f*) The religious movement of the Lollards and the weakening of the power of the Pope.

(*g*) The Reformation Movement started by Luther.
(*h*) The invention of gun powder and changes in the methods of warfare.
(*i*) Literature, Fine Arts and Architecture of the 15th century.

(*B*) *Events of the Tudor period.*

(*a*) Henry VII—1485-1509

(1) His claim to the throne and Yorkist plots.
(2) His foreign relations: Marriage alliances and their importance.
(3) His attempts to make the crown all powerful.

(*b*) Henry VIII—1509-1547

(1) His character and his marriages; his policies regarding Ministers and friends.
(2) His foreign policy—Balance of Power; the foreign relations in his reign.
(3) Rise and fall of Cardinal Wolsey.
(4) His quarrel with the Pope and its effects.
(5) The destruction of monasteries and its results—The English Navy.
(6) The rise and fall of Thomas Cromwell.
(7) His relations with Wales, Scotland and Ireland.

(*c*) Edward VI—1547-1553

(1) Protectorship of Somerset;—War with Scotland, further changes in the Church; his fall.
(2) Protectorship of Northumberland—his Second Prayer Book; failure of his attempt to make Lady Jane Grey as the Queen; his fall.

(*d*) Mary I—1553-1558.

(1) Changes introduced by her in the Church; her religious persecutions and their effects.
(2) Her foreign policy; her marriage with Philip of Spain and disappointments.
(3) The Marian Martyrs.

(*e*) Elizabeth—1558-1603

(1) Her character and policies compared with those of her sister Mary and Mary, Queen of Scots.
(2) The changes introduced by her in the Church and their effects; the new religious parties.
(3) The changes in the Church of Scotland and the career of Mary, Queen of Scots.
(4) Her foreign policy in the early years of her reign; relations with France and Spain.
(5) The conspiracies against the queen; the persecution of her enemies.

(6) Her foreign policy in the later years of her reign—Direct hostility to Spain and encouragement to the English maritime adventurers.

(7) The discipline and the fate of the Invincible Armada; its results.

(8) The Conquest of Ireland. (6)

(*C*) *The main characteristics of the Tudor period.*

(1) The personal rule of the Tudors; the causes of the growth of their power and their wise policy.

(2) The relations of the Tudor Monarchs with their ministers and their Parliaments.

(3) The stages of progress of Reformation in England in the Tudor period; Differences between English Reformation and Reformation in the Continent.

(4) England's part in the voyages and discoveries, beginnings of the British trade and colonisation.

(5) The relations of England with Wales, Scotland and Ireland in the Tudor period.

(6) The Social and industrial changes in England in the Tudor period.

(7) Glories in the end of the reign of Elizabeth—literature, travel, architecture, etc.

(*D*) *Events of the Stuart period.*

(*a*) James I—1603-1625.

(1) The character, claim to throne and policies of James I, the failure of his early attempts to unite England, Scotland and Ireland.

(2) The settlements of English Colonies in America.

(3) His relations with the Puritans, Catholics, Parliament and his favourites; Divine Right Theory.

(4) His foreign policy and foreign relations.

(*b*) Charles I, 1625-1649.

(1) His character and foreign policy.

(2) His quarrels with his first three parliaments; the Petition of Right.

(3) His eleven years' tyranny or the personal rule and its failure.

(4) The proceedings of the Short and Long Parliaments.

(5) Events leading to the Civil war, the Grand Remonstrance.

(6) The First Civil War (1642-47).

(7) The rise of Oliver Cromwell, his reforms in the parliamentary army.

(8) The Second Civil War and the execution of Charles I.

(*c*) Oliver Cromwell—1649-1660.

(1) The rule of Rump and its expulsion.

(2) Cromwell's domestic policy and constitutional experiments.
(3) His religious policy.
(4) His foreign policy, foreign relations.
(5) Events leading to restoration after the death of Cromwell.

(*d*) Charles II—1660-1685.
(1) Character of Charles II and the proceedings of the Cavalier Parliaments.
(2) Foreign policy of Charles II and foreign relations. Colonies and trade under Restoration.
(3) Important events in the Ministries of Edward Hyde, and Danby; the Cabal.
(4) The question of succession to the crown, origin of Whigs and Tories, plots against the king, Exclusion Bill and the Habeas Corpus Act.

(*e*) James II—1685-1688.
(1) His character and popularity with the Tories at the time of his accession.
(2) Monmoth's Rebellion, and James' attempts to restore Catholicism and arbitrary rule in England; the trial of the Seven Bishops.
(3) The Revolution of 1688.

(*E*) *The main characteristics of the Stuart period.*
(1) Causes for the unpopularity of the Stuart monarchs, Comparison with the Tudor monarchs.
(2) Causes for the struggle between the Stuart kings and their parliaments.
(3) The History of the Long Parliament and its work in general.
(4) The gradual changes in the constitution in the Tudor period.
(5) Similarities and differences between the Puritan Revolution in the time of Charles I and political Revolution in the time of James II.
(6) The growth of colonies in America, trade in Asia and British sea power.
(7) Progress of Science, Literature and Arts in the Stuart period.

VI FORM—*Three Periods a Week.*

(*F*) *The reigns of William, Mary and Anne*—1689-1714.
(1) The character of William, his domestic and foreign policies.
(2) The revolution settlement in England regarding Power of Parliament, Justice, Army, Religion, Succession and Finance.

(3) The origin of Cabinet system and Party Government.
(4) The revolution settlement in Scotland; Union of 1707.
(5) The revolution settlement in Ireland.
(6) The war in William's reign. English Succession War.
(7) The war in Anne's Reign; Spanish Succession War, (1702-1714); Peace of Utrecht and its results.
(8) The economic, social and literary progress in England during the reign of Queen Anne.

(*G*) *The period of the early Hanoverians: George I and George II* (1714-1760).

(1) Twenty-five years of peace from 1714-1739 with the exception of Jacobite Revolt of 1715.
(2) The Whig Rule and the South Sea Bubble.
(3) The rise of Walpole as a Prime Minister; his home and foreign policies.
(4) The War of Jenkin's ear; the war of the Austrian Succession and the Jacobite Revolt of 1745.
(5) The weak ministry of Pelham followed by the strong ministry of Elder Pitt; the character, domestic and foreign policies of the latter—results.
(6) The Seven Years' War and its results—The achievements of Robert Clive in India and Wolfe in America (1756-63).

(*H*) *The reign of George III* (1760-1820).

(1) His character, policies and attempt at personal rule and its failure.
(2) The causes, campaigns and results of the American War of Independence.
(3) The rise of Younger Pitt, his character, domestic reforms and foreign policies—results.
(4) The French Revolution; attitude of England and outbreak of war.
(5) The French Revolution—wars between 1793-1802.
(6) The Napoleanic wars between 1803-1814.
(7) The battle of Waterloo; settlement of Europe and the results of the French Wars over the whole of British Empire.
(8) The relation between England and Ireland in the 18th Century.
(9) Other great men of the 18th Century—Burke, Fox, etc.
(10) The Industrial Revolution in England and its effects.

(*I*) *The periods of the 19th Century.*

(1) The character and policies of George III and William IV and the ministers during their reigns.

(2) The religious policy of the 18th and 19th Centuries—The Catholic Emancipation Act of 1827.
(3) The Movement of Parliamentary reform and the Reform Act of 1832; its results in further reforms.
(4) The difficulties and the political parties when Queen Victoria ascended the throne; the early ministries of her reign.
(5) The Ministry of Sir Robert Peel. Policy of Protection; Repeal of the Corn laws.
(6) The rise and fall of the Chartists; the Parliamentary Reform Act of 1867 and its results.
(7) The foreign policies of Britain in the 19th century, its main aspects and stages.
(8) The Eastern Question in the 19th century; the Crimean war—1854.
(9) The ministries of later Victorian Age—1869-1900.
(i) The ministries of Gladstone; his domestic, Irish and foreign policies—results.
(ii) Other short ministries.
(10) The growth of the British Empire and rivalry with other European powers in (i) the sea, (ii) America, (iii) Australia, (iv) India, (v) Africa, etc.
(11) The relations between England and Ireland in the 19th Century.
(12) The progress in science, literature, fine arts, etc., during the reign of Queen Victoria.

(*J*) *Recent affairs from the commencement of the 20th century.*

(1) The character of Edward VII; his foreign policy, the ministries and reforms during his reign.
(2) The Great War of 1914-18; brief description of its causes, campaigns and results—Peace of Versailles and the League of Nations.
(3) British Home Reforms during the war and the growth of Self-Government in Ireland.
(4) The progress of the British Empire after 1900 and the feeling of unity among its parts.
(5) Main features of the present British Constitution.

Books recommended for—

(*a*) Pupils' reference:
(1) A History of Great Britain by T. F. Tout, M.A., (Book II).
(2) A History of England from 1485 to 1900 A.D. by Sir Henry Sharp.

(*b*) Teachers' reference:
(1) The History of Great Britain by T. F. Tout, M.A., (Book III).

(2) Groundwork of British History by Townsend and Martin.

(ii) Geography.

V FORM—3 *periods a week.*

1. Climate—Influences affecting the climate of a place. Causes of winds and rain and their distribution.
2. Major Natural Regions of the world—Vegetation, population and occupations.
3. Asia—Climate.
4. Arctic and cold Temperate regions of the North—Siberia.
5. Cool Temperate—Eastern Region.
6. Temperate Deserts.
7. Warm Temperate or China Type—China.
8. Tropical and Monsoon lands. (India in brief)—Indo-China.
9. Deserts and Semi-Deserts—South West.
10. Equitorial regions—Southern Malaya and East Indies.
11. Europe—Land surface and its formation—Compare Asia and Europe. (Formation of Mountains, Rift Valley, etc., to be clearly explained.)
12. Climate and Natural Regions.
13. Arctic Region—Northern Russia, Sweden and Iceland.
14. Cold Temperate—Russia and Baltic States.
15. Cool Temperate—Western European regions—Influence of Currents.
16. Warm Temperate—Continental—Central Europe.
17. Mediterranean—Southern Europe.
18. Cool Temperate—Grass lands.
19. International Rivers and Ports—League of Nations.
20. Australia: Coral Reefs—formation of Islands. Isolation.
21. Climate.
22. Tropical regions and hot deserts.
23. Warm Temperate, Cool Temperate and Mediterranean East and South.
24. Cool Temperate—Oceanic.
25. New Zealand—Climate, (compare with British Isles.)
26. Trade—Preferential Tariff—White Australian Policy. Danger from Japan.
27. Revision.

VI FORM—3 *periods a week.*

1. AFRICA.—Physical features—Compare with Australia.

2. Wind system of the world.—Formation of deserts.
3. Tropical and hot desert.
4. Mediterranean—North and South.
5. Equitorial.
6. Trade and Communications—Dark Continent. Economical wealth and European Colonization.
7. Mathematical and Physical Geography in broad outline.—Meaning of Isotherms and Isobars.
8. North America—Physical features—Weathering, Erosion, Glaciation, Formation and use of rivers and lakes.
9. Climate—Tides and currents.
10. Communications.
11. Arctic and cold Temperate regions.
12. Cold Temperate—Oceanic.
13. Cool and warm—Temperate east.
14. Mediterranean and hot desert.
15. Tropical regions.
16. Sea Routes—Suez and Panama Canals.
17. South America—Climate.
18. Amazon and Congo Basins compared.
19. Unstable Governments and communications.
20. Equitorial and Tropical lands.
21. Warmtemperate and temperate continental
22. Hot and temperate deserts.
23. Cold temperate and Mediterranean.
24. Trade.
25. Three Southern Continents compared.
26. Revision.

Text book.—Columbus Regional Geographies—Worlds of to-day—Price 3/6.

Note.—Under each head of natural regions the following topics should be dealt with in brief:—

(1 Position and size,
(2 Climate,
(3 Vegetation and animal life,
(4 Products,
(5 Trade and communication;

and the students should be made to record these points on outline maps.

Additional Suggestion Regarding Syllabus in Geography.

The Geography syllabus under this group may be suitably modified so as to reduce the bulk of subject-matter at present proposed, and give little more prominence to Mathematical Geography and the study of continents by political divisions. For instance, a few lessons may be devoted to cover the following topics.

Mathematical Geography.

The Solar System—The Earth—Shape—Size.

The two movements of the earth. Axis. Latitudes—Longitudes.

Day and Night—The Seasons.

How Latitudes and Longitudes are determined. Local time. Standard time. The international Date Line.

