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A comparison of the fluency of oral recall with written recall in silent reading in geography in grade five

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Thesis

A Comparison of the Fluency of Oral Recall
With Written Recall in Silent Reading
in Geography in Grade Five

Submitted by
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(B. S. in Ed., Boston University, 1937)

In Partial Fulfillment of Requirements for the
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A Comparison of the Fluency of Oral Recall

With Written Recall in Silent Reading

in Geography in Grade Five
Acknowledgments

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Finally thanks are due to Miss Ann McCarthy and Miss Stella G. Bucknam for their assistance in the testing program.
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Chapter I

Introduction
Introduction

Statement of Problem

The purpose of this study is to compare the fluency of unaided oral recall with unaided written recall on silent reading, in geography, in grade five. It includes recall from different selections on the same level as measured by multiple choice questions on the same material.

The need for such a study is indicated by Durrell, who says: "It is apparent that the main difficulty in recall is lack of fluency. Often a child thinks he has told all he can remember of a selection, but many omitted ideas can be brought out by appropriate questions. Similarly, in written recall many children can give only fragmentary summaries of material read, yet under questioning they reveal good comprehension of the entire selection."

This study differs from other studies in this field as it presents material in geography and tests built by the use of this material which was selected from a classroom text book and a supplementary geography reader in order to measure oral and written recall.

It is recognized that there is little provision made in the school curriculum for training pupils in the completeness of comprehension in oral or written recall. Yet, in almost

1. Durrell, Donald D., "Improvement of Basic Reading Abilities" World Book Co., N. Y., 1940
[Text content missing or illegible]
every phase of life people have to interpret material read either by oral or by written expression.

Wiley\(^2\) states that "in the intermediate grades the dominant emphasis should be upon those exercises which train for skill in thought getting and thought expressing in connection with the regular school subjects. In these grades the pupils should be introduced to the silent reading and study procedures which are most helpful in lesson getting".

Dolch\(^3\) says "poor readers seldom comprehend as well as we should like them to. In this situation, to get increased comprehension is to provide easier and more interesting reading matter. Not all reading materials can be easy and interesting, however. School books must be taken as they come. Therefore, the child needs the habit of getting all he can from what he reads, even though it may not greatly interest him."

Gray\(^4\) states "By and large, our pupils are not getting very much direct help in understanding what they hear or read, or in knowing what they mean by what they say or write. While the importance of recall is generally recognized by psychologists and by investigators of problems in reading, it is generally ignored both by pupils and by teachers. The attempt to recall stimulates an active, as contrasted with a passive, attitude.

2. Wiley, J. A., "Practice Exercises in Silent Reading" Iowa State Teachers College, 1928
toward learning. Some psychologists who have studied the effect of recall estimate that as much as three fourths of a student's time in study should be spent upon recall".

McKee\(^5\) says: "Because the school presents meanings for the most part in the form of language - oral and written - pupils and students at all levels must be able to make adequate meaning for the language that they see and hear. In addition, they must be able to speak and write with enough clearness to enable other people to make the meanings that they present in speaking and writing".

This thesis includes an analysis of the data in recall from reading since the use of the material read often depends upon powers or oral and written expression rather than upon the powers of comprehension.

The purposes of the investigation are:

1. To compare the completeness of comprehension in unaided oral recall with the completeness of comprehension in unaided written recall.
2. To compare oral and written recall for short and long selections.
3. To compare unaided oral recall with recall as measured by multiple choice test questions.
4. To compare multiple choice and oral recall for short and long selections.

5. McKee, Paul, "Language in the Elementary School"
Houghton Mifflin Co., 1939
5. To compare unaided written recall with recall as measured by multiple choice test questions.

6. To compare multiple choice and written recall for short and long selections.
Review of Research

Investigations in reading have found that unless reading is motivated and guided by attempted recall, little is added to what is gained by a single reading. In an experimental study on retention Spitzer found that immediate recall in the form of a test is an effective method of aiding the retention of learning and should therefore be employed more frequently in the elementary school. His findings supported the fact that a single immediate recall upon retention of factual material enabled students to remember more for two months than was remembered without recall for twenty-four hours. In his study he proved that more is forgotten in one day without recall than is forgotten in sixty-three days with the aid of recall.

Betzner stated that there is a fair correlation between general intelligence and ability to recall. She found a decided growth in the ability to recall ideas, both in oral and in written form, between the third and the sixth grade levels. Her study reported that children reproduce easy material in writing as well, if not better, than they reproduce orally.


Potter's study supported the findings of Betzner's in stating that difficult material is reproduced better orally. Her experiment reported that the difference between written and oral recall becomes less as we progress toward the sixth grade. She disclosed an actual gain in written memories in the intermediate grades.

In a study by Acomb it is stated that the speed of handwriting is apparently an insignificant factor in the number of ideas and the amount of written recall recorded after silent reading. His study indicated that spelling ability is definitely a limiting factor in the number of ideas recalled in writing and in the amount of written recall after silent reading. He reported that spelling ability is highly related to reading ability. It is evident in his study that reading ability is a limiting factor in the number of ideas recalled in writing and the amount of written recall. He supports the fact that the recall after silent reading is dependent upon the number of ideas comprehended during silent reading.

It is evident in Torrants study of recall in the fourth grade that multiple choice recall is superior to unaided oral recall.

The text on the page is not legible due to the quality of the image. It appears to be a page from a book or a report, but the content cannot be accurately transcribed.
Her study disclosed an average of twelve ideas recalled in the multiple choice test as compared with five in the unaided oral recall. In the number of ideas recalled orally and in the rate of expression the girls were superior to the boys. The boys, however, were superior to the girls in the multiple choice recall.

Bushnell in a study comparing oral and written recall in the eighth grade, reported written expression as superior to oral expression in the qualities of thought content and sentence structure. The written expression was less subject to all kinds of error. He also concluded that those who were the most fluent and most rapid speakers were the most proficient.

Chapter II

Plan and Conduct of the Experiment
Plan:

The purpose of this study is to compare the fluency of unaided oral recall with written recall on silent reading. The following experiment was conducted in three fifth grades of two schools in one city. These rooms contained one hundred and twenty-two pupils.

Conduct:

1. Selection of Material Used in the Study

Four selections of about one hundred and thirty words of equal difficulty and two selections of about three hundred and thirty words of equal difficulty were used in pairs in this study. The selections were chosen from a supplementary geography text and a supplementary geography reader and presented material unknown to the pupils. Although some of these selections were somewhat revised for the present purpose, they were originally taken from the following sources:

(a) Selections A and B

Webster, Hanson Hart, "Travel by Air, Land and Sea", Houghton Mifflin Co., 1933

(b) Selections C, D, E, and F

Brannon, Frederick K., and Ganey, Helen M., "Geography of North and South America", William H. Sadler, 1930.

In preparation for the decision to use these particular selections, five different geography texts and twelve different supplementary readers were consulted. The selections were paired as nearly as possible by considering the number of ideas
and the kind of material presented in each. The reading vocabulary was within the reading range of the pupils and the subject matter was of interest to children of the grade. The selections have been lettered so they might be conveniently referred to in this study. All material used in this experiment was mimeographed. (See complete copies in appendix).

A list of ideas was prepared for each of the short selections. These lists included all of the ideas present in the paragraphs. Selections A and B included twenty-three ideas while selections C and D included twenty-four ideas. Pages 10 and 11 present one of the short selections and a list of ideas. A list of thirty major ideas was prepared for each of the longer selections. Pages 12, 13, 14, and 15 present one of the longer selections and a list of ideas. These lists were constructed in order to check each pupil's oral and written recall and Multiple Choice Test responses, together with the number of responses gained above the recall by the test.

Multiple Choice tests were built to measure the comprehension not given in the recall. Each test for the short selections contained all of the ideas included in the selection and in the list of ideas. The two Multiple Choice tests built to measure the responses from each of the longer selections, included all of the major ideas in the selections and in the lists of ideas. Each test item included three choices and presented the same vocabulary as the selection from which it was constructed. The purpose of these tests was to measure the
SECTION C

The Cacao Tree

Chocolate and cocoa come from the seeds of the cacao tree. This tree grows in tropical regions as it must have plenty of warmth and moisture. The cacao tree usually grows in the shade of other trees. Pods which resemble cucumbers form on the trees. Each pod has from 25 to 50 seeds. When the pods turn a yellow or a reddish color, the natives know they are ready to be picked. The pods are cut from the trees by sharp knives fastened to long poles. The pods are dried for about a day, then the seeds are removed. The seeds are the size of an almond. They are put on large cement floors and are thoroughly dried before they are shipped to market. America buys much of its cacao from South America.
SELECTION C

Ideas

1. Chocolate and cocoa
2. come from the seed of the cacao tree
3. This tree grows wild in the tropical regions
4. as it must have plenty of warmth and moisture
5. The cacao trees usually grow in the shade
6. of other trees
7. Pods which resemble cucumbers
8. form on the tree
9. Each pod has from 25 to 50 seeds
10. When the pods turn a yellow or reddish color
11. the natives know
12. they are ready to be picked
13. The pods are cut from the trees
14. by sharp knives
15. fastened to long poles
16. The pods are dried
17. for about a day
18. then the seeds are removed
19. The seeds are the size of an almond
20. They are put on large cement floors
21. and are thoroughly dried
22. before they are shipped to market
23. America buys much of its cacao
24. from South America
The southeastern part of the Brazilian Highlands in South America is called "Coffee Land". Three fourths of all the world's coffee is raised here, and coffee has brought much wealth to the people. There are miles and miles of coffee plantations where millions of coffee trees cover the hillsides. One reason why so much coffee is raised in this part of the Brazilian Highlands is that the climate and soil are just right for the best growth of the coffee plant. Another is that coffee-growing made an early start here, and as yet no other part of the world has caught up with Brazil in coffee production.

Coffee is raised on evergreen trees which are usually obtained by planting seeds. In many places the trees are only allowed to grow about six or eight feet high so that the berries may be easily picked. Harvest season on the Brazilian coffee plantation begins in May and lasts until October. During that season you will see the plantation workers gathering the ripe, red berries from the trees. A common way of picking berries is to pull them off and let them fall on large sheets which are spread under the trees.

The berries look somewhat like red cherries and each one contains two seeds, or "beans", buried in soft pulp. After the berries have been picked there are
several ways of preparing the coffee for market. One way is to spread the berries out on drying floors to dry in the sun. This takes two or three weeks, and from time to time the berries are stirred with rakes so that they will dry evenly. After the drying, the berries are put through machines which remove the dried skin and pulp and clean and polish the beans. When the beans are finally ready to be sold, they are packed in large bags and sent for export. One half of all the coffee which is shipped from Brazil is sent to the United States.
The southeastern part of the Brazilian Highlands is called "Coffee Land." Three fourths of all the world's coffee is raised here. Coffee has brought much wealth to the people. There are miles and miles of coffee plantations where trees cover the hillsides. The climate and soil are just right for the best growth. Coffee-growing made an early start here. No other part of the world has caught up with Brazil. Coffee is raised on evergreen trees, which are usually obtained by planting seeds. The trees are allowed to grow about six or eight feet high so that the berries may be easily picked. Harvest season begins in May and lasts until October. Plantation workers gather ripe, red berries from the trees. One way of picking them is to pull them off and let them fall on large sheets which are spread under the trees. The berries look somewhat like red cherries and each one contains two seeds or "beans." Buried in soft pulp, there are many ways of preparing coffee for market. One way is to spread the berries on drying floors in the sun, which takes two or three weeks.
25. The berries are stirred with rakes so they will dry evenly.

26. Machines remove the skin and pulp.

27. And clean and polish the beans.

28. The beans are packed in bags for export.

29. One half of all the coffee from Brazil.

30. Is sent to the United States.
SELECTION C

Multiple Choice

Underline the right answer.

1. The seeds of the cacao tree are the size of
   (a) cucumber (b) an almond (c) a bean

2. Each pod contains
   (a) 50 seeds (b) 25 seeds (c) 25 to 50 seeds

3. The cacao tree grows in
   (a) warm zones (b) tropical lands (c) cool regions

4. The pods are removed from the trees by
   (a) cutting them (b) picking them (c) shaking the tree

5. We make chocolate from
   (a) pods of a vine (b) seeds of a tree (c) pods of a tree

6. The seeds are dried before they are
   (a) removed from the pods (b) cut from the trees (c) shipped away

7. We buy chocolate from
   (a) Central America (b) North America (c) South America

8. The pods resemble
   (a) cucumber seeds (b) almonds (c) cucumbers

9. After the pods are picked they are
   (a) ready to be sold (b) dried (c) shipped away

10. The cacao tree must have
    (a) warm, moist weather (b) dry, warm weather (c) wet, cool weather

11. In order to remove the pods from the trees men use
    (a) knives (b) machines (c) saws

12. Before the pods are opened they are left to dry for
    (a) 12 hours (b) one day (c) two days

13. When the pods are ready to be picked they turn a
    (a) yellow or brownish color (b) green or reddish color (c) yellow or reddish color

14. Before the seeds are sold they are
    (a) thoroughly dried (b) thoroughly washed (c) cut open

15. After the seeds are taken from the pods they are
    (a) spread on cement floors (b) shipped to market (c) put into bags
16. The cacao pods grow
   (a) from seeds  (b) on trees  (c) under the ground

17. Men who gather the pods are
    (a) plantation owners  (b) Americans  (c) natives

18. The seeds of a tree give us
    (a) cucumbers  (b) chocolate  (c) pods

19. In order to cut the pods the natives fasten their knives to
    (a) long poles  (b) their waists  (c) the tree

20. Men tell by the color of the pods when they are ready to be
    (a) opened  (b) picked  (c) shipped

21. These trees grow best in the
    (a) shade  (b) sun  (c) wet climate

22. When the pods are dry
    (a) they are cut down  (b) they are ready to eat
      (c) the seeds are taken out

23. The cacao tree lives best in the shade
    (a) of other trees  (b) of buildings  (c) of vines

24. Our country buys
    (a) cacao pods  (b) cacao seeds  (c) cacao trees
number of ideas present and not given in oral recall as compared with the number of ideas present and not given in written recall. Pages 16 and 17 present one of the Multiple Choice tests.

2. Subjects of the Study

The subjects of this study were one hundred and twenty two fifth grade pupils from three different classrooms in two schools located in Somerville. Some members of the group came from poor homes while others came from homes in moderate circumstances. Many of these children have parents who were born in foreign countries. The following birthplaces were recorded: 24 from Italy; 19 from Canada; 14 from Ireland; 9 from Scotland; 6 from Greece; 4 from Portugal; 2 each from Syria, Armenia, and England; and 1 each from Hungary, Newfoundland, Sweden, Belgium, Poland, the Azores and Madeira.

3. Chronological Age Distribution of the Subjects

Figure 1, Page 19, shows the chronological age distribution of the one hundred and twenty two pupils. The range was from nine years eight months to fourteen years four months, a total of four years and eight months with a mean of ten years nine months as calculated February 12, 1941. This group was below normal according to chronological age.

4. Mental Age Distribution of the Subjects

Figure 1, Page 19, shows the mental age distribution of this group of fifth grade children. The mental ages of these pupils were obtained by the average of the results from the Otis Quick-Scoring Mental Ability Tests,¹ and from the Otis, Arthur S. Otis Quick-Scoring Mental Ability Tests Beta Test: Form A, for Grades 4-9 World Book Co., Ronkers-on-Hudson, N.Y.

¹ Otis, Arthur S. Otis Quick-Scoring Mental Ability Tests Beta Test: Form A, for Grades 4-9 World Book Co., Ronkers-on-Hudson, N.Y.
Mean 10 Yrs. 9 Mos.

Distribution of Chronological Ages of 122 Fifth Grade Pupils

Mean 11 Yrs. 2 Mos.

Distribution of Mental Ages of 122 Fifth Grade Pupils

Measured by Kuhlmann-Anderson and Otis Mental Ability Tests
Kuhlmann-Anderson Tests\(^2\) for Grade Five which were administered. The range was from eight years seven months to fourteen years ten months with a mean of eleven years two months. This group was below average mentally.

5. Reading Grades of the Subjects

Figure 2, page 21, shows the distribution of the reading grades of the pupils as measured by the Durrell-Sullivan Reading Capacity and Achievement Tests.\(^3\) The reading capacity grade equivalent ranged from that of pupils just entering the fourth grade to seven months through the ninth grade with a mean of twelve years two months. The age equivalent ranged from nine years four months to fifteen years, a total of five years and eight months in reading capacity. The reading achievement grade equivalent ranged from that of pupils four months through the third grade to two months through the ninth grade, with a mean of eleven years four months. The age equivalent ranged from eight years eight months to fourteen years seven months. The achievement ages of this group about equalled the mental ages while the capacity ages were above those of the achievement ages.


FIGURE 2

Mean 12 Yrs. 2 Mos.

Distribution of Reading Grades
of 122 Fifth Grade Pupils
Measured by Durrell-Sullivan Reading Capacity Tests

Mean 11 Yrs. 4 Mos.
6. **Spelling Grades**

Figure 3, Page 23, shows the distribution of spelling grades of this group as measured by the New Stanford Achievement Test, Form X. The spelling grade ranged from one month through the third grade to five months through the seventh grade with a mean of eleven years six months. This group is below average with spelling ages ranging from eight years seven months to thirteen years three months.

7. **Handwriting Comparison**

The subjects of this study were given a handwriting test. The speed of handwriting was obtained by the writing of a nursery rhyme for one minute. The number of letters written per minute was recorded. There were thirteen pupils who were below age in handwriting speed and one hundred nine whose handwriting speed equalled that of their ages and above according to the table quoted by Durrell. The quality was measured by Freeman's "Handwriting Measuring Scale for Grade Five". The handwriting of forty-six pupils was graded as satisfactory, forty as good, and thirty-six as poor. This study is not primarily concerned with spelling or handwriting.

4. New Stanford Achievement Test, Form X

5. Durrell, Donald D. "Improvement of Basic Reading Abilities" World Book Co., 1940

6. Freeman, Frank N. "Handwriting Measuring Scale for Grade Five", Zaner-Bloser Co., Columbus, Ohio
FIGURE 3

Mean 11 yrs. 6 Mos.

Distribution of Spelling Grades of 122 Fifth Grade Pupils Measured by New Stanford Achievement Test
The one hundred and twenty two pupils were divided into two equal groups, A and B, based on the results of the above tests. Pages 25 and 26 include the complete scores of the two groups.

The reason for equating the groups in this manner is stated by Kelty who wrote: "The average grade contains children with a range of five grades in a given ability. The material must be capable of treatment at different levels." Gray says: "There are four important facts concerning individual differences: (1) Children of a given grade vary widely in achievement; (2) There is a great overlapping in achievement from grade to grade; (3) A given pupil is much more advanced in some phases of reading than in others; (4) Pupils progress in reading at different rates.

Test Procedure

Selection A was given to Group I as silent reading with written recall and to Group II as silent reading with oral recall. Selection B was given to Group I as silent reading with oral recall and to Group II as silent reading with written recall. All selections were presented in pairs in a similar manner in order to compare oral and written recall on the same material.


## Division of 122 Fifth Grade Pupils Into Two Equal Groups

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
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<td>No. of Pupils</td>
<td>Reading Achievement</td>
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<td>Selections</td>
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<tr>
<td>Shorter Selections</td>
<td>Written Recall</td>
</tr>
<tr>
<td>(A)</td>
<td>Oral Recall</td>
</tr>
<tr>
<td>(B)</td>
<td>Written Recall</td>
</tr>
<tr>
<td>(C)</td>
<td>Oral Recall</td>
</tr>
<tr>
<td>(D)</td>
<td>Written Recall</td>
</tr>
<tr>
<td>Longer Selections</td>
<td>Written Recall</td>
</tr>
<tr>
<td>(E)</td>
<td>Oral Recall</td>
</tr>
<tr>
<td>(F)</td>
<td>Oral Recall</td>
</tr>
</tbody>
</table>

All the written recall was given as a group test. Each child was given a printed selection face down, and told, "When I say 'Go', turn the paper over, read the story once with the idea that you will remember what you have read, then place the paper on your desk again face down." The selections were collected and blank sheets of paper were passed out. The pupils were then told, "Write as much as you can remember of the story. If there are any words which are hard to spell, spell them as best you can by sounding the letters in the word." When the pupils had finished writing, the papers were collected and the Multiple Choice Tests were given out. The written recall was checked against a list of ideas from the selection all of which appeared in the test items. This was done by numbering the ideas on each pupil's paper in the order in which the recall was written. The same list of ideas was used to check the correct responses from the Multiple Choice Test. Page 11 presents a checked sample of a written recall together with the
pupil's test response on the same material. The pupils were
given as much time as they needed for reading the selection,
writing the recall and taking the test. The same directions
were given for all written recall.

The oral recall tests were given individually, the
child reading silently and repeating all that he remembered to
the examiner. The oral recall was given in the classroom and
the manner in which it was administered may have had an effect
upon the score. In each case, however, the pupil taking the
test could not be heard by his classmates. He was seated at a
table apart from the other pupils. The child was given the
selection and told, "Read this story to yourself once and when
you finish return the paper to me." When he had returned the
paper the examiner said, "Tell me all that you can remember
about the story." Each recall was checked against a previously
prepared list of ideas or events in the selection. This was
done by numbering the ideas on each pupil's paper as he re-
called. After the recall each child was given a Multiple Choice
Test including all of the ideas which appeared in the selection
and in the list of ideas. The same directions were given for
all oral recall. Each pupil's list of ideas was used to check
his responses from the Multiple Choice Test. Page 14, shows
a sample of an oral recording together with the Multiple Choice
recording.
Chapter III

Analysis of Data
Analysis of the Data

One hundred and twenty-two children were studied to compare the fluency of unaided oral and written recall with recall as measured by multiple choice questions on the same material.

The data are interpreted in the following order:

1. The comparison of unaided oral recall with written recall.
2. The comparison of oral and written recall for short and long selections.
3. The comparison of unaided oral recall with recall as measured by multiple choice responses.
4. The comparison of multiple choice and oral recall for long and short selections.
5. The comparison of unaided written recall with recall as measured by multiple choice responses.
6. The comparison of multiple choice and written recall for long and short selections.
7. A survey of gains by multiple choice questions after oral and written recall.

Comparison of Unaided Oral Recall
with Unaided Written Recall

Table I, following, shows the difference between oral recall and written recall in the number of responses. Oral recall with a mean of 37 is superior to written recall with a
mean of 30.60.

Table I
Comparison of Oral and Written Recall

<table>
<thead>
<tr>
<th>Total Selections</th>
<th>No. of Pupils</th>
<th>Mean</th>
<th>P E M</th>
<th>M1 - M2</th>
<th>P E Diff.</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Recall</td>
<td>122</td>
<td>37.0</td>
<td>.61</td>
<td>6.40</td>
<td>.81</td>
<td>7.91</td>
</tr>
<tr>
<td>Written Recall</td>
<td>122</td>
<td>30.60</td>
<td>.54</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The difference of 4.22 between the means of oral and written recall in short selections is apparent in Table II. It is evident by comparing Tables II and III that the difference between oral and written recall of the longer selections was not as great as the difference recorded in the short selections.

Table II
Comparison of Oral and Written Recall

<table>
<thead>
<tr>
<th>Shorter Selections</th>
<th>No. of Pupils</th>
<th>Mean</th>
<th>P E M</th>
<th>M1 - M2</th>
<th>P E Diff.</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Recall</td>
<td>122</td>
<td>23.49</td>
<td>.42</td>
<td>4.22</td>
<td>.54</td>
<td>7.81</td>
</tr>
<tr>
<td>Written Recall</td>
<td>122</td>
<td>19.27</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table III
Comparison of Oral and Written Recall

<table>
<thead>
<tr>
<th>Longer Selections</th>
<th>No. of Pupils</th>
<th>Mean</th>
<th>P E M</th>
<th>M1 - M2</th>
<th>P E Diff.</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Recall</td>
<td>122</td>
<td>13.47</td>
<td>.20</td>
<td>1.92</td>
<td>.32</td>
<td>6.0</td>
</tr>
<tr>
<td>Written Recall</td>
<td>122</td>
<td>11.55</td>
<td>.25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table III A

Comparison of Oral and Written Recall in Longer and Shorter Selections

<table>
<thead>
<tr>
<th>No. of Pupils</th>
<th>M1 - M2</th>
<th>P E Diff</th>
<th>Diff M1 - M2</th>
<th>P E Diff</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shorter Selections</td>
<td>122</td>
<td>4.22</td>
<td>.54</td>
<td>2.30</td>
<td>.62</td>
</tr>
<tr>
<td>Longer Selections</td>
<td>122</td>
<td>1.92</td>
<td>.32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table III-A gives a comparison of the number of ideas recalled orally in the shorter and longer selections. The difference of 2.30 between the means is evident that the recall for shorter selections is greater than that for longer selections.

Table IV shows a comparison of the total number of responses for each selection. The oral recall surpasses the written recall with a difference of 731 responses. The total number of ideas recalled orally is 4482 as compared with 3751 written ideas. Figure 4, page 32, makes evident the comparison of responses.

Table IV

Total Recall for Each Selection

<table>
<thead>
<tr>
<th>Shorter Selections</th>
<th>Test</th>
<th>Oral Recall</th>
<th>Test</th>
<th>Written Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection A</td>
<td>1054</td>
<td>724</td>
<td>1016</td>
<td>578</td>
</tr>
<tr>
<td>Selection B</td>
<td>1050</td>
<td>658</td>
<td>996</td>
<td>502</td>
</tr>
<tr>
<td>Selection C</td>
<td>1147</td>
<td>770</td>
<td>1118</td>
<td>682</td>
</tr>
<tr>
<td>Selection D</td>
<td>1042</td>
<td>718</td>
<td>1010</td>
<td>590</td>
</tr>
</tbody>
</table>
Comparison of Number of Ideas Expressed for Each Selection

Oral and Written Recall

- Oral Responses - Total Number 4,482
- Written Responses - Total Number 3,751
Table IV
Total Recall for Each Selection

<table>
<thead>
<tr>
<th>Longer Selections</th>
<th>Test</th>
<th>Oral Recall</th>
<th>Test</th>
<th>Written Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection E</td>
<td>1420</td>
<td>775</td>
<td>1417</td>
<td>670</td>
</tr>
<tr>
<td>Selection F</td>
<td>1370</td>
<td>837</td>
<td>1371</td>
<td>729</td>
</tr>
</tbody>
</table>

The number of ideas recalled from the longer selections does not greatly exceed the number of ideas recalled from the short selections. The reason for this may be explained by Gray who states: "Since children in the intermediate grades begin to read extensively in the content subjects, they are meeting many old words in new uses and new meanings. Too frequently insufficient understandings result."

Comparison of Unaided Oral Recall with Recall as Measured by Multiple Choice Responses

Table V discloses a marked difference of 21.61 between the means of multiple choice responses and the oral recall.

Table V
Comparison of Multiple Choice Test Scores and Oral Recall

<table>
<thead>
<tr>
<th></th>
<th>No. of Pupils</th>
<th>Mean</th>
<th>P E M</th>
<th>M1 - M2</th>
<th>P E Diff.</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Choice</td>
<td>122</td>
<td>58.61</td>
<td>.55</td>
<td>21.61</td>
<td>.82</td>
<td>26.35</td>
</tr>
<tr>
<td>Oral Recall</td>
<td>122</td>
<td>37.0</td>
<td>.61</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5, page 34, gives a comparison of multiple

Figure 5
Comparison of Multiple Choice Test Scores and Oral Recall for Each Selection

No. of Pupils

1500
1400
1300
1200
1100
1000
900
800
700
600

Short Selections

Oral Responses
Total Number 4482

Multiple Choice Responses
Total Number 7063

Long Selections
choice test scores and oral recall for each selection. The oral responses total 4482 while the multiple choice responses total 7063.

Tables VI and VII disclose the fact that oral recall together with the multiple choice test responses from short selections is greater than the oral recall and multiple choice test responses from longer selections.

| Table VI |
| Comparison of Multiple Choice Test Scores and Oral Recall |

**Shorter Selections**

<table>
<thead>
<tr>
<th></th>
<th>No. of Pupils</th>
<th>Mean</th>
<th>PE</th>
<th>M1 - M2</th>
<th>PE Diff.</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Choice</td>
<td>122</td>
<td>34.83</td>
<td>.33</td>
<td>11.34</td>
<td>.57</td>
<td>19.89</td>
</tr>
<tr>
<td>Oral Recall</td>
<td>122</td>
<td>23.49</td>
<td>.42</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Table VII |
| Comparison of Multiple Choice Test Scores and Oral Recall |

**Longer Selections**

<table>
<thead>
<tr>
<th></th>
<th>No. of Pupils</th>
<th>Mean</th>
<th>PE</th>
<th>M1 - M2</th>
<th>PE Diff.</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Choice</td>
<td>122</td>
<td>22.96</td>
<td>.21</td>
<td>9.49</td>
<td>.29</td>
<td>32.72</td>
</tr>
<tr>
<td>Oral Recall</td>
<td>122</td>
<td>13.47</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Table VII A |
| Comparison of the Differences in the Multiple Choice Test Scores and Oral Recall in the Shorter & Longer Selections |

<table>
<thead>
<tr>
<th></th>
<th>No. of Pupils</th>
<th>M1-M2</th>
<th>PE Diff</th>
<th>Diff</th>
<th>PE Diff</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shorter Selections</td>
<td>122</td>
<td>11.34</td>
<td>.57</td>
<td>1.85</td>
<td>.63</td>
<td>2.93</td>
</tr>
<tr>
<td>Longer Selections</td>
<td>122</td>
<td>9.49</td>
<td>.29</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table VII-A presents the fact that the multiple choice response for short selections is greater than that for longer selections.

Comparison of Unaided Written Recall with Recall as Measured by Multiple Choice Responses

Table VIII makes evident the difference between multiple choice responses and written recall. The difference is greater than that of multiple choice and oral recall shown in Table V because the oral recall exceeds that of written recall.

Table VIII

<table>
<thead>
<tr>
<th></th>
<th>No. of Pupils</th>
<th>Mean</th>
<th>P E_m</th>
<th>M_1 - M_2</th>
<th>P E_Diff</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Choice</td>
<td>122</td>
<td>57.12</td>
<td>.52</td>
<td>26.52</td>
<td>.74</td>
<td>35.83</td>
</tr>
<tr>
<td>Written Recall</td>
<td>122</td>
<td>30.60</td>
<td>.54</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6, page 37, presents a comparison of multiple choice test scores and written recall for each selection.

Tables IX and X show a greater difference between the means of multiple choice and written recall from short selections, as compared with multiple choice and written recall from longer selections.

Table IX

<table>
<thead>
<tr>
<th></th>
<th>No. of Pupils</th>
<th>Mean</th>
<th>P E_m</th>
<th>M_1 - M_2</th>
<th>P E_Diff</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Choice</td>
<td>122</td>
<td>34.09</td>
<td>.34</td>
<td>14.82</td>
<td>.58</td>
<td>25.25</td>
</tr>
<tr>
<td>Written Recall</td>
<td>122</td>
<td>19.27</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 6

Comparison of Multiple Choice Test Scores and Written Recall for Each Selection

- Written Responses
- Multiple Choice Responses

Total Number 3751
Total Number 6928
Table X

Comparison of Multiple Choice Test Scores and Written Recall

Longer Selections

<table>
<thead>
<tr>
<th>No. of Pupils</th>
<th>Mean</th>
<th>P E_M</th>
<th>M_1 - M_2</th>
<th>P E Diff</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Choice</td>
<td>122</td>
<td>22.97</td>
<td>.21</td>
<td>11.42</td>
<td>.32</td>
</tr>
<tr>
<td>Written Recall</td>
<td>122</td>
<td>11.55</td>
<td>.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A Survey of Gains by Multiple Choice After Oral and Written Recall

Table XI gives the total number of responses gained by multiple choice after oral and written recall. The number of responses gained after oral recall did not exceed the number given in recall. The gain after written recall exceeds the number of responses given in three selections.

Table XI

Total Number of Responses Gained by Multiple Choice Test After Oral and Written Recall

<table>
<thead>
<tr>
<th>Shorter Selections</th>
<th>Oral Recall</th>
<th>Gain</th>
<th>Written Recall</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection A</td>
<td>724</td>
<td>448</td>
<td>578</td>
<td>561</td>
</tr>
<tr>
<td>Selection B</td>
<td>688</td>
<td>495</td>
<td>502</td>
<td>575</td>
</tr>
<tr>
<td>Selection C</td>
<td>770</td>
<td>463</td>
<td>632</td>
<td>540</td>
</tr>
<tr>
<td>Selection D</td>
<td>718</td>
<td>426</td>
<td>590</td>
<td>498</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Longer Selections</th>
<th>Oral Recall</th>
<th>Gain</th>
<th>Written Recall</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection E</td>
<td>715</td>
<td>731</td>
<td>670</td>
<td>811</td>
</tr>
<tr>
<td>Selection F</td>
<td>837</td>
<td>694</td>
<td>729</td>
<td>785</td>
</tr>
</tbody>
</table>
Table XII shows a comparison by groups of the total number of oral and written responses together with the total number of multiple choice responses. It also presents a comparison of the total gains in multiple choice after oral and written recall. It is evident that the gains after written recall exceed those gains after oral recall. Figure 7, page 40, also discloses this fact.

Table XII

Total Responses and Gains by Groups

<table>
<thead>
<tr>
<th>Short Selections</th>
<th>Group I</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Group II</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Multiple Choice</td>
<td>Oral Recall</td>
<td>Written Recall</td>
<td>Gains by Mul. Choice</td>
<td></td>
<td></td>
<td>Multiple Choice</td>
<td>Oral Recall</td>
<td>Written Recall</td>
</tr>
<tr>
<td>Select. A</td>
<td>1016</td>
<td>578</td>
<td>561</td>
<td>1034</td>
<td>724</td>
<td>448</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select. B</td>
<td>1050</td>
<td>658</td>
<td>495</td>
<td>996</td>
<td>502</td>
<td>575</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select. C</td>
<td>1118</td>
<td>682</td>
<td>540</td>
<td>1147</td>
<td>770</td>
<td>463</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select. D</td>
<td>1042</td>
<td>718</td>
<td>426</td>
<td>1010</td>
<td>590</td>
<td>498</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4226</td>
<td>1376</td>
<td>1260</td>
<td>2022</td>
<td>1494</td>
<td>1092</td>
<td>1984</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Longer Selections</th>
<th>Group I</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Group II</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Select. E</td>
<td>1417</td>
<td>670</td>
<td>811</td>
<td>1420</td>
<td>775</td>
<td>731</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select. F</td>
<td>1370</td>
<td>837</td>
<td>694</td>
<td>1371</td>
<td>729</td>
<td>735</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2787</td>
<td>837</td>
<td>670</td>
<td>1505</td>
<td>2791</td>
<td>775</td>
<td>729</td>
<td>1516</td>
<td></td>
</tr>
</tbody>
</table>

The reliability coefficient of oral and written recall is .68.

The reliability coefficient of oral recall and multiple choice is .76.

The reliability coefficient of written recall and multiple choice is .64. These reliability coefficients were statistically significant.
FIGURE 7

Ideas Gained by Multiple Choice Test
After Oral and Written Recall

--- Ideas Gained After Oral Recall --- Total Number 2857
--- Ideas Gained After Written Recall --- Total Number 3770

Oral Recall:
- Short Selections 14.32
- Longer Selections 14.25

Written Recall:
- Short Selection 2174
- Longer Selections 1596
Chapter IV

Summary and Conclusions
Summary and Conclusion

The purpose of this study was to compare the fluency of unaided oral recall with written recall on silent reading, in geography, in grade five. It included recall from different selections on the same level as measured by multiple choice questions constructed on the same material. One hundred and twenty-two fifth grade pupils were subjects of this experiment with the following results.

1. Unaided oral recall was superior to written recall. The difference of 6.4 memories was statistically significant.

2. The difference between oral and written recall was greater for short than for long selections. This difference was statistically significant.

3. Recall on multiple choice questions was much superior to unaided oral recall. The difference of 21.61 in total number of ideas recalled had a critical ratio of 26.35 showing a high statistical significance.

4. The difference between multiple choice and oral recall was greater for long than for short selections. This difference was statistically significant.

5. Recall on multiple choice questions was much superior to unaided written recall. The difference of 26.52 in total number of ideas recalled had a critical ratio of 35.83 showing a high statistical significance.
6. The difference between multiple choice and written recall was greater for long than for short selections. The difference was statistically significant.
Chapter V

Problems for Further Research
Problems for Further Research

This study has made the writer conscious of the following new problems to be solved in the field of oral and written recall in geography.

1. The comparison of boys and girls in oral recall as compared to recall measured by multiple choice questions.

2. The comparison of boys and girls in written recall as compared to recall measured by multiple choice questions.

3. The comparison of those pupils who are superior in geography with others in oral recall, written recall, or recall measured by multiple choice questions.

4. The comparison of boys and girls in the recall of major and minor ideas in selections from the content subjects.
[Text not legible]
<table>
<thead>
<tr>
<th>Author</th>
<th>Title and Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acomb, Allen</td>
<td>&quot;A Study of the Psychological Factors in Reading&quot; - Unpublished Ed. M. Thesis, Boston University, 1936</td>
</tr>
<tr>
<td>Betzner, Jean</td>
<td>&quot;Content and Form of Children's Original Compositions&quot; - Contributions to Education, No. 442, Teachers College, Columbia University, 1932</td>
</tr>
<tr>
<td>Bushnell, Paul F.</td>
<td>&quot;An Analytical Contrast of Oral With Written English&quot; - Bureau of Publications, Teachers College, Columbia University, 1930</td>
</tr>
<tr>
<td>Durrell, Donald D.</td>
<td>&quot;Improvement of Basic Reading Abilities&quot; - World Book Co., N.Y. 1940</td>
</tr>
<tr>
<td>Gray, William S.</td>
<td>&quot;Recent Trends in Reading&quot; - Elementary Educational Monographs, No. 49, Nov. 1939</td>
</tr>
<tr>
<td>Kelty, Mary C.</td>
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Appendix
Much of the flying over air-mail routes is done at night and there are lights all the way. Every few miles there is a special kind of gas lantern whose light comes on whenever the sun stops shining. It is shut off whenever the sun comes out. There are many small fields where pilots can make a landing in bad storms or if anything goes wrong with the machine. The regular landing fields are 250 miles apart. They have houses, post offices, repair shops, supplies and extra airplanes and pilots in case they are needed. These airports have very powerful beacons, whose light can be seen by an airplane 150 miles away. A pilot is never out of sight of one of these main landing fields.
1. Much flying
2. over air-mail routes
3. is done at night
4. there are lights all the way
5. Every few miles
6. there is a special kind of gas lantern
7. whose light comes on
8. whenever the sun stops shining
9. It is shut off
10. whenever the sun comes out
11. There are many small fields
12. where pilots can make a landing
13. in bad storms
14. if anything goes wrong with the machine
15. The regular landing fields
16. are 250 miles apart
17. They have houses, post offices, repair shops, supplies
18. extra airplanes and pilots
19. in case they are needed
20. These airports have very powerful beacons
21. whose light can be seen 130 miles away
22. A pilot is never out of sight
23. of one of these main landing fields
Underline the right answer.

1. The gas lanterns turn on when the sun
   (a) sets (b) stops shining (c) comes out

2. Small landing fields are used
   (a) for regular stops (b) to exchange mail (c) in bad storm

3. A large amount of air-mail is carried
   (a) at night (b) in the morning (c) during the day

4. At the main landing fields there are
   (a) extra airplanes and pilots (b) special gas lanterns
      (c) many people

5. There are many fields where pilots can land
   (a) because the mail is too heavy (b) if it is dark
      (c) if anything goes wrong with the machine

6. Every 250 miles there are
   (a) small airports (b) regular landing fields (c) gas lanterns

7. An air-mail pilot is guided by
   (a) lights all the way (b) post offices (c) signs all the way

8. A powerful beacon can be seen
   (a) 13 miles away (b) 30 miles away (c) 130 miles away

9. Along the air-mail routes there are many
   (a) regular landing fields (b) special gas lanterns
      (c) repair shops

10. An airmail pilot is always able to see
   (a) a main landing field (b) another pilot (c) a post office

11. The large landing fields have
    (a) gas lanterns (b) powerful beacons (c) no buildings

12. All air-mail routes are marked by
    (a) five landing fields (b) few landing fields
        (c) many landing fields

13. There is a kind of gas lantern
    (a) every few miles (b) at regular landing fields
        (c) every 130 miles

14. The gas lantern is arranged so that when the sun stops shining
    its light (a) shuts off (b) shines 50 miles (c) comes on
15. During the night time much flying is done
   (a) to try out the planes (b) over air-mail routes
   (c) for supplies

16. The main landing fields are
   (a) 130 miles apart (b) not far apart (c) 250 miles apart

17. There are many small airports where
   (a) there are extra pilots (b) there are powerful beacons
   (c) pilots can make a landing

18. The main landing fields have extra planes and pilots
   (a) in case they are needed (b) for regular exchange
   (c) every 130 miles

19. The large airports have
   (a) gas lanterns (b) one pilot (c) post offices

20. A pilot and a main landing field are never
   (a) many miles apart (b) out of sight (c) 100 miles apart

21. The special gas lanterns are turned off
   (a) whenever the sun comes out (b) during the day
   (c) whenever there is a storm

22. Over air-mail routes during the night there is
   (a) little travel (b) much flying (c) much danger

23. When the sun comes out the gas lanterns are
   (a) seen plainly (b) shut off (c) used by a pilot
In the days when there were no engines that could be used in flying machines, all experiments were made with the sort of airplane that today is called a glider. Men made planes shaped as nearly as possible like the wings of birds. They discovered how to start off into the air by running down a hill with these planes fastened to their waists. Then, when the wind lifted them off the ground, they found out how to balance themselves in the air while they glided a short distance. The farther they glided, the slower they went, and they always landed on ground lower than the hill on which they started. A German is said to have made a flight of one hundred and sixty-five miles. In our day men are again studying gliders.
SELECTION B

Ideas

1. In days when there were no engines
2. that could be used in airplanes
3. all experiments
4. were made with the sort of airplane
5. that today is called a glider
6. Men made planes
7. shaped as nearly as possible like wings of birds
8. They discovered how to start off into the air
9. by running down a hill
10. with these planes fastened to their waists
11. the wind lifted them
12. off the ground
13. they found out how to balance themselves
14. in the air
15. while they glided a short distance
16. The farther they glided
17. the slower they went
18. they landed on ground lower than the hill
19. on which they started
20. A German
21. is said to have made a flight of 165 miles
22. In our day
23. men are again studying gliders
Underline the right answer.

1. Gliders are raised off the ground
   (a) by men (b) by engines (c) by the wind

2. Within late years men are
   (a) studying gliders (b) not using gliders
   (c) using gliders instead of airplanes

3. In a glider a man once made a flight of
   (a) 100 miles (b) 165 miles (c) 175 miles

4. Long ