



SUPPLEMENT

TO THE

NEW ZEALAND GAZETTE

OF

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WELLINGTON, WEDNESDAY, APRIL 20, 1904.

Regulations for Inspection and Examination of Schools.

RANFURLY, Governor.

ORDER IN COUNCIL.

At Government House, at Wellington, this fifteenth day of April, 1904.

Present:

HIS EXCELLENCY THE GOVERNOR IN COUNCIL.

IN exercise and pursuance of the powers and authorities vested in him by "The Education Act, 1877," the Governor, with the advice and consent of the Executive Council of the colony, doth hereby make the following regulations for the inspection and examination of public schools and for the course of instruction therein; and, with the like advice and consent, doth order that the same shall come into force on the date of the first publication thereof in the *New Zealand Gazette*, and that on the said date all previous regulations upon the same subject shall be cancelled, except as hereinafter provided.

Inspection and Examination of Schools.

1. Every public school shall, as a general rule, be visited at least twice in every year by a Public-School Inspector. One visit, called hereinafter the "annual visit," shall take place as nearly as possible in the same month in every year, at least ten days' notice of the date being given to the head teacher by the Inspector. The date of the annual visit of the Inspector to a school shall also be notified, not more than twenty-eight days and not less than seven days before such annual visit, as provided in clause 18 hereof, and in such other manner as may be convenient. As soon as possible after the annual visit to any school the Inspector shall present his "annual report" on that school. No notice shall be required for any other visit than the annual visit. After one of his visits in each year the Inspector shall present an "inspection report." The inspection report may, if the Inspector see fit, be presented at the same time as the annual report. A special report may be presented after any visit. In these regulations a "year" means a year beginning with the 1st January.

2. For purposes of instruction, the pupils of every public school shall be divided into classes for the several subjects according to the standards defined by the syllabus of subjects, as follows: With regard to any sub-

ject, Class I. shall include all the children doing the work prescribed for Standard I. in that subject, and may be called S1: for instance, S1 English will include all the children doing the work in English prescribed for Standard I.; S1 arithmetic, those doing the arithmetic of Standard I.; and so on for the other subjects. Class II. shall include all the children doing the work prescribed for Standard II., and may be called S2; and so on to Class VII. The preparatory class shall include all pupils below Class I., and may be called Class P. Class P may be divided, the lower part being called P1, and the next P2; if necessary, these classes may be subdivided, as, for instance, into P1 lower, P1 upper, P2 lower, P2 upper.

3. The classification of a school shall be made by the head-teacher, who shall have full discretion to arrange his pupils in different classes for different subjects according to their ability and proficiency with respect to the several subjects, and to group two or more classes for instruction in one subject. This discretion he must exercise to the satisfaction of the Inspector, who will regard as an element of weakness any undue complexity in the classification of pupils. As a general rule, pupils should be classified according to their capacity and attainment in English and arithmetic respectively, classification in English being determined by proficiency in English, and classification in arithmetic by proficiency in arithmetic.

4. Promotion of pupils from class to class may be made at any time by the head teacher, provided that, as a general rule, in Standards III., IV., and V. promotion shall not be granted in English unless the pupil satisfies the requirements of the standard in reading and composition, and at least one of the subjects, spelling and writing; and that also, as a general rule, in Standards I.-V., the classification for English and arithmetic shall not in the case of any pupil differ by more than one standard.

5. The head teacher shall draw up for each term or quarter schemes of work for all the classes in his school, and shall hold thereon not fewer than three periodical examinations of the classes, the last of which shall be held immediately before the Inspector's annual visit, and he shall keep for the information of the Inspector a record of the nature and results of these examinations. This record shall show for each standard class the head teacher's estimate of the proficiency of each pupil in classes S1 to S7 in the subjects of English and arithmetic, and also a general estimate of the quality of the work done in each of the additional and other subjects. The record shall also show all changes from class to class made as a result of the examination to which it relates. These records, as well as the class registers and the copies of the Inspectors' reports and class-lists, shall be kept in the school for not less than ten years, and in the case of the closing of a school shall be delivered up to the Education Board to be kept for a similar period as the Board shall direct. The written questions used at the periodical examinations and the pupils' answers thereto shall be kept in the school for reference till the next annual visit.

6. Before the Inspector's annual visit, the head teacher shall prepare, in duplicate, class-lists on the forms provided by the Department. The class in which a pupil has been placed for English during the preceding three months shall determine the list on which his name shall appear. The class-lists shall contain—(a) the names and ages of all the pupils on the school roll; (b) the number of half-days on which each pupil has attended the school since the last annual visit of the Inspector; and, where necessary, (c) the number of half-days each pupil has attended the class in which he is placed for English, (d) the classes in which pupils have been placed for other subjects besides English during the preceding three months, and (e) the number of half-days each pupil has attended such classes.

7. The head teacher shall indicate on the class-lists the subjects in which any pupil is not in a class higher than that in which he was placed at the previous annual visit of the Inspector. The Inspector may require the head teacher to note in the column for remarks the reason for more or less rapid promotion in the case of any pupil, or to give an explanation in the case of any pupil whose age is much above the average age of the pupils in that class for that school or that education district; and the Inspector may approve or not of the sufficiency of the reason or explanation given.

8. In order to satisfy himself of the general efficiency of the instruction given in the school, the Inspector shall at his annual visit devote the major portion of his time to an investigation of the character of the teaching and of the degree to which the intelligence of the pupils has been developed, and to this end he shall examine a due proportion of the pupils in each class, including Class P and Class S7, in such subjects as he shall choose.

9. Every pupil examined in any subject by the Inspector shall be examined in the class in which he has been taught during the preceding three months; but the Inspector or the teacher may exclude from the examination of a class any pupil who has made less than one hundred half-day attendances at the school since the date of the last annual visit.

10. Nothing herein contained shall preclude the Inspector, at the time of his annual visit, or of any other visit, from examining all the pupils of the school, or of any class, to ascertain their individual progress. As the result of such examination, he may, but only if the circumstances seem to call for such exceptional action, modify the classification of the head teacher by directing that any pupil or pupils shall be placed in any class or classes that he may name. Such modified classification shall thereupon for six months, or such shorter period as the Inspector may prescribe, be substituted for the classification of the head teacher.

In such cases the effect of clauses 3 and 4 will be modified accordingly.

Certificates of Transfer.

11. When a child leaves one school for another the head teacher shall furnish him with a "certificate of transfer," showing (1) the class or classes in which he is placed for English and arithmetic; (2) the date of the last annual visit of the Inspector; (3) the number of half-day attendances he has made since that annual visit; (4) the number of half-day attendances he has made since the date of his last promotion in English and arithmetic respectively; and (5) the other subjects (including military drill) in which he has been receiving instruction.

Annual Report.

12. The annual report shall show the number of pupils in each class the number present, and the Inspector's judgment of the quality of the work done in the compulsory subjects, the quantity and quality of the work in the additional subjects, the efficiency of the instruction in Class P, and his opinion of the order, the discipline, and the tone of the school; also the degree of discretion displayed in the classification of the pupils, in the determining of the promotions from class to class, and the organization of the school in other respects—*e.g.*, in regard to the average number of children present at any one time under the instruction of any teacher or teachers. (Subject to the conditions of classification, and the suitability of the several teachers for the various classes of the school, the average number under the instruction of any teacher or teachers should not in general greatly exceed the number indicated by the scale of staffs in "The Public-School Teachers' Salaries Act, 1901," which allows not more than sixty children for each adult teacher, and not more than thirty for each pupil-teacher, or on the average not more than forty-five for each member of the staff.)

13. In expressing his opinion of the value of the work done in any compulsory subject, the Inspector shall consider whether the subject is taken by all the pupils in all the classes for which it is prescribed, and also whether it is efficiently treated.

14. In judging the work in the additional subjects in any school, the Inspector shall consider whether the number of subjects taken in the school is in accordance with clauses 29 to 35 of these regulations, and also whether these subjects are efficiently treated.

Inspection Report.

15. The inspection report shall relate to such topics as the following:—I. List of classes and teachers; II. Organization, as shown under topic I.; III. Marking and keeping of registers; IV. Regularity of attendance; V. Suitability of time-tables; VI. Method and quality of the instruction in general or in detail; VII. Order and discipline, and the tone of the school with respect to diligence, alacrity, obedience, and honour; VIII. Supervision in recess; IX. Manners and general behaviour of the pupils; X. State of buildings, ground, and fences; XI. Sufficiency of school-accommodation; XII. Cleanliness and tidiness of rooms and premises, including outside offices; condition and sufficiency of school material and apparatus; ventilation, and warming; XIII. List of class-books used in the school; XIV. Special circumstances affecting the work of the school; XV. Instruction given to pupil-teachers; XVI. Other topics.

16. The report shall be divided into sections, and the section relating to any topic in the foregoing list shall bear the number assigned to that topic in the list. Section I. shall show what classes within the meaning of clause 2 of these regulations there are in the school, whether the classes are grouped for instruction, and, if so, how they are grouped, and by what teacher each class is taught, describing each teacher by his position in the school as "sole teacher," "head teacher," "mistress," "first

assistant," "third-year pupil-teacher," or as the case may be. Any section except Sections I. and XIII. may, if the Inspector so choose, be omitted or consist of the appropriate number and of a single word, such as "Satisfactory."

Standard of Exemption.

17. The "standard of exemption" under section 4 of "The School Attendance Act, 1901," shall be the Fifth Standard, and the certificate referred to in subsection (e) of section 4 of the said Act shall be a certificate of competency in the work of Standard V. or a higher standard.

Certificates of Competency.

18. (i.) A "certificate of competency" means a certificate that the holder has fulfilled the requirements of some standard of education, prescribed by these regulations and named on such certificate, in (1) reading, (2) spelling, (3) writing, (4) composition, (5) arithmetic, and has satisfied the Inspector that he has received sufficient instruction in the other compulsory and additional subjects: Provided that the Inspector may accept work below the requirements of such standard in one, but not more than one, of the subjects (2) to (5).

(ii.) A person may be a candidate for a certificate of competency on one of the following grounds:—

(a.) That he is seeking employment in the public service or elsewhere;

(b.) That he wishes to enter a secondary school;

(c.) That he is under fourteen years of age, and that his parent wishes to obtain for him a certificate of exemption as prescribed in section 4 of "The School Attendance Act, 1901."

[NOTE.—Under (b) and (c) he must be a candidate for a certificate of competency in S5.]

19. Immediately on the receipt of the notice of the annual visit of the Inspector referred to in clause 1, the head teacher shall post for public information, in a conspicuous place on the school premises, a notice that such visit is about to be made, and shall call the attention of the children thereto. The parent of any child of school age, or on the roll of any school, who wishes such child to obtain a certificate of competency must give notice of his desire in writing to the head teacher at least three days before such annual visit; this notice must state on which of the grounds named in clause 17 the parent wishes such certificate to be granted.

The head teacher shall, on the day of the annual visit, hand to the Inspector lists in duplicate of those on behalf of whom notice has been given to him of the desire to obtain certificates of competency. These lists shall be written on forms provided by the Department.

20. The Inspector shall, at or about the date of his annual visit, arrange for the examination of such children as are candidates for certificates of competency in whatever way he may deem fit, and may examine them at their own or any other school; provided that for such purpose no child shall be compelled to attend at any school (not being his own school) more than five miles from his place of residence.

The Inspector may, if he see cause, refuse to examine for a certificate of competency any child on the roll of a public school who has not been instructed for at least six months in the work of the standard to which such certificate refers, or in the work of a higher standard; or any candidate who has failed to reach the required standard at an examination held during the previous three months; or any candidate in whose case he is not satisfied of the existence of one of the grounds named in clause 17 hereof.

Nothing in this regulation shall prevent an Inspector from accepting at any time the results of a head teacher's examination or the records of a school as sufficient evidence that a child has reached a certain standard of education, and giving his certificate accordingly, whether such child be still on the school roll or not.

Certificates of Proficiency.

21. The Inspector shall examine all the pupils in the Sixth Standard class, and any other children of school age, whether on the school roll or not, whose parents desire them to be examined in the work of the Sixth Standard, and have given notice of such desire in writing to the head teacher at least three days before the annual visit, and he shall award "certificates of competency" to those who satisfy the conditions for such certificates, or "certificates of proficiency" to those who fulfil the requirements named in clause 22 hereof. Provided that the Inspector may refuse to examine for a certificate of proficiency any candidate who has failed to reach the required standard of examination held during the previous three months.

22. The standard of attainment for a certificate of proficiency shall be the same in all schools. No one shall receive a certificate of proficiency unless he (a) obtains at least 30 per cent. of the possible marks in each of the subjects English and arithmetic; (b) gains at least 50 per cent. of the possible aggregate marks in the following compulsory subjects—viz., English, arithmetic, geography, drawing; and (c) satisfies the Inspector that he has received sufficient instruction in the other compulsory subjects, and in the additional subjects, as prescribed by these regulations. In the compulsory subjects named in (b) the possible marks shall be in the following proportions, viz.: English, 400; arithmetic, 200; geography, 100; drawing, 100.

23. All certificates shall be on forms issued by the Department, and shall be signed by an Inspector of Schools, or by the Secretary of the Education Department, or of an Education Board, in accordance with information furnished by an Inspector.

Special and Central Examinations.

24. The Inspector may also hold special examinations of candidates, whether of school age or not, for certificates of competency or for certificates of proficiency at any place and time that may seem fit to him, and may require candidates for such special examinations to give fourteen days' notice of their intention to be examined.

25. By or on behalf of each candidate at such special examinations there shall be paid to the Inspector, or to the Secretary of the Education Board, if the Board shall so direct, the following fees, viz.: If there be only one candidate, £1; if there be two candidates, 10s. for each candidate; if there be three candidates, 6s. 8d. for each candidate; if there be four or more candidates, 5s. for each candidate. But no fee shall be payable in the case of any one examined at a school at the time of the Inspector's annual visit to such school.

26. Notwithstanding clause 21, the Inspector need not, at the time of his annual visit to a school, examine for certificates of proficiency, and Standard VI. certificates of competency, the pupils of S6 and other candidates who are of school age. He may arrange to hold a central examination for all such pupils and candidates from places within a convenient radius, due notice of such examination being given. This examination, being in lieu of the annual examination of S6, is not to be regarded as a special examination within the meaning of clauses 23 and 24.

Nevertheless, at the time of his annual visit to the school, the Inspector shall satisfy himself of the general efficiency of the instruction given in S6, as provided for in clause 8.

Annual Return.

27. The Inspector or Inspectors of each district shall make an annual return showing, with respect to each public school subject to their inspection, the number of pupils in the several classes and the number present in each class at the time of the annual visit. The return shall indicate the degree of attention paid to the several compulsory subjects and to the additional subjects respectively, and state in brief the Inspector's opinion of the order, discipline, and tone of each school. The return shall also include a statement of the average age of the pupils in each of the classes S1 to S7.

COURSE OF INSTRUCTION IN PUBLIC SCHOOLS.

CLASSES P-S2.

28. The following subjects shall be compulsory in all schools for classes P, S1, and S2: (1) English, (2) arithmetic, (3) drawing, (4) singing, (5) physical instruction. Instruction of the kind indicated in clauses 48 and 53 must also be given.

29. In the same classes the following shall be the additional subjects: (1) A definite course of nature-study, (2) handwork, (3) geography (in S2), (4) needlework.

30. All the additional subjects may be taken in any school.

In schools of Grades 1, 2, 3, all the additional subjects may be omitted.

In schools of Grades 4, 5, 6, 7, 8, at least two of the additional subjects shall be taken.

In schools of 9 and higher grades, at least two of the additional subjects shall be taken in classes P and S1, and at least three in S2.

In all schools of Grade 4 and higher grades, both boys and girls shall take either a definite course of nature-study or a course of handwork.

CLASSES S3-S6.

31. The following subjects shall be compulsory in all schools for classes S3, S4, S5, and S6: viz., (1) English, (2) arithmetic, (3) drawing, (4) singing, (5) physical instruction, (6) geography courses A and B,

(7) history, including civic instruction. Instruction of the kind indicated in clauses 48, 53, and 57 shall also be given.

Military drill, as prescribed in the regulations for public-school cadet corps, must be taken by boys in every school in which there are twenty or more boys of twelve years of age or upwards. Boys who take military drill will be held to satisfy the requirements under the head of (5) physical instruction.

32. In the same classes the following shall be the additional subjects: viz., (1) a definite course of nature-study or elementary science, (2) handwork, (3) geography as defined in clause 43, (4) history as defined in clause 50, (5) needlework.

33. All the additional subjects may be taken in any school.

In schools of Grades 1, 2, 3, all the additional subjects may be omitted, except needlework as prescribed below.

In schools of Grades 4, 5, 6, 7, 8, at least one additional subject shall be taken by boys and girls.

In schools of Grade 9 and higher grades, at least two additional subjects shall be taken by boys and girls.

In all schools of Grade 4 and higher grades, boys and girls shall take either a definite course of nature-study or elementary science, or a subject of handwork that includes a training in elementary scientific method, such as cottage-gardening, dairy-work, agriculture, elementary physics, &c.; but in the case of girls in schools of Grades 4, 5, 6, 7, 8, this requirement may be held to be satisfied if they receive sufficient instruction in the geography of Course A, and in health.

Needlework must be taken by all the girls in classes S3 to S6 in every school where there is a female adult teacher, provided that girls who are attending a class in cookery, dressmaking, or laundry-work recognised under the regulations of the Manual and Technical Instruction Act need not take needlework while they are so attending.

CLASS S7.

34. The following subjects shall be compulsory in all schools for Class S7: (1) English, as prescribed in clause 38; (2) arithmetic, as prescribed in clause 39; (3) military drill, as prescribed in the regulations relating to public-school cadet corps. Attention should still be given to the kind of instruction that is indicated in clauses 48, 53, and 57.

35. In the same class the following shall be the additional subjects from which a selection shall be made: (1) Drawing, (2) geometry, (3) algebra, (4) elementary mechanics (5) physics, (6) chemistry, (7) botany, (8) bookkeeping as for Civil Service Junior Examination, (9) shorthand, (10) agriculture, (11) physiology, (12) geology, (13) geography as for Civil Service Junior Examination, (14) history as for Civil Service Junior Examination, (15) handwork, one or more branches.

In schools situated more than five miles from any secondary school coming under section 5 of the Secondary Schools Act, or from any district high school, and in schools attached to training colleges, but in no other schools, (16) Latin, (17) French, and (18) German, may be included in the list of additional subjects from which a selection may be made.

In places where there is a district high school or a secondary school coming under section 5 of the Secondary Schools Act, and in places from which the pupils can travel daily to such a school, the work in S7 shall not be required.

Subject to these regulations a pupil who has gained a certificate of proficiency shall be held to be qualified for admission to S7.

OUTLINE OF SYLLABUS.

36. The syllabus of the work required in the several subjects for the various standards is indicated, for the sake of convenience, in outline in the clauses below. It is set out in full detail in clauses 37 *et seq.*

STANDARD I.

Compulsory Subjects.

- (1.) English (see clauses 37, 38):—
 - (a.) Reading—Two books.
 - (b.) Composition—Oral formation of simple sentences.
 - (c.) Writing—Letters and figures; transcription of easy sentences.
 - (d.) Spelling—Easy words in common use, as in one of the reading-books, and other words of regular formation.
 - (e.) Recitation—120 lines of suitable standard poetry.
- (2.) Arithmetic (see clause 39):—
 - (a.) For preparatory classes—The numbers from 1 to 20, with concrete examples.
 - (b.) The numbers from 1 to 100, with concrete examples.

- (3.) Drawing. (See clauses 44, 45, 46.)
 - (4.) Singing—Easy songs in correct time and tune, and at proper pitch. (See clause 52.)
 - (5.) Physical Instruction. (See clause 47.)
- Instruction of the kind indicated in clauses 48 and 53 must also be given.

Additional Subjects.

- (1.) A definite course of nature-study. (See clauses 53, 54.)
- (2.) Handwork. (See clause 58.)
- (3.) Needlework. (See clause 51.)

STANDARD II.

Compulsory Subjects.

- (1.) English (see clauses 37, 38):—
 - (a.) Reading—Two books.
 - (b.) Composition—Oral and written composition of simple sentences.
 - (c.) Writing—Words at dictation; transcription.
 - (d.) Spelling—Word-building continued; other words in common use contained in one of the reading-books.
 - (e.) Recitation—Not less than 120 lines.
 - (2.) Arithmetic (see clause 39)—The numbers up to 1,000, treated as before; also very easy money sums.
 - (3.) Drawing—As for Standard I. but more advanced. (See clauses 44, 45, 46.)
 - (4.) Singing. (See clause 52.)
 - (5.) Physical instruction. (See clause 47.)
- Instruction of the kind indicated in clauses 48 and 53 must also be given.

Additional Subjects.

- (1.) A definite course of Nature-study. (See clauses 53, 54.)
- (2.) Handwork. (See clause 58.)
- (3.) Geography—Elementary geographical notions from actual observation; simple plans. (See clause 41.)
- (4.) Needlework. (See clause 51.)

STANDARD III.

Compulsory Subjects.

- (1.) English (see clauses 37, 38):—
 - (a.) Reading—Two books.
 - (b.) Composition—Analysis and synthesis of easy sentences, and oral and written composition (as defined in clause 38).
 - (c.) Writing—Transcription, with punctuation.
 - (d.) Spelling—Word-building and spelling as before.
 - (e.) Recitation—Not less than 150 lines.
 - (2.) Arithmetic—The numbers up to 1,000,000, treated as before; easy money sums. (See clause 39.)
 - (3.) Drawing—As for Standard II., but more advanced. (See clauses 44, 45, 46.)
 - (4.) Singing. (See clause 52.)
 - (5.) Physical Instruction. (See clause 47.)
 - (6.) Geography: Course A—Elementary geographical notions; north and south line; chief points of the compass; such knowledge of physical geography as can be acquired from observation by children at this stage, especially in regard to the action of water and rivers; more extended plans of the neighbourhood than in Standard II. (See clause 41.) Course B—(See clause 42.)
 - (7.) History, including civic instruction. (See clause 49.)
- Instruction of the kind indicated in clauses 48, 53, and 57 must also be given.

Additional Subjects.

- (1.) A definite course of nature-study or elementary science. (See clauses 53, 54, 55, 56.)
- (2.) Handwork. (See clause 58.)
- (3.) Geography. (See clause 43.)
- (4.) History. (See clause 50.)
- (5.) Needlework. (See clause 51.)

STANDARD IV.

Compulsory Subjects.

- (1.) English (see clauses 37, 38):—
 - (a.) Reading—Two books.
 - (b.) Composition—Structure of easy sentences; functions of words; oral and written composition; letter-writing.
 - (c.) Writing—Transcription, including copying of simple invoices.
 - (d.) Spelling—Continued as before.
 - (e.) Recitation—150 lines of suitable poetry.
 - (2.) Arithmetic—Extension of the earlier work to other compound rules; simple practice; easy bills of accounts; knowledge of meaning of fractions. (See clause 39.)
 - (3.) Drawing. (See clauses 44, 45, 46.)
 - (4.) Singing. (See clause 52.)
 - (5.) Physical Instruction. (See clause 47.)
 - (6.) Geography: Course A—Extension of the physical geography done in Standard III., which may be illustrated from the map of New Zealand; study of some river; evaporation, dew, rain, &c.; more extended and exact plans and (optional) elementary notions of mathematical geography. (See clause 41.) Course B—(See clause 42.)
 - (7.) History, including civic instruction. (See clause 49.)
- Instruction of the kind indicated in clauses 48, 53, and 57 must also be given.

Additional Subjects.

- (1.) A definite course of nature-study or elementary science. (See clauses 53, 54, 55, 56.)
- (2.) Handwork. (See clause 58.)
- (3.) Geography. (See clause 43.)
- (4.) History. (See clause 50.)
- (5.) Needlework. (See clause 51.)

STANDARD V.

Compulsory Subjects.

- (1.) English (see clauses 37, 38):—
 - (a.) Reading—Two books.
 - (b.) Composition—Oral and written composition, including letter-writing suited to this stage; structure of sentences; correction of common errors.
 - (c.) Spelling—Word-building and spelling continued.
 - (d.) Writing—Transcription more advanced than for Standard IV.; easy commercial forms.
 - (e.) Recitation—Not less than 200 lines.
 - (2.) Arithmetic—Simple proportion; practice and bills of accounts; easy vulgar fractions; easy direct percentages; meaning of decimals, to three places; mensuration of rectangular areas from actual measurements; cubic measure; easy metric standards. (See clause 39.)
 - (3.) Drawing. (See clauses 44, 45, 46.)
 - (4.) Singing. (See clause 52.)
 - (5.) Physical Instruction. (See clause 47.)
 - (6.) Geography: Course A—Scale of the map of New Zealand; first ideas about glaciers and the work of ice; the sea and its work, winds and currents; coasts and capes; general distribution of land and water on the globe; mountain and river systems in outline of some one continent. (See clause 41.) Mathematical Geography—(see Course A, Standard VI.) Course B—(see clause 42.)
 - (7.) History, including civic instruction. (See clause 49.)
- Instruction of the kind indicated in clauses 48, 53, and 57 must also be given.

Additional Subjects.

- (1.) Elementary Science. (See clauses 54, 55, 56.)
- (2.) Handwork. (See clause 58.)
- (3.) Geography. (See clause 43.)
- (4.) History. (See clause 50.)
- (5.) Needlework. (See clause 51.)

STANDARD VI.

Compulsory Subjects.

- (1.) English (see clauses 37, 38) :—
 - (a.) Reading.—Two books.
 - (b.) Composition.—Revision and extension of the work of previous standards.
 - (c.) Spelling.—Word-building continued; also, technical words in every-day use and the words from one of the reading-books.
 - (d.) Writing.—More advanced transcription.
 - (e.) Recitation.—Not less than 250 lines of poetry or prose.
 - (2.) Arithmetic (see clause 39) :—Vulgar and decimal fractions (excluding recurring decimals) more advanced percentages, compound proportion; easy partnerships; troy weight; metric weights and measures; square root; easy mensuration; shorter methods.
 - (3.) Drawing. (See clauses 44, 45, 46.)
 - (4.) Singing. (See clause 52.)
 - (5.) Physical Instruction. (See clause 47.)
 - (6.) Geography :—Course A—Scale of maps generally; the following subjects treated somewhat more fully than in earlier classes: ice, deltas, and alluvial plains; winds; climate; the seasons; geographical zones. (See clause 41.) Course B (Mathematical Geography, &c.)—(see clause 42)—The following subjects, to be taught as far as possible from actual observation: Daily rotation of the earth; meridians, longitude, approximately stable position of the earth's axis, annual revolution of the earth round the sun, form of the earth, latitude, altitude of the sun at various times and places, inclination of the earth's axis to its orbit, length of the day at different times and places; the seasons, Arctic and Antarctic Circles, tropics, zones, trade-winds, &c.; climatic effects of conditions dealt with herein.
 - (7.) History, including civic instruction. (See clause 49.)
- Instruction of the kind indicated in clauses 48, 53, and 57 must also be given.

Additional Subjects.

- (1.) Elementary Science. (See clauses 54, 55, 56.)
- (2.) Handwork. (See clause 58.)
- (3.) Geography. (See clause 43.)
- (4.) History. (See clause 50.)
- (5.) Needlework. (See clause 51.)

STANDARD VII.

Compulsory Subjects.

- (1.) English—More advanced work than in Standard VI., including the study of some author or authors. (See clauses 37, 38.)
- (2.) Arithmetic—Arithmetic and mensuration more advanced than for Standard VI.; meaning of a simple balance-sheet and of a cash account. (See clause 39.)
- (3.) Military Drill.

Additional Subjects.

- (1.) Drawing.
- (2.) Geometry.
- (3.) Algebra.
- (4.) Elementary Mechanics.
- (5.) Physics.
- (6.) Chemistry.
- (7.) Botany.
- (8.) Book-keeping, as for Civil Service Junior Examination.
- (9.) Shorthand.
- (10.) Agriculture.
- (11.) Physiology.
- (12.) Geology.
- (13.) Geography, as for Civil Service Junior Examination.
- (14.) History, as for Civil Service Junior Examination.
- (15.) Handwork (one or more branches).

And, subject to clause 35,—

- (16.) Latin.
- (17.) French.
- (18.) German.

Attention should still be given to the kind of instruction that is indicated in clauses 48, 53, and 57.

SYLLABUS.

ENGLISH.

GENERAL.

37. There shall be at least two reading-books in each class. One of these shall consist mainly or entirely of literary matter suited to the comprehension of the pupils; the other may contain historical, geographical, or scientific matter, but must not be merely a text-book of history, geography, or science; it may be a continuous reader. If approved by the Minister, a school journal may be substituted for one of the reading-books. If a historical or geographical reader be selected for the second reader it may, if of adequate scope, be held to satisfy the requirements of such portions of history or geography as are so specified in the syllabus laid down for those subjects. (See clauses 42 and 49.)

The chief objects of the instruction in reading shall be to impart to the pupils the power of fluent reading, with clear enunciation, correct pronunciation, tone, and inflexion, and expression based upon intelligent comprehension of the subject-matter; to cultivate a taste for and an appreciation of good literature; and accordingly to lead the pupils to form the habit of reading good books. The reading of such books might, indeed, well replace all other kind of home-work.

Poetry set for recitation should, while suited to the age of the pupils, be chosen for its literary merit as well as for the interest it arouses. There is such a wealth of simple and beautiful poetry in English literature that there is no reason to select for repetition verse that is not worth the trouble of learning by heart. One of the objects in making children learn verse or prose by heart is that they may have stored up in their memory masterpieces that may develop their imagination, and may, whether the children themselves are conscious of the operation or not, mould their taste for good literature.

The children should have an intelligent comprehension of the poetry set for recitation, and be able to answer questions upon the subject-matter of it. In some classes the pupils might be trained to reproduce in their own words the substance of poetry previously committed to memory. These exercises link the recitation to the composition lessons.

In order to secure the objects named in the last three paragraphs, teachers are recommended, in the upper classes, to give special attention to a few selected lessons—*e.g.*, the lessons for recitation and, say, six of the best prose lessons in the reading-book.

Spelling should be taught by means of systematic lessons on word-building, based on a general phonic scheme, or on the meanings of the words, or on both principles combined. This teaching should be regularly supplemented by transcription from script and print. Dictation is a useful test, but not in itself, it should be remembered, a method of teaching spelling. It is recommended that in the preparatory classes and Standard I., the transcription should be from script only.

The object of the instruction in composition shall be to train the children in the correct and ready use of their mother-tongue, both in speech and in writing. Although in the definition of the work for the several standards many grammatical terms are introduced, these terms are used for the guidance of teachers, and it is not intended that any grammar shall be introduced into the course of primary instruction except for the practical end above mentioned. Technical grammatical terms should be used very sparingly indeed, and the order of instruction should be, first from example to rule, and then from rule to example; in other words, by induction first, then by deduction. Every lesson, in short, should be a composition lesson, no lesson merely a grammar lesson.

38. The following shall be the complete course in English for the various standards in all schools:—

STANDARD I.

Reading.—Two books. One book at least should consist of short stories, fables, verses, &c., well within the comprehension of the youngest readers, and not containing rare words or long words.

Composition.—Answering orally, in complete sentences of a simple character, questions upon the most striking parts of the subject-matter

of the reading lesson, and upon such common objects and occurrences as would be observed by children of seven or eight years of age at home, at school, on the way from home to school, or elsewhere.

Writing.—Formation of the small letters and junctions. The small letters, short words, and figures on the slate or on paper at dictation. Transcription of short, easy sentences, beginning with a capital, from script on the blackboard.

Spelling.—Based chiefly on word-building, but including also other words in common use contained in one of the reading-books.

It is suggested that the word-building for this standard should consist of such combinations of consonant and vowel sounds as are most commonly represented in words of one syllable and in easy words of two syllables, and of easy words formed therefrom by the addition of common inflexions. The following words may serve to illustrate what is here meant: Ass, asses, mass, masses, lass, lasses; lip, slip, slips, slipping, slipped, slipper, slippers; talk, talks, talking, talked, talker; stalk, stalks, stalking, stalked, stalker; walk, walks, walking, walked, walker; match, matches, catch, catches, latch, latches; ledge, ledges, sledge, sledges; fly, flies, dry, dries, try, tries; light, tight, fight, might, &c.; eight, weight, eighteen, eighty, weights; though, dough; rain, rains, train, trains, strain, grain, chain, brain, stain, &c.; oar, roar, boar, soar, oars, roars, boars, soars, roared, soared, roaring, soaring, &c.; swim, swims, swimmer, swimming; light, sun-light, moon-light, star-light, candle-light, fire-light, night-light, &c.; brave, braver, bravest, bravery; quick, quicker, quickest, quickly; hot, hotter, hottest, hotly, &c.

Every word should be used in a sentence, formed if possible by the child, unless its meaning is beyond the child's comprehension or experience, in which case, indeed, it would be wiser to defer the teaching of it.

Recitation.—To learn at least 120 lines of suitable standard poetry. A syllabus of the work done during the year to be given to the Inspector.

STANDARD II.

Reading.—Two books, containing more difficult matter than is required for Standard I., but still well within the comprehension of ordinary children of the age of nine.

Composition.—Oral composition as before, suited to this stage of progress. Written composition: Simple sentences upon the subjects already dealt with in oral composition. Completion of sentences given in an incomplete form, e.g., Birds — (*fly*); the boy — (*ran home*); (*Tom*) — did not learn his lesson; the paws of the lion are furnished — (*with sharp claws*); the elephant can be taught — (*to do many kinds of work*). Use of the full stop and note of interrogation.

Writing.—Formation of the capital letters. Easy words at dictation. Transcription from print or from script.

Spelling.—Word-building continued. Spelling of other words in common use contained in one of the reading-books.

The word-building might include an extension of the work of Standard I. to words of two and three syllables in common use; also the formation of simple derivatives and compound words. The following may serve to illustrate what is meant: East, eastward, eastern, easterly, north, northern, &c.; after, afterwards, backward, forward; answer, answers, answering, answered; breath, breathe, breathing, breathed; feather, leather, weather, heather, &c.; steady, instead, read, lead, pleasant (unpleasant); sleep, slept, sleeping, sleeper; weep, wept, weeping; self, myself, himself, herself, ourselves, &c.; two, twice, twenty, three, thrice, thirty, thirteen; four, fourteen, forty; five, &c.; carry, carriage, marry, marriage, courage, &c.; berry, berries, gooseberry, gooseberries, &c.; chestnut, walnut; butterfly, dragon-fly, &c.; afternoon, forenoon; morn, morning; eve, even, evening; lady, ladies; daisy, daisies; breakfast; dine, dinner; sup, supper; Monday, Tuesday, &c.; January, February, March, &c.; Christmas, Easter; happy, happily; merry, merrily; spark, sparkle; rap, rapped; wrap, wrapped; rather, father, &c.

Recitation.—Not less than 120 lines of suitable standard poetry, a syllabus of the work done being given to the Inspector.

STANDARD III.

Reading.—Two books, suited to the comprehension of average children of nine or ten years of age; to be read fluently and intelligently, with knowledge of the meaning of the words, and with due regard to the distinction of paragraphs as well as of sentences.

Composition.—Analysis of easy simple sentences into subject and predicate: e.g., The bad boy — (*hit the cat with a stone*); Mary — (*is a good girl*); Edward VII. — (*was crowned in August, 1902*). What is required is not any exact definition of the terms "subject" and

“predicate” (which, indeed, need not be used at all at this stage, although their use may be found convenient), but the ability to break up a sentence into its two parts. This power will probably be gained most easily by the answering of such questions as “Who hit the cat with a stone?” *Answer*: “The bad boy” (subject). “What did the bad boy do?” or “What is said about the bad boy?” *Answer*: “(He) hit,” &c. (predicate).

The sentences should be direct statements of simple character. The chief word of the subject should be identified as a name or “noun,” or as a substitute for a name (as a pronoun), and the essential part of the predicate as a verb. Synthesis of sentences to correspond, supplying subjects where predicates are given, or *vice versa*, and so forming complete sentences. The synthetic exercises might embrace the joining-together of simple sentences to form easy compound or complex sentences (the terms “simple sentence,” “compound sentence,” “complex sentence,” need not be known): *e.g.*, “Tom saw the cat — Tom hit the cat with a stone”; “Tom saw the cat and hit it with a stone”; or “When Tom saw the cat he hit it with a stone,” &c.

Oral and written composition: The pupils should be able to write several consecutive sentences on subjects that have been dealt with in oral composition exercises, using easy connectives such as “who,” “which,” “when,” “and,” “but,” “for,” “because,” “while,” &c.

Writing.—Continued instruction in the formation of letters and junctions, and of figures. Transcription of easy prose or poetry, including the use of the full stop, the comma, the notes of interrogation and exclamation, and the use of inverted commas.

Spelling.—Dictation of words from the reading-book and of easy sentences. Word-building continued. Spelling of all common words contained in one of the reading-books. Common homonyms, as their, there; air, e'er, ere, heir; to, too, two, &c.

Some such scheme of word-building is recommended as the following, which is based upon a more complete treatment of the various vowel sounds than has been given in earlier classes—*e.g.*, father, papa, fah, lah, aunt; fat, ant, attach, &c.; gate, cage, mare, mane, dame, ancient, &c.; bait, maid, saint, remain, pair, &c.; stray, betray, spray, &c.; eight, rein, reign, neighbour, &c.; set, get, &c.; health, breast, &c.; heifer, said &c.; been, eve, succeed, precede, teach, piece, believe, receive, machine &c.; live, engine, build, guinea, forfeit, &c.; all, awl, alter, gaunt, naughty fought, &c.; top, cough, knowledge, &c.; bone, loaf, toe, potato, snow, fol low, &c.; cut, tough, dove, son, &c.; flute, pool, true, soup, shoe, through &c.; full, good, could, &c.; find, dine, try, dye, sigh, height, buy, guide &c.; boy, boil, buoy, &c.; cow, found, plough, nikau, &c.; pew, due, mule beauty, feudal, &c.

Recitation.—Not less than 150 lines of suitable standard poetry. A syllabus of the work done during the year to be given to the Inspector.

STANDARD IV.

Reading.—Two books, suited to children of ten or eleven years of age; treated as for Standard III.

Composition.—Analysis, synthesis, and variation of the form of very easy sentences. The recognition of nouns, pronouns, adjectives, verbs, adverbs, by their functions in easy sentences. Distinction between singular and plural, between past and present, present and future, taught by examples and by the variation of simple sentences. Correction of common errors of the spoken and the written language corresponding to this stage. Oral description in consecutive sentences of simple objects or phenomena, or of simple incidents, or of pictures, or the oral reproduction of easy stories and fables. Written composition to correspond. Letter-writing.

Writing.—Transcription of prose or of the poetry learnt for recitation, with due regard to paragraphs or to the lines and stanzas of the poetry, and to all punctuation marks. Copying simple invoices relating to ordinary retail trades.

Spelling.—Word-building continued; other words from one of the reading-books. Dictation suited to this stage.

The word-building might include the formation of plurals (regular and irregular) of nouns, and of the participles and past tenses of verbs; also words with silent consonants and vowels more completely treated than before—*e.g.*, climb, palm, yacht, design, bough, height, ghost, honest, thyme, carriage, business, knowledge, wrinkle, castle, sword, autumn, &c.

Recitation.—Not less than 150 lines of poetry as before, but suited to this stage. A syllabus of the work done during the year to be given to the Inspector.

STANDARD V.

Reading.—Two books suited to this stage.

Composition.—Oral and written compositions on suitable topics. The pupils may be expected to give in their own words the substance of a story contained in a ballad or other simple poem, but paraphrase as usually understood is not to be expected. Letter-writing.

The exercises in oral composition should embrace simple narratives and continuous short descriptions of natural objects, as of plants or geographical features, or of scientific experiments, or of pictures. Analysis, synthesis, and variation in the form of easy sentences; knowledge of the functions of adjective phrases and adjective clauses, of noun phrases and noun clauses, and of adverbial phrases and adverbial clauses, in easy direct sentences, as far as they can be distinguished by answering such questions as "What kind of?" "Which?" "What?" "When?" "Where?" "How?"—*e.g.*, "The State requires for its leaders men endowed with honesty, courage, and intelligence"—"What kind of men does the State require?" "I remember the house where I was born"—"Which house do I remember?" "It is glorious to die for one's country"—"What is glorious?" "I know where he lives"—"What do I know?" "After the war Lord Kitchener returned to England," or "When the war was over Lord Kitchener returned to England"—"When did he return to England?" &c. The children should be trained to ask the questions themselves.

(Complete analysis is not to be expected, nor are the children to be required to pick out adjective phrases and clauses, noun phrases and clauses, or adverbial phrases and clauses, except in answer to such questions as those indicated above. They need not even know the terms "adjective phrase," "adjective clause," &c., although the use of these terms may be found convenient.)

The distinction between the various tenses of the indicative, including the perfect forms, is to be taught by their use in sentences, but no parsing is to be insisted on, except such as is implied in analysis—*e.g.*, the distinction between subject and object should be known, but the terms "nominative" and "accusative" (or "objective") need not be used.

The exercises in the variation of the forms of sentences might include the substitution of phrases and clauses for nouns, adjectives, and adverbs—*e.g.*, "He got up *early*"; "He got up *at sunrise*"; "He got up *when the sun rose*."

The correction of common errors of spoken and written language, such as those arising from the misuse of "shall" and "will," "should" and "would"; the use of "have got" for "have"; the misplacing of common words like "only"; &c.

Spelling.—Word-building continued, and the spelling of other words from one of the reading-books. Dictation.

The word-building should include the formation of words by means of the commonest prefixes and suffixes of English, French, and Latin origin.

Writing.—The writing should include the transcription of more difficult prose and poetry than before, and of invoices and other commercial forms in common use.

Recitation.—Not less than 200 lines of suitable standard poetry or prose. A syllabus of the work done during the year to be given to the Inspector.

STANDARD VI.

Reading.—Two books suited to this stage.

Composition.—Revision of the work of the previous standards treated in such a way as to give average children of twelve or thirteen years of age a reasonable knowledge of the structure of easy sentences, the exercises in analysis and synthesis being directed always to the practical end of securing clearness, accuracy, brevity, fluency, and force in the use of language.

There should be further exercises in the blending of sentences and clauses, and in the conversion of phrases, clauses, and sentences into equivalent constructions; also in the proper order of words, phrases, and clauses; more especially should attention be directed to the proper position of limiting words, phrases, and clauses, of easy time phrases and clauses, and of very easy concessive clauses. Further practice in the correction of common errors of spoken and written language; oral and written composition, including in both the reproduction of the subject-matter of the poetry or prose learnt for recitation, and of other easy literary pieces; simple business letters.

Spelling.—Word-building, including the formation of somewhat harder words of English, French, and Latin origin, and of words containing common Greek prefixes and suffixes; also scientific and technical words in everyday use, and other words from one of the reading-books. Pupils in this class should be able to write correctly at dictation a passage from a daily newspaper, or any similar matter that is not technical in character.

Writing.—The copying from print or from fairly legible manuscript of business letters or forms, or of tabulated matter, showing bold head-lines and marking distinctions such as in letterpress require varieties of type.

Recitation.—Not less than 250 lines of suitable standard poetry or prose. A syllabus of the work done during the year to be given to the Inspector.

STANDARD VII.

English work generally as for Standard VI., but the work must be more advanced in character. The reading must include a study of one or more of the works of some standard author or authors—not less than 800 lines of poetry or 200 pages of prose in the year, or an equivalent in poetry and prose.

The subjects for the essays and other composition exercises should be such as are suited to more mature minds; especially should the pupils be practised in reproducing, in abstract or in outline, literary and other matter, and there should be training in very elementary commercial correspondence. In addition, the pupils might be expected to have a more complete knowledge of the analysis and synthesis of sentences than is required in class S6.

The English of this class need not be allotted a separate place on the time-table in schools below Grade 4.

ARITHMETIC.

39. The following shall be the complete course in arithmetic:—

PREPARATORY CLASSES.

The numbers from 1 to 20. The composition of every number up to 20 should be known, and the children should be taught to perform mentally and orally every kind of operation with these numbers that is within the mental powers of children of their age and development, and similarly to apply the power thus acquired to concrete examples and to various easy problems.

Where the preparatory classes have separate teachers, part of the work of Standard I. may be attempted also.

STANDARD I.

The numbers from 1 to 100. The composition of every number up to 100: *e.g.*, 28 would be known (1) as 2 tens and 8 ones or units; (2) as $27 + 1$, $26 + 2$, $25 + 3$, &c.; (3) as $14 + 14$, *i.e.*, $7 + 7 + 7 + 7$, &c.; (4) as 4 sevens, 7 fours, 14 twos, 2 fourteens. Again, it should be known that $\frac{1}{2}$ of 28 = 14, $\frac{1}{4}$ of 28 = 7, &c. Also that $28 + 72 = 100$: thus, $28 + 2 = 30$; $30 + 70 = 100$. Also that $28 + 17 = 45$: thus, $28 + 7 = 35$; $35 + 10 = 45$; &c. In short, there should be instruction to secure the power of working orally addition, subtraction, multiplication, and division of the numbers 1 to 100, neither operating numbers nor the result being greater than 100.

Each number should be taught in the first instance by concrete examples, and the composition and the grouping should be similarly taught. Examples should include examples in shillings and pence; yards, feet, and inches, which should be taught by the actual measurement of the length and breadth of books, slates, desks, the class-room, of the height of a desk, of a window-sill, of the mantelpiece, of the children themselves, &c. The written work to be within the same limits.

It is recommended that subtraction should be taught by the method of complementary addition. This method is just as easy to teach as any other method, and, inasmuch as the modern contracted methods of division, practice, &c., depend upon it, the children would have nothing to unlearn at a later stage.

Too much emphasis cannot be laid upon the fact that success in teaching arithmetic is proportional to the attention given by the teacher to the oral work at every stage, but most especially in the early stages. This oral work should begin with concrete examples, which should be repeated again and again in various forms until the relationship of the numbers is grasped. When any principle is grasped it should at once be applied to new concrete problems based upon the experience of the children. The chief advantage to be gained from the written work in

arithmetic is, probably, that it enables the pupil to have before his eyes the several logical steps by which a given result is obtained. It is no doubt true that many minds cannot deal with large numbers without some visual aid, but it is equally true that greater attention given to oral work would produce a much greater amount of skill in dealing mentally with comparatively large numbers than is usually found in our schools.

STANDARD II.

The numbers up to 1,000.

The composition of every number up to 1,000 should be known: *e.g.* 100 would be known as 10 tens, 200 as 2 hundreds or 20 tens, &c.; 340 as 3 hundreds and 4 tens, or as 34 tens, or as 10 times 34, &c.; 672 as 6 hundreds, 7 tens, and 2 ones or units, or as 67 tens and 2 units. The composition of these numbers should be taught from the concrete, by the use of cubes, bundles of sticks, bags of shot, &c., or by means of diagrams. The four simple rules, multipliers and divisors being confined to the numbers 1 to 12 and 20. The pupils should understand the meaning of $\frac{1}{2}$, $\frac{1}{3}$... $\frac{1}{12}$, $\frac{1}{20}$, applied to easy concrete examples. Reduction of pence to shillings and pence, or of shillings and pence to pence; also of shillings to pounds and shillings, or of pounds and shillings to shillings; but not reduction of pounds shillings and pence to pence, or *vice versa*. Compound rules (money), multipliers and divisors not to exceed 12, and sums of money in the questions and answers not to exceed £20.

STANDARD III.

The numbers up to 1,000,000. The composition of these numbers should be known in a general way: *e.g.*, 10,000 would be known as 10 thousands, or as 100 hundreds, or as 1,000 tens; 20,000 as 20 thousands, &c.; and so on up to 1,000,000, which would be known as 1,000 thousands. Simple and compound rules (money), multipliers and divisors not to exceed 99, multipliers if over 12 to be reducible to factors not over 12; sums of money in the questions and answers not to exceed £1,000. It is recommended that the principle of complementary addition should be extended to long division

Work of Standard II. applied to higher numbers.

In teaching simple multiplication by higher multipliers than 12, the first exercise should involve multiplication by 20, 30 ... 90, and the difference explained (in a concrete manner at first) between the results thus obtained and those obtained by multiplying by 2, 3 ... 9. Even after this point is understood, frequent reference to concrete illustrations will be desirable until the pupil begins habitually to visualise the process and the result. For this reason also the numbers should be as small as can be employed to illustrate the process. Then teach multiplication by numbers 13 ... 99: *e.g.*, by 86, *i.e.*, 80 times + 6 times.

The first exercises in long division should be as simple as possible: *e.g.*, $26 \div 13$, $260 \div 13$, $2,600 \div 13$; and so on.

Simple multiplication by factors should precede compound multiplication by factors.

STANDARD IV.

Long multiplication of money; reduction of money and of the weights and measures named below; simple practice, and the making out of easy bills of accounts and receipts such as occur in ordinary retail transactions. Tables of money, avoirdupois weight, long measure (excluding poles or perches), square measure (excluding square poles or perches and roods), capacity (pint, quart, gallon, peck, bushel, quarter), time, angular measure. Mensuration—to find the area of a square and of a rectangle with given sides, expressed in one denomination only (as in inches, feet, or yards, but not in feet and inches, &c.): this should be demonstrated by making each child draw and cut out a square and a rectangle with a given integral number of inches in each side, and then fold or rule the paper so as to show the number of square inches; the principle may be extended to square feet on the floor of the class-room and to square yards in the playground. (See also clause 56.) The meaning of proper fractions, with denominator not greater than 20, is to be known, and applied to concrete examples in a simple manner—*e.g.*, $\frac{2}{5}$ of £4 10s.: $\frac{1}{5}$ to be found first, and $\frac{2}{5}$ to be shown to be three times the result.

Mental arithmetic and problems to be adapted to this stage of progress.

STANDARD V.

Simple proportion; it is recommended that this should be taught from first principles as set forth in the unitary method, the steps of which may be curtailed when the children become accustomed to the thought involved in the process. Practice and harder bills of

accounts; the easier cases of vulgar fractions (excluding complex fractions); shorter methods in working sums required in earlier standards; easy direct percentages (*e.g.*, to find the simple interest for a year or for a given number of months, but not years and months or days). The meaning of $\cdot 1$, $\cdot 2$, &c., is to be known as one-tenth, two-tenths, &c.; that of $\cdot 01$, $\cdot 02$, &c., as one-hundredth, two-hundredths, &c.; of $\cdot 11$, $\cdot 12$ $\cdot 49$ $\cdot 95$ $\cdot 99$, to be known as one-tenth and one-hundredth, or eleven-hundredths, &c.; that of $\cdot 001$, $\cdot 002$, &c., as one-thousandth, two-thousandths, &c., and applied to concrete examples in a simple manner—*e.g.*, the value of $\cdot 1$, $\cdot 15$, $\cdot 2$, $\cdot 25$ $\cdot 999$ of a pound sterling or of a ton should be understood. The pupils should be able to express money and common weights and measures in decimal forms (to three or four places of decimals), and to work very easy sums thereby. Mensuration of walls and floors, and other simple rectangular areas, as far as possible from actual measurements. The relative values of the cubic foot and cubic inch, and of the cubic yard and cubic foot: these should be actually demonstrated by models, which in the former case may be made of cardboard, carton, or cartridge paper, and in the case of the latter of wood or tin. Relative values of the kilometer, meter, decimeter, centimeter, and approximate equivalents in yards and inches. Relative value of kilogram and gram, and approximate equivalents in pounds and grains respectively.

STANDARD VI. (See also Standard VII.)

