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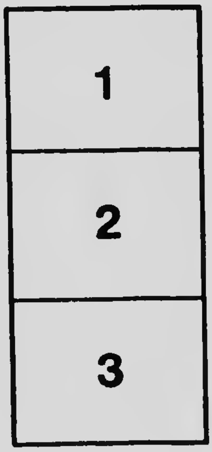
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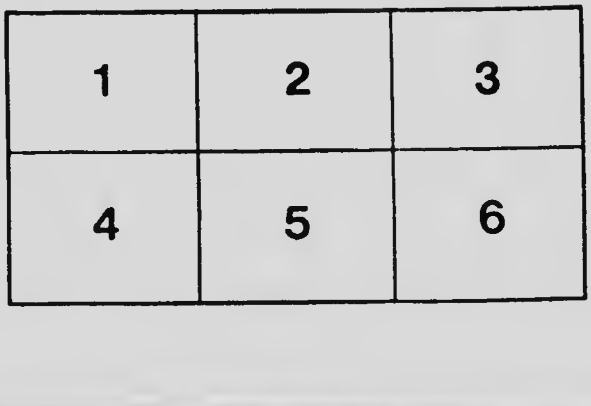
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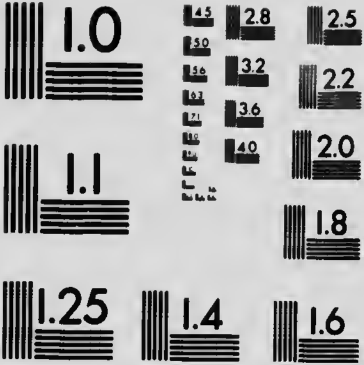

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NATIONAL BUREAU OF STANDARDS
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No. 16

A

CLASS AND FIELD BOOK

FOR

NORMAL SCHOOL STUDENTS

THE COPP CLARK COMPANY, LIMITED
TORONTO

No. 18

A CLASS AND FIELD BOOK

FOR

NORMAL SCHOOL STUDENTS

CONTENTS

TORONTO

THE COPP, CLARK COMPANY, LIMITED

PREFACE

So long as promotions have to be made, so long will examinations be necessary. There *is* a place for the written work of the student, and no "system of credits" can do away with the final written examination. But how to give the completest justice to the student is the question. Too often the student's fate has hinged on one great final trial extending from a few days to a couple of weeks. No account is taken of physical condition, the weather, nor of any other matter which might cause the examined to give in answers much below his or her best. Why should not a record of the student's work, properly certified, be considered? To secure such a record is partly the object of this book. The results will be carefully looked into, and everything directly or indirectly connected with the term's work will not be overlooked.

ARITHMETIC

1. Why should arithmetic be taught?
2. Which of these values are you going to accept, and why?
3. What work is assigned Grade I.?
4. Distinguish *formal* from *informal* arithmetic.
5. Why should a student be asked to take arithmetic continually for ten years?
6. Discuss the wisdom of placing arithmetic in Grade XI.

1. What is the *general* method of teaching counting?
2. State this method *specifically*.
3. Why should the foot-rule be first taught?
4. When is the *foot* known?
5. When should the inch and the yard be taught?
6. How far should the children of Grade I. learn to count?
7. Why should young children count forwards and backwards by ones, twos, fives, and tens, but not by threes, sixes, etc.?

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1. Should *formal* arithmetic be assigned to Grade I.? Why, or why not?
2. How does the idea of number probably arise?
3. What is meant by saying—"Arithmetic is a *thought*-subject?"
4. What are the three things which the teacher should endeavour to develop in connection with primary number?
5. How may each of these be developed?

1. Which measures should be introduced in Grade I.?
2. Tell how the teacher should conduct a class in Grade I. formal number.
3. How will you teach the number 8?
4. What facts in 8 should be memorized? Why?

1. Indicate how you will teach the number 15.
2. What addition *couplets* should be known by the time 15 is taught? What muliplication facts?
3. State how you will endeavour to review these facts and couplets.

1. When should you deal with the *notation* of 6? Of 18?
2. Give reasons for not teaching the number 19.
3. The class has finished the number 18. Write in columns the addition couplets which thus far have been taught?
4. Why should 20 be taught?

---

1. What is the purpose of placing *problem-work* so early in the course?
2. Should fractions be taught? Why or why not?
3. What is the last fraction one should teach?
4. What are the children to do with the fractions discovered in the study of the first ten numbers?
5. How should you assist the children to read the clock?

---

4 1 2 3

1. You wish the children to think number. How may this be brought about? *e.g.*, the number 12?
2. Indicate how you will teach the number 20.
3. What is the arithmetic of Grade II.?
4. What extra measures should be taught in this Grade?

---

1. What numbers in the third number-group (21-30), should not be taught?
2. Should 26 be taught? Give reasons.
3. Indicate how you will deal with the number 28.
4. Why should 24 be taught?