Structure of the Earth. The Earth's Crust, changes in the Earth's crust, Land forms.—examples from the continents.

Map making, (simple) and Map reading; Importance of map study. Map scales. Representation of Relief. The study of ordinance survey maps.

A few map projections—Most commonly used ones.

iii (*a*) English.

Three Periods per week.

(1) One period may be allotted to English Poetry, and one period to English Detailed Prose and one period to Elements of Rhetoric and Non-detailed Prose and Composition in the V and VI forms.

(2) In poetry, poems descriptive and abstract in character may be prescribed, graded according to the standard of each Form. About 250 lines for the V Form and 300 lines for the VI Form may be selected. More than half the number of lines should be memorised by the students.

(3) About 50 pages of Prose for detailed study for the V Form and 60 pages for the VI Form may be prescribed. The standards of text books may be slightly higher than those prescribed for Detailed Prose—Compulsory Group.

(4) Non-Detailed Prose Books of fairly simple standard for the different forms. 100 and 125 pages respectively may be prescribed for the V and VI Forms.

(5) A suitable text book may be prescribed for Elements of Rhetoric.

iii (*b*) Sanskrit.

Three Periods per week.

I (*a*) *Text books*:—V AND VI FORMS.

About 20 to 25 pages or 400 to 500 lines of suitable prose and about 150 lines of poetry per year should be prescribed from time to time.

(*b*) *Grammar*:—

V FORM.

Declension of regular stems including Pronouns.

Conjugation of the roots of the 1st, 4th, 6th, and 10th classes in the present, imperfect, imperative and potential.

Principal rules of External Sandhi; Simple Rules of Concord.

Formation of the Future by the addition of 'Sya'. Passive Voice.

Declension of irregular substantives used in the Text Books prescribed.

Indeclinable words.

Conjugation of the typical roots of the 5th and 8th classes.

(*a*) *Translation* :—

V Form.

Translation from Sanskrit into vernacular and *vice versa*.

VI Form.

(*b*) *Grammar* :—

Elementary notions regarding compounds or Samasas in general.

Formation of Tatpurasha and Dvandva compounds.

General knowledge of causative forms of the present and the past participles.

Rules of Internal Sandhi; analysis of simple sentences.

Numerals and Degrees of Comparision.

Easy examples of Bahuvrihi, Karmadharaya, Dwigu and Avyayibhava compounds.

Simple Rules of Syntax.

Derivation of ordinary, Primary and Secondary declinable stems.

Desiderative forms.

Perfect Tense and the Aorist.

Analysis of Complex and Compound Sentences.

Grammar under the above heads may be taught with reference to the text books prescribed in Prose and Poetry.

VI Form.

(*c*) *Translation* :—

Harder exercises in Translation.

Translation of simple unseen passages from Sanskrit into vernacular and *vice versa*.

In the case of translation, the conversational ideal may be kept in view as far as possible

iii (*c*) **Persian.**

Note—Syllabuses are under preparation.

iii (*d*) **Arabic.**

Note—Syllabuses are under preparation.

V AND VI FORMS.

iii (*e*) **Islamic History.**

Three Periods a week.

V AND VI FORMS.

I. Arabia on the eve of Mohamed's Birth—Mohamed the Prophet—His rule.

II. Early Khalifate—Abu Baker—Umar I—Usman and Ali—Achievements of Omar and rule of the Khalifs.

III. Parties in Islam—
- (*a*) House of Omiya—Mawviwa—Yzad—Political History of the House—Expansion of Saracenic Power under the Omiyads and the cultural aspects of their rule.
- (*b*) Abbasides. House of Abbas—
  - (i) Political History—Harron—Mamoon.
  - (ii) Islamic Culture under Abbasides.
- (*c*) Turks—
  - (i) Ghaznavide Dynasty, Political and Cultural History of the House.
  - (ii) Salyuky Dynasty—Political and Cultural History of the House.

IV. Saracens outside Arabia —
- (i) Rule in Africa—Brief History of the rule—Causes for its downfall.
- (ii) Rule in Spain—
  - (*a*) Political and cultural aspects, causes for the downfall.
  - (*b*) Result of Islamic intercourse with the West—The Crusades—Causes—Events and results.
- (iii) Conquest of Eastern Europe, Eastern Roman Empire and its influence on the History of Europe.
- (iv) Conquest of Persia.
- (v) Conquest of India.
  - (*a*) Brief Survey of Political History.
  - (*b*) Result of the contact between Islamic and Indian Culture.

V. Present position of Islam in the World
Pan-Islamic Movement.

List of Reference Books—

1. Amir Ali—History of the Saracens.
2. Salik—Heroes of Islam.
3. Khuda Buksh—Orient under Califs.
4. Arnold—Legacy of Islam.
5. Pickthall—The Cultural side of Islam.

(iii) (*b*) **Hindi.**

Three Periods a week.

V Form.

Texts—

1. Bala Bodhini.
2. Anuvadamala.
3. The First, Second and Third Readers.
   Supplementary study—A book of the standard of Bala Katha Kahani.
   (All the above books are published by the Dakshina Bharatha Hindi Sabha, Madras.)

Grammar—

Different forms of the imperative and their uses; Formation of simple sentences; verbs and their conjugation in the present tense; Number and Gender—the rule and its applications; Case endings; declension of Pronouns. Reflexive Pronoun; Future Tense; Past Indefinite, Past Imperfect, Present Perfect and Past Perfect. The use of and the consequential changes in the predicate.

VI Form.

Texts—

1. Prose of about 100 pages of the standard of Bhashasar Sangraha (published by the Indian Press, Allahabad).
2. Poetry—300 lines.
3. Supplementary reading—About 150 pages of the standard of Bala Ramayana, (published by the Dakshina Bharata Hindi Sabha, Madras).

Grammar—

Comparison of Adjectives; Verbs in the three tenses expressing doubt, habit, obligation, force, etc. Infinitive, Gerund, Participle, and their different forms. Active Voice and Passive Voice, Causative, Auxiliary and Compound verbs.

Conversion of intransitive into transitive verbs and conversion of transitive into causals and double

causals: Formation of words from other parts of speech, *e.g.*, Verbs from Nouns, Adjectives and Adverbs as in lesson 27 of the Hindi-English Self-Instructor—2nd Edition, (published by the D. B. H. Sabha, Madras).

Formation of different forms of Nouns from other parts of speech by the addition of suffixes, and prefixes (as treated in lesson 33, Hindi-English Self-Instructor, 2nd Edition). Simple Hindi Idioms and Phrases and their correct uses.

The Medium of Instruction shall, as far as possible, be Kannada.

The question paper in Hindi for the S. S. L. C. Examination shall be set in Hindi and answered in the Devanagari script and consist of questions testing the candidate's knowledge of the subject-matter of the texts and the supplementary reader, reproduction of narrative, grammatical points in regard to the texts, translation from Hindi to the vernacular and vernacular to Hindi from seen and unseen passages and letter-writing.

B. MATHEMATICS AND SCIENCE GROUP.

(i) MATHEMATICS.

(*a*) Algebra.

V FORM—*Two Periods per week.*

1. Factorisation—
   (*a*) by the inspection method and grouping method.
   (*b*) by the application of the formulas $(a \pm b)^2$, $(a^2 - b^2)$, $(a^3 \pm b^3)$, $(a \pm b)^3 (a \pm b)^3 = (c \pm d)^3$, $a^3 + b^3 + c^3 - 3abc$ and $(a + b + c)^3 - a^3 - b^3 - c^3$.
   (*c*) by completion of squares method—type of $a^4 + a^2b^2 + b^4$
   (*d*) of trinomials of the forms $x^2 + ax + b$ and $ax^2 + bx + c$.

3. Simultaneous equations (including literal co-efficients), reciprocal equations. Problems involving simultaneous equations.
4. Functional Notation.
5. Graphical solution of simultaneous equations.

VI FORM—*Two Periods per week.*

1. Remainder Theorem.
2. (*a*) Application of Remainder Theorem to factorisation.
   (*b*) Factorisation of homogeneous and symmetrical functions.
3. Simple Identities.
4. H. C. F. and L. C. M.

5. Simple fractions.

6. Solution of quadratic equations of one variable of the type $ax^2+bx+c=0$. Problems involving quadratic equations.

(*b*) Geometry.

V Form—*Two Periods per week.*

Theorems.

Lines and Angles.

1. The adjacent angles which one straight line, makes with another straight line on one side of it are together equal to two right angles.

2. If at a point in a straight line, two other straight lines on opposite sides of it, make the adjacent angles together equal to two right angles, then these two straight lines are in one and the same straight line.

3. If two straight lines cut one another, the vertically opposite angles are equal.

Triangles.

4. If two triangles have two sides of the one equal to two sides of the other, each to each, and the angles included by those sides equal, then the triangles are equal in all respects.

5. The angles opposite to the equal sides of an isosceles triangle are equal.

6. If two angles of a triangle are equal to one another, then the sides which are opposite to the equal angles are equal to one another.

7. If two triangles have three sides of the one equal to the three sides of the other, each to each, they are equal in all respects.

8. If one side of a triangle is produced, then the exterior angle is greater than either of the interior opposite angles.

9. If one side of a triangle is greater than another, then the angle opposite to the greater side is greater than the angle opposite to the less.

10. If one angle of a triangle is greater than another, then the side opposite to the greater angle is greater than the side opposite to the less.

11. Any two sides of a triangle are together greater than the third side.

12. Of all straight lines drawn from a given point in a given straight line the perpendicular is the least.

Parallels.

13. If a straight line cuts two other straight lines so as to make (i) the alternate angles equal or (ii) an exterior angle equal to the interior opposite angle on the same side of the cutting line

or (iii) the interior angles on the same side equal to two right angles, then in each case the two straight lines are parallel.

4. If a straight line cuts two parallel lines it makes :

(i) the alternate angles equal to one another ;

(ii) the exterior angle equal to the interior opposite angles on the same side of the cutting line ;

(iii) the two interior angles on the same side together equal to two right angles.

15. Straight lines which are parallel to the same straight line are parallel to one another.

Triangles.

16. The three angles of a triangle are together equal to two right angles.

(*a*) The interior angles of any rectilineal figure together with four right angles are together equal to twice as many right angles as the figure has sides.

(*b*) If the sides of any convex rectilineal figure are produced in order, all the exterior angles so formed are together equal to four right angles.

17. If two triangles have two angles of one equal to two angles of the other, each to each, and a side of the first equal to the corresponding side of the other, the triangles are equal in all respects.

18. Two right-angled triangles, which have their hypotenuses equal and one side of one equal to one side of the other, are equal in all respects.

19. If two triangles have two sides of the one equal to two sides of the other, each to each, but the angle included by the two sides of one greater than the angle included by the corresponding sides of the other, then the base of that which has the greater angle is greater than the base of the other.

Conversely, if two triangles have two sides of the one equal to two sides of the other, each to each, but the base of one greater than the base of the other ; then the angle contained by the sides of that which has the greater base, is greater than the angle contained by the corresponding sides of the other.

Parallelograms.

20. The straight lines which join the extremities of two equal and parallel straight lines towards the same parts are themselves equal and parallel.

21. The opposite sides and angles of a parallelogram are equal to one another, and each diagonal bisects the parallelogram.

22. If there are three or more parallel straight lines and the intercepts made by them on any transversal are equal, then

the corresponding intercepts on any other transversal are also equal.

Loci.

I. The locus of a point equidistant from two given points is the perpendicular bisector of the straight line joining the two given points.

II. The locus of points equidistant from two given straight lines is the pair of straight lines which bisect the angles between the two given lines.

Riders and numerical exercises on the above.

VI Form—*Two Periods per week.*

THEOREMS.

Areas.

23. If the number of units in the length of a rectangle is multiplied by the number of units in its breadth, the product gives the number of square units in the area of the rectangle.

24. Parallelograms on the same base and between the same parallels are equal in area.

25. The area of a triangle is half the area of the rectangle on the same base and having the same altitude.

26. Triangles on the same base and between the same parallels, (hence of the same altitude) are equal in area.

27. If two triangles are equal in area and stand on the same base and on the same side of it, they are between the same parallels.

28. The area of (1) a trapezium and (ii) a quadrilateral. Field Book.

29. In a right-angled triangle the square described on the hypotenuse is equal to the sum of the squares described on the other two sides.

30. If the square described on one side of a triangle is equal to the sum of the squares described on the other two sides, then the angle contained by these two sides is a right angle.

Circles.

31. If a straight line drawn from the centre of a circle bisects a chord which does not pass through the centre, it cuts the chord at right angles. Conversely, if it cuts the chord at right angles, it bisects it.

32. One circle, and only one, can pass through any three points not in the same straight line.

33. If from a point within a circle more than two equal straight lines can be drawn to the circumference, that point is the centre of the circle.

34. Equal chords of a circle are equidistant from the centre. Conversely, chords which are equidistant from the centre are equal.

35. Of any two chords of a circle, that which is nearer to the centre is greater than the one more remote. Conversely, the greater of the two chords is nearer to the centre, than the less.

36. If from any internal point, not the centre, straight lines are drawn to the circumference of a circle, then the greatest is that which passes through the centre, and the least is the remaining part of the diameter. And of any other two such lines, the greater is that which subtends the greater angle at the centre.

37. If from any external point, straight lines are drawn to the circumference of a circle, the greatest is that which passes through the centre and the least is that which when produced passes through the centre. And of any other two such lines, the greater is that which subtends the greater angle at the centre.

38. The angle at the centre of a circle is double the angle at the circumference standing on the same arc.

39. Angles in the same segment of a circle are equal.

40. The opposite angles of any quadrilateral inscribed in a circle are together equal to two right angles.

Conversely, if a pair of opposite angles of a quadrilateral are supplementary, its vertices are concyclic.

41. The angle in a semicircle is a right angle.

42. In equal circles, arcs which subtend equal angles, either at the centres or at the circumferences, are equal.

43. In equal circles, angles, either at the centres or at the circumferences, which stand on equal arcs are equal.

44. In equal circles, arcs which are cut off by equal chords are equal, the major are equal to the major arcs and the minor to the minor.

45. In equal circles chords which cut off equal arcs are equal.

Tangent to a circle.

46. The tangent at any point of a circle is perpendicular to the radius drawn to the point of contact.

47. Two tangents can be drawn to a circle from an external point.

48. If two circles touch one another, the centres and the point of contact are in one straight line.

49. The angles made by a tangent to a circle with a chord drawn from the point of contact are respectively equal to the angles in the alternate segments of the circle.

Riders and numerical exercises on the above.

Problems.

In addition to the problems in Geometry—compulsory group the following problems are to be done :—

(1) To describe a parallelogram equal to a given triangle and having one of its angles equal to a given angle.

(2) To describe a parallelogram equal to a given parallelogram having a given side. (By the method of complements).

(3) On a given straight line to describe a segment of a circle which shall contain an angle equal to a given angle.

(ii) Science.

(a) Physics.

V FORM—*One Period per week.*

1. Motion, speed, velocity and acceleration. Attraction of earth on bodies. Equations of uniformly accelerated motions.

2. Inertia; meaning of force and momentum; the first and the third laws of motion. Common illustrations of work and energy treated in an elementary manner. The laws of the simple pendulum treated experimentally.

3. Buoyancy and the Principle of Archimedes. Determination of the specific gravities of solids (insoluble) and liquids by the above principle, by the density bottle, by balancing liquid columns. Floating bodies and the use of common hydrometer. Siphon, the common pump, the force pump and the air pump.

4. Change of state, melting and boiling points and the effect of pressure on the boiling point of a liquid. Quantity of heat; specific heat, latent heat and their determination. Formation of dew.

VI FORM—*One Period per week.*

5. Reflection from a concave mirror; the principal focus. images formed by it determined experimentally and graphically; Refraction through a convex lens. Definition of the principal focus and the focal length of a convex lens. Position and the nature of the images produced by a convex lens. An elementary treatment of the astronomical telescope and the compound microscope; tracing the course of the rays from the object to the image in the above instruments.

6. Magnetic induction. Mariner's compass.

7. Ampere's rule and simple galvanoscope. Meaning of resistance. Simple explanation of the working of the direct current dynamo and motor.

(b) Chemistry.

V FORM—*One Period per week.*

1. Elementary ideas of elements, compounds and mixtures. Air is a mixture.

2. Decomposition of water by Sodium, Potassium, Iron, Magnesium and an electric current.

3. Preparation of the following :—

i. Sulphur-di-oxide.
ii. Hydrochloric acid gas.
iii. Chlorine.
iv. Nitric acid.
v. Ammonia.
vi. Sulphuric acid.

4. Explanation of the following terms with illustrations : Combustion, Analysis, Synthesis, Catalysis, Oxidation and Reduction.

5. Properties and the uses of the following :—

i. Sodium hydroxide, Sodium chloride, Sodium carbonate and bicarbonate.
ii. Potassium hydroxide, Potassium nitrate and Potassium permanganate.
iii. Calcium oxide, Calcium hydroxide. Calcium carbonate and Calcium sulphate.

VI FORM—*One Period per week.*

1. Properties of the different forms of (1) carbon, (ii) sulphur, (iii) phosphorus. Allotropy.

2. Explanation of the following terms with illustrations— Dissociation, Displacement, Double decomposition. Precipitation and Neutralisation.

3. Properties and the uses of the following :—

i. Zinc and zinc oxide.
ii. Mercury, red oxide of mercury and calomel.
iii. Copper and copper-sulphate.
iv. Alluminium and common alum.
v. Three varieties of iron, magnetic oxide of iron and ferrous sulphate.
vi. Magnesium sulphate and white lead.

4. A study of hard and soft waters.

5. Revision of the V and VI Form portions.

(c) Practical Work in Science.

Two periods a week.

Practical Physics.

V FORM.

1. Measurement of length—straight and curved lines. Use of callipers (without vernier).

2. Determination of the volumes of solids and liquids.

3. The use of common balance.

4. Densities of solids.

5. Densities of liquids.

6. Verification of the Principle of Archimedes.

7. Specific gravities of solids and liquids by the Principle of Archimedes.

8. Specific gravities of solids and liquids by the density bottle.

9. Specific gravities of liquids by Hare's Apparatus. The use of common hydrometer.

10. Experimental verification of the 'Law of Moments.'

VI Form.

1. Determination of the melting point of paraffin wax and the boiling point of water. The use of clinical thermometer.

2. Determination of the specific heat of a solid.

3. Determination of the latent heat of ice and of steam.

4. Verification of the laws of reflection and the position of the image in a plane mirror.

5. Determination of the focal length of a concave mirror. A study of the position and the nature of the images formed by the concave mirror.

6. Verification of the laws of refraction. Tracing rays of light through a rectangular block and a prism.

7. Experimental verification of the formula $1/u - 1/v = 1/f$ in the case of a convex lens.

8. Simple experiments with magnets.

9. The study of the simple Voltaic cell, the Daniell's cell and the Leclanche cell. The magnetic effect of an electric current and Ampere's rule.

10. Examination of an electric bell, D. C. dynamo and motor.

Practical Chemistry.

V Form.

1. Filtration and Evaporation.
2. Distillation.
3. Crystallisation.
4. Solubility of common salt at room temperature.
5. Composition of Air—Bell jar experiment.
6. Preparation and properties of oxygen.
7. Action of Sodium, Potassium and Quick-lime on water.
8. Action of dilute Sulphuric acid on Zinc, Magnesium and Aluminium.
9. Preparation and properties of carbon-di-oxide.
10. Hard and soft waters.

VI Form.

1. Preparation and properties of Sulphur-di-oxide.
2. Preparation and properties of Hydrochloric acid gas.
3. Preparation and properties of Ammonia.
4. Properties and tests of Hydrochloric acid.
5. Properties and tests of Sulphuric acid.

6. Properties and tests of Nitric acid.
7. Detection of the acid radical.

(d) Biology.

(One period per week in V and VI Forms.)

I. *Animal Life.*

The external features, habits, locomotion, food, structural adaptations for the different functions and adaptation to environment of the following animals :—

V Form.

1. Earthworm.
2. House-fly.
3. Mosquito (Life history also).
4. Fish.

VI. Form.

1. Frog (Life history also).
2. Pigeon.
3. Snake.
4. Rabbit.

II. *Plant Life.*

V. Form.

Forms of plant life (Flowering plants), work of the leaf (carbon assimilation and transpiration). Roots and their work (soil). Stems and their work. Protection of plants.

VI Form.

Food of plants—different ways of obtaining it. Seed and its germination. Flower and its work. Fruits—dispersal of plants. Revision

(d) Alternative Syllabus in Biology.

A simple account of the external features, habits, adaptations to modes of life and surroundings, movement, and food of the following animals :—

V Form.

(1) The earthworm, (2) the house-fly, (3) the mosquito (life history also) and (4) the fish.

VI Form.

(1) The frog (life history also), (2) the pigeon, (3) the snake, and (4) the rabbit.

Plant Life.

V Form.

Germination of the pea, Castor, and maize. Simple experiments to demonstrate the conditions of germination.

Simple experiments on photosynthesis to show the intake of carbon-di-oxide and the output of oxygen.

Contrast between the nutrition of green plants and animals.

Different modes of nutrition, including those of saprophytes and parasites. Nitrifying bacteria. The rotation of crops.

VI Form.

Some types of flowers : Regular, Polypetalous, sympetalous, irregular, superior and inferior ovary ; unisexual flower.

The chief types of inflorescence : raceme, spike, umbel, head, cyme.

Relation between flowers and insects ; The papilionaceous, the bilabiate and the tubular flowers.

C. PRACTICAL ARTS GROUP.

(i) Domestic Arts.

V Form—*Three Periods per week.*

I. *Elementary Physiology*—Study of the position and functions of the chief organs in man. The human body and its general structure : bones, joints, elementary ideas of the muscular system, circulatory system, nervous system, respiratory system, digestive system, excretory system.

Personal Hygiene.—The sense organs : eyes, ears. Care of the skin, teeth, nose and throat.

General Hygiene.—(1) Water-supply. Sources of water, deep and shallow wells, Artesian wells. Methods of purifying water. Storage of water. How to avoid pollution of water-supply. Town water-supply.

(2) Ventilation. Value of light and air and how they may be secured. Natural and artificial ventilation.

(3) Sanitation. Methods of removal of refuse. Flies, fleas, mosquitoes, bugs, lice, how to get rid of them and how to prevent them.

(4) Choice and care of clothing.

II. *House Management.*—

Food and Cookery.—(1) The classification of food, uses of food, advantages and disadvantages of cooking food. The essential food factors ; mixed diet and varieties of food. The principles of cooking, such as roasting, baking, boiling, frying and stewing. The care of cooking utensils. The dangers of pollution of food.

(2) Furnishing of house, arrangement of rooms, cost of furniture, estimates of expenditure of family, care of the store-room, thrift and savings, duties of servant and mistress, management of servants.

Gardening and its advantages, flower garden and kitchen garden.

Furniture and utensils: their care, cleaning and repairing.

The importance of cleanliness and tidiness.

III. *House-wifery.*—(i) Methods of cleaning the house: daily cleaning, weekly cleaning, general cleaning, cleaning of wood, glass, carpet, metals like tin, zinc, steel, aluminium, enamel ware, silver, electroplate, copper and brass Various kinds of fuel in modern use: wood, charcoal, coke, coal, kerosene oil, electricity. Various kinds of cookers, stoves, etc.

(ii) The management of money: Income and expenditure, accounts and marketing.

(iii) Maternity and child welfare. Infant mortality in India and its causes, creches and clinics. How to treat and to prevent common diseases of babies such as, rickets, diarrhœa, teething and convulsions. Vaccination. Feeding of infants, weaning, necessity for milk, care of the feeding bottle, need for fresh air, plenty of water and cleanliness, clothing.

(iv) Health of mother. Importance of exercise, fresh air and recreation.

(v) Care of children in general and rules for health.

IV. *Laundry*:—Washing of silk, wool, cotton, linen and artificial silk, removal of stains.

Practical Work: *Cooking, Laundry, House-wifery (two periods per week).*

V. *Needle-work (four periods per week).*—A sample showing tacking, running, back stitching, hemming, felling, French-seam, top-sewing, hemstitching, trucks, sewing of tape, hooks and eyes, buttons and press buttons, fancy stitches such as, feather stitch, herring-bone stitch, chain stitch, blanket stitch, French knots, simple embroidery stitches, button hole, darning, calico patch, print patch, flannel patch.

A child's magyar frock.

Marking of alphabet in English, Kannada and numbers one to ten.

Simple knitting. Bag.

A child's yoke frock.

Mending of personal wear and house linen.

Whip-stitching, gathering and setting into hand, putting on a frill plaiting and setting into hand, use of the gusset, making of a pillow case, cushion cover.

Making of a table or tray cloth in simple embroidery involving cross stitch and drawn-thread work and a boy's banian.

Marking should be carried out on practical lines.

Magyar blouse.

Knitting baby's vest.

Taste in form and colour should be taught by encouraging pupils to work border and edging in fancy stitches and by guiding pupils to prepare suitable patterns.

VI Form.

(Three Periods per week)

I. *Food.*—Food values, diets, relative values of animal food such as, milk, eggs and vegetable foods, beverages, adulteration of food, preservation of food. The use of a meat safe.

II. *First aid.*—(i) Use of the roller and triangular bandage and splints and cotton wool. Accidents and care of moving injured people. Need of absolute cleanliness for all wounds.

(ii) Treatment of wounds, bites, stings, bruises, burns, scalds and cuts.

(iii) Fractures: varieties, causes, symptoms and treatment; dislocations, sprains and strain; hæmorrhage: how to arrest, treatment; apoplexy, fainting, epilepsy: treatment; artificial respiration: how and when administered.

(iv) Poisons: symptoms and antidotes. Foreign body in the eye, ear, nose, throat: treatment.

III. *Home Nursing.*—The care of the sick, washing and dressing: Sick room: preparation, furniture, need of ventilation and light, bedding and its care, bed-making; a good nurse: her dress and duties, temperature, pulse, administering medicine and food to the sick.

Common ailments such as colds, influenza, cholera, sunstroke, fever, malaria and simple remedies: The medicine chest. Preparation of invalid diet: tea, coffee, cocoa, barley water, albumin water, arrowroot, custard. Value of milk. How to prevent and treat bed-sores.

Infectious diseases and non-infectious diseases. Need of air, cleanliness and light. Use of antiseptics and lotions. Infectious diseases: their cause, symptoms and treatment; Measles, smallpox and re-vaccination, chicken-pox, whooping cough, tuberculosis, mumps, influenza, typhoid, plague.

Precautions against taking or spreading of these diseases, quarantine.

Disinfection and disinfectants; The use of Condy's fluid, boric powder, iodine, lysol, carbolic acid.

IV. *Education*; Mental and moral training of children at home, a brief and simple outline.

Visits to hospitals and clinics whenever possible.

Practical work.

(Two Periods per week.)

(*a*) Cooking.
(*b*) Laundry.
(*c*) House-wifery, including home decoration of all kinds, such as arrangement of rooms, simplicity, no overcrowding, hanging of pictures on walls, colour schemes, choice of furnishing materials, flowers in bowls and vases, floors, carpets, etc.

V. *Needlework.*—(*Four periods per week.*)

A boy's jubba opening on shoulder, a boy's shirt with glad-neck collar.
A boy's coat and pants.
A girl's bodice and the use of darts.
Knitting a baby's booties and cap.
A skirt petticoat.
How to use and clean a sewing machine.

N.B.—The garments required to be cut out and sewn for the S. S. L. C. Examination are the following :—

(1) Magyar frock.
(2) Yoke frock.
(3) Magyar blouse.
(4) Bodice.
(5) Banian.
(6) Jubba.

All the teaching must be done with the Indian Home conditions in view. The apparatus must be simple and inexpensive to meet the requirements of middle class homes. The practicall classes in cookery, laundry-work, etc., should be held in two consecutive periods, and this may be borne in mind when time-tables are arranged.

---

*(ii) Agricultural Arts
*(iii) Industrial Arts
*(iv) Commercial Arts
*D. Music and Fine Arts Group.
*Syllabuses are uner preparation.

APPENDIX E.

SYLLABUSES

FOR THE

VOCATIONAL HIGH SCHOOL COURSE.

SUBJECTS.

Compulsory.

1. English
2. Elementary Mathematics
3. Elementary Science
   (*a*) Physics
   (*b*) Chemistry
4. Elementary Economics

Optional.

5. One of the following :—
   (i) Woodwork with related Mathematics, and related Science.
   (ii) Building Trades—Houses.
   (iii) Automobile Mechanics
   (iv) Printing and Book-Binding
   (v) Textiles
   (vi) Agriculture
   (vii) Sericulture
   (viii) Machine Shop
   (ix) Electric Wiring and Lighting
   (x) Manufacture of Electrical Goods
   (xi) Photography and allied trades
   (xii) Foundry and Pattern making
   (xiii) Dyeing and Printing
   (xiv) Horticulture.

COMPULSORY.

1. ENGLISH.

Text Books will be prescribed for study.

Students should be trained to write and speak correct English.

General reading by boys should be encouraged, especially of books in English relating to the particular vocation that they select.

Reading of recognized newspapers and magazines should also be insisted upon.

2. ELEMENTARY MATHEMATICS.

(N. B.—Examples selected should have a direct bearing on life conditions as far as possible.)

I Year.

Arithmetic.—Revision of Middle School arithmetic, mainly Rule of Three and Percentages. Decimals. Easy approximations. Percentages and averages.

Algebra.—Symbolic Expressions of arithmetical results. Addition and Subtraction.

Geometry.—Practical Geometry comprising the following :—

1. To bisect a given angle.
2. To bisect a given straight line.
3. To draw a straight line perpendicular to a given straight line from a given external point.
4. To draw a straight line perpendicular to a given straight line at a given point in it.
5. At a given point in a given straight line to make an angle equal to a given angle.

II Year.

Arithmetic.—Square and cubic measures. Ratio and Proportion. Proportional parts.

Algebra.—Elementary laws of integral indices. Multiplication and division. Use of brackets.

Geometry (Practical).—1. Through a given point to draw a straight line parallel to a given straight line.

2. To divide a given straight line into any number of equal parts.
3. To draw a triangle having given the lengths of three sides.

4. To construct a triangle having given two sides and the contained angle or an angle opposite to one of the sides.
5. To construct a right-angled triangle having given the hypotenuse and one side.

III Year.

Arithmetic.—Simple and compound interest. Allegations and mixtures. Simple statistical graphs.

Algebra.—Easy factorisation based in grouping and the dentities for $(a \pm b)^2$ and $(a^2 - b^2)$. Easy problems leading to simple equations.

Geometry (Practical).—1. To construct a triangle given any two angles and a side.
2. To construct a quadrilateral given the lengths of the four sides and one angle.
3. To construct a parallelogram having given two adjacent sides and the included angle.
4. To construct a square on a given side.

3. ELEMENTARY SCIENCE.

(The purpose of the course is to give the students an insight into and to rouse their interest in some of the common facts of science they meet with in daily life in nature trades and industry. The subject is therefore to be approached from a practical point of view. Visits to workshops and industrial concerns should be arranged as far as possible.)

(a) Physics.

Measurement of Space.—Unit of length; Multiples and submultiples of the yard. Use of the Inch scale. Use of the dividers and side callipers (without vernier). Square foot and cubic foot. Area of triangle, parallelogram and circle. Volumes of rectangular blocks, prism, cone, pyramid and sphere. Volumes of irregular solids by graduated jar. Use of ounce glass. Gallon, pint and ounce.

Measure, Weight, Density and Specific Gravity.—Use of common and spring balances and British system of weights. Using these derive ideas of mass and weight. Density. Determination of density of insoluble solids and of liquids (use graduated jar). Meaning of Specific Gravities of common substances like wood, stone, iron, brass, lead, aluminium and oil.

Liquids.—Find their level. Exert pressure in all directions. Use of spirit level.

Gases.—Have weight—Exert pressure in all directions. Principle and practical use of a simple barometer, Principle and uses of air pump and water pump. The siphon. Principle of the syringe and the ink-filler.

Heat.—Expansion of solids, liquids and gases by heat Practical illustration from life. Use of Centigrade and Fahrenheit thermometers and of the Doctor's thermometer. Use of the Rutherford's maximum and minimum thermometers. Meaning of specific heat (no determination). Results in nature of the high capacity of water for heat. Meaning of the latent heat (no determination). Heat used up during vaporisation. Practical illustrations. Elementary principle of Steam Engine.

Light.—Light travels in straight lines. Shadow and eclipse. Law of reflection of light used to explain the formation of the image by a plane mirror. Phenomenon of Refraction. Effects of Refraction of light through water. Refraction through a double convex lens leading to the simple microscope. Description and use of the magic lantern. The photographic camera.

Electricity.—Description and use of Daniell and Laclanche cells. Dry cell. Electro-magnet and electric bell. The electric glow lamp. The electric telegraph (single needle type). Principle of the Bell telephone explained in a simple manner. Electroplating (copper and silver). Use of the electric motor (illustrated by showing motors used in industry).

(b) Chemistry.

Oxygen.—Preparation by heating potassium chlorate. Properties and uses. Oxides (S.C.P. Mg, Fe) Oxidation and combustion. Rusting iron. Demonstrate that oxygen exists in air, 1/5 by volume. (Evolve ideas of chemical combination and decomposition). Role of oxygen in animal and plant life.

Hydrogen.—Preparation by the action of dilute sulphuric acid on zinc. Properties and uses. Prepare a specimen of zinc sulphate and illustrate thereby the process of filtration, evoporation and crystallization. Decomposition of water by electric current.

Carbon.—Diamond, graphite and charcoal and their industrial uses. Carbon-di-oxide produced during burning and respiration, in lime kilns and during fermentation. Uses of carbon-di-oxide. Action of plants on the oxide present in air. Hard and soft waters.

Acids.—Properties and uses of sulphuric, hydrochloric and nitric acids. Acids alkalies (slaked lime, soda and ammonium hydroxide) and salts.

Chlorine.—Properties and uses. Preparation and uses of bleaching powder.

Phosphorus.—Properties and uses of red phosphorus.

Iron.—Manufacture, properties and uses of cast-iron. Properties and use of (1) steel, (2) soft iron, (3) ferrous sulphate, (4) alum, (5) caustic soda, (6) carbonate of soda, (7) postassium nitrate, (8) copper sulphate, (9) aluminium and (10) copper.

VISITS TO FACTORIES.

Once a month the pupils may be taken on visits to factories and other places where trades and industry are carried on, the object being to acquaint the pupils with the application of science to modern industrial processes. The following places are suggested for visits in Bangalore.

1. Cotton, Woollen and Silk Factories.
2. Soap Factory.
3. Porcelain Factory.
4. White Lead Factory.
5. Central Industrial Workshop.
6. Electric Workshop.
7. Electric Power and Lighting Station.
8. Imperial Livestock and Dairy Farm.
9. Railway Workshop.
10. Indian Institute of Science Laboratories.
11. The Hebbal Agricultural Farm.
12. The Government Printing Press.

4. ELEMENTARY ECONOMICS.

1 Year.

Introduction.—(1) Economics—its meaning—its scope—Economic meaning of "goods" "utility". Relation of Economics to other social sciences.

(2) Wealth—Characteristics of wealth in Economics.

(3) Diminishing utility—Two characteristics of wants—the law of diminishing utility—Marginal utility.

(4) Consumer's surplus—Economic Laws.

Production.—Agents of production—Land—Labour—Capital—Organisation.

Land—Distinction between land in the ordinary sense and economic sense.

Labour—Malthusian theory of population. Labour exchanges. Efficiency of labour. Technical schools. Division of labour. Its advantages to industry as a whole, advantages to the worker, etc. Localisation of industry and geographical division of labour.

Kinds of labour—organisation of industry—broad divisions of modern industry such as Extractive industries, *e.g.*, mining, quarrying, fishing and agriculture. Manufacturing industries—transport industries, such as railways, canals, shipping, etc., Distributive Industries, personal services of various kinds.

Capital—Functions of capital—forms of capital such as money capital, consumption capital, circulating capital, fixed capital—growth of capital—saving and investment—hoarding.

Organisation or Business ability—The place of enterpreneur in modern business.

Organisation of Production.--Cost of production—Expenses of production—Increasing, constant and diminishing returns. Limit to the size of a business. Principle of substitution—Joint products and bye-products.

Exchange.--Exchange and Barter--Value—price and utility. Medium of Exchange. Conditions determining price. Markets—Money market of the world. Demand--Conditions determining demand. The demand curve. Supply—conditions determining supply price. Elasticity of demand. Direct and derived demands. Composite demand and supply. Monopoly. Monopoly price. Business combinations such as Trusts and Combines, Kartels, etc. Cornering the supply.

Money.—Functions of money—Medium of exchange. Measure of value—Means of storing wealth—characteristics of Money such as utility, portability, indestructibility, homogenuity, divisibility, stability of price, cognisability. Coinage in some important countries. Gresham's Law. Bymetallism. Standard gold. Token coins. Representative money such as promissory notes, Bank notes, Cheques, Bills of Exchange, etc. Credit.

Mechanism of Exchange.—Value of money—quantitative theory of money. Inflation and Deflation of currency. Rapidity of circulation. Banking. Functions of Banks, Banks of Deposit. Banks of Issue. Current Account. Fixed Account. Inconvertible paper money. Banking system in India.—Indigenous and foreign. The Hoondie system. The Bank of England. The Imperial Bank of India, the Bank of Mysore, theReserve Bank, the Co-operative Banks. The Gold Reserve. The Bank Rate of Discount. The Clearing House System. The Joint Stock Enterprise. The Limited liability concerns. The Stock Exchange Crisis, such as industrial depression or financial panic.

II. Year.

Distribution.—Depreciation—productive and unproductive consumption. Distribution of production. Unequal distribution. Ownership of the agent of production. Private property. Profit—wages—rent, etc. The state and production. Taxation.

Interest.—Productivity of capital. Demand for capital. Interests, gross and net. Producer's surplus. Demand and supply price of capital. National Debt. Usury.

Rent.—Productivity of rent. Margin of cultivation. Conditions determining expenses of production. Producer's surplus. Economic Rent. Land tenure. Extensive and Intensive cultivation. Unearned increment. Rent of mines and royalty.

Wages.—Money wages. Minimum wages. Demand for labour. Marginal productivity of labour. Supply of labour. Standard of living. Labourers, disadvantages in bargaining. Trade Unions. Strikes and Lock-outs.

III. Year.

Profit.—Business ability. Conditions determining profit. Normal rate of profit. Survival among businessmen.

Foreign Trade and Foreign Exchange.—Foreign trade. The need for foreign trade. Exports and Imports. Invisible exports and imports. Foreign exchange. Mint par of exchange. Gold or specie points. Favourable and unfavourable. Balance of trade. Fluctuations of price.

Relations of Economics to other Social Sciences.—Economic Man. Man's relations to the State, to society, to law, to religion, etc. Taxation—Indirect and direct taxes. Principles in the levy of taxes such as convenience, economy, certainty, just, equity. Progressive taxation. Protective tariff.

Some social movements of an economic character. Trade unionism. Co-operation. Nationalisation and Municipalisation of industry. Economics and human progress. Internationalism.

(N. B.—Outlines of Economics by R. E. Nelson G. Bell & Sons, Ltd., (London.) may be followed as the text book. General principles indicated above must always be explained with special reference to Economic conditions in Mysore and India. Only a very elementary treatment is expected

OPTIONAL SUBJECTS.

5(i) WOODWORK WITH RELATED MATHEMATICS AND RELATED SCIENCE.

Wood Work.

Objective.—To give the pupils a vocational knowledge with effectively conducted shop work at the rate of 17 periods per week for 3 years of the methods of carpentry, joinery, cabinet making and wood turning, so as to enable them to earn a living at the end of the course by following the occupation of the worker in wood. The items of practical work during the course should be such as would be immediately useful to the community in which the pupils live.

Items for Work Shop.

Household Furniture.

Box with lid
Wooden tray
Towel rack
Book rack
Rack for ladles
Rack for kitchen utensils
Stool
Table with and without drawers.
Arm chair
Almirah
Shelf
Revolving chair
Chest drawer
Cot
Easy chair
Pattern making (Simple)
(Wood turning up to 3' span)

Woodwork in house construction

Windows
Stairs
Doors (Panelled)
Ventilators in halls and bath rooms.
Lattice work for verandahs
Wooden work for roofs
Shelf in walls
Casing for electric wires
Ceilings attached to roofs
Single upper floors
Different forms of flooring boards.

Related Trades.

Wood covering. Building of vehicles. Body building for autos. Machines-sawing, shaping, planing, jointer, mortise and tenon. Pattern making (Parted and Cored). Wood forms in concrete work.

Note.—Work shop practice is progressive, beginning with simpler models and finishing with the more difficult and artistic patterns. The course is to be adapted to the industrial capacity and experience of the pupil.

Two lessons a week to be specifically given to the whole group teaching correct methods of handling, sharpening, and care of tools.

Occupational information Leading to Vocational Guidance.

As far as possible, information must be collected by pupils by their own enquiry from carpenters and other workers in wood, and by visits to wood-work concerns in the locality, such as furniture makers, vehicles builders, and auto-body constructors, and also to wood-work departments, of factories and industrial workshops. The teacher should gather his own information and then check students' findings. Conference method is to be used for class discussions.

1. *Working conditions of carpenters, cabinet makers, etc.*
   - (*a*) Hours of employment.
   - (*b*) Wages minimum and maximum.
   - (*c*) Conditions of work places regarding health, safety, etc.
   - (*d*) Any trade unions, their status and regulations.
   - (*e*) Social standing of the different grades of wood workers.
   - (*f*) Demand and supply of the workers.

2. *Job Analysis.*—
   - (*a*) Different kinds of jobs in woodwork in the locality.
   - (*b*) Age of workers in each job.
   - (*c*) General education of people engaged.
   - (*d*) Technical training of workers.
   - (*e*) Strains and hazards to which the workers in each job are subjected.
   - (*f*) Any suggestions to improve earnings of jobbers.

Related Mathematics.

Arithmetic.--Degrees of accuracy and approximation relating to carpentry trade. Square root.

Geometry.—Construction and use of plain and diagonal scales. Use of the protractor. Practical application of the right angled triangle. Ratio and proportion treated graphically. Construction of rectilinear figures of regular and irregular shape from given data. Enlargement and reduction of rectilinear figures and their areas by triangle method. The circle ; tangents and normals. Inscribed and circumscribed figures. Lines and circles in contract. Areas and volumes of cylinders, cubes and prisms. Problems in arch construction. Angle in a segment. Practical methods of constructing the ellipse. (The above problems in geometry are to be done in the drawing room).

Calculations.—Trade measurements of woodwork in general with records of materials needed for any woodwork job. Measurement of floor and roof area of straight and curved plans Radius of segmental arches, Percentage waste in cutting, jointing and preparation of timber. Means of minimising waste. Calculation of cost using scheduled prices.

Related Science.

Growth of trees. Structure of wood. Soft and hard woods. Study of the structure of the different kinds of wood used in Mysore in woodwork trades, and their use. Moisture content. Shrinkage and warping. Seasoning ; air drying and kiln-drying. Density and its estimation. Strength of wood-tension, compression and bending. Defects and blemishes in wood. Termites. Fungi. Simple facts of wood preservation. Periodic furniture painting. Storage of wood.

Simple scientific facts about varnishes, shellac, wax, polish and paints ; also about iron, steel used for instruments—saws, auger bits, files, etc., abrasives, sand paper, etc., glue and other adhesives.

The surfaces of a liquid. Construction and action of the spirit level. Porosity with special reference to wood. Breaking of test beams. Factors of safety. Simple experiments to plot load and effort. Force measured in terms of weight parallelogram of forces treated experimentally and applied to three membered frames. Common and spring balances.

5. (ii) BUILDING TRADES—HOUSES.

Unit No.	Type Job Specification	Items for Consideration	Trade information
1	2	3	4
I	Selection of Site ...	1 Sanitation ...	Urbans--away from the congestion of City; Open and elevated place.
		2 Convenience nearness to place of vocation and to thoroughfare; availability of water; status of neighbours.	Rural-nearness to towns, proximity to forests, brooks and tanks.
		3 Scope for further expansion in case of need.	
II	Preparation of plan and estimate.	1 Accommodation required...	1 Technical terms used (both in Eng. and Kan.)
		2 Money available for construction.	2 Rates of cost of materials required.
		3 Conform and aesthetic beauty in the building with reference to other buildings.	3 Cost of conveying materials
			4 Condition and cost of labour
		4 Details of foundation walls, floor, roof, etc.	5 Symmetry—order of architecture.
III	Setting out of the building on ground.	Transferring of measurements from plan on ground.	Names and use of the several appliances for setting out plan pegs, string line, try square, plumb bob, measuring rod, levelling instrument or bonning staff.
		Transference of levels ...	
IV	Excavation in foundation.	1 For walls up to a depth of 4 to 6 feet.	1 Places where the materials used are available and their prices.
		2 Timbering for greater depths.	2 Well seasoned hand wood for timbering.
		3 Use of sheet piling ...	3 Appliances for baling out water.
		4 Action of sub soil water in foundation excavation.	
V	Foundation ...	1 Bearing capacity of the soil.	1 Use of tables for bearing capacity of soils.
		2 Spreading foundation to bring stress per unit area below bearing capacity.	2 Density of building materials and their strength (use of tables).
		3 Stopped foundations ...	3 Wind pressure.
		4 Raft and frilled foundation	4 Places where materials are sold and their prices.
		5 Use of piles ...	
		6 Use of plain and reinforced concrete with special reference to executive loads.	
		7 Under pinning in case of old foundations.	
		8 Inverted arch ...	

Building Trades—Houses—*contd.*

Trade Mathematics	Trade Drawing	Trade Science
5	6	7
Elements of Mensuration, Clone, prism odial formula and area method.	1 Reading the location of the site in a survey map. 2 Elementary ideas of preparation and reading of contour maps with special reference to earth work.	Uses of instruments level, planimeter.
1 Mensuration area and volume of simple geometrical figure. 2 Calculation of quantities of materials and cost there of.	Drawing of plans, sections and elevations including detail working sketches of details	1 Pressure on soil and bearing capacity of soil. 2 Stress in masonry and other materials used. 3 Applied mechanics of foundation, girders, timber, scantlings, arches and lintels (use of tables) Lushington's table.
1 Method of triangulation and checking the diagonals of rectangles. 2 Setting right angle with the help of chain only.	Reading from drawings made or furnished and transferring the same on ground.	Plumb-bob, level and spirit level.
3 Study of angle of repose	Sketching and timbering and sheet-piling appliances with details and method of use.	Properties of soils with regard to their deterioration, angle of repole, skinfriction and capillarity.
3 Calculation of wind pressure. 2 Liveload calculations using tables. 3 Working out load per square foot on bearing soil.	1 Drawing stress diagrams. 2 Working details of various types of foundations.	1 Graphic statics. 2 Strength of concrete mortar and the proportion of their ingredients for maximum strengths. 3 Analysis of concrete and mortar. 4 Water cement ratio in case of cement concrete. 5 Mixing and testing of lime, cements, mortars and concrete regarding their chemical properties and grading.

Building Trades—Houses—*contd.*

Unit No.	Type Job Specification	Items for Consideration	Trade information
1	2	3	4
VI	Superstructure building walls, making allowance to doors, windows, ventilators, arches.	1 Walls should be strong and safe enough to afford protection against weather, burglars, etc. 2 They must be fire-proof and sound proof. 3 Suitable materials to be used, mud with bamboo reinforcement, brick and stone masonary, reinforced concrete. 4 Construction of chimneys in the kitchen and bath room and for fire places. 5 Outlets for wash water, holes for electric conduits and for water connection for wall shelves. 6 Arch construction over doors and windows both gauged and rough. 7 Skew backs ... 8 Centering devices ... 9 Use and construction of corbels and over sailings and copings. 10 Hollow wall construction and its bonding arrangements. 11 Use of hoop-iron bondings 12 Hanging walls and brick-nogged partition wall.	1 Must be plugged and tamped. 2 Manufacture of bricks—wire cut and country bricks, hollow bricks. 3 Reinforced concrete. 4 Cost of material and places where they are sold. 5 Terms used English bond, Flemish bond raking and diagonal bond, garden wall bond, Explanation. 6 Method of fixing doors, windows and ventilators. Special treatment to improve beauty of building. 7 Dressing in stone including sills, plints quoin stones and theresholds. 8 Stone arches and their joints. Names of their parts. 9 Cold storage for meat. Various types of pointing, plastering, and their specification. 10 Trussed wood partitions and expanded metal or other metal partitions. 11 Strong rooms for banks.
VII	Basement	1 To prevent dampness from reaching the floor. 2 To keep off rain water ... 3 Aesthetic beauty ...	1 Level of subsoil water during wet season. 2 Chances of flood, if any ... Kind of masonry and the specifications, rubble and course rubble and random rubble.
VIII	Doors and windows lintels, ventilators.	Designing size of doors according to people and safety in house, schools, banks and other public buildings, shops, cinemas and theatres.	1 Carpentry with special reference to joinery and wood carving. 2 Outer architecture and internal decoration. 3 Places where materials are found and their cost.

Building Trades—Houses—*contd.*

Trade Mathematics	Trade Drawing	Trade Science
5	6	7
1 Calculation of quantities of building material. Use of formulæ and tables and calculation of thickness of walls for various heights and different materials.	Drawing for method of brick laying in various layers-different kinds of bonds in street wall, corners, in foundation footings, in jams, and reveals and rebates.	1 Amount of light and ventilation required, Science of Sanitary fittings, electric wiring, plumbing. 2 Effect of heat on bodies, expansion, fusion and vaporisation. Conduction convection and radiation. 3 Chemistry of air and water and of combustion and breathing. Ventilation. Mortar, its functions, preparation and uses. Method of transference of central line of walls, doors and window openings with the help of plumbline. Devices for hoisting huge units pillars, stones, etc.
Estimating quantities of materials and cost thereof.	Sketching the usual types of bonds.	1 Use of damp proof courses lead sheet, asphalt sheet, hollow brick construction. Properties of stone brick wood, lead, iron and steel, lime and cement and their testing.
...	...	2 Absorption and retention of moisture by wood, brick and stone and effect of moisture on them.
Calculating the cost of doors, windows, ventilators, collapsible iron shutters (use of specification.)	1 Drawing of roof diagrams and stress diagrams.	1 Graphic statics of weights and stresses for diverse conditions of loading and fixture of roofs.
...	2 Drawing of roof joints ...	2 Study of different kinds of wood found in the market.
...	Isometric views of the same ...	3 Wood preservation and seasoning and testing. Paints, polish and varnishes.

Building Trades—Houses—*contd.*

Unit No.	Type Job Specification	Items for consideration	Trade information
1	2	3	4
IX	Roof—Different types, viz., thatched, pot-tiled, Mangalore tiled, Madras terracing, Jack arch terracing, reinforced concrete roof, zinc-sheet roof, Bengal terrace.	1 Shelter and Protection ...	1 Several kinds of roof support.
		2 Leak roof	2 Technical names such as King and Queen post trusses.
		3 Should not be easily blown off by wind.	3 Method of centering for terrace.
		4 Should be strong enough to bear weight and workers.	4 Firms which deal in materials and the cost of materials,
		5 Common forms of ceiling works Purlins, Keats, Repiece, etc.	5 Terms Pitch and Span ...
		6 Laying tiles, their varieties and cost.	6 Effect of span in the design
		7 Making roof Leak proof, Burglar proof and Heat proof.	7 Limitation of various kinds of trusses in use.
		8 Method of construction of composite roof trusses up to 40' span with details of jointing, fastening and mounting.	8 Construction and erection of couple collared roof. Simple gables, Hippe and valleys.
		9 Steel concrete trusses ...	9 Knowledge of manufactured roof covering materials and their fixing Slates, tiles, cement, glass, corrugated sheets, cement asbestos sheets.
		10 North light roof trusses for factories.	...
		11 Cement concrete roofing rendering water proof, providing expansion joints. Joining of new work with the old.	...
X	Floor—	1 Ensuring cleanliness and even surface.	1 Method of giving fine finishing to floors.
	(a) Ground floors Mud plaster, mortar plaster with cement rendering, Cement concrete floors.	2 Sustaining wear and tear ...	2 Place where material are available and their comparative cost.
		3 Use of ornamental tiles ...	...
	(b) First and Higher floor, Wooden floors, various types of patent floors.	4 Colour of floor should match colour of walls, etc.	...
	Fittings—		
	1 Light ...	1 Electric or Gas lighting avoiding dark spots. Uniform lighting.	1 Firms dealing in the refittings and the relative prices of articles.
	2. Water ...	2 Availability of water in bath rooms, kitchen and in washing places—fixing sinks—Water tank if needed.	2 Selection of proper fittings.
	3. Sanitary ...	3 Water closet and urinals. Wash basin and bath tubs. Shower bath. Water drains.	3 Places of plumbers and efficiency of different plumbers.

Building Trades—Houses—*contd.*

Trade mathematics	Trade drawing	Trade Science
5	6	7
1 Design of roof trusses, joints, rafters, etc.	1 Drawing of roof diagrams and stress diagrams.	1 Graphic statics of weights and stresses for diverse conditions of loading and fixture of roofs.
2 Calculation of wind stresses and determination of their angles of incidence.	2 Drawing of roof joints ...	2 Strength of materials used for roof and their physical properties and data.
3 Stresses due to rain water especially in Malnad.	...	3 Tensile, compressive and sher stresses and strains. Elasticity, Composition and resolution of forces. Parallel forces. Moments, Levers. Canti livers. Centre of gravity. Pulleys and inclined plane. Friction.
...	...	4 Elementary knowledge of perfect framed structures.
...	...	5 Manufacture of tiles, roofing and ceiling tiles, Eastern tiles, Glass tiles and cement tiles.
Estimating the cost of different kinds of flooring.	Detailed sketches in case of floors supported by beams.	1 Estimating the strength of materials.
2 Applied mechanics, bending moment, stiffness.	...	2 Manufacturing methods of finished materials.
1 Estimating the cost fittings	1 Sketches to scale of joints, articles in position, etc., in all these fittings.	1 Elementary ideas of electric wiring and fitting.
2 Design of light and water fittings.	2 Skeleton drawing of lighting leads and of water mains and gutters.	2 Plumbing and its science.
...	...	3 Principles of household sanitary Engineering.
...	...	4 Fluid pressure due to lead of water in pipes and tanks. Hydrostatic drain test. Siphon action in flushing tanks.
...	...	5 Solution. Water as a solvent, Hardness of water.

5 (iii) AUTOMOBILE MECHANICS.

Unit I.

Lathe.

FIRST YEAR.

Cylinder turning.
Taper Cutting.
Thread Cutting.

Chucking and Boring.
Drilling, Tapping and Reaming.

Unit II.

The Auto-Repairman.
Small Tools for the Shop.
Precision Tools for the Shop.
Assembly of the Automobile.
(NOMENCLATURE).

Unit III.

Jobs.

Repairing bent and broken frames.
Tightening spring clips.
Adjusting shackle bolts.
Tightening by use of shims.
Tightening by drawing nuts.
Lubricating spring shackles.
Graphiting spring leaves.
Spring overhaul (Removing from car, etc.).

Unit IV.

Straightening a bent front axle.
Replacing broken knuckles and spindles.
Repairing steering knuckle assembly.
Straightening knuckle arm.
Replacing bushing or pins in kunckle arm.
Repairing "wobbly" wheel.
Lining up front wheel.
Removing "lost motion" from steering mechanism.
Overhaul ford front radius rod.
Do wheel and bearing.
Do and rebush Ford front axle.
Tightening up ford steering gear.
Ford steering wheel inspection and lubrication.
Adjusting and lubricating Timken front wheel bearing.
Replacing front wheel spindles, cones or races.
Replacing wheel bearing cups.
Steering gear lubrication.
Overhauling drag links.

Unit V.

Installing new gears in the differential.
Installing a new ring gear and pinion.
Straightening rear axle or drive shaft.
Installing new key in drive pinion.
Installing new hub.
Replacing broken axles.
Adjusting rear wheel bearings.
Lining up rear axle assembly with frame.
Split axle housing type overhaul (Rear).
Overhauling rear axle of single piece housing construction.
Pulling rear wheels.
Adjusting rear axle bevel and pinion gears.
Remove Ford rear axle from car.
Removing Universal from car.
Dis-assembling Ford rear axle.
Do do Axle Differential.
Inspection and reassembly.
Adjusting External Brake Bands.
Do Internal expanding Brakes.
Removing grease and oil from brakes.
Relining brakes.
Reparing squeaking brakes.

Unit VI.

CLUTCHES, TRANSMISSION AND UNIVERSALS.
Removing Ford transmission bands.
Relining do
Adjusting clutch on the Ford Car.
Overhauling Ford transmission.
Cleaning and oiling an exposed cone clutch.
Applying a new lining to a cone type clutch
Relining a disc or plate clutch.
Adjusting a Borg and Becktype clutch.
Clutch Collar Care.
Clutch spring adjustment.
Installing new clutch springs.
Do do bearings.
Repairing a spinning clutch.
Do grabbing do
Do slipping do
Lubricating a wet clutch.
Lubricating Transmission.
Standard selective type transmission care.
Overhauling transmission selective type.
Universal joint lubrication.
Do overhaul

Unit VII.

SECOND YEAR.

Grinding and adjusting valves.
Reseating and refacing valves.
Installing oversize valves.
Adjusting mainbearings.
Adjusting connecting-rod bearings.
Fitting new connecting-rod bearings.
Do main bearings.
Do piston rings.
Fitting new wrist pins and bushings.
Replacing cam-shaft bushing.
Removing cam-shaft end play.
Scraping carbon.
Burning do
Cutting and fitting gaskets.
Replacing head gaskets.
Replacing manifold gaskets.
Scrapping main engine bearing.
Polishing a crank shaft.
Fitting main engine or crank shaft bearing on a Ford Engine.
Removing engine from Ford car.
Adjusting connecting, rod bearing on Ford Engine
Timing engine.
Silent chain care.
Removing a cylinder head.
Replacing a cylinder head.
Shellacing a cylinder head to prevent compression leaks.

Unit VIII.

Cleaning valve stems and guides and piston rings.
General instruction for draining, flushing and refilling the engine crank case.
Cleaning out oil pan.
Repairing and inspecting oiling system.

Unit IX.

Cooling System.

Radiator hose care.
Radiator Care.
Removing radiator.
Testing a radiator for leaks.
Repairing a radiator with liquid compound.
Repairing a radiator.
Overhauling water pump.
Packing a pump.

Replacing radiator hose.
Replacing or repairing a fan belt.

Fuel system.

Adjusting carburetter.
Installing do
Installing a vacuum tank.
Overhauling do
Maxwell carburetter.
Packard twin six carburetter.
Tilloston carburetter.
Buick carburetter.
Adjusting Buick carburetter.
Kingston carburetters, Model E and L.
Rayfield carburetter.
Zenith model L plain tube compound nozzle.
U. S. Standard carburetter.
Cadillac carburetter,
Stromberg type M plain tube carburetter.
Stromberg economizer.
Dodge carburetter.
Hudson super six carburetter.
Schebler dash pot air valve type carburetter.
Engine speed governor.
Installing Pierce, Governor.
Carburetter jobs.

Unit XI.

Ignition.

Repairing "Trouble" in primary circuit
Testing coil.
Timing ignition.
Cleaning spark plugs.
Repairing distributor.
Repairing magneto
Do do switch.
Atwater-Kent ignition system CC.
North-East ignition system model 'O' for Dodge cars.
Hudson Delco system.
Buick Delco system.
Remy ignition.
Simms high tension magnetos.
Bosch magnetos Dual type.
Do high tension on magneto, K B4 & B6 types.
Do Dual ignition system.
Do Vibrating Duplex ignition.
Eismann high tension magneto.
Do dual ignition.

Dixie magneto.
Splitdorf adjustable magneto couplings.

Third Year.

Unit XII.

Batteries.

Cleaning battery terminals.
Charging a storage battery.
Emergency repairs to battery terminals.
Replacing cable terminals.
Testing battery and additing distilled.

Unit XIII.

Generators and Starting Motors.

Cleaning commutator and brushes on motor or generator
Adjusting generator charge.
Wagner starting motor.
Buick Delco motor-generator.
Dodge North-east motor-generator.
Hudson Delco motor-generator, Single unit.
Maxwell Simms system.
Remy, oldsmobile.
How to use Weston Model 441 fault finder for testing auto-elect starting, lighting and ignition systems.
Fitting brushes and sanding commutator.
Sanding commutator.
Do brushes.
Undercutting mica.

Unit XIV.

Wiring and Lighting.

Replacing fuse.
Adjusting and Cleaning lamps.
Replacing new light bulbs.
Replacing and cleaning lighting switch.
Repairing old wiring troubles.
Replacing old wires.
Spacing lighting cable.
Sweating or burning on a terminal.
Attaching wire to lamp sockets.
Installing and wiring ammeters.
Polishing lamp reflectors.
Tests for locating lighting trouble.

Trouble Shooting.

Starting engine. Engine hard to start. Engine stalls. Engine misses at low speed. Engine misses at high speed. Engine misses at all speeds. Engine races. Engine will not accelerate. Loss of power. Engine overheats. Engine will not stop. Adjusting valve tappets to remove noise.

Knocking engine. Piston slap or loose wrist pin. Removing spark knock.

Tubes and Tyres.

Repairing pin holes and small punctures. Repairing large injuries and blow-out in tubes. Splicing inner tubes.

Driving, soldering, brazing, welding, tempering and case hardening.

5. (iv) PRINTING AND BOOK-BINDING.

I Year.

Composition (Practice).

Learning arrangement of type case and point system. Picking up type. Placing in stick. Spacing. Justification. Dumping a stick. Tying up type. Proofing on stone. Proofing on proof press. Learning proof reader's marks. Correcting stick. Making up of forms and arrangement of pages. Locking up forms. Unlocking forms. Washing up type. Display work.

(All this work is to be done until the pupil gets adequate efficiency, the theory of the work being brought in just to elucidate practice.)

II Year.

Press Work (Practice).

Oiling. Inking. Placing chase. Making ready. Press Proofing. Press Feeding. Cleaning Press. Cleaning Form.

Theory.—Composition of types. Compositor's tools and appliances and their uses. Principles of good composition in ordinary and tabular work. Mode of making ready ordinary work, common defects—their causes and remedy. Rollers, their composition, mode of manufacture, treatment and care.

Estimating cost of printing with and without paper. Drawing machines in use.

III Year.

More intensive practice in printing operations.

Book Binding (Practice).

Folding book-work sheets. Folding and stabling an ordinary pamphlet and pasting paper to cover. To bind in paper and cloth cover ordinary size books, including trimming.

Theory of the above operations to elucidate practice, including use and care of tools and materials.

Estimating cost of binding Books of different types.

Drawing machines and appliances in use.

5, (v) TEXTILES.

I Year.

Spinning.—Sources and properties and uses of the textile raw materials. General characteristics of principle varieties of each. The process used in the production of yarn from cotton, wool, silk, rayon and other fibres, Ginning, spinning in olden times. Modern methods of spinning, its elementary principles.

Weaving,—Preparatory process for warp and weft with and without the aid of machines. Various plants and tools used for sizing and warping. Principles of weaving. An introduction to the use of point paper.

Practical.—Practice on preparatory machines and on hand-looms.

Chemistry,—Chemistry pretaining to sizing.

Drawing,—Free-hand drawing and the use of water colours, Drawing sketches of different parts of textile machinery.

Machines.—Lectures on applied mechanics. Principles of levers, pulleys, screws and inclined plane.

II Year.

Spinning.—Cotton mixing and its object. Technical items used in cotton trade. Machines used for cleaning, preparing and spinning system of counting yarn.

Weaving.—Lectures on various appliances used on hand and power looms, twisting plants and ordinary tappet looms. Primary motions of power looms. Cloth dissection, sketching and designing of sample cloth. Standard weaves, such as drill, twill, satin, cork screw, net weave, hucka back and honey-comb weaves.

Machinery,— Demonstration of the working of and practical work on the machines involved in spinning, doubling and making up of cotton yarn. Calculation relating to speed, production draft twist and count.

Practical instruction in the handling and adjustment of hand and power looms, pattern weaving on hand-looms and power looms.

Chemistry.—The origin, composition and properties of the principle textile fibres. Methods of bleaching and the principles involved. Mordants, assistants, etc., and their uses.

Practice.—Practical study of textile fibres towards various chemical requirements. Experimental study of bleaching and dyeing processes.

Drawing.—Advanced drawing of designs for woven fabrics. Drawing of machinery (continued).

Mechanics.—Different kinds of drives, rope, belt, chain and gear drives and their principles. Power transmission by the above and their rate limits, calculation of speeds and Horse Power.

Book-keeping.—Principles of accounts, such as writing of Day Book, Posting Day Book to Ledger, writing of commercial letters, order forms, writing of invoices, etc.

III Year.

Spinning.—Ginning and baling. The principles, construction and working of machinery for the production of cotton yarn. Methods of obtaining uniformity of counts and quality. The preparation of yarn for doubling. The making of yarn for the market. Characteristics of the various types of single and folded yarn.

Weaving.—Construction of standard weaves and their derivations. The weave stripe and check patterns. The application of colour in woven design. Structure of bed-ford cards. Welts pique, Bercada fabrics. Warp and weft file and gauze structures. The study of Dobby, Drop, Box, Jacquard machines and their principles of working. Automatic looms. Study of preliminary operation of weaving, *i.e.*, winding, warping and sizing, etc. Use of point paper.

Practice.—Testing of yarn for twist strength, etc. More advanced practical work on drawing, preparing, doubling, spinning, finishing machinery. Adjustments of machines for different classes of cotton and counts of yarn.

Study of advanced loom mechanism including automatic looms and special jacquards. Weaving of cloth samples on hand and power looms. Systems of counting yarn, reed and healds. Calculation for quantities of warp and weft from specified particulars and samples of cloth. Wages calculations.

Chemistry.—The origin, composition and properties of the principal materials employed in sizing and finishing. Analysis of sized yarn and cloth. Dyeing and bleaching of wool, silk and cotton. The chief colours and the chief methods used. Practical course in dyeing laboratory.

Drawing.- Advanced free-hand and machine drawings.

Book-keeping.—Maintenance of Sales Day Book, Purchase Book, Bill Books, etc , and preparation of finer accounts.

History.—Historical development of textile industries with special reference to hand-loom and principles of weaving.

5. (vi) AGRICULTURE.

I Year.

Elementary Botany.—The plant and its relation to soil and air ; practice ;—Seed germination and growth.—Study of development of roots of important crops in relation to soil conditions and food.

Elementary Zoology and Entomology.—A broad survey of Evolution of animal life ; Study of common domestic animals ; study of the common useful, beneficial and harmful insects.

Practice :—Rearing some common insects like the silk-worm and the Bee.

Agricultural Chemistry.—Elementary organic and inorganic chemistry with special reference to agriculture.

Agriculture.—General meteorology and climatology of Mysore ; formation of soils ; classification of soils ; chemical composition ; properties of soil in relation to water and tillage.

Tillage.—Objects and methods ; present local practices and their improvements.

Manures.—Local practices such as sheep folding—tank silt—green manures—local organic manures like oilcakes—important artificial manures containing nitrogen, phosphoric acid and potash.

Plant Propagation.—Layering, grafting and budding.

Practice :—General cultivation of both dry and wet crops.

II Year.

Agricultural Botany.—Nutrition of plants. Reproduction, Ecology ; Systematic Botany of crop plants. Practice : Study of flowers ; Structure and Classification ; Leaves ; Transpiration ; Photosynthesis.

Zoology and Entomology.—Study of common insect pests and their control.

Practice : —Sericulture and Beekeeping ; spraying for insects and diseases.

Mycology.—Study of common plant diseases in Mysore.

Agricultural Chemistry.—Soils ; soil-water ; irrigation and drainage ; manures, their composition and uses.

Agriculture :—Irrigation ; sources and methods of irrigation ; irrigation in relation to soils and seasons ; drainage, methods of drainage ; relation to crops and saline soils.

Seed.—Importance of good seed—production and testing of seed—various methods of sowing—improvement of crops by selection and by hybridization.

Practice :—Cultivation of Important common vegetable crops in individual plots—budding—grafting and orchard work—growing of important fruit trees ; a few exercises in hybridizing

of the common flowering plants—feeding and care of cattle—milking—butter and ghee-making—poultry rearing and bee-keeping—spraying of crops and practice in checking insect pests and diseases—occasional visits to surrounding villages to study rural conditions—study of the effects of a good sire on the improvement of cattle and sheep—preparation of good farm yard—manure and compost—silo and silage-making.

III Year.

Agricultural Botany.—Economic products; heredity; variation mendelism, plant improvement—seed testing, seed plots and distribution.

Practice:—Seed testing; selection and hybridizition for improvement of crops.

Zoology and Entomology.—Remedial measures for important pests; bee-keeping and sericulture.

Mycology.—Remedial measures against common plant diseases.

Agricultural Chemistry.—Manures in relation to crops. Animal feeding for work and for dairy.

Elementary Veterinary Science.—Diseases of cattle and sheep, remedial measures. Practice.—Dissection of sheep and treatment of cattle for simple diseases.

Agriculture—Rotation of crops, cultivation of crops, dairying and Live Stock of the Farm, rational feeding and care-laying of experimental crops, general principles of labour—Selection and equipment of the farm—farm accounting—grading of products and marketting—Co-operation and Banking—Land mortgage banks—Agriculturists' Relief measures. A general recapitulation of the work of all the three years.

Practice:—as in the second year.

General Practical work continuously for all the three years:—

1. General cultivation of crops (*a*) dry, (*b*) wet and (*c*) common fruits, vegetables and flowers. Field crops to be grown are:—Ragi, jola, sugar-cane, paddy, cotton, groundnut, gingelly and castors. Garden Crops:—Potato, chillies, tobacco, onions, garlic, turmeric and ginger according to locality. Also plantains, areca, cocoanut, and betel vine. Fruits.—apple, orange, grape, pomegranate, guava Vegetables.—the common local vegetables and greens, cabbage, knolkhol, tomato, capsicums, carrot. Flowers—the hardier ones.

2. Practice in layering, budding and grafting.

3. A few exercises in hybridizing of the common flowering plants and selection of some of the important crops and seed testing.

4. Preparation of spraying mixtures, and spraying of crops and practice in recognising and checking insect pests.

5. Preparation of farm-yard manures and compost.

6. Feeding and care of live-stock, milking and making Butter and Ghee—Housing—Preparation of feeds—use of concentrates.

7. Study of the effects of good breeding bull—and in areas where sheep is important of the ram also—on the ryots and of the general improvement of stocks.

8. Preparation of silage and of hay.

9. Poultry-rearing and Bee-keeping.

10. Occasional visits to surrounding villages to study Rural conditions.

Note.

1. The above practical work is continuous for the three years, two hours in the morning being allotted every day by turns of batches.

2. In addition to these farm practices in general, the second year class will have individual plots for vegetable cultivation and the third year class individual plots for wet and dry field crops.

3. Note-books must be maintained by every pupil for his individual cultivation, observation and for all practical work.

5. (vii) SERICULTURE.

I Year.

Theory.

1. Mulberry cultivation :—
   - (*a*) General knowledge about the soil fit for mulberry, varieties of mulberry, etc.
   - (*b*) Methods of propagating mulberry.
   - (*c*) Preparation of soil and planting and care of mulberry garden including tillage, manuring, irrigation, pruning, harvesting and preservation of mulberry leaves.
2. Rearing of Silk Worms :—
   - (*a*) Varieties of silk worms.
   - (*b*) General idea about the life-history of silk worms.
   - (*c*) Incubation of eggs and hatching.
   - (*d*) Preparation of leaves for feeding.
   - (*e*) Brushing, feeding, change of beds and care of worms in different ages.
   - (*f*) Mounting and harvesting.
3. Silk-worm rearing house : Sanitation and equipment.

Practice.

1. Mulberry cultivation—selection and preparation of cuttings for planting, purning, harvesting of leaves and preservation of leaves.

2. Rearing—study of worms in several ages, feeding of worms, cleaning of beds, spacing, mounting, harvesting and sorting of cocoons.

3. Rearing houses—selection and handling of appliances, cleaning of appliances and disinfection of rearing rooms.

II Year.

Theory.

1. Relation between the age of worms and the quality of leaves used for feeding; rearing of univoltine and bivoltine races of silk-worms; cocoon ages.

2. Diseases of silk-worms: Their characteristics and methods of prevention, etc., *(a)* Pebrine, *(b)* Flacherie, and *(c)* Grasserie, etc.

3. Principal diseases of mulberry and remedies.

4. Seed supply in Mysore.

5. Hybrids and their advantages and disadvantages.

6. Physiology and Pathology of worms.

7. The silk worm seed :—

(*a*) Grainage appliances.
(*b*) Selection of cocoons for seed.
(*c*) Emergence and pairing of moths.
(*d*) Microscopic examination of moths.
(*e*) Preservation of seed.
(*f*) Packing seed for despatch.

Practice

1. Rearing of foreign races of worms.

2. Grainage teachnique, handling of microscopes and appliances.

3. Preparation of hybrids.

4. Anatomy of worms and dissection.

5. Rearing for seed.

III Year.

Theory

1. Manufacture of raw silk
(*a*) Reeling methods.
(*b*) Reeling machines and appliances.
(*c*) Handling, stifling, drying and storing cocoons.
(*d*) Reeling—cooking and reeling.
(*e*) Finishing and packing and inspection of raw silk.
(*f*) Silk waste and bye-products.
(*g*) Theory of silk weaving.

2. A general outline of the silk industry in the World.

3. A general idea of the economics of the silk industry.

4. The place of sericulture in the rural economy of Mysore State.

Practice.

1. Rearing of worms and mulberry garden work.
2. Study of several devices used for producing raw silk.
3. Selection of cocoons for reeling, handling of cocoons, etc.
4. Cocoon drying and preservation.
5. Practice in reeling, examination and packing of raw silk.
6. Testing of cocoons and silk.
7. Utilisation of bad cocoons.
8. Utilisation of bye-products.

N.B.—The students should be taken to sericultural centres in the State to familiarise themselves with the local conditions.

5. (viii) MACHINE SHOP.

I Year.

Lathe Work.

Layout and centre work. Facing to given dimensions. Aligning centres. Cylindrical turning. Shoulder turning. Taper turning (offset tailstock). Taper turning (taper attachment). Knurling. Tool grinding for above operations. Standard thread cutting. U. S. S. thread cutting. Square thread cutting. Acme thread cutting. Multiple thread cutting. Tool grinding for listed threads. Form turning. Eccentric turning. Cam turning. Chuck and face plate work boring. Chuck and face plate work reaming. Boring taper—compound rest. Boring taper—attachment.

II Year.

Planer and Shaper.

Flat surface work—Horizontal. Flat surface work—Vertical. Square shoulder. Angles. Keyways (External). Keyways. (Internal). Bevel gibs to fit. Radius work. Tool grinding.

Milling Machine.

Cutting off stock. Surface milling. Groove milling. Rectangular milling. End milling. Straddle milling. Simple index work. Spiral milling. Angular milling. Form milling. Vertical milling. Circular milling. Slotting milling. Boring milling. Differential index works. Milling spur gear wheels. Milling bevel gear wheels. Hobbing work gear wheels. Spiral cutting.

Universal Grinder.

Outside cylindrical work. Outside taper work. Inside cylindrical work. Inside taper work.

Milling Cutter Grinder.

Straight teeth mills. Spiral teeth mills. End teeth mills. Side teeth mills.

III Year.

Surface Grinder.

Flat surface work clamped to table. Flat surface work clamped to angle plate. Flat surface work held in vice.

Tool Making.

Making reamers, end mills, spiral milling, cutters, taps, etc. involving use of engine lathe, milling machine and grinders. Forging and tempering of tools.

Bench and Floor Work.

Problems in laying out work. Drilling, tapping and reaming. Chipping keyways, oil grooves, etc. Filling, fitting. Assembling and erecting.

*5. (ix) Electric Wiring and Lighting.
*5. (x) Manufacture of Electrical Goods.
*5. (xi) Photography and allied trades.
*5. (xii) Foundry and pattern making.
*5. (xiii) Dyeing and printing.
*5. (xiv) Horticulture.

* Syllabuses are under preparation

APPENDIX F.

NOTE ON THE SYLLABUSES FOR GENERAL HIGH SCHOOLS.

Note on Syllabuses for General High Schools.

From several years' experience, it is found that there is considerable disparity between the results of the S.S.L.C. Examination based upon the Public Examination marks as against those based upon moderated marks. There is also considerable wastage of effort on the part of teachers as well as on that of students in our High Schools, inasmuch as a fairly large number of students fail to complete the S.S.L.C. Course successfully in three years or even in four. Even with the system of moderation of the marks obtained at the Public Examination with reference to class records the proportion of those eligible for University Courses of study is in the neighbourhood of a third of those that appear for the Public Examination, while the proportion of E.C's on the basis of the Public Examination marks alone is less than a fifth. Even in the case of those that are declared eligible for admission to the University courses much dissatisfaction has been expressed by the University authorities and others that the material they get is poor in quality. Thus the scheme has not proved satisfactory either from the academic point of view of the University or the general point of view of the public at large. The proportion of failures is likely to be very much higher hereafter since moderation has been dropped and the standard of English has been raised by the alterations effected in the contents and scope of the English Second Paper. There was therefore an urgent necessity for a re-examination of the whole question of Secondary Education with a view to securing more profitable returns for the heavy expenditure of money and effort incurred in connection with our High Schools. This question was discussed at the Conference of the heads of High Schools and members of the S.S.L.C. Board and a few members on the staff of the University held in November 1933, and it was the unanimous opinion of the Conference that the present High School Course which is in the main bookish and academic and designed mainly to lead on to the University Courses of study was not suited to the varying initial equipment, temperaments and aptitudes of the students that sought admission into High Schools and that it was far too heavy as it was and that it was necessary to revise the S.S.L.C. Scheme, so as to provide alternative courses suitable for the different types of students, *viz.*, those that would seek higher general education in the University, those that would proceed to take the Diploma courses in several professions or industries or commerce, etc., and those that would stop schooling altogether at the end of the High School course. This view was also endorsed by the S.S.L.C. Board which at its meeting held on the 17th May 1934, resolved that the curriculum of the present S.S.L.C.

course be revised so as to provide for two groups of subjects, *viz.*, Compulsory and Optional, as detailed below, in order to counteract the disharmony between the courses provided in schools and the aptitudes of the pupils :—

The first or the Compulsory Group should comprise (1) English and (2) a Second Language (both more or less of the present standard), (3) Elementary Mathematics, (4) History, Civics and Geography and (5) Elementary Science, the requirements in the latter three subjects being reduced considerably.

The second or the Optional Group should comprise groups of subjects falling under the following groups, any one of which should be offered by each candidate :—

(*a*) Humanistic Group.
(*b*) Mathematical and Scientific Group.
(*c*) Practical Arts.
(*d*) Music and Fine Arts.

It was felt that every boy or girl that had completed the S.S.L.C. Course should possess a certain minimum knowledge in the subjects coming under the First Group and at the same time have the benefit of a more advanced course in subjects selected by the individual on the basis of his or her aptitude and future intentions. The first two groups under the Optional Group are definitely designed to lead on to the University Degree courses in Arts or Science, while the other two are intended for those who may wish to drop schooling at this stage or proceed to take professional courses. It may, in this connection, be said that practically every student that seeks admission to the High School considers a University Degree or Diploma as the utlimate end of his or her educational career and that courses in High Schools which definitely shut the student out of the University are not likely to be popular. It is quite true that every student is not fit to benefit by a University course, but unfortunately at present no student or parent is prepared to concede that the individual concerned comes under this category until after considerable waste of time and effort, he finds out the truth, by which time, the best part of his or her youth will have been spent and his or her enthusiasm will have waned. This vicious circle can only be cut by the University agreeing to admit to University courses under such conditions as they may see fit, even those that had taken one of the last two Optional Groups. Such courses need not necessarily be the ordinary Degree courses in Arts or Science but such special courses as may be designed for them, but what is important is that every student that takes the S.S.L.C. course should feel that the doors of the University are not shut against him or her merely because he or she has elected the Practical Arts or the Music and Fine Arts Group. This is one of the essential conditions under which the present unhealthy rush to the ordinary Degree courses can be checked. It is not

suggested that provision should be made for follow-on-courses in all these subjects immediately the new conditions begin to operate. It is not likely the Department itself will be in a position to arrange for all these Groups at once, but such provision, at least in part, must be visualised as one of the cognate liabilities on the University when the revised course is in force.

The question of drawing up detailed syllabuses in the several subjects under the proposed S.S.L.C. Scheme on the above basis was referred to the Committee of six consisting of the following members appointed by the S.S.L.C. Board :—

1. Mr. N. S. Subba Rao.
2. Mr. M. Sultan Mobiyuddin.
3. Miss K. White.
4. Mr. M. A. Narayana Iyengar (Head Master, Maharaja's High School, Mysore).
5. Dr. K. N. Kini.
6. Mr. G. Channappa.

With Mr. R. Jagannatha Rao as Secretary.

N.B.—Dr. S. P. Chinnappa and Mr. K. Srinarasimhaiya had also been invited to attend a few of the meetings.

The syllabuses in the several Groups of subjects excepting those in the Music and Fine Arts Group and some subjects under the Practical Arts Group have been drawn up by the Committee of six.

The Committee also resolved that two alternatives should be provided under Practical Arts, *viz.*, (a) Domestic Arts and (b) Industrial Arts, and that the teaching of subjects coming under the optional group should be commenced in the Fifth Form and continued in the Sixth, the time available in the school being distributed in the proportion of 2 : 1 approximately between the compulsory and optional groups.

The scheme as outlined by the Committee of six along with the draft syllabuses drawn up by them was discussed in detail and approved by the S.S.L.C. Board at the meeting held on the 6th November 1935. The scheme of studies and the general contents of the syllabuses as approved by the S.S.L.C Board are indicated below :—

Revised S.S.L.C. Scheme.

I. Compulsory Group.

1. *English.*—Standard as at present. Books for non-detailed study should be deleted and special prominence should be given to English Grammar and General English

2. *Second Language.*—Standard as at present. Specific provision should be made for a study of Grammar—particularly in the Vernaculars.

One of the following.—

(*a*) Kannada, (*b*) Sanskrit, (*c*) Urdu, (*d*) Telugu, (*e*) Tamil, (*f*) Persian, (*g*) Arabic, (*h*) French.

3. *Elementary Mathematics.*—

(*a*) Arithmetic	..	Standard as at present.
(*b*) Algebra	...	Elements leading to the solution of simple equations only.
(*c*) Practical Geometry	...	Important and well-known principles and constructions relating to straight lines, angles, triangles, parallelograms, regular polygons and circles. No theoretical work.

4. *History, Civics and Geography.*—

(*a*) Indian History	...	Whole in outline without much of details.
(*b*) Civics	...	Elements of Civics with elementary ideas of Indian Economic and Social life.
(*c*) Geography	...	A detailed study of India and British Isles and a general study of the political, economic and regional Geography of the World with Continents as the basis.

5. *Elementary Science.*—

(*a*) Physics	...	The syllabus prescribed at present to be considerably reduced. No practical work.
(*b*) Chemistry	..	Do do
(*c*) Biology	..	Do do

II. Optional Group.

One of the following groups—

Humanistic Group.—

(*a*) History of England	...	As at present.
(*b*) Geography of the World	...	As at present. To supplement Geography under the compulsory group.
(*c*) One of the following—		
(i) English	...	Standard slightly higher than in English under the compulsory group.

(ii) Sanskrit	...	Standard as at present under Sanskrit Additional subject.
(iii) Persian	...	Standard as at present under Persian Additional subject.
(iv) Arabic	...	Standard as at present under Arabic Additional subject.
(v) Hindi	...	Standard as at present under Hindi Additional subject.
(vi) Islamic History.		General outline.

2. *Mathematics and Science Group.*—

(*a*) Algebra	...	As at present with a few sections deleted.
(*b*) Geometry	...	Do do
(*c*) Physics	...	As at present including Practical Work. To supplement the work done under the compulsory group.
(*d*) Chemistry	...	Do do
(*e*) Biology	...	Do do

3. *Practical Arts Group.*—

One of the following.—

A. Agricultural Arts B. Industrial Arts C. Commercial Arts	...	More or less a suitable combination of courses prescribed under any two of the Vocational subjects as at present to provide work for nine periods a week for two years. (V and VI Forms.)
D. Domestic Arts	...	Portions now included under Domestic Science, First Aid and Home Nursing and Needlework, including Practical Work.

4. *Music and Fine Arts Group.*—

It will be seen that the twofold object with which the reorganization of the scheme was undertaken, *viz.*, to supply to the University a set of students a little better equipped than at present in English and in arts (Humanistic subjects) or Science as the case may be with a certain amount of minimum of knowledge of both and to provide courses that divert students from the ordinary Degree courses has been achieved in the scheme outlined above. The student that elects the Arts course will get less of Science and conversely the student that elects the Science Course will get less of Arts without impairing his efficiency in the particular Group of his choice, while the student that elects

the last two groups will find the time to specialise in the particular subjects of his choice and all the students get more time to devote to English and to assimilate a certain amount of minimum knowledge in subjects like Elementary Mathematics Elementary Science and History, Geography and Civics. The courses are also so designed as to fit in with the existing arrangements in our High Schools, without any violent changes, an aspect which is very important from the administrative point of view. Efforts have also been made to provide special courses as alternatives to others that are open to all the students—for girls which will materially assist them in their special field of activity, *viz.*, management of a household after school life. In short, it is hoped that every student that comes into a High School will find that he or she is fit to take one or the other course that is provided, in the light of his or her aptitudes and aims in life.

WD 1618—GPB—500—17-4-86