Vulgar and decimal fractions (excluding sums in recurring decimals, but the meaning of simple recurring decimals should be known); percentages applied to simple examples—*e.g.*, to find simple interest for a year, months, or days; to find rate or time when one of them and principal and interest or principal and amount are given, but not to find principal when rate, time, and amount are given; to find profit or loss when cost price and rate per cent. are given, or to find rate when cost price and profit or loss, or when cost price and selling price, are given; to find commission and commercial discount; to find compound interest, interest being payable yearly or half-yearly; compound proportion, which it is recommended should be taught by the unitary method, the steps of which may be curtailed as the children become more and more accustomed to the process; the meaning of ratio should be understood—*e.g.*, $5:12$ should be known as equivalent to $\frac{5}{12}$, &c. Easy cases of partnership. Troy weight. The meaning of the following terms in the metric system of weights and measures to be known and illustrated: (a) kilometer, meter, decimeter, centimeter, millimeter; (b) kilogram, gram; (c) liter=cubic decimeter; very simple examples to show their use. Square root. Simple cases of mensuration of plane surfaces and of solids bounded by planes. Suitable mental arithmetic and problems. Shorter methods of working sums required in earlier standards.

STANDARD VII.

(a.) Simple direct cases of stocks; exchange; cube root of numbers reducible to prime factors not greater than 11; easy cases of present worth, that is, to find the principal when the amount, time, and rate are given; harder cases of sums required in Standards V. and VI.; shorter methods of working sums required in earlier standards; mensuration of the prism, the cylinder, sphere, pyramid, cone; simple cases to be demonstrated experimentally, and, as far as possible, by the pupils individually.

(b.) The meaning of a simple balance-sheet, and of ordinary commercial terms, such as "assets," "liabilities," "solvent," "insolvent," "creditor," "debtor," "profit" and "loss"; also of a statement of receipts and expenditure, and of a debit or credit balance. Working of sums arising therefrom. (b) may, with the approval of the Inspector, be substituted for an equivalent amount of the work required in Standard VI.

The arithmetic of this class need not be allotted a separate place on the time-table in schools below Grade 4.

GEOGRAPHY.

GENERAL.

40. This subject should be based as far as possible upon the actual observation of natural phenomena by the children; where the actual phenomena themselves do not come within the range of the children's observation, models should be used if possible. Pictures rank next in value to models. Models of wet sand or clay or plasticine form an extremely useful means of instruction, and in most cases it will be an

advantage for the children to make such models themselves, either from their own observation or from the teacher's copy. Carefully selected pictures taken in conjunction with maps form a good vehicle for lessons on subjects lying more or less outside the children's experience. The more remote the place, or the less familiar the subject, the more necessary is the use of pictures or of other auxiliaries. The children should be taught to make maps or plans of the district from their own measurements, increasing in exactness from year to year with a view to making them understand how maps are made. As an instance of what is meant, the children in the early stages might be taught to measure approximately, by pacing, the length and breadth of the playground, the distance from their homes or other well-known points to the school, &c.

The mathematical geography will be of far more value if it is based upon actual measurement and observation, and if drawings and models are made to illustrate the facts observed, so that the children may gain thereby clear conceptions of the daily and yearly movements of the earth, and of such phenomena as tides and eclipses. The action of rivers can be studied from nature in the neighbourhood of almost every school, and even the effect of a shower of rain as seen in the playground or the public road may be utilised for this purpose. The action of the sea and of ice and snow may in some cases be learnt first-hand; if that is not possible, models and pictures should be used.

Some of the physical phenomena lend themselves to illustration by experiments—*e.g.*, the fact that warm water floats upon cold water, and that a block of ice floats in water with the greater part of its bulk below the level of the surface of the water. The action of water and rivers may be illustrated by experiments outside in the playground, or even indoors by means of a wooden tray with fine shingle, sand, and clay, and a watering-pot.

It is recommended, therefore, that in teaching geography full use should be made of such aids as the following: globes; models made with plasticine, clay, carton or cardboard, wire, &c.; school museums; wall pictures of typical phenomena; hand-pictures; school museums with collections of plants and plant products, of minerals, rocks and fossils, of animal products, of national coins, weapons, ornaments, &c.

41. The following shall be the course in geography:—

STANDARD II.

In Standard II., geography is one of the additional subjects (see clause 29).

Elementary geographical notions are to be taught as far as possible from actual observation—*e.g.*, the nature of hills, plains, valleys, rivers; also of lakes, bays and gulfs, straits, islands, peninsulas, if examples of these are found in the neighbourhood of the school; the position of the sun at noon and at other times of the day; the position and length of the shadow cast, say, by a post in the playground at different times of the day; the rough determination of the north and south line and of the east and west points; the position of the school and class-room, and of buildings and other objects visible from the playground, with reference to the cardinal points; the direction of the wind on different days, and whether a given wind brings rain, is hot or cold; the snow upon the mountains and lower hills, whether always seen or not; the distinction between clay, sand, and other very common rocks.

First lessons might be given in the playground, or the roadside near the school, upon the action of water running down a gentle slope to form streamlets, streams, and rivers. Models of damp sand or clay should be made by the teacher in the playground, or on a large wooden tray or a blackboard placed upon the floor, to illustrate the geographical features seen within a short distance of the school, and the children should make smaller models of sand or clay or plasticine.

The children should be taught to make plans, first full-size, of wooden blocks or bricks, books, ink-pots, &c.; then plans, roughly to scale, from their own measurements of desks, tables, the class-room, the school, the playground; and the drawing of plans might be extended to such portions of the district within, say, three or four miles of the school as come within the common knowledge of the children. The direction of one or two of the nearest towns should be known, and a plan or simple map should be drawn upon the blackboard to show the relative positions of these towns with reference to the school. All plans should be drawn in the first instance with the blackboard, slate, or paper in a horizontal position. (The drawing of plans may be very conveniently co-ordinated with the lessons in "brick-building" if this is taken as part of the course in "handwork.")

The geography indicated above is, strictly speaking, a part of nature-study, and should be treated accordingly.

STANDARDS III.—VI.

The geography of Standards III.—VI. is divided into two courses—A and B—of which A may be considered part of nature-study (see clauses 53, 54) and B may be treated as indicated in clause 42.

COURSE A.

As in the case of other portions of nature-study, the teaching should have reference to the surroundings of the school, and the scheme of work should be drawn up accordingly. The following programme will indicate the kind of work that is intended to be done under this head, but any suitable programme may be accepted by the Inspector. It will often be convenient to include this work in the definite course of nature-study or elementary science that is taken up (see clause 54).

This division of the subject is to be taught continuously through the four classes S3–6.

Standard III.

The elementary geographical notions should be taught, or, if geography has been taken in Standard II., be extended as far as possible from actual observation (or, where this means cannot be used, from pictures), models, and plans being constructed by the teacher and the children. The children should also be taught to observe the length of the shadow of a post at noon at different times of the year, noon being the time on any given day at which the shadow is shortest, and at which, therefore, the sun is highest in the sky (with indoor illustration of the same principle by the shadow of any object cast by a lamp or candle held at different heights); the more exact position of the north and south line, being the direction of the shadow at noon (the north and south line when found should be marked by two wooden pegs in the playground and by two brass nails in the class-room); the directions N.E., S.W., N.W., S.E., &c.; the compass, the fact being observed that the north and south ends of the needle point to the east and west respectively of the north and south line; the phases of the moon, and the number of days from new moon to new moon, from new moon to full moon, and from full moon to full moon; if the children live near the sea, they should know, further, the time of high tide and low tide, and the interval between high tide and high tide, or low tide and low tide, or high tide and low tide; the chief forms of clouds—the “feather-cloud” (cirrus), the “heap-cloud” (cumulus), the “sheet-cloud” (stratus), the “rain-cloud” (nimbus); the most common birds, plants, and insects found near the school; the fact that water sinks very quickly through sand but not through clay.

Further lessons might be given outside on the action of water and the drainage of the earth's surface; river channel, source, mouth, tributary, wearing-away or denudation of the surface and deposition of alluvium (the terms “denudation,” “deposition,” “alluvium,” need not necessarily be used); the formation of deltas.

More extended and more accurate plans of the neighbourhood should be drawn to scale, observations and measurements being made by the children. There should be in every school a map, on a large scale, of the town or district, and a map of the education district or of the provincial district in which the school is situated. The children should know three or four of the most important places and geographical features within that district; but it is not desirable that any name should be known merely as “a name on the map”: every name (and this is true throughout the whole course in geography) should be introduced to illustrate some principle, or in association with some interesting fact. Pictures of places or geographical features not known to the children should always be used, if available. The map of the district should be laid flat upon the ground with its north towards the true north, and the children should be led to connect the information it gives with the knowledge they have already acquired, and with the plans they have drawn. This method might then be extended to the map of New Zealand, the positions of, say, twelve places in other parts of the colony being known in relation to the education or provincial district in which the school is situated.

Standard IV.

The work of Standard III. is to be extended—*e.g.*, the action of rain and of rivers should be more fully treated, especially as regards denudation of the earth's surface, and the deposition of alluvium in the lower course of a river, or at the inside of a bend in its course, or at its mouth, and the formation of bars and deltas.

The relative rapidity with which, or the order in which, pebbles, sand, and clay are deposited may be observed from experiment, or from the action that takes place in a pool, in a small stream, or by cutting a section with a spade through the sediment left in a large puddle (the section, of course, should be cut when the water has run off or evaporated); or experiments might be made in the playground, or with a wooden tray and clay, sand, and shingle, as suggested in Standard II.

A fairly complete study should be made of some river known to the class or to most of the individuals in it; comparison should then be made between this river and two or three other rivers in New Zealand, and also, if pictures can be obtained, between the given river and, say, one river in each of the great continents.

The children could then infer from the map of New Zealand the general slope of the surface, and could construct rough relief maps of the North and of the South Island. The same process might be applied in a general way to the continents, of which, also, very rough relief maps could be made.

The process of evaporation should be demonstrated practically—first, rapid evaporation, as when water is boiled; next, slow evaporation, as of a small quantity of water in a saucer in front of a fire, or in the sunshine, or even anywhere in comparatively dry air; next, the formation of vapour clouds, the deposit of water on cold surfaces, the formation of dew, &c.

Plans of the playground may again be drawn, and distances and areas calculated therefrom. This should be followed by the drawing of more extensive and more accurate plans of the district around the school than have been made in Standards II. and III.; the rough measurement of distances might be computed therefrom.

The following work may be done either in this class or in Standard V.: By means of an upright stick, post, or block, the children might be taught to find the altitude to the nearest degree of the sun, at noon at the equinoxes (in 1904, 21st March and 23rd–24th September), and at the solstices (in 1904, 22nd June and 22nd December); to note approximately the length of day and night, checking their observations by reference to the times of sunrise and sunset as given in any almanac.

Some very useful work might be done in the direction of the discovery by the children from their observations of the nature of the movements of the earth and of its form. It would, for instance, be quite possible for children at this stage to be taught to recognise a few of the brightest stars, to notice that those in the northern sky, on any given evening, seem to be moving from right to left, and that the Southern Cross seems to be turning round in the same direction as the hands of a clock. Hence, by a general but simple inference, they might be led to the idea of the daily rotation of the earth. There should be no attempt to hurry the process; there should be observations taken by the children themselves during the winter months, and the conclusion should be formulated when their minds are ready for it.

If an eclipse of the moon visible in New Zealand occurs, the opportunity should not be missed of showing the children, by lessons beforehand upon shadows, and lessons afterwards upon what was seen during the eclipse, what is really for children probably the best proof of the earth's rotundity.

Standard V.

(a.) The scale of the wall-map of New Zealand used in the school compared with the scale of the map of the district; the scale of the map of New Zealand in an atlas or geographical reader. A few distances may be computed from the map of New Zealand, and also, roughly, the areas of the North and South Islands, and of the whole colony. Either in this standard or in Standard VI. the process may be extended so as to give clear ideas as to the distance of New Zealand from Australia, Fiji, &c.; the extent and area of Australia, &c. First ideas (to be further extended in Standard VI.) about glaciers and the work of ice; the sea and its work; tides; winds and currents; coasts, rocky and otherwise; capes. General distribution of land and water on the surface of the globe; the land hemisphere; the water hemisphere. The mountain and river systems, in outline, of some one continent.

(b.) Mathematical geography: See Standard VI. (b), Mathematical geography.

Standard VI.

(a.) The scale of maps generally, illustrated by some one or two maps, as of England, Australia, India; distances and areas computed therefrom; a few distances measured on the globe. Ice; experiments with

ice; temperature of melting ice; volume and density of ice; fracture of rocks; easy to make two surfaces of ice freeze together, &c.; snow; glaciers; the work of ice in shaping the surface of the land; icebergs. Formation of deltas and alluvial plains, *e.g.*, the Canterbury Plains. Winds, more fully than in Standard V. Radiation; specific heat of water and air; the principal causes of the differences of climates; continental climates; island climates. Rise and fall of the land surface; earthquakes; volcanoes.

(b.) The following portions of mathematical and physical geography should be taken in a connected logical order, but the lessons may be spread over the two years of Standards V. and VI. in some such way as is indicated in paragraphs (1) to (16) below. The instruction may be founded in every case directly upon observation and experiment, inferences from which may be explained by means of globes and other models, and by diagrams. Should teachers from any cause, however, find themselves unable to base their teaching directly upon the observation of the stars and other phenomena, simple models may be used and diagrams drawn therefrom; in no case can the teaching of mathematical geography be regarded as satisfactory, if it is taught from books and diagrams alone.

- (1.) Daily rotation of the earth, as suggested in the syllabus for Standard IV. The children should be convinced of this from their own observation of stars in the northern and southern skies.
- (2.) Meridians; longitude, known as an angle and an arc; cause of the differences of local time; method of finding longitude at sea (optional).
- (3.) Approximately stable position of the earth's axis, which may be inferred from the apparently fixed position of a certain point in the southern sky (the South Pole).
- (4.) Annual revolution of the earth round the sun, which may be argued from the varying position of stars in the northern sky, or of the Southern Cross, from month to month.
- (5.) Approximately spherical form of the earth: the common proofs may be used, as—by inference from what is seen when ships go away from the land; the circular form of the offing or horizon; the shape of the earth's shadow on the moon; the circumnavigation of the world; the round form assumed by a plastic body that is made to rotate rapidly; or (optional) even from the meridian altitude of the sun or a star at two places, one north of the other, on the same day (to do this it would be necessary for two schools to exchange observations).
- (6.) Latitude, known as an angle and an arc; the value of a degree of latitude, roughly nearly seventy miles everywhere; the distance from the school to the equator, the distance from either pole to the equator; the circumference of the earth, its diameter; the length of New Zealand and of the continents from north to south; the distance of a few well-known places (London, New York, Calcutta, Cape Town, Sydney, &c.) from the equator; and (optional) method of finding latitude from the altitude of the sun at noon may also be explained to Standard VI. All these may be calculated; it is not intended that they should be committed to memory.
- (7.) The altitude of the sun at the equinoxes or at the solstices: hence, in conjunction with (4), we infer—
- (8.) The inclination of the earth's axis to the plane of its orbit.
- (9.) The length of the day at different times of the year—from observation, from the times of sunrise and sunset given in an almanac, from experiments with a globe; length of day and night at the poles.
- (10.) The calorific effect of vertical and oblique rays from the sun falling upon the surface of the earth.
- (11.) The seasons, inferred from (4), (8), (9), and (10).
- (12.) The antarctic and arctic circles; the tropics; the five zones.
- (13.) The mean temperature at different times of the year. It is recommended that the temperature in the shade should be regularly recorded each day, say at 9 a.m., noon, and 3 p.m. (or 5 p.m. if possible), and also the temperature in the sun at noon, and that the mean temperature for each week and each month should be found.
- (14.) Vegetable life at different times of the year and in the different zones of the earth (from pictures, &c.).
- (15.) Seasonal winds; trade winds; monsoons.

- (16.) A comparison of the inferences derived from (8), (9), and (10) with the observed phenomena of (13), (14), and (15).

COURSE B.

42. The requirements for this part of the geography may be satisfied by the use of geographical readers, prescribed and approved by the Minister of Education, if the reading lessons are explained fully by the aid of maps, and, where possible, of pictures and other accessories.

The course shall consist of lessons on some or all of the following subjects, occupying at least eighty hours in the aggregate, which may be spread over two, three, or four years in such a way that every child passing through one of the classes S3-6 in each year shall receive at least two years' instruction therein:—

New Zealand: (1.) Its natural productions of geographical or commercial interest—*e.g.*, ores and minerals, rocks, insects; birds and other animals; plants, native and introduced. (2.) Influence of the position, soil, climate, and natural productions of New Zealand upon the occupations, trade, and general life of the people; internal and external communication.

The five zones more fully treated than in Course A; their climate; animals and plants characteristic of each—*e.g.*, regions of pines, rye, wheat, maize, rice, and also of gooseberries, apples, vines, figs, oranges, bananas, palms, pineapples, dates, cocoanuts; habitat of the polar bear, reindeer, whale, buffalo, camel, elephant, lion, tiger, ostrich, and also of the kangaroo, crocodile, seal, herring, cod, penguin, shark, humming-bird.

Alluvial plains and valleys; areas of cultivation on the world's surface; wheat and chief wheat-producing countries; other articles of food-supply—*e.g.*, maize, rice, meat, fish, butter and cheese, sugar, tea, coffee, fruits, &c.

Coal, iron, gold, silver, petroleum: where found; effect on manufactures, industries, and prosperity of various countries.

Cotton, wool, silk: where most largely produced and manufactured. Other important animal products, such as leather, ivory, &c.

Timber, different kinds of; other vegetable productions, indiarubber, &c. The different races of men, and where they live; their houses; degree of civilisation; effect of climate and other physical conditions on civilisation; migrations of races—*e.g.*, English, Turks, Arabs; European colonies; a few typical examples of the connection between history and geography—*e.g.*, discovery of America, independence of the Swiss, migrations of the Danes; chief lines of trade and communication in the world, oceanic, river, and continental; influence of winds, &c., on trade-routes; effect of the distribution of land and water upon trade and trade-centres; influence of rapid steamships and ocean cables in modifying this.

Influence of position upon importance of towns, whether situated at mouths of rivers, at head of navigation of large rivers, on large lakes or natural harbours, on lines of communication, on coalfields, &c.

Geographical causes of the rise and importance of the British Empire.

Notable travellers and geographical discoveries.

The object of the course sketched out here is to show, as far as it is possible for the minds of the children to see it, the connection between natural conditions on the earth's surface and the civilisation of man—*i.e.*, between physical geography on the one hand, and political and commercial geography on the other. In the course of the lessons many names of places will be naturally introduced in order to illustrate the principle which it is sought to establish, but it is not intended that the lessons should be used as an exercise of the memory. It will be expected, however, that the illustrations employed in courses A and B will be so chosen as, incidentally, to give the children clear ideas of the extent of the British Empire and of the position of the most important places in it.

43. The geography indicated in clause 32 cannot be considered as fully dealt with if treated by the use of a reading-book only. There must be definite lessons given to the several classes by the teacher. The requirements will be satisfied by a fuller treatment of Course B than is implied in clause 42, but the Inspector may accept any equivalent course if a syllabus of the work done in Standards III.-VI. be presented to him.

[The following programme will provide material from which a possible alternative course may be constructed:—

New Zealand: its position on the globe and with reference to other countries; its length, breadth, and area illustrated by reference to known

distances and areas; its surface and coast features; chief towns: occupations of the people; leading products and industries according to locality; agriculture in its various branches; sheep-rearing (wool and frozen mutton); dairy farming; mining; fruit-growing; manufactures; gum-digging, &c.: principal ports; means of transit between different parts of New Zealand; the chief railways and the places they connect; steamer-routes; roads; objects of interest to tourists; chief telegraph-lines; climate; characteristic plants.

Australia: The names and positions of the several States with their chief towns and ports; intercolonial trade between New Zealand and Australia; leading industries; the most important exports.

Great Britain and Ireland: Great ports and other chief towns; leading industries, imports and exports; trade with New Zealand.

The countries and chief towns of Europe; the chief British colonies and possessions, with their capitals, ports, and leading products; the names and positions of other countries of the world; of well-known mountains and rivers, and other conspicuous features of the continents; chief trade-centres and trade-routes; the countries in which the principal articles of commerce are produced; the oceans, great seas, and important islands and straits.]

The parts of the subject indicated in this clause and the preceding clauses cannot for the most part be taught directly from observation of the actual facts; but it is recommended that pictures should be used as largely as possible in conjunction with the globe and maps.

Suitable pictures from illustrated papers are available in almost every school, and if these are mounted upon brown paper and kept, each school will in time come to possess a collection of pictures that, with a little supplementing from other sources, will form a very useful adjunct to the lessons in physical and descriptive geography. The pictures should be used in such a way as to call forth the reasoning powers of the children as much as possible. They may be passed round the class in order, each pupil having a map, or atlas, and a note-book; and the lesson at the end might sum up and enforce the ideas gained from the pictures. The pupils should be trained in the habit of making rough sketch-maps of small portions of the earth's surface to illustrate special points, but it is not desirable that time should be spent in making elaborate copies of maps in the atlas. The use of pictures will generally also secure attention to places of interest in connection with current events, a point that should never be overlooked in the teaching of geography. The same pictures would in many cases suggest suitable subjects for oral and written composition lessons in the upper classes.

DRAWING.

GENERAL.

44. In preparatory classes, the instruction in drawing is to be directed towards preparing the children for the work of the First Standard. The character of the work should be such as to familiarise the children with elementary notions of form and proportion, to quicken their perceptive faculties, and to train them in habits of accuracy and decision, in dexterity of hand, and in freedom and boldness of style. The several branches of handwork that are prescribed for school classes in the regulations issued under the Manual and Technical Instruction Act, if taken in conjunction with suitable instruction in drawing, afford ample material for attaining the object in view.

In all work in which the subject-matter lends itself to such treatment, the children should be encouraged to draw diagrams or sketches to illustrate various points of the instruction; in other words, they should be taught, in a very simple way, to use drawing as a means of expression.

The several parts of Blair's Colonial Drawing-book, issued by the authority of the Minister of Education, will indicate what is intended in the syllabus to be the range of freehand drawing in pencil from diagrams, but in no standard is such drawing to be taught altogether from set copies; indeed, these are to be regarded rather as supplying material for the teacher than copies for the pupils. As much as possible of the drawing from diagrams is to be done from examples drawn by the teacher on the blackboard or from wall diagrams.

The course in drawing for each standard is to include some instruction suited to the capacity of the pupils in elementary design; simple known geometrical, natural, or conventional forms are to be utilised as elements for the drawing of simple patterns and borders, and of simple decorative arrangements. The designs are to be inventive as well as imitative, and should show that the pupils have some knowledge of the fundamental principles of design, such as repetition, alternation, balance, radiation, &c. Drawing from memory is to be practised in all standards.

The pupils are to be required from time to time to reproduce from memory a simple freehand or geometrical exercise, a simple example of design, a representation of a simple model or of a common object that has formed the subject of a previous lesson.

The course in freehand for each standard is to include some practice in drawing from actual objects, the character of which shall be suited to the capacity of the pupils. In the first three standards the objects selected are to be such as have no appreciable thickness (*e.g.*, a sheet of paper, a book, a slate, a map, representations in wood or cardboard of simple geometrical or ornamental forms) placed flat on the wall opposite the pupils. In the Fourth and Fifth Standards, in addition to more difficult objects of the kind described above, the objects selected are to include such articles as a saw, a screwdriver, a spade (placed flat on the wall), and simple leaves, fruits, or vegetables suitably placed with regard to the pupils. In the Sixth Standard, objects similar to but more difficult than the above are to be selected, such as shells, sprays of leaves, flowers, and other natural objects.

Pupils must also have a general knowledge of the following geometrical solids—the cube, the square prism, the square pyramid, the sphere, the cylinder, and the cone, and must for this purpose receive instruction in either (1) freehand drawing from single examples or from groups of not more than two elements of the solids named, and of simple objects based thereon, or (2) elementary solid geometry as prescribed for Standard VI.

For model-drawing the objects are to be arranged in the simplest positions in front of and below the level of the pupils' eyes. It is suggested that where the equipment for the teaching of model-drawing is limited it might with advantage be supplemented by models in cardboard, &c., constructed where possible by the pupils, and by objects that approximate in shape to the solids named. It will be beneficial to pupils if the instruction in freehand drawing is correlated with instruction in drawing on the blackboard, brush drawing, and modelling in plasticine or clay.

Drawing by the Aid of Instruments.

45. In the first three standards, pupils are to be practised in the use of the flat ruler (with scale of inches), and of set-squares of 45° and 60°. The pupils will be required to know how to construct with the aid of these instruments the following rectilinear figures: the square, the rhombus, the oblong, the rhomboid, the triangle, and the trapezium (having two sides parallel), and the kite. They must be able to recognise, to describe, and to distinguish between these figures, and also the lines and the angles thereof, and to draw them from dictation, from written descriptions, or from memory. They must know, for example, that a triangle may have all, or two, or none of its sides of equal length, that an obtuse angle is greater than an acute angle, and that the diagonal of an oblong divides that figure into two equal triangles of similar shape. But geometrical terms are, in the first two standards, to be avoided as far as possible, and used but sparingly in the Third Standard. Cardboard models of the several figures should be freely used by the teacher for demonstration purposes, and by the pupils, who should at first be given frequent opportunities of handling, tracing round, and drawing from them. Adjustable skeleton models, in wood or cardboard, may with advantage be used for the purpose of comparing with one another the square, the rhombus, the oblong, the rhomboid, and the various triangles.

The pupils should be required to draw the various figures with sides of prescribed length, and in the Third Standard to make drawings to scale from large models of the figures, or from simple objects of similar form (*e.g.*, maps, frames, exercise-books, &c.).

The instruction is also to include the drawing of simple patterns or borders based on combinations of straight lines: these exercises should be inventive as well as imitative.

In the Fourth Standard the pencil-compass and dividers will be added to the instruments already in use. Pupils should be required to construct geometrically the several rectilinear figures prescribed for the first three standards, and must for this purpose be familiarised with the following geometrical operations: the bisection of a straight line and of an angle; the erection of a perpendicular on a given straight line; the drawing of a straight line parallel to a given straight line; the making of an angle equal to a given angle; and the division of a straight line into any number of equal parts. They must also know how to make drawings to scale of objects from actual measurements or from dimensioned blackboard sketches; the objects selected must be of a simple character,

and must not require for their representation a knowledge of geometrical operations other than those prescribed for this standard. The meaning of plan and elevation must be known.

Pupils should also be required to apply these geometrical operations to the construction of simple borders and patterns, which should be inventive as well as imitative.

In the Fifth Standard, pupils are to be familiarised with the following geometrical operations: the construction of triangles and of quadrilaterals from given data (not more than two cases for any one figure); the general method, and in each case one special method, of constructing a regular pentagon, a regular hexagon, and a regular octagon (1) on a given straight line, (2) within a given circle; the method of enlarging and reducing given figures by means of proportional scales; how to find the centre of a given circle; how to draw a circle to touch a given circle; how to draw a tangent to a given circle (1) from a given point on its circumference, (2) from a given point without it. Pupils must be able to make freehand dimensioned sketches either from actual objects or representations thereof, and then to draw the object to scale. The instruction in scale drawing must include practice in drawing plans and elevations of simple objects, based on the cube and square prism.

In the Sixth Standard, where model drawing is not taken, the pupils must have a general knowledge of and be able to draw plans and elevations (front and end) of the geometrical solids prescribed for model drawing for this standard, and of simple objects based thereon.

Course of Drawing.

46. Subject to clauses 44 and 45 the following shall be the course of drawing for the various standards. Where, however, a course of hand-work that includes drawing is taken up, the specific requirements of this clause may be lightened to a corresponding extent. (See also clause 59.)

STANDARD I.

Drawing, with and without ruler and set-squares, of rectilinear figures, of straight lines, of angles, and of actual objects; elementary geometrical notions; elementary design; memory drawing. (See clauses 45 and 46.)

STANDARD II.

As for Standard I., but more advanced. The instruction in freehand is to include practice in drawing simple curves. (See clauses 45 and 46.)

STANDARD III.

As for Standard II., but more advanced. The instruction in freehand is to include practice in drawing simple curvilinear forms. Ruler-work is to include very elementary exercises in drawing to scale. (See clauses 45 and 46.)

STANDARD IV.

Drawing with aid of instruments, drawing to scale, pattern-drawing. Freehand drawing is to be in advance of that for Standard III. (See clauses 45 and 46.)

STANDARD V.

As for Standard IV., but more advanced. (See clauses 45 and 46.)

STANDARD VI.

Freehand drawing is to be in advance of that for Standard V. Instruction is to be given in either freehand drawing from simple models, or elementary solid geometry. (See clauses 45 and 46.)

These requirements are further explained in clauses below.

The solid or object treated of should be placed in the simplest positions with regard to the vertical and horizontal planes.

It will be beneficial to pupils if the instruction in geometrical notions and geometrical drawing is combined with instruction in paper-work, carton and cardboard work modelling.

PHYSICAL DRILL.

47. Exercises selected from those given below, or any set of similar suitable exercises.

PRELIMINARY.

The following commands need not be explained here: "Fall in"; "Attention"; "Right dress"; "Eyes front"; "Stand at ease"; "Right turn"; "Left turn"; "Right incline"; "Left incline"; "About turn";

“Slow march” (75 paces to the minute, 25 in. to 30 in.); “Quick march” (128 paces to the minute, 25 in. to 30 in.); “Double march,” or “Double” (180 paces to the minute, 28 in. to 32 in.); “Mark time”; “Forward”; “Halt”; “Right close”; “Left close” (one-two, one-two, &c., paces of 12 in.); “Dismiss.”

Saluting to the front, and to the left or right, should also be taught.

“Fall in” (in single rank). “Number.” “Open ranks.” “Even numbers one pace to the rear—March.” “Right close—Quick march” (covering front-rank numbers. If there be plenty of room it will be better for the ranks not to close up). “Front rank—Number.” “Rear rank—Number.” “Front rank, three paces to front—March.” “Right turn—Odd numbers of both ranks one pace to the left; even numbers one pace to the right—March.” “Half-left turn.” “Close ranks” (all turn to the front; odd numbers of front rank stand fast; others step up to original formation).

Or, if clubs are used, the classes may be arranged for physical exercises according to the following plan, which is based on the method in the “Imperial Handbook of Infantry Training.” Form up in two ranks, girls in the rear rank. “Number” (rear rank take number of file covered.) “Full interval from the left—Right close—Quick march” (No. 1 on left in both ranks stands fast; others move with side step, one-two, one-two, &c., to the right, extending left arm till it rests palm upwards on right shoulder of next file; rear rank moving so as to cover front files, but with hands to side). “Eyes front” (hands to side). “For physical drill—Prepare” (rear rank step back two paces). “March” (odd numbers in front rank, four paces to front; even numbers in rear rank, four paces to rear).

FREE EXERCISES.

[Most of these exercises may also be done with light dumb-bells, some with Indian clubs.]

Muscles exercised.	Music.	Description.
1. Arms, shoulders, and front of chest	“Oh, dear! What can the Matter be?” (6-8 time), or “Keel Row” (in 2-4 time)	Position, same as “Attention.” (Except where the word “slowly” is inserted, all movements should be executed smartly). A. “One.” Extend arms forward horizontally, palms touching, thumbs uppermost, fingers and thumbs together, chin up. “Two.” Come to position. Repeat “One,” “Two,” &c., till tune is finished. “Change.” B. “One.” Extend the arms sideways, fingers and thumbs together, palms uppermost and on a line with the shoulders. “Two.” Position. Repeat as before till tune is finished. “Change.” C. “One.” Extend the arms straight upwards from the shoulders, fingers and thumbs together, fingers straight, palms inward but apart. “Two.” Position. Repeat as before.
2. Arms, &c.	“The Campbells are comin’” (6-8 time)	A. “One.” Bend the arms, bring the clenched hands into line with shoulders, elbows well back, knuckles to rear, chin slightly raised. “Two.” Extend arms straight to front from shoulders, hands open, palms inwards but apart. Repeat until tune is finished. “Change.” B. “One.” As for Ex. 2A. “Two.” As for motion “One” in Ex. 1B. Repeat as before. “Change.” C. “One.” As for Ex. 2A. “Two.” As for motion “One” in Ex. 1C Repeat as before.
3. Arms, shoulders, and front of chest	“Ring the Bell, Watchman” (common time), or “The Campbells are comin’” (6-8 time)	“One.” As for “One” of Ex. 1A, but palms touching. “Two.” Raise hands over head, arms kept straight, palms together. “Three.” Lower arms to position of Ex. 1B “Four.” Position.

NOTE.—Exercises 1 and 2 may also be done with the two arms alternately.

Muscles exercised.	Music.	Description.
4. Arms, &c. ..	"Keel Row," or "Comin' thro' the Rye," or any tune in 2-4 time	<p>In doing "Three" and "Four," arms should be kept well back; exercise may also be done slowly. Repeat until tune is finished.</p> <p>"Change."</p> <p>A. "One." As for "One" of Ex. 1B. "Two." Touch the shoulders with the tips of the fingers, elbows in a line with the shoulders. Repeat as before. "Change."</p> <p>B. "One." Extend right arm only, fingers of left hand touching shoulders as before. "Two." Extend left arm, right hand to shoulder. Repeat as before. "Position."</p>
5. Arms, &c. ..	"The Ash Grove," or any tune in 3-4 time, or waltz refrain	<p>A. "One." As for "One" of Ex. 1A. "Two." Swing the arms from front to rear over the head and with a circular movement to the front again; body steady. Continue till tune is finished. "Change."</p> <p>Position as for "One" of Ex. 1B.</p> <p>B. "One." Swing arms downwards and inwards through a half-circle till they cross the chest; body steady. "Two." Swing them back, downwards and outwards, to position. Continue till tune is finished. "Change."</p>
6. Leg and foot principally	"Keel Row" ..	<p>Any tune in 3-4 time (movement from left to right) taking two bars</p> <p>Position, arms stretched out horizontally, both towards left.</p> <p>C. "One." Swing arms downwards through half-circle towards right. "Two." Swing arms back downwards through half-circle to "Position." Continue till tune is finished.</p> <p>Position, hands on hips, thumbs behind; shoulders back.</p> <p>A. "One." Lift the right foot, knee fully bent, toes pointing to the ground. "Two." Extend leg to front, leg straight, toe pointed downwards and towards the right, and about 1½ in. from the ground. "Three." Position. Continue with the right leg; then with the left leg. "Change."</p> <p>Position as before (Ex. 6A).</p> <p>B. "One." As above in "One" of Ex. 6A. "Two." Extend leg sideways, foot not touching ground. "Three." Position. Continue with each leg. "Change."</p> <p>Position as before (Ex. 6A).</p> <p>C. "One." As above in "One" of Ex. 6A. "Two." Extend leg to rear, foot being stretched out and toes downward, but not touching ground. "Three." Position.</p>
7. Leg and foot ..	"Keel Row"; "Oh, dear! What can the Matter be?"	<p>Position as before (Ex. 6A).</p> <p>A. "One." As above in "One" of Ex. 6A. "Two." As above in "Two" of Ex. 6A. "Three." Place foot on ground. "Four." Position. Continue with right foot. "Change." Repeat same with left foot; continue. "Change." Repeat same with right and left foot alternately.</p> <p>Position as before (Ex. 6A).</p> <p>B. "One." As before in Ex. 6A. "Two." As in Ex. 6B. "Three." Place foot on ground. "Four." Position. Continue with each foot, then with right and left alternately.</p> <p>Position as before (Ex. 6A).</p> <p>C. "One." As before. "Two." As in Ex. 6C. "Three." Place foot on ground.</p>

Muscles exercised.	Music.	Description.
8. Leg and foot chiefly	"Comin' through the Rye"	"Four." Position. Continue with each foot, then with right and left alternately. Position as before (Ex. 6A). A. "One." Right foot forward, toe on ground. "Two." Move foot to side, toe on ground. "Three." Move foot back, toe on ground. "Four." Position. Repeat. "Change." B. Repeat movement with left foot. "Change." C. Repeat with right and left alternately. "Change." D. Position as before (Ex. 6A). "One." Right foot forward, toe on ground. "Two." Move right leg across in front of left, resting toe on ground. "Three." Move foot to front, toe on ground. "Four." Move foot to right, toe on ground. "Five." Move foot to rear, toe on ground. "Six." Move foot to position. Continue the exercise.
	Not to music ..	Position as before (Ex. 6A). "One." Rise on toes, heels together, legs straight, shoulders back, chin up. "Two." Position. Continue—first in slow time, with pause after each motion; secondly in quick time, without pause.
9. Leg and foot chiefly	"Oh, dear! What can the Matter be?" or "Kinloch o' Kinloch"	Position as before (Ex. 6A). "One." Rise on toes, heels together, legs straight, shoulders back, chin up. "Two." Position. Continue—first in slow time, with pause after each motion; secondly in quick time, without pause.
1 and 9 combined. Arms, legs, and feet	..	Position as before (Ex. 6A). A. "One." Rise on toes, extending arms forward as in Ex. 1A. "Two." Position. Continue. Similarly Ex. 1B and 9, 1C and 9.
2 and 9 combined. Arms, legs, and feet	"Keel Row," or "Charlie is my Darling"	Position as in "One," Ex. 2. A. "One." Rise on toes, bringing arms horizontally forward. "Two." Position. Continue. Similarly Ex. 2B and 9, 2C and 9.
4A and 9. Arms, legs, and feet	Same ..	Position, fingers on shoulders. "One." Rise on toes, extending arms horizontally to right and left. "Two." Position. Continue.
10. Same ..	"Ash Grove," or "See-saw," or any waltz refrain	Position, "Attention." "One." Arms horizontally forward. "Two." Rise on toes, swinging arms upwards and outwards until backs of hands nearly touch the thighs. Continue until tune is finished.
11. Feet, legs, and abdominal muscles of trunk	Not to music ..	Position, hands on hips. "One." Raise heels, rising on toes. "Two." Bend legs, going down as low as possible. "Three." Straighten the legs, resting still on toes. "Four." Position (heels on ground). Continue, first very slowly and with pauses, then more quickly without pauses.
12. Legs and feet	Not to music ..	Position, hands on hips. A. "One." Jump up 3 in. or 4 in., coming down lightly on toes. "One," "Two." Jump up twice. "One," "Two," "Three." Jump up three times. Position, hands on hips. B. "One." Jump forwards about 12 in. "Two." Jump backwards. "Three." Jump to right. "Four." Jump to left. Position as before. C. "One." Jump, turning a quarter-circle to right. "Two." Jump, turning a quarter-circle to left.
13. Legs, feet, and chest	"There's nae Luck," &c.	Position, hands clenched on chest, elbows up, knuckles touching, feet closed. "One." Jump, throwing feet apart to right and left, arms stretched to sides, palms up.

Muscles exercised.	Music.	Description.
14. Foot, calf, front of thigh	Not to music ..	<p>"Two." Jump, bringing feet together into position. Continue.</p> <p>Position, left foot one pace to front, body half-right turn, hands on hips.</p> <p>A. "One." Raise heels, weight equally on toes of both feet. "Two." Bend left leg slightly, right leg straight, weight on toes of left foot. "Three." Straighten left leg, bend right leg slightly. "Four." Straighten both legs, weight on toes of both feet. "Five." Position. Pausé, then continue slowly, and then "Attention."</p>
15. Foot, calf, front of thigh	<p>"Keel Row," or "British Grenadiers," "Kinloch o' Kinloch"</p> <p>"The Harp that once," &c.</p>	<p>Position as before (in Ex. 14A).</p> <p>A. "One." Rise on toes, bending left leg right leg straight. "Two." Straighten left leg, bend right leg. "Three." Position. Continue, first slowly with pauses, then more quickly without pauses. Repeat until tune is finished. "Change."</p> <p>B. Similarly with right foot one pace to front. Position, hands on hips, both feet together.</p> <p>C. "One." Left foot one pace forward. "Two." Raise heels, left leg bent. "Three." Straighten left leg, bend right. "Four." Position. Repeat twice, then "Change."</p> <p>D. "One." Right foot one pace forward. "Two." Raise heels, bend right leg. "Three." Straighten right leg, bend left. "Four." Position. Repeat twice, then begin at C with left foot; finish at Ex. 4 of D.</p>
16. Neck and trunk	<p>"Hearts of Oak," or any common-time tune</p> <p>Same</p> <p>Same</p>	<p>Position, hands on hips.</p> <p>A. "One." Bend head forward till chin touches chest, trunk and shoulders steady. "Two." Raise head. "Three." Bend head back as far as possible without bending body, look upward. "Four." Position. Continue slowly, with pauses; then more quickly, without pauses. "Change."</p> <p>Position as before.</p> <p>B. "One." Bend head over to the right, keep shoulders square. "Two." Position. "Three." Bend head to left. "Four." Position. Continue slowly, with pauses; then more quickly, without pauses. "Change."</p> <p>Position as before.</p> <p>C. "One." Turn head to right, shoulders square, chin over right shoulder. "Two." Position. "Three." Turn head similarly to left. "Four." Position. Continue slowly, with pauses; then more quickly, without pauses.</p> <p>Position as before.</p> <p>D. "One." Turn head to right. "Two." Turn head to left. Continue slowly, with pauses; then more quickly, without pauses.</p>
17. Trunk, dorsal, lumbar, and abdominal muscles	<p>"Banks and Braes," &c., or any 6-8 measure</p> <p>"Banks and Braes"</p>	<p>Position as before (Ex. 16A).</p> <p>A. "One." Bend forward, back and knees straight, head well back until trunk and legs are at right angles. "Two." Position. "Three." Bend backwards, head thrown well back, knees straight. "Four." Position. Continue slowly, with pauses. "Change."</p> <p>Position as before.</p> <p>B. "One." Bend trunk over to right, keeping legs, from hips downwards, quite straight.</p>

Muscles exercised.	Music.	Description.
	<p>"Little Bo-Peep," or any 6-8 measure taken slowly</p> <p>Same</p> <p>"The Campbells are comin'," or "Ring the Bell, Watchman"</p> <p>"White Wings," or any 3-4 refrain; two bars to each movement</p>	<p>"Two." Position. "Three." Bend similarly to left. "Four." Position. Continue as before. "Change." Position, "Attention." C. "One." Bend the trunk forward, knees straight, stretching arms forward until fingers touch toes, or nearly so. "Two." Position. "Three." Bend backwards as in Ex. 17A, but throw arms upwards. "Four." Position. Continue as before, slowly. "Change." Position, "Attention." D. "One." Bend over to right as in Ex. 17B, but raise left arm above head, right arm down. "Two." Bend over to left, right arm raised, left arm down. (The bending should be strictly from side to side, not backward or forward.) Continue as before. "Change." Position as before. E. "One." Turn trunk round, shoulders square, to half-right front. "Two." Position. "Three." Turn similarly to left. "Four." Position. Continue as before. "Change." Position as before. F. "One." Turn trunk to right as in Ex. 17D, but swing arms up, right arm being raised to full extent. "Two." Turn trunk to left, swinging arms down and then up to left, left arm raised to full extent. Continue as before. "Change."</p>
Trunk, arms, feet	"There's nae Luck," &c.	<p>Position as before. G. "One." As "One" in Ex. 17E, but raising heels. "Two." Position. "Three." As for "Two" in Ex. 17E, but raising heels. "Four." Position. Continue as before.</p>
18. Trunk, legs, arms	"Three Blind Mice"	<p>Position, hands on hips. A. "One." Rise on toes. "Two." Bend trunk forward, keeping balance. "Three." Position. Continue as before. B, C, D. Similarly bending trunk backwards, to right and to left respectively.</p>
19. Same ..	"Bonnie Dundee," taken not too fast	<p>Position, left foot one pace to front, hands on hips, knees straight. A. "One." Bend trunk forward, arms thrown forward, knees straight. "Two." Bend backwards, arms thrown back, knees straight. Continue as before. "Change." Position, right foot one pace to front. B. "One." "Two." As for Ex. 19A. Continue as before. "Change." Position, feet one side-pace apart. C. "One." "Two." As for Ex. 19A. Continue as before.</p>
20. Arms, knee, and front of thigh	"Scots wha ha'e," or "British Grenadiers," &c.	<p>Position, as for Ex. 19A. A. "One." Bend left knee so that it projects well over toes, left arm raised to front, right arm back and down, palms uppermost, trunk to half-right front. "Two." Straighten both knees, hands on hips (position). Continue as before.</p>
21. Arms, knee, and front of thigh	"Hearts of Oak," or "Harp that once," &c.	<p>B. Similarly with right foot to front. Position, hands on hips. A. "One." Put left foot forward one pace, bending left knee until it projects well over toes, which point straight to</p>

Muscles exercised.	Music.	Description.
		front, right foot firm on ground, right knee straight, shoulders square to front, head back. "Two." Position. "Three." As for "One," but right foot forward, &c. "Four." Position. (This exercise is known as "the lunge.") "Change." B. As in A, but in "One" bring clenched hands, left up and forward, right hand down and back; and similarly in "Three." "Change." Position, hands on hips. C. "One." Left foot one pace to left, bend knee well over toes, which point straight to left, right knee straight, shoulders square to left, head back. "Two." Position. "Three." As in "One," but to right. "Four." Position. Continue as before. "Change." D. As in C, but hands as in B. Position, feet apart, knees slightly bent body and head erect, hands on hips. "One." Clap hands smartly on thighs. "Two." Clap hands straight in front. "Three." Clap hands on thighs. "Four." Swing arms sideways, clap overhead. "Five." Clap thighs. "Six." Clap hands behind. "Seven." Clap thighs. "Eight." Clap hands in front.
22.* Chest and arms	"St. Patrick's Day"	Take Ex. 2 (A, B, C,) while marking time, thus:— "One." Mark time at starting position, four bars. "Two." On first of next bar, turn to right, bending arms as for "One" of Ex. 2A; give Ex. 2A four times. "Three." Turn to right again, facing rear, and give Ex. 2B four times. "Four." Turn to right again, and give Ex. 2C four times, finishing last note of bar by coming to front (position).
23.† Arms, chest, and legs	"Keel Row"	

* A variation of preceding exercises, taken from Victorian hand-book on physical drill.

† Taken from the Victorian hand-book. It gives a suggestion of the way in which some of the arm exercises may be done to music while marking time.

Further variety may be secured by causing the pupils to advance and retire while doing some of the exercises. Some marching in slow time, quick time, and double should always, if possible, precede the exercises. It would be well, too, if each pupil were made to take several deep inspirations. If the chest-expansion of a child twelve years old is less than 2 in., special breathing exercises should be given, with both arms down, with one arm raised horizontally, and with one arm raised upwards, the mouth being closed. The exercises are not all of equal difficulty; some are more suitable for older pupils. Most of the exercises may be done by girls as well as boys.

No part of the dress, including stockings and boots, should be tight. Any tightness hinders the movement and development of the muscles. The exercises should not be done too soon after a meal. Frequent short intervals of rest should be given; too many exercises of the same kind should not be taken in succession, and the exercises should not be continued after signs of fatigue have shown themselves in the pupils. If the pupils are too tired to brace their muscles up firmly and smartly for each movement the exercises cease to be beneficial, and may do more harm than good; lax, loose ways of performing the exercises will be acquired, or, possibly, weakly children may receive injury. There is, however, nothing in the exercises themselves to cause injury, even to children whose physical development is below the normal standard. Care should be taken after physical drill or gymnastics to avoid a chill.

The following tunes may be found suitable for the various exercises:—

In 6-8 time: "Oh, dear! What can the Matter be?" (♩ = 48); "The Campbells are comin'"; "St. Patrick's Day" (♩ = 60); "Hey, Diddle-diddle" ("Kinloch o' Kinloch"); "Lilibulero"; "Little Bo-peep" (♩ = 60); "Where are you going to, my Pretty Maid?" "Three Blind Mice"; "Bonnie Dundee"; "Garryowen"; "Ye Banks and Braes"; "The Lorelei."

In 2-4 time: "Comin' thro' the Rye"; "British Grenadiers"; "There's nae Luck about the House"; "Charlie is my Darling"; "Keel Row."

In 3-4 time: "See-saw"; "My Nelly's Blue Eyes"; "White Wings"; "The Ash Grove"; or any waltz refrain.

In 4-4 (common) time: "Hearts of Oak"; "What's a' the Steer, Kimmer?" "The Harp that once"; "The Marseillaise"; "The Red, White, and Blue"; "Ring the Bell, Watchman"; or any schottische refrain.

Boys who take military drill as prescribed in the regulations for public-school cadet corps will be held to satisfy the requirements under this clause.

Physical training should not be confined to the mere performance of exercises; but the teacher should endeavour to prevent the formation of habits that interfere with the good physique of his pupils, and should bring under the notice of parents any defects of eyesight, hearing, &c., that he observes. Teachers will also recognise the fact that attention paid to healthy games and school sports is a most important aid to the formal physical instruction.

MORAL INSTRUCTION.

48. It is not intended that these lessons should occupy, any more than they have done in the past, a separate place on the time-table, or be considered as forming a subject apart from the general instruction or from the life of the school. The moral purpose should, indeed, dominate the spirit of the whole school life, and the influence of the school and its teachers upon the pupils should be such as is calculated to be a real factor in the formation of good character. Many of the reading lessons and sometimes other lessons, and the ordinary incidents of school life, will in most cases furnish sufficient occasions for the inculcation of such principles as are indicated below.

The formation of habits—*e.g.*, order (tidiness at home, in school premises, in the street, tidiness of dress and person); punctuality and regularity at school, at work, and elsewhere; industry in school, at home, in play; cleanliness of person (hands, faces, teeth, heads), of clothes, about the house, and in school; clean talk and clean thoughts; pure minds and pure deeds; truthfulness in word and deed; honest work; self-control; government of temper; patience; perseverance; moral courage; duties in relation to our own bodies and minds; temperance in eating and drinking; the reading of good books; choice of amusements; readiness to learn from all. Duties to others, to parents, to the family, to those in misfortune, to neighbours and those in authority, to fellow-pupils; respect for others; obedience to parents and teachers; toleration of others in regard to act, speech, and opinion; gratitude; practical help to others; speaking well of others; kindness, unselfishness, and self-denial. Good manners—at home, to parents, to friends, to brothers and sisters; at school, to teachers and fellow-pupils; in the street, to girls and women, to the old and to the young, to the sick and afflicted, to seniors, equals, and juniors—in short, to every one. Money and its uses; it represents the result of labour; frugality and thrift; savings-banks. Regard for property, public or private, not to injure or spoil. We should help to make the place we live in a more beautiful place. Civic duties; the franchise, and the duty of using it always with honesty and intelligence; the welfare of the State should be the care of all, for we are all members of it. Kindness to animals. Candour; honour; love of home; forgiveness and forbearance; peace; duty; accuracy and painstaking; contentment; benevolence or humanity; cheerfulness; self-reliance; self-respect; modesty; courage; prudence; zeal and energy; justice; loyalty and patriotism; respect for law; magnanimity; integrity of purpose; precept and example; formation of character; the golden rule.

The experience of teachers will guide them as to the best time and manner in which to impart these lessons; it will probably be recognised that abstract moral teaching fails to excite any interest in the minds of children generally, and that it is best to enforce the principles of moral conduct by examples taken from history, biography, poetry, and fiction, and by anecdote, allegory, and fable.

HISTORY AND CIVIC INSTRUCTION.

49. The requirements of this subject shall be held to be satisfied by the use of reading-books embracing the topics named, if explanation of and questions on the subject-matter form part of the lessons in connection with these reading-books.

STANDARDS III. TO VI.

A course of lessons should be drawn up by the teacher to cover some or all of the ground indicated by the following list, and to occupy in the aggregate at least eighty hours. The lessons should be spread over two, three, or four years; they need not be taken in every year. The pupils should have a general idea of the order of the leading events, but the subjects need not be taken always in chronological order; it is recommended, indeed, that, especially in the earlier lessons, the order of instruction shall be from the known to the unknown—that is, from the present back to the past. Britons and Romans. Coming of the English and the North-men into Britain. Introduction of Christianity. Alfred the Great. The Norman Conquest and its chief effect on English language, social life, and government. The Crusades. Magna Charta. Origin and development of parliamentary institutions. Bannockburn. The Hundred Years' War. Invention of printing. Discovery of America. Elizabeth and the Armada. Shakspeare. Milton. The rise of absolute monarchy. The Civil War and Cromwell. The English Revolution. The Cabinet and party government. How the wish of the people becomes law. Union of England and Scotland. The House of Hanover. The expansion of England. Foundation of Indian Empire. Seven Years' War. Canada becomes a British colony. American independence. Freedom of the Press. Union with Ireland. Introduction of machinery. French Revolution. Napoleon. Nelson and Trafalgar. Wellington and Waterloo. Factory and other industrial and social legislation. Trades-unions. Industrial arbitration. Reform Act of 1832 and similar Acts. Abolition of slavery. The reign of Queen Victoria. Railways. Electric telegraphs. Gas-lighting. Customs and excise duties. Free-trade and protection. Popular education, primary, secondary, technical, and university. Tennyson. Cook and his discoveries. The foundation of the Australian Colonies. Colonisation and early government of New Zealand. Abolition of the provinces. Leading principles of the British Constitution. New Zealand and other forms of colonial Government. Legislative and executive functions of Government. Local government. Courts and Magistrates. The privileges and duties of a citizen as a member of the Empire, of the State or colony, and of the municipality. The franchise. Elections. Labour. Capital. Money. Banking. Rates and taxes. Modern inventions. The telephone. Electric lighting.

50. The history indicated in clause 32 cannot be considered as fully dealt with if treated by the use of a reading-book only; there must be definite lessons given to the several classes by the teacher. The requirements will be satisfied by a fuller treatment of the history set out in clause 49 than is implied therein, but the Inspector may accept any equivalent course, if a syllabus of the work done in classes S3 to S6 be presented to him.

NEEDLEWORK.

51. The following is the programme of needlework for the various standards:—

STANDARD I.

Threading needles and hemming. A small article, *e.g.*, a handkerchief, showing the stitch named.

STANDARD II.

The work of Standard I., and seaming, felling, and oversewing; also fixing a narrow hem. A small article, *e.g.*, pillow-slip, sewing-bag, showing these requirements, as before.

STANDARD III.

The work of the previous classes, and stitching, pleating, sewing on strings and buttons. A small article or garment, as before, *e.g.*, pinafore, apron, &c.

STANDARD IV.

The work of previous classes; setting-in gathers; button-hole stitch; eyelet holes; sewing on hooks and eyes. Plain darning, as for thin or worn places, but not for holes. A small article or garment, as before.

STANDARD V.

The work of previous classes, button-holes; plain darning on stocking material; patching (including patching of holes); cutting out in paper or material a simple garment suitable for making up in Standard III.

STANDARD VI.

Work of previous classes; darning and patching generally; cutting out and fixing one plain garment.

The cutting out should be done on some principle of proportion, and girls in upper classes should be able to cut out in paper or material simple garments as required in the lower standards.

Materials and stitches should not be so fine as to strain the children's eyesight. Children of weak eyesight should not be given any exercise that will be injurious to their eyes, and in serious cases they should not be expected to do sewing at all.

In cutting out, it is not necessary to devote time to making elaborate patterns. What is required is a method which imparts correct proportion, and which tends therefore to be practical.

Fancy-work of various kinds is not required.

SINGING.

52. The following is recommended as a programme of singing. (This programme may be modified to suit the conditions of various schools; for instance, where there are only one or two teachers, the course may be arranged accordingly.)

CLASS P AND STANDARD I.

A sufficient number of easy and suitable songs in correct time and tune, and at proper pitch. Action-songs suited to this stage: these should be chosen as far as possible both for the words and for the music.

The teacher should aim at getting sweet singing, and all tendency to harshness or strain should be checked at once. To this end, songs must not exceed the range of the children's voices.

STANDARD II.

Songs as before; the places of the notes on the stave, or the symbol used for each note in the notation adopted; the major diatonic scale, and the successive notes of the common chord in all keys. Breathing exercises should be practised, and some attention may be given to ear-training, exercises in imitation being taken.

STANDARD III.

Exercises on the common chord, and the interval of a second in common time and in 3-4 time not involving the use of dotted notes. Breathing exercises and ear-tests as before; the most advanced children may be asked to name three consecutive notes, sung or played, the chord or scale first being given. Songs as before; easy rounds may also be studied.

STANDARD IV.

Easy exercises in the chord of the dominant and sub-dominant, and in the intervals prescribed for Standard III. Exercises in 3-4 time; use of dotted notes; ear-tests as before; melodies, rounds, and part-songs.

STANDARDS V. AND VI.

More difficult exercises in time and tune, including some practice in simple passages containing accidentals; expression-marks; national and patriotic songs in unison or in parts; part-songs (care should be taken that the altos are not permitted to strain their voices); more difficult ear-tests, and the singing at sight of simple passages combining time and tune.

NATURE-STUDY.

53. The purpose of nature-study is to train children in the careful observation of surrounding objects and common phenomena, and to set them to ask themselves questions such as "What does this mean, and how does it act, and why?" Even should it not be possible, as in small schools under the charge of one teacher, to assign to nature-study a separate place on the time-table, and by means of lessons on objects, on natural history and in elementary science to give a definite course of instruction of

this kind, yet the idea and spirit of it may be carried out in other ways. The most important parts of the lessons on geography may be thus described; some of the best subjects for composition exercises may be led up to by questions based on the children's own observation in their ordinary life, or in their rambles about the district; the information given in many of the reading-lessons may be tested, confirmed, supplemented, and reinforced by nature-study; drawing and modelling may serve as vehicles for nature-study and thereby gain an added interest. In short, there is hardly any subject in the school course into the teaching of which the ideas that underlie nature-study may not enter.

In schools of Grade 4 and higher grades, where it is expected that provision shall be made for a definite course of nature-study or elementary science, the remarks just made apply with equal force; even the hand-work, which may seem at first to compete with it for a place on the timetable, will be found to give material aid to nature-study. This will be most clearly seen in those branches of handwork which are of the character of applied science, such as agriculture, cottage-gardening, dairy-work, for which the habits of careful observation acquired in nature-study are the only sound foundation.

It would be well, therefore, for the teacher, when drawing up the programme of work in the several subjects of the syllabus, to have in mind a scheme of nature-study, and the various parts of the instruction should be so co-ordinated as to pursue this scheme continuously throughout the school course.

Nothing can be considered as nature-study unless it includes an actual study of things themselves by the individual children; models, pictures, and books may be valuable aids, but are not substitutes for it.

Definite Courses of Nature-study.

54. Where a separate course of nature-study is not compulsory (see clauses 30 and 33), the lessons of geography, Course A, and on health in the upper standards, will give the occasion for some definite teaching of this kind.

In schools of Grade 4 and higher grades a definite course of nature-study or elementary science, or an equivalent course of hand-work, is compulsory in classes S3 to S6 (except for girls in schools of Grades 4, 5, 6, 7, 8), and work preliminary to this should be begun in the lower classes.

The lessons given in the lower classes should be marked by two main characteristics. In the first place, they should be really lessons on *objects*, or on natural phenomena—that is, they should treat of things that each child in the class can see with his own eyes or can handle with his own hands; secondly, they should not be disconnected, but should form a course of lessons co-ordinated with one another and, as far as possible, with the other subjects of instruction.

The following list of topics, the material indicated in Geography Course A, and the suggestions given in clauses 55, 56, and elsewhere in these regulations will serve as indications of the kind of teaching that should be included in a definite course of nature-study:—

[It will be understood that it is not intended that common objects of manufacture or daily use should be excluded from the list of suitable topics.]

The structure of a bird; birds and their habits; the study of an egg at various stages. The structure of a well-known mammal, as a rabbit; the differences in form and habit of various mammals. The human body. The structure of a fish. Insects: the life-history of a few common insects—*e.g.*, butterflies, moths, flies, beetles, grubs and caterpillars, hive-bees and wild bees, &c. (butterflies or moths may be reared in the school). Lizards, frogs, crabs, oysters, worms, and other forms of animal life as seen in ponds or on the sea-shore. Plants; flowers, wild and garden; roots, leaves, seeds, and fruits; the life of plants, germination and growth; the effect of light, moisture, soil, and manures. Food of plants. Trees and the common kinds of timber. Shrubs. Wheat and other useful grasses. Other useful plants. Useful vegetable products: starch may be obtained from a potato, sugar from a parsnip, beet, or carrot. Ferns. Fungi; mildew. Water, its nature and forms. Soils; clay, sand, limestone, mud, gravel, &c. Quarries; a few common rocks, minerals, and fossils; typical volcanic rocks contrasted with stratified rocks and metamorphic or altered rocks (specimens should be handled by the children). Coal. Quartz. Shingle of rivers and of the seashore. Clay; bricks and tiles. Building-stone. Pottery. Glass. Mortar; cement. Road-metal. The

air; oxygen; carbonic acid. Vapour-clouds. The thermometer and temperature. Ventilation. Winds. The barometer. Frost and heat. The weather; weather-charts. Rainfall. Hydrometer. Milk; cream; curds; whey; cheese; tests for milk; separators. The pump; siphon; fire-engine. Pressure of water; artesian wells; use of a head of water. Density; flotation. Mechanics in everyday-life: levers, pulleys, steam. Physics: expansion of solids, liquids, and gases when heated; magnetic compass. Solutions. Solvents: water, alcohol. Crystals. Common elements and compounds: sulphur, iron, common salt, soda, saltpetre, mercury, tin, zinc, lead. Distillation; filtration. Fire. Candle. Coal-gas. Tar. Kerosene and kerosene-lamps. Sun, moon, planets, stars, meteors, comets. Tides. Eclipses. The seasons. The sea and the sea-shore. Outdoor studies in geography. Land-measuring. Natural history calendars; weather calendars; astronomical calendars; &c.

Some of these subjects may be taken in junior classes; others are suitable only for senior classes; others, again, may be taken twice, three times, or even oftener in the school course—at first in a simple manner, afterwards in a way suited to the more mature powers of observation of older children. Natural-history calendars of a simple character might be kept as early as Standard II. Weather calendars might begin in Standard IV. (The school should be equipped for this purpose with a thermometer, maximum and minimum by preference, and a rain-gauge; also, if possible, with a barometer.)

Of course, no school will attempt all the topics that are suggested above. Lessons will be arranged for various schools according to the tastes and acquirements of the teachers, and should in all cases have immediate reference to the local surroundings.

ELEMENTARY SCIENCE.

55. There is no difference in the aims of what is here called "elementary science" and what is called "nature-study": both are intended to give the children the beginnings of scientific method rather than to teach them a systematic science.

The definite course in science for the upper classes should be chosen with regard to the district in which the school is situated. Even with careful attention to individual practical work, a course of science for young children will probably fail as an educational instrument if it is too far dissociated from their daily life and experience. Two specimen courses are given below—one (in elementary physics) for town schools or large country schools, the other for country schools. (See clause 56.) These courses are intended as suggestions. Any suitable programme of work drawn up to cover the three or four years of S4 to S6 or S7 will be accepted by the Inspector.

A course of elementary physics for the upper classes of a town school or of a large country school might include such work as is indicated in the following notes, some of the more elementary portions of which may be attempted even before the pupils reach S4:—

Measurement of lines in inches and sixteenths, in inches and tenths, using decimal points to mark tenths; measurement of length, &c., of desks and other objects, of girth of chest, &c. Take the mean of several measurements. Measurement of lengths in the class-room in feet and inches, in the playground in yards, &c., or in chains, yards, &c., or in chains and links. Measurement of circumference and diameter of circles, as of a penny, and of a cylinder. Ratio of circumference to diameter approximately. Diameter of a sphere.

Divide a square drawn on paper or cardboard into square inches; find area of square. Similarly, find area of a rectangle.

Draw to suitable scales plans of top of desk, table, class-room, &c. Find area of each.

Draw scale of yards and chains. Find area of square chain. Draw to scale plan of acre. Find area in square chains.

Draw square mile to suitable scale. Find area in acres.

Draw playground, or rectangle in playground, to scale. Find area.

Construct table of square measure.

Find surface of a cube or other rectangular solid, of outside of a box, of walls of room, &c.

Wrap paper round cylinder; unroll and find surface.

Find the scale of a map, as of New Zealand, England, or India, taking one degree of latitude as equal to 70 miles; estimate the area of the country, or of some part of it. The estimate may be confirmed by each pupil's making a tracing of the map, cutting it out, and also cutting out a square piece of paper representing, say, 10,000 square miles. All the tracings should be weighed, then all the squares, and the area calculated.

Draw circle on cardboard; draw two diameters at right angles. Bisect right angles. Divide circumference into 6, 12, 24, parts. Prove angles and sectors equal (by cutting out and superposition). Define degrees.

Construct table of angular measure. Find angles between hands of clock at 1 o'clock, 2 o'clock, &c.

Construct a cardboard protractor; with it construct various angles.

Build up cubes and other rectangular solids with wooden or cardboard cubes, blocks, and slabs. Find volume in cubic inches. Construct table of cubic measure.

Find volume of box, class-room (measuring the height to wall-plate if there is not a horizontal ceiling).

Make a simple lever with a rule or lathe in which the fulcrum is between the power and the weight. Show that $\text{power} \times \text{its arm} = \text{weight} \times \text{its arm}$.

Make and mount a simple balance; make weights of lead and copper sheeting, or of shot in canvas bags. Weigh various substances, using generally method of double weighings.

Make cubic inch of cardboard, caulking it with wax or candle-grease. Find weight of cubic inch of water in grains. Check by weighing $\frac{1}{4}$ pint or 5 fluid ounces of water (which contains about 8.66, or $8\frac{2}{3}$, cubic inches).

Find weight of cubic inch of wood. Find relative density or weight of wood compared with water, *i.e.*, weight of cubic inch of wood divided by weight of cubic inch of water.

Graduate a glass jar or bottle, with neck removed, into cubic inches, with paper scale gummed outside. Find volume of block of wood by pushing it below surface of water in jar, and noting rise of water; hence find relative density; in like manner, that of a pebble, glass, iron, lead, candle, &c. Find by same graduated jar, the water being removed, relative density of milk, olive-oil, alcohol, turpentine, milk-and-water, salt water, mercury (which may be put into a small bottle and held below surface of water, the volume of the small bottle being first found).

Find volume and relative density of various coins—penny, florin, &c. (Take several pennies, &c., at a time; shake them about so that no air is enclosed.)

Take a flask or bottle, apparently empty; immerse below water, and let water fill it. What escapes from jar?

Put a little water into a large flask, fit with stopper and glass and rubber tubes; boil water and drive off air, closing rubber tube with clip. Let flask cool; weigh; admit air and weigh again. (Put clip into scale with flask). Weigh flask full of air. Fill it with gas from gas-jet and weigh again. (Keep it away from a flame.) Warm flask with air; close with clip. Let flask cool; weigh. Admit air; weigh again.

Take a U tube (two straight tubes joined by rubber tube will do). Pour in water. Hold at different angles; note level of water. For one branch of U tube substitute tube of a glass filter; pour in water; note level in funnel of filter and in tube.

Construct model to illustrate artesian well; also model with branches to illustrate a high-pressure water-supply system.

Very slightly oil wooden cube; float it in water. Measure depth immersed, and total depth of cube. Find the fraction, depth immersed, total depth, and compare with relative density of wood.

Float oil on water; warm water (coloured) on cold water, &c.

Take U tube as before. Pour in mercury. Pour alcohol into one branch, and water into the other until mercury is at same level in both branches. Measure heights of alcohol and water above mercury find the fraction $\frac{\text{height of water}}{\text{height of alcohol}}$; compare this fraction with relative density of alcohol. Repeat for other liquids (including mercury).

Take a U tube, one end closed; hold it with closed end down, and nearly fill with mercury; raise closed end. What happens?

Take the U tube; hold closed end up. What happens? Attach rubber to open end, placing it below surface of water; lower the other end. What comes out?

Make barometer; graduate it. Keep record of readings.

Fill a wide-mouthed bottle with water, and invert it over water; lower a similar inverted bottle, apparently empty, into water; turn it round gradually with its mouth below that of the first bottle. What happens?

Fill a common syringe with water, noting what happens as it is filling with water; hold the nozzle against a piece of sheet rubber or against the finger; try to push the piston down.

Repeat the same experiment when the syringe has only air in it. Is air compressible? Test the same fact with the U tube with air in the closed end, pouring additional mercury into the open end. Try this also with water instead of air in the closed end.

Fit a piece of cardboard or glass plate to the mouth of a glass jar or tumbler; fill the jar with water, and invert it, holding the cardboard against the mouth of the jar. What happens? Repeat the experiment, but only half-fill the jar. What happens? (Invert it over a basin or bucket.)

Substitute a lamp-glass for the jar, fitting a card or plate to both ends. Repeat the experiment. Remove the top plate. What happens? Why?

Make a siphon (the open U tube, inverted, will do). Make a siphon of rubber tube only. Try the effect of raising the free end above the level of the water.

Make a hole at the highest point. What happens? Why?

Take two pieces of rubber cord, one stouter than the other, and two boards. Fasten each cord by a drawing-pin through its end to a board, and tie a loop of silk thread round the cord 12 in. from the drawing-pin. Attach a weight to the loop of one cord, and measure the stretched length. What stretches the cord? Remove the weight; take hold of the cord by the loop, and pull it horizontally until it is stretched to the same extent. What is the force of your pull?

Attach the same weight to the second cord, and repeat the experiments. Place both boards horizontally and connect the loops by a piece of silk; pull the boards apart until the first cord is stretched as much as it was at first. How much is the second cord stretched? What stretches each cord? (After a few experiments fresh pieces of rubber cord should be used.)

Attach a toy wagon to one of the cords. Incline the board at any angle, the fixed end of the rubber cord being at the highest part of the board. Put shot or weights into the wagon until the cord is stretched as much as it was before. What is the total weight of the wagon and shot? Call this the *weight*. What is the pull on the rubber cord? Call this the *power*.

Find the fraction or ratio, $\frac{\text{weight}}{\text{power}}$.

Measure the length of the inclined plane or board; measure the height of the raised end. Find the ratio or fraction, $\frac{\text{length}}{\text{height}}$. Compare it with the ratio, $\frac{\text{weight}}{\text{power}}$.

Make or procure a simple pulley; mount it and pass a silk cord over it. Attach equal weights to each end. Substitute the rubber cord fixed as above for one weight. Hang the other weight to it. How much is the rubber stretched? Replace the silk cord on the pulley; note the result. Incline the board at different angles. What pull is exerted by the cord over the pulley? Repeat the experiment with the inclined plane; but, instead of attaching the wagon to the rubber cord, attach the power by a silk cord passing over a pulley fixed at the higher end of the plane. Find the ratios—weight/power, and length/height—as before.

Vary the inclination of the plane, and so get law of inclined plane.

At this stage pupils may be able to express their ideas of mass, weight, and force more or less clearly.

Repeat the last experiments. Detach the wagon from the silk cord, and keep it in position with the finger: with what force does it press against the finger? Remove the finger: what happens? What force drives it down the plane?

Take or make a large glass syringe with a wooden piston with cotton-wool or woollen-yarn packing. Take out the piston, and put a small glass marble or bulb inside the nozzle of the syringe. Make a small hole in the piston, and fit the top with a small valve of rubber sheeting.

Illustrate principle of common pump. The apparatus may easily be converted into a model of the common pump.

Place an iron rod with its ends on two bricks (or wooden blocks); drive a nail into one brick to prevent the rod from slipping. On the other brick place a piece of steel wire or a darning-needle at right angles to the rod, so that the end of the rod rests upon the wire, which is free to turn round. At one end of the wire, at right angles to it, attach a thin piece of straw or a fine splinter of wood. Find how many revolutions the straw makes when the rod is pushed on one inch. (Use a protractor to measure the angle or fraction of a revolution.) Set light to some methylated spirit in a narrow tin dish placed under the rod, and note the greatest expansion that takes place.

Repeat the experiment with a brass or copper rod, using the same amount of spirit.

Take an ordinary screw-wrench or spanner and a brass curtain-ring or a penny. Adjust the screw so that the ring or penny will just pass between the jaws of the wrench. Heat the ring or penny, and then try to make it pass through the jaws.

Fit a flask with a stopper and glass tube, and fill it with water (with which may be mixed a little ink or a solution of indigo). Heat the flask, and note the result.

Let the flask cool. Pour out half the water, but let the lower end of the glass tube be below the surface of the water. Heat the flask again, and note the result. Why does the water in the tube rise higher than before?

Let the flask cool. Pour out all the water, and fit the stopper with a narrow tube bent at right angles. Attach the open end of the bent tube by rubber to the open U tube used before. In the U tube place some water or mercury. Heat the flask, and note the result.

Repeat the last three experiments, putting a thermometer into the flask. Note the readings of the thermometer.

What is the temperature of the air in the room? of the water from the tap? of the air outside? in the sun? What temperature is shown when the thermometer is held inside your mouth?

Find the temperature of the steam immediately above the surface of boiling water.

Find the temperature of melting ice.

Put some pieces of ice into water. Why does it float?

Into the jar used for measuring volumes put some water cooled, say, to about 40° Fahr. and a piece of ice, as large as possible, enclosed in enough wire netting or perforated zinc to make it sink. Note the temperature and volume. Watch the change in temperature. Wait until the water is at freezing-point. When the ice has just melted, note the temperature of the water and the volume.

Melt a piece of candle gently in a test-tube; find the temperature when the candle is nearly all melted. When it is completely melted, throw in one or two small pieces of the same candle. Do they float or sink? Why?

To this course may be added experiments to explain conduction, radiation, and convection of heat; ebullition, evaporation, distillation, condensation of vapour; the formation of clouds, rain, and dew; the principles of ventilation.

Daily readings of the thermometer should be taken, and a record kept. Use maximum and minimum thermometer for this purpose if possible.

There might also be included in the course experiments to explain the composition of air and water, and the process and products of combustion; solutions and the change of temperature when, say, common salt or ammonium-nitrate is dissolved in water; filtration; the action of acids on carbonates, and of expired air upon lime-water, &c.

[The work thus indicated might be taken up in classes S5 and S6 as one of the courses of elementary science prescribed by the regulations under the Manual and Technical Instruction Act.

Elementary Science in Country Schools.

56: The following rough notes are given as an indication of the topics from which there may be selected subjects for a course of lessons suitable for the upper classes of a country school. [In schools with 41 to 90 in average attendance it will be found convenient, probably, to take Standard III. and Standard IV. together; and in schools with a sole teacher in charge Standard IV. to Standard VI., or Standard III. to Standard VI., may profitably be grouped for these lessons.]

Preliminary Work.—It is presumed that in the earlier standards lessons on objects will have been given with the purpose of teaching children to observe carefully and intelligently the simpler facts of animal and plant life as it may be seen around them, and that these lessons will have been grouped systematically so as to include, for instance, some of the following subjects: Man, rabbit, sheep, cow, horse, pig, dog, cat; fowl, duck, pigeon, sparrow, lark, blackbird, starling, one or more of the native birds of New Zealand; frog; eel, trout, rock-cod, sole; crab, crayfish, snail, oyster; spider, butterfly, beetle, &c.; bean, pea, sow-thistle, oat or wheat, ryegrass, cocksfoot, potato, rose, lily, sunflower, carrot, turnip; fern, moss, mushroom, mildew, yeast; gorse or broom; New Zealand flax; willow, oak, white-pine, red-beech (commonly called "birch"); apple, plum, orange, gooseberry, strawberry; cabbage, radish, mustard; tomato; common trees and other plants found in the neighbourhood of the school.

In Standard IV. this work will be continued and still further systematized, and the children may begin, if they have not done so already, to keep nature-calendars and weather-calendars.

In their geography lessons the children will also learn from actual observation the simplest and most striking facts about rivers and the work of water on the earth's surface; clouds, rain, dew; cardinal points; the direction of winds; drawing of plans; height of the sun at different times of the day and year.

The drawing of plans may extend to the mensuration of squares and rectangles as set forth in the elementary course of physics suggested above.

Some such experiments and observations as the following may also be made. [The actual experiments and the work of caring for the plants, &c., should be done by the children individually.] :—

Raise seedlings of beans and peas in small pots or shallow dishes in sand and in garden-soil, planting seeds every two or three days; also raise other seedlings between two sheets of blotting-paper on a glass plate or in a saucer. Soak a few seeds also in water, and put a few into dry sand. Compare the seedlings raised. Observe the method of germination and growth. Note the parts of the seedlings—rootlets, root-hairs, stem, leaves, plant-hairs, &c. Raise in like manner seedlings of vegetable-marrow, mustard or radish, cabbage, sunflower, oat or wheat, and ryegrass. Observe the seeds after some days' growth. Moisten some fine wheaten flour. Knead it, and then wash out all the white powder (nearly all starch), and show the gluten. By crushing seeds of flax, sunflower, rape, between dry blotting-paper show that some seeds contain oily matter. What has become of these things in the seedlings? Suspend seedlings of various kinds so that only the root-hairs just dip into water. Note what happens after a few days.

Make solutions of salt, sugar, aniline, &c., in water; filter. Distil the solution of salt, and condense water again. What is left behind? What is found in the condenser?

Put some small growing plant through a split cork in a wide-mouthed bottle so that the roots dip into a solution of aniline. After an interval observe the leaves. Take six or eight large, healthy leaves; pass the petioles through three or four holes in each of two cards, and put the cards over two tumblers nearly full of water. After a short interval invert two dry empty tumblers over the cards; place one set of leaves in the sunshine, and one in a shady place. After ten minutes observe what has taken place. From which set of leaves has there been most evaporation?

Take a leaf from a young plant whose roots have been placed in water; put it back downwards on a polished metal surface, and leave it for a few minutes. What do you notice? Repeat the same experiment with a similar leaf, placed face downwards. Observe again. From which side of the leaf does evaporation take place?

[To show the existence of air.] Invert wide-mouthed bottle or tumbler full of water in water; invert another bottle or tumbler, apparently empty, below mouth of first. What passes from second to first bottle? Burn a candle in a lamp-glass with narrow top (i) with lower end open; (ii) with lower end closed. What happens in each case? Test the gas left in tube with lime-water. Also blow or breathe into lime-water.

Put two healthy young growing plants through split corks into bottles so that the roots dip into water; in one case allow free access of air, in the other shut off the air by sealing the cork with melted candle-grease. Observe the difference after a few days. Repeat the experiment, using garden-soil instead of water, and pouring the melted grease over the surface of the soil in one of the pots or bottles. Observe again. What do the roots require besides water?

Grow young seedlings of corn on damp paper. Mark the longest rootlet very carefully with a fine camel's-hair brush with India ink or purple ink by lines, say, $\frac{1}{4}$ in. apart, beginning at the tip. Keep the plants moist and warm, and notice which of the $\frac{1}{4}$ in. intervals increase in length, and which remain the same. Where is the growing point of the root?

Keep some of the growing seedlings or young plants without water; water others very occasionally; others, regularly; and to others again give large quantities of water, keeping the soil always completely saturated. Note the difference in growth after the lapse of, say, a fortnight. [The pots in which the seedlings are grown should be numbered, and a diary of all that is done should be kept.]

Observe the forms of the leaves of several plants. Note the veins. Is there a midrib, or are the veins parallel? Note the upper and under surfaces. How are the leaves placed on the plant?

Examine various buds. Note the bud-scales. Watch the growth of the buds; how do they grow? (By lengthening the distance between

successive leaves.) Note the "eyes" of the potato; plant several "sets" of potatoes; also slips of geranium, heliotrope, leaf of begonia, &c.; likewise crocus-bulbs, iris, &c. Watch their growth. Note the rootlets, root-hairs, &c.

Rear various plants, those named above or others; place some of them in the school windows. Turn the pots round from time to time; do any of the leaves or stems turn round towards the light? Put some plants in a dark place, and others in the light; after a few days note the differences.

Take several young plants or seedlings—sow-thistle, oat, wheat, carrot, bean. Note the kinds of roots. Is there one main root, or are there several fibrous roots?

Note parts of flowers, several kinds of flowers; leaves, their veins, &c.; fruits; seeds and seed-vessels.

Take young saplings of oak or other trees. Cut the stem horizontally and vertically. Note inner and outer bark; sap-wood, heart-wood, and in some cases the pith.

Identify the chief wild plants found in the neighbourhood, including the chief weeds; the chief plants in cultivation in the district, including grasses; also the chief forest and orchard trees. Remark where possible their roots, buds, branches, flowers, fruit, seeds, &c.

Let the children keep diaries of phenomena within their observation: the date of sowing of various crops, of the appearance of the wheat, &c., above the ground; the dates of the appearance of buds of various kinds on trees.

Note the yield of various kinds of crops. Grow different varieties of wheat in different soils. Try varieties of other farm plants. Grow specimens of different grasses, &c. Note length of time from sowing to the various stages of the growth up to seeding.

Pour some water on dry sand hollowed out into a cup-shape; pour some water in like manner upon dry clay, then upon clay that has become saturated with moisture.

Take some garden-soil which has been dried as before. Crush it carefully, and sift it through muslin. Note what is left in the muslin. (Small stones and pieces of vegetable-stems.) Wash the sifted soil with pure water, pouring off the muddy water carefully into a bucket, after allowing the remainder to settle. Wash again and again until clear water only comes off. Examine what is left behind, and what has settled in the vessel into which the muddy water has been poured. (Clay.) What is left behind in the other vessels? (Sand.) What does the garden-soil contain?

Repeat the experiments with the subsoil.

Take some garden-soil; weigh it. Dry it by placing the vessel containing it in a vessel with water in it, and keeping the latter for some time at the boiling-point. Weigh it from time to time until it ceases to lose weight. How much water has been driven off? Take the dry soil; wash it well with pure water, and pour the latter off carefully so that the water poured off is quite clear. Dry the soil again. Has it lost weight? Why?

Collect and examine various insects, including the grubs, chrysalides, and the full-grown insects. Rear a few moths in boxes, noting the stages of development. Note the plants on which the grubs or caterpillars are found or feed. Note as far as you can the habits and the life-history of the various insects. Are they noxious or not? Do birds feed upon them; if so, what birds?

Use a thermometer to find the temperature of the air, of warm water, of the surface of the ground. Add half a pint of cold water to half a pint of warm water, observing the temperatures before and after mixing. Find the temperature of the steam over boiling water, and also that of a mixture of ice and water. Take readings of the thermometer twice or three times daily in the shade and in the sun, and, if possible, maximum and minimum readings.

There should be a few simple experiments to show the constitution of air, production of oxygen, burning charcoal in oxygen, testing product with lime-water, &c.; "soda-water"; coal-gas; ammonia, its solubility in water, &c.; composition of water; iron and iron-rust; the distinction between mixtures and chemical compounds; acids and alkalis, effect on litmus, on violet flower; comparative density of liquids; use of hydrometer and lactometer; solutions; emulsions; &c.

The work begun in Standard IV. should be continued in the upper standards in conjunction with cottage gardening, small plots being cultivated by the individual children for the experimental illustration of the lessons taken within the school, and a somewhat larger plot for

more extended experiments—*e.g.*, as to the effects of various modes of cultivation and of various kinds of common manures upon the soils found in the district, one row or ridge being devoted to each experiment.

The courses for cottage gardening and for elementary agriculture for classes under the Manual and Technical Instruction Act will serve as guides for what is intended in this respect.

HEALTH.

57. Lessons on the structure of the body and on health should be given in classes S3 to S6.

These should include such subjects as the following, treated in a very simple manner: The chief bones of the skeleton, and the way in which they form a framework for the body; tendons and muscles; the skin; the heart, the blood, and the general system of circulation; food and drink, digestion, the stomach and intestines; the lungs; the liver; the kidneys; the nerves; the brain; the eye; the sense of touch; the outer ear; the throat and nose. Air, ventilation and respiration; water, washing, and cleaning; the choice of clothing, food and drinks; the management of health; exercise; the avoidance of evil and unhealthy habits; infectious diseases; vaccination; methods of dealing with common ailments, colds, and common accidents.

The lessons on the structure of the body are intended not as a course in physiology, but solely to serve the practical purpose of an introduction to such a knowledge of the laws of health as every individual of the community ought to possess: *e.g.*, the study of the eye need not include a knowledge of all its parts, if it be known to act as a lens through which the rays of light pass and, forming an image on the retina, convey a visual impression to the brain. (The care of the eye should receive some notice.)

The instruction may be given partly in the nature-study or science lessons, and partly in special oral lessons, or in lessons contained in the reading-books of the higher standards. If this be done, it will not be necessary to allot a separate place for the subject on the time-table.

Very simple preliminary work of the same kind may be done, at the discretion of the teacher, in the lower classes.

HANDWORK.

58. "Handwork" in these regulations means any subject prescribed for "School Classes" under the Manual and Technical Instruction Acts.

The Inspector shall approve of the suitability of the course of handwork adopted, having regard to the needs of the particular school and to the value of such course of handwork as part of the general curriculum of the school.

GENERAL.

59. It is to be considered as important that the programme of instruction in any school shall be drawn up with a due regard to the principle of co-ordination, so that the various portions of the work shall be regarded not so much as separate subjects, but as parts of a whole linked together firmly by immediate reference to the facts and needs of the children's daily life.

Accordingly, the requirements of the syllabus are not to be interpreted too rigidly, but for the several classes in various kinds of schools are to be adapted to the children in those classes, to the circumstances of the district, to the staff of the school, &c. In the lower classes of all schools the drawing would be combined with the handwork, if the latter were taken; geography, if taken, would form part of the course of nature-study. In the upper classes one course of lessons might meet the more definite of the requirements for geography A, nature-study, health, and elementary science, and this course might even be connected with a handwork course, such as cottage-gardening. Geographical and historical readers taken in alternate years in Standards III. and IV., grouped together where necessary, and in Standards V. and VI., grouped together where necessary, might give a convenient way of treating the lessons in geography B, history and civic instruction; and so on.

60. The course of instruction in any school may, if the Board of Education think fit, be modified in accordance with clause 28 and following clauses forthwith, or at any time not later than the 1st day of January, 1905, on which date these regulations shall, without any exception, come into force; in all other respects they shall come into force from the date of publication.

J. F. ANDREWS,
Acting Clerk of the Executive Council.