1. What numbers should be omitted in the fourth number-group?
2. In teaching 35 why should not the question—Get the 10's in 35 be asked? Why should this question be asked when teaching the number 40?
3. To teach the number 35.
4. Write six problems for *drilling* in 7 × 5.

1. To review 35. Give examples of the review questions you would use. How many questions of the form—"Three, five, etc.," would you give?

2. The teacher has introduced the following questions:—

(*a*) Add 17 and 19. (*b*) From 32 take 17.
(*c*) Multiply 14 by 2. (*d*) Divide 35 by 3.

Write the solutions of each of these questions.

1. What is the fifth number-group? What numbers in this group should be taught? Why should 43 be omitted?
2. To teach the number 48.
3. What question leads to the discovery that $9 \times 5 = 45$?
4 How will you endeavour to teach the Roman notation from I to L?

---

1. Your pupils have completed the number-work of Grade I. What should they know?
2. Your pupils have completed the number-work of Grade II. What should they know?
3. What is the difference between a *drill* and a *review*? Between a *teaching-lesson* and a *review*?
4. State carefully how you will teach the *ounce*?

1. To review the number 45. Sample review questions only.
2. Your pupils have discovered that 42 is six sevens. Write the next 4 questions you *should* ask.
3. Indicate the presentation of the number 45.

1. Parents are usually anxious regarding home-work questions in addition, etc. How are you going to meet this desire?
2. Write several problems to serve as a drill on each of the following facts:—
   (*a*) 6 × 7, (*b*) 7 × 6, (*c*) 9 + 8.
3. Solve:—(*a*) 19 + 25, (*b*) 50 − 27, (*c*) 14 × 3, (*d*) 49 ÷ 4.

1. What numbers in the 6th and 7th number-groups should be considered?
2. To teach 56 and 70 respectively.

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1. What measures may be taught in Grade III.?
2. What is the work of Grade III.?
3. How would you deal with the reading and writing of the Roman numerals from L to C?
4. State the difference in the students' attitude toward the members of each of the following couplets:—

(*a*) 54 + 9 and 27 + 35. (*b*) 70 − 6 and 70 − 26.
(*c*) 8 × 9 and 18 × 3. (*d*) 70 ÷ 8 and 70 ÷ 6.

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1. Indicate how you will teach the number 90.
2. What numbers in the number-group (51—100) should be taught?
3. Write typical review questions on the number 81.

1. Write several problems you would give in connection with each of the following:—
8×7, 9×7, and 12×6.

2. Solve each of the following:—

(*a*) Add 29 and 37.	(*b*) From 93 take 29.
(*c*) Multiply 27 by 3.	(*d*) Divide 98 by 7.

1. How will you deal with 108, 110, 120, 121, 132, and 144?
2. Indicate how you will teach the notation and numeration of numbers from 100 to 9999.
3. Why should the teacher commence with 100?
4. Your pupils are slow in their use of addition endings. How will you rectify this?
5. Two pupils out of a class of ten are slow in the use of endings. What should be done with them?

1. State the steps the Grade III. teacher should take in teaching blackboard addition.
2. Blackboard subtraction.
3 Write an exercise of ten questions on Step I. addition, and the same on Step I. subtraction.

1. Give reasons for the second step in each of the foregoing processes?
2. Why does the programme of studies from Grade III. on, urge the teacher to take up mental arithmetic?
3. Is mental arithmetic a subject separate from other arithmetic? Should it be? How may you prevent it from becoming a distinct subject?

1. Write an exercise of ten questions for practice of the third step in addition. Also for the practice of the same step in subtraction.

2. The class have been given the fourth step in subtraction. Write a question illustrating this step. Where will a difficulty naturally arise? How will you meet this difficulty?

1. State in their order the steps the Grade III. teacher should take in blackboard multiplication and division.
2. State generally how far addition, subtraction, multiplication, and division should be developed in Grade III. Why is this limit imposed?
3. How well should the pupils be expected to add, subtract, etc., in Grade III.?

1. Your pupils are inaccurate in their multiplication and division. What is likely to be the cause? How may this fault be remedied?
2. If the inaccuracy were in subtraction, how would you deal with it?
3. Write an exercise of at least ten questions for mental work suitable for a Grade III. class.

1. How far should the problems of a text-book enter into Grade III. work? Why?
2. What work should be covered in Grade IV.?
3. The Grade IV. teacher has practically nothing to teach the children in addition and subtraction. Why not? What does the Grade IV. teacher really add to the pupil's experience in these processes?

1. The children should learn to check their work in addition and in subtraction. How should this be done?
2. When should the children leave addition? When leave subtraction?
3. State the steps the Grade IV. teacher must introduce in order to complete (*a*) blackboard multiplication, and (*b*) blackboard division.

1. How will you introduce multiplication by factors ?
2. How introduce division by factors ?
3. Write an exercise of ten questions in *exact* division; and an exercise of ten questions in *inexact* division.
4. Indicate how you will teach the children to get the remainder in an inexact division question.

1. State in their order the steps one should take in presenting (*a*) blackboard addition, and (*b*) blackboard subtraction.
2. How will you help the class to divide 728963 by 71? By 79?
3. Why should the most troublesome divisions follow divisors whose second digit is 4, 5, 6, or 7? Why should these be kept to the last?

1. How should the pupils check their multiplication and division results respectively?
2. When should the class have short multiplication and short division?
3. How will you assist a class to multiply 87 by 59? 438 by 371?
4. Write an exercise of ten questions where the divisor is of the form 7123. Where it is of the form 8967.

1. Grade IV. pupils have a text in arithmetic. How should the teacher use this text? How should the pupils?

2. Write a few suggestions regarding the pupil's exercise book in arithmetic, and the danger of acquiring bad habits.

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1. How will you endeavour to *speed* your pupils in the simple rules?
2. Why have addition, subtraction, etc., been called by this term?
3. Indicate your method of teaching your Grade IV. class to complete the reading and writing of numbers. How far should this work be taken?

1. How will you assist your class to complete the reading and writing of Roman numerals?
2. State the steps in the development of the *mensuration of the surface.*

---

1. Write an exercise of at least nine problems, no two alike, for the mental work in connection with the mensuration of the surface.
2. How will you teach the *acre*, the *square rod*, and the *section* respectively?

---

1. What is the arithmetic of Grade V.?
2. What should be the first work of the Grade V. teacher? The last work of the Grade IV. teacher?
3. How will you teach the mensuration of the rectangular space-form?

1. Why should the mensuration of the rectangular space-form be more difficult to teach than that of the mensuration of the rectangle?
2. How should you introduce the idea of the *square inch*? The *cubic inch*?
3. To teach the table of pints, quarts, gallons, etc.

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1. In reducing 3 ml. 1 rd., etc., to inches, you have had the children multiply the 3 by 320. Does this not give 960 miles? How do you get over this obstacle?
2. Write an exercise showing the kind of work you would have the pupils do in the addition and subtraction of linear measures.

1. How will you assist the pupil (*a*) to multiply by $5\frac{1}{2}$? (*b*) to divide by $5\frac{1}{2}$?
2. State the steps in connection with the development of factors.
3. State your views regarding:—(*a*) The imparting of the truth that $8 \times 9 = 9 \times 8$.
   (*b*) The giving of short methods of work.

1. Why is the *general* method of finding the H.C.F. not usually taught in the elementary school ?
2. State in their order all the steps in connection with the teaching of the common fraction

1. To teach the Law of the Fraction.
2. State the several meanings usually attached to such a fraction as $\frac{3}{7}$.
3. Write six problems where cancellation may be introduced.

1. **State the steps in teaching that $7 \times \frac{3}{5} = \frac{21}{5}$.**
2. **State the steps in teaching that $7 \div \frac{3}{5} = \frac{35}{3}$.**
3. **State the steps in teaching that $\frac{3}{4} \times \frac{5}{7} = \frac{15}{28}$.**
4. **State the steps in teaching that $\frac{3}{4} \div \frac{5}{7} = \frac{21}{20}$.**

1. **How will you introduce the idea of inverting the divisor?**

2. **Show how you will introduce simplification of fractions and lead up to the solution of such an example as:—**

$$\frac{\frac{2}{3} \text{ of } 3\frac{1}{4} - \left(\frac{1}{1\frac{1}{2}} \text{ of } \frac{1}{2\frac{1}{3} - 1\frac{4}{15}}\right)}{\frac{1}{2\frac{2}{3}} + \frac{1}{1\frac{5}{7}} + \frac{1}{4}} \text{ of } \frac{\frac{1}{3} + \frac{1}{5}}{\frac{1}{3} - \frac{1}{5}} \times \frac{1\frac{1}{4} - \frac{11}{12}}{\frac{1}{1\frac{1}{4}}}$$

1 What should be your first step in the teaching of decimals?

2. Indicate carefully your procedure in dealing with the notation and numeration of decimals to thousandths.

3. State the steps in dealing with (*a*) mu ation, and (*b*) division of decimals.

1. How will you deal with each of the following:—78.6 × .19 and 78.6 × 19; 98.5 ÷ 5 and 98.5 ÷ .05?

2. How should pupils solve the following problem:—A piece of land is 63.5 rd. long by 27.75 rd. wide. What will it cost to fence it at $.875 per rd.?

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1. State the steps in connection with the teaching of the triangle.
2. How will you assist your pupils in finding the volume of any triangular prism ?

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1. State the arithmetical work assigned to Grades V., VI., and VII., respectively.
2. How will you introduce percentage?
3. Give a sample of each of the problems you would present to your class in your effort to give as complete an introduction as possible to percentage.

1. State the steps one should take in dealing with insurance, taxes, and simple interest respectively.

2. In each of the above cases give a mental arithmetic exercise of at least four questions.

1. State the steps in dealing with the circle.
2. Indicate how you will teach (*a*) the cylinder, and (*b*) the finding of the volume of a cylinder.
3. What work in addition and subtraction should be undertaken by the teachers of Grades V., VI., VII., and VIII., respectively ?

1. How will you deal with squares and square roots?
2. Why should longitude and time be considered in arithmetic?
3. If arithmetic were taught exclusively for its practical value, what should a text in arithmetic cover? How long should this take?

1. High school teachers of arithmetic have frequently complained of the inability of the students of the first year to handle problems relating to percentage. If this is true, what is the explanation ?
2. Prepare an exercise of eight questions suitable as a test for students writing on the entrance examination.
3. Prepare a paper in mental arithmetic for an entrance class, the time being twenty minutes.

1. How will you assist a pupil to solve each of the following:—

   (*a*) By selling grapefruit at the rate of $2.60 for 4 dozen, it was found that $\frac{5}{8}$ of their cost was gained. Find the price at which each ought to have been sold in order to gain 0.7 of the original cost.

   (*b*) A farmer bought 48.125 tons of hay. For 20.25 tons he paid $16.75 per ton, and for the rest $18.2625 per ton. He sold the whole at an average price of $0.945 per cwt. Find his gain or loss.

1. How will you assist a pupil in solving:—

   (*a*) I bought 4250 lbs. of wheat at $1.02 a bushel, and 3408.5 lbs. of oats at 64 cents a bushel. I sold the oats at a certain loss per bushel, and the wheat at an advance of 14 cents per bushel, gaining on the whole 98 cents. At what price per bushel did I sell the oats?

   (*b*) I bought 18[illegible] gals. wine at $2.60 per gal.; paid for carriage $8.60, and for duties $5.80. If 15% of the wine be lost by leakage, at what price per gal. must the remainder be sold so as to clear $10.60 over all?

---

1. How should you assist a class to solve the following:—

   (*a*) A grocer intended to gain 8% on some tea, and fixed his price accordingly. When he had sold $\frac{2}{3}$ of his stock he had to reduce the price by 10 cents a pound, and so gained only half as much as he had intended. Find the first marked price per pound.

   (*b*) A man bought land at $60 an acre. He sold $\frac{1}{3}$ of it to A. at $80 an acre, 20% of the remainder to B. at $22 an acre, and the rest, which was 120 acres to C. at $75 an acre. Find his gain or loss.

1. What assistance should you give your class in solving the following:—

   (*a*) I bought 9000 bushels of wheat at $1.25 a bushel, payable in 6 months. I sold it at once for $1.06 a bushel cash, and put the money at interest at 10%. At the end of 6 months, I paid for the wheat. Find my gain or loss.

   (*b*) Seven-tenths of the selling price of certain goods is 2% less than cost. Find the gain per cent. at which the goods were sold.

1. Should students writing on the teachers' examination be asked to write on a paper in mental arithmetic?
2. Write the solutions you would expect your pupils to make of the problems on page 54.
3. How does a pupil's attitude in solving a problem differ from his attitude in writing the solution of the same problem?

1. Make your arithmetic *practical.* This is the advice we get on all sides. Write a short essay on the topic:—"The teacher alone makes the arithmetic practical or impractical."
2. Also write a note on puzzle-problems, and puzzles in arithmetical work. Give one example of each of these problems.

1. Criticize the following solution of the question:—"To find the simple interest on \$650 for 2 years at 6 per cent.?"

   Interest on \$100 for 1 year is \$6.

   Interest on \$100 for 2 years is \$12.

   Interest on \$1 for 2 years is $\$\frac{12}{100}$.

   Interest on \$650 for 2 years is $\$\frac{12}{100} \times 650$ \$78.

2. Write the solution you would recommend.

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1. Show how you wish your pupils to solve the following problems in mental arithmetic:—
    (*a*) At ¾% what will it cost to levy a draft on Montreal for $12,000?
    (*b*) A contractor has 75 miles of railway to construct at $8,000 a mile. He pays his engineer 2% of the contract price for managing the work. Find the engineer's fee
2. Show that commission, Insurance, Taxes, and Duties are simply different names for the same idea.

1. How should the following mental arithmetic questions be solved

   (*a*) A herd of cattle is insured for half its value at $\frac{3}{4}\%$ premium. The premium paid was $120. Find the value of the herd.

   (*b*) Ice when cut into blocks of a certain size, and well packed, occupies 40 cub. ft. per ton. How many tons of ice can be packed into a space 60 ft. by 40 ft. by 25 ft.?

---

1. It is often found that the teacher who devotes the most time to arithmetic has poorer results than the teacher who devotes much less time to the subject. How may this be explained?
2. Write a note on the place of memory in arithmetic. On the place of the imagination.
3. Criticize the problems on the last entrance paper in arithmetic.
4. Why should book-keeping and geometry be placed on the Grade VIII. programme?

1. Why should not algebra be introduced in Grade IV.?
2. What is algebra?
3. What is the difference in the part definitions play in algebra and in geometry respectively?
4. How far should arithmetic encroach upon book-keeping?
5. What efficiency in arithmetic should be expected from an entrance pupil?

GEOGRAPHY.

1. Define Geography.
2. When should geography be commenced? Why?
3. Why should geography be on the programme of studies at all?
4. Students entering the high school are not as a rule enthusiastic over geography. Why not?

1. Every Canadian boy and girl should be ashamed not to know geography well. Discuss this. Does it apply to the same extent in the case of the Italian boy?
2. What is wrong in studying geography as the science of the "what and where?" Has this kind of geography any practical value? Explain.
3. Why should the moon and the sun be studied as topics of home-geography?

1. Define home geography.
2. What purposes are met in a teaching of home-geography?
3. To begin book-geography without the home-geography foundation is to court failure. Discuss this.
4. Give reasons why home-geography in the town school is frequently neglected. Show that there is no excuse for this neglect.

1. There is and must be a difference between the experiences of the country and those of the town; there must therefore be a difference in the home-geography topics. State the character of this difference.

2. What will the phrase the "rolling prairie" mean to a little girl living in the heart of a great city?

3. Outline your method of dealing with the cardinal points of the compass to a primary class.

1. Outline the work you intend to do with a vertical stick and the noon sun.
2. Why should so many teachers neglect this work ?
3. Describe your first lesson with the compass.
4. Why should the children be asked to obtain a north and south line ?

3rd – 24

1. Why draw the attention of the primary class to such a thing as the distant elevator?
2. What Grades should take up home-geography?
3. What should a child beginning Grade IV. know of the behaviour of the sun from June 21st to December 21st?
4. What have you to say regarding the oft-repeated remark—"Why should the children be taught the things that everyone knows?" Specify.

1. Why should dew, rain, clouds, etc., be taught?
2. Outline a lesson on a "ring about the moon," a rainbow, or, a cloud.
3. What have you to say regarding the giving of definitions to the children of the primary grades?
4. What should the children of Grade III. know regarding the cause of clouds?

1. How would you assist a Grade III. child to get at the cause of cloud formation?
2. Why should the children of senior Grade III. be asked to make weather records for January, etc.?
3. Tell how you are going to teach the children to read a thermometer.
4. Indicate your plan of teaching the thunder-storm to a Grade III. class.

Name.................................

.......................*Grade*

..........................*School*

Weather Record for the month of..............

DATE	DIRECTION OF WIND	FORCE OF WIND	TEMPERATURE	RAIN OR SNOW	CLOUDS OR SUNSHINE	REMARKS

1. What is the general method of teaching either a land form or a water form ?
2. Why should these forms be taught ?
3. How may the city teacher teach the hill ?
4. Outline the descriptive portion of the method, the topic being a "Manitoba winter."
5. Complete the record on the opposite page.

1. How will you teach current, basin, and right bank respectively ?
2. Why should the teacher spend extra time on such a topic as the district creek ?
3. What should the child's first map be to the child ?
4. Outline work you would do regarding the topic—"Our domestic animals and birds."

1. **Make a map of your district.**

> **Winnipeg students will show the Red and Assiniboine Rivers, Winnipeg City, Fort Rouge, Norwood, Elmwood, St. Vital, New Agricultural College, Old College grounds, Kildonan, Portage Avenue, Selkirk, Emerson, Lake Winnipeg, etc.**

1. Make from memory an outline of the continent of———. Place on it the things a Grade IV. pupil ought to know.

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1. Describe the hanging of the district map on the wall.
2. How should further work in map-reading be managed ?
3. When should the children leave home-geography ?
4. Outline a lesson on trade; also a lesson on transportation.

---

1. What is the main topic of Grade IV. geography ?
2. How does this work differ from that already taken ?
3. State in their order the five sub. topics.
4. Write a short essay on the place of the imagination in geographical work.

---

1. What preparation have the children had for the study of book-geography? Give particulars.
2. Write a short note on the use the teacher should make of the text in Grade IV.
3. Enumerate the general method of teaching the fact "The earth is a ball."

---

1. You wish to give the children some adequate idea of the size of the earth. Write your conversation on this point.

2. Why should not reference be made to the "Ship at sea," etc.?

3. The children are asked to accept an important fact on your simple statement. Is this good teaching?

1. State the general method of teaching (*a*) Rotation, and (*b*) Revolution.
2. What facts should follow your statement that the earth rotates? That the earth revolves?
3. How should day and night, sunrise and sunset, etc., be presented?
4. Outline a lesson on the earth's axis.

1. Outline a lesson on the "North Cold Cap."
2. What have you to say regarding the telling of such things as "the sun is 91,000,000 miles from the earth?"
3. What is the general method of presenting the great land and water masses of the earth?

1. How will you deal with the globe study of the land and water masses? State as (*a*), (*b*), etc.
2. What great facts regarding the relations of the land and water should the children obtain from this globe study?

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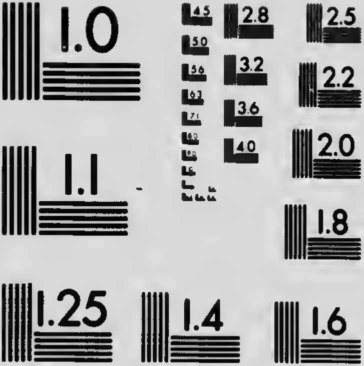
1. What maps would you suggest for the use of an ungraded school ?
2. Give a list of books on geography you think would be suitable for supplementary reading for Grade IV. pupils.
3. What topics would you select from any one of these books ?

1. How should the blackboard work in Geography be conducted?
2. Illustrate the above, taking Australia as an example.



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

1. Make a map of ———— and place on it the things a Grade IV. pupil *ought* to know.

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1. How should the blackboard study of the continent of North America differ from that of all other continents?
2. Make a map of ——— and place on it the things a Grade IV. pupil ought to know.

1. How should a review of the continent of Europe be conducted?
2. Outline the work you would endeavour to cover in this review.

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1. Make a map of ————. Place on it the things a Grade IV. pupil ought to know.

1. **Make a map of ———— and place on it the things a Grade IV. pupil ought to know.**

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1. Make a map of ————. Place on it the things a Grade IV. pupil ought to know.

1. When the globe study has been completed the teacher should review the work. State how this review should be conducted.
2. Write at least twelve review questions on globe work.

1. A general review should follow the completion of the blackboard geographical work. State how this review should be conducted, and write at least ten questions you would give the class.

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1. Why should a world-map on Mercator's projection be kept out of the elementary school?
2. How will you deal with the question of "world-homes"?
3. Indicate what you will do in connection with "Life in the mountains."

1. Describe the geographical method of the ever-widening circle. Wherein is this method faulty?
2. Why should the *world-whole* follow home-geography?
3. How should the text-book be used in Grades V. and VI.?
4. You are teacher of a rural school. There are five pupils in your Grade V. class, and six pupils in your Grade VI. class. How should your geography be conducted to save time?

1. Describe somewhat fully how you would take up Australia with a Grade V. class.
2. Why should the continent of North America be given first place in the order of teaching?
3. Consider the following order of introducing the continents:—Australia, South America, North America, Europe, Africa, and Asia.

1. What have you to say regarding the making of beautiful maps, maps drawn for home-work, construction lines in map-making, etc.?
2. Should a child's map be a *means*, or should it be an *end*?
3. How should you help your class to make a good outline of Africa?
4. How does map-reading differ from ordinary reading?

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1. Discuss the kind of work a Grade VII. class should have in geography. Does the work at present assigned meet with your approval? State your objections if any.
2. What have you to say regarding the absence of geography from a Grade VIII. programme?
3. The pupils of either Grade VII. or Grade VIII. should be given an opportunity of re-discovering such facts as—the earth's shape, the rotation of the earth, etc. What have you to say regarding this suggestion?

1. Describe fully how you will endeavour to assist your Grade VII. or Grade VIII. class to make the discovery that the earth is like a ball in shape.

2. Tell how you would endeavour to make the revolution of the earth, and the movements of the moon concrete.

1. Outline a lesson on the rotation of the moon, and another on the revolution of the moon.
2. How will you try to show the class the difference between *sun-time* and *standard-time*?

1. The pupils of the entrance class were asked to make from memory a map of the Indian Ocean. This question was considered entirely too difficult. What have you to say regarding the judgment of the man who set the paper?
2. Make the above map and place on it all the coast features a Grade VIII. pupil ought to know.

1. Among the defects which we note as worthy of repetition are two which may fairly be called the parents of a thousand errors, viz.:—The failure to establish in the minds of pupils the mental concept of the *world-whole*; the brain picture of the continents, and chief countries in due relation to each other as they lie in the great bodies of water; and secondly, the failure to teach the uses of the great circle as the necessary first element in getting all world measurements. Discuss this.
2. What should the elementary school do towards making it possible for the student to be ever a student of geography?

1. No child has ever been able to get even a fair idea of mathematical and physical geography from flat maps in first lessons. Consider this statement
2. A child gives as a definition of meridian line the following:—"A meridian is 15 degrees." Criticise the teacher.
3. Outline a lesson you would give a Grade VII. class in current geography.

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1. Prepare a paper of six questions suitable for an entrance examination in Geography.
2. What is the altitude of the noon sun at the equinoxes and solstices respectively to an observer at lat 60° N., 42½° S., and at lat. 0°?

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1. The supreme test of efficient geographical teaching is determined by the place geography plays in the after-life of the student. Discuss this.
2. How far should current geography enter into your school work?

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1. Outline your plan of dealing with a country, *e.g.*, France, (*a*) Grade V., (*b*) Grade VIII.

NATURE-STUDY

1. Give Professor Hodge's definition of Nature-study. What is Mr. Bailey's definition? Which do you prefer? Why?
2. What values are considered by Hodge? Which one does he emphasize and why?
3. "The impossible idea that a teacher must know everything is at present the shackles of our school system." Criticise.

1. "In rare cases now we find the charm of childlikeness, the open interest and rapid growth, extending on through childhood and to the end of old age." What is meant? What does Hodge think is the solution?
2. "Just in the period of early childhood, with its passion for activity and its capacity for interests, we need the ethical training more than at any other time." What suggestion is here for Nature-study?

1. "The child that plants a seed or cares for the life of an animal, is working hand in hand with nature and the Creator." Discuss this statement.

2. "Parents should provide for their children pet animals suited to their ages and inclinations." "No animal should be made a pet." Compare these statements and give your own views of the matter.

1. How are you going to carry out Hodge's injunction :—"Give the children large interests and give them young"?

2. "Upon these two things depend largely the quality of knowledge and texture of mind that education yields to the child" (Hodge, page 23). What is the reference?

3. Outline a first lesson on the giant water bug to a primary grade.

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1. What do you think of emphasizing the economic value of a Nature-study specimen?
2. "By its means we may reinstate childhood in the function for which it was designed and created" (Hodge, page 14). What is the reference?
3. Every Nature-lesson should leave an interrogation mark. Outline a first lesson with a Grade IV. class on the crayfish or on the flicker.

1. "But the teacher says the parents make all sorts of objections to Nature-study, etc." (Hodge, page 12). What does Hodge say regarding this excuse?
2. The city teacher says:—"Nature-study is for the rural teacher, etc." Show that this is but an excuse for leaving Nature-study alone.
3. Outline a lesson on the dog for a Grade IV. class.

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1. "The omission of *soil-lore* from a system of education of the young is suggestive of relapse to barbarism." Discuss this.
2. What things are best worth knowing ?
3. Nature-study is not science. What is it ?
4. Who originated the term "Nature-study" ? What Does Mr. Bailey think of this term ? Suggest a better term.

1. (*a*) **Nature-study is studying things and the reason of things, not about things.**
   (*b*) **Nature-study is not the teaching of facts for the sake of the facts.**
   What does Mr. Bailey mean in these suggestions ?
2. How does **Nature-study** differ from the object lesson ? From elementary science ?

1. How may Nature-study be taught? Give Mr. Bailey's reply. See page 19, The Nature-Study Idea.
2. Two factors determine the proper subjects for Nature-study. What are these?
3. There are three factors in the teaching of Nature-study:—The fact, the reason for the fact, and the question left in the pupil's mind. Illustrate this from the white poplar leaf.

1. At what time of the day should the Nature-lesson be taught? Mr. Bailey says:—"I should prefer ten minutes a day of Nature-study to two hours." What have you to say regarding this?
2. What may be the results of Nature-study? See page 29, The Nature-Study Idea.

1. How may Nature-study tend to improve the farmer?
2. What does Mr. Bailey think of the *Integument Man*?
3. "Specimens mean more to the pupil when he collects them." "A living, growing plant is worth a score of herbarium specimens." Discuss these statements.

1. Give a synopsis of Chapter VI.—The Nature-Study Idea.
2. "One plant cannot be handled without leaving an impress on the life." Write a short essay on this topic.
3. Write a short account of any experience you have had along one of the following lines:—My geranium. My pet cat or dog. What the box-elder told me. My prize cabbage, pumpkin, etc.

1. What do you think of the attempt to interest the children in farm-life by means of a text-book on agriculture?
2. Many good people seem to think that the only thing to do to reform any school problem is to get a teacher. What do you say and why?
3. "I should make farm-life interesting before I make it profitable." Discuss this.

1. We must abandon the pleasing delusion that all go to school with the expectation of afterward going to college. Discuss the question of the boys leaving the farm for the city, and suggest remedies. Find out what Bailey has to say on this matter.
2. Must a *use* be found for everything? Chap. IV., The Nature-Study Idea.
3. Give your estimate of the "New Hunting."

1. In connection with the poem, "Robert of Lincoln," the following criticism has been made:—"The poem is not true. The Bobolink is not 'drest'; he has no clothes. He has no wife; he is mated, not wed." What have you to say regarding this criticism?

2. My recommendation to every teacher desirous of learning something of nature is this:—*Read everything John Burroughs has written.* Why should this help?

3. Outline a lesson on one of the following:—The giant water bug, the harvestman, the clam, a winter-night's sky, an earthworm, a hill of corn, a milkweed pod.

1. School supervisors have reported that teachers are doing nothing more serious in Nature-study than making weather reports. What have you done? What are you going to do?
2. If supervisors would only interest themselves half as much in Nature-study as in reading and arithmetic, better results would be forthcoming. Discuss this.
3. Discuss (*a*) the teacher's place in the lesson; (*b*) the pupil's place.

1. **Discuss the place of school-gardening in the teaching of nature.**
2. **"School-gardening is not necessarily Nature-study." Consider this.**
3. **Some rural districts have asked time after time:—"Why should our children be compelled to make school gardens; we wish them to study the three R's." Discuss.**
4. **Discuss the place of drawing in Nature-study.**

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1. Prepare a lesson plan on the goldfish. State the grade you have in mind.

1. Prepare a lesson plan on the Nature-study of the Balm of Gilead. Consider this in the winter season, the class being Grade VII.

1. There are 200 teaching days in the school year. If I leave one interrogation mark in the minds of each of my pupils, each day, I shall accomplish very valuable results. What is your opinion of this scheme? Prepare five such questions.

2. Write a short essay on the relations of Nature-study and literature.

LOCAL "NATURE" OBSERVATIONS

The following pages are provided for the purpose of aiding students to become interested in observing the times of the regular procession of natural phenomena each season. What is desired is to have recorded in these forms the dates of the first leafing, flowering, and fruiting of plants and trees; the first appearance in the locality of birds migrating north in spring, or south in autumn, etc. While the objects specified here are given so as to enable comparison to be made between the various sections of Manitoba, it is very desirable that other local phenomena of a similar kind be recorded. Every neighbourhood has a *flora*, *fauna*, *climate*, etc., more or less distinctly its own; and the more common trees, shrubs, plants, crops, etc., are those which will be most valuable from a local point of view in comparing the characteristics of a series of seasons.

To all observers the following most essential principles of recording are emphasized:—*better no date, no record, than a wrong one or a doubtful one.* The date to be recorded should be the *first* of the *many* of its kind following immediately after it. Only such things as pertain to the special locality are to be recorded.

AUTUMN

Box-elder, showing fall colouring....
Box-elder, bare..................
Poplars, showing fall colouring......
Poplars, bare....................
Elm, showing fall colouring.........
Elm, bare.......................
Oak, showing fall colouring.........
Oak, bare.....................
Dogwood, showing fall colouring.....
Ash, showing fall colouring.........
Ash, bare......................
Aster, flowering.................
Golden Rod, flowering............
Gentian, flowering................
Dandelion, last in flower...........
Stink Weed, last in flower.........
Lilac, showing fall colouring.......
Potato, digging begun.............
Wheat in shot blade...............
Wheat heading out................
First cutting of wheat............
Wheat cutting, general...........
First threshing of wheat...........
Wheat threshing, general..........
Oats heading...................
Oat cutting begun................
Oat cutting, general..............
Hay cutting begun...............
First hay stacked.................
First fall frost..................
First snow to fly in the air.........
First snow to cover the ground......
Last thunderstorm of autumn.......
Closing of river or lake............
Wild ducks going south..........
Wild geese going south............
Robins going south................

List of winter birds of this locality...

List of flowering shrubs of this locality

SPRING

Early Anemone, first in bloom......
Box-elder, showing green...........
Box-elder, in flower................
Poplar, in flower..................
Poplar, showing green.............
Poplar-wool, blowing..............
Elm, in flower....................
Elm, showing green...............
Elm, in full leaf..................
Oak, in flower....................
Oak, in full leaf..................
Choke Cherry, in flower............
Wild plum, in flower..............
Hawthorn, in flower..............
Basswood, in flower...............
Elm, seeds falling................
Willow, in flower.................
Willow, in full leaf...............
Ash, in leaf......................
Buttercup, in flower..............
Dandelion, in flower..............
Dandelion, seeds flying..........
Wild Rose, in flower..............
Orange Lily, in flower.............
Stink Weed, in flower...........
Lawns, getting green.............
Lilac, in leaf.................
Lilac, in flower...................
Potato, in flower..................
Wheat sowing begun.............
Wheat sowing, general............
Wheat-fields looking green........
Oats sown......................
Oat-fields looking green...........
First potato planting.............
Last snow to cover the ground.....

Last snow to fly in the air..........
Last frost before August...........
Number of thunderstorms in May..
Number of thunderstorms in June...
Opening of river or lake...........
Frost out of the ground completely...
Ditches, first running of...........
Highest water in river............
Piping of frogs...................
First gopher seen................
First pond-life seen..............
First mosquito seen...............
First grasshopper seen............
First dragon-fly seen..............
First polywogs seen..............
Hottest day in spring.............
Wild ducks coming................
Wild geese coming...............
First robin......................
First meadow lark................
First flicker.....................
First kingbird...................
First whip-poor-will..............
First grackles (kind)..............
First crow seen or heard..........
First gulls.......................
First white-throat heard...........
First wren heard.................
First wren seen..................
Robins, nest-making..............
English sparrows, nest-making......
First nighthawk seen or heard......
Purple martins coming............
Purple martins nesting............
First cat-bird heard or seen.........
Baltimore orioles coming..........
First chickens hatched on farm......

STUDENTS' OBSERVATIONS

from..............................*to*..............................

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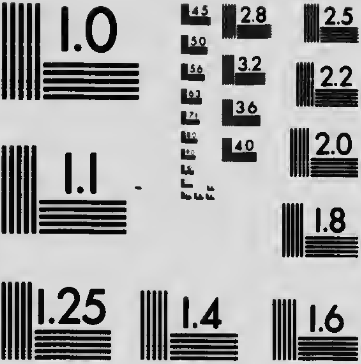
[illegible]



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

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Weather and Sky	Insects	Plants
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Summary of weather during the month of..................................

Summary of bird and insect-study during the month of.......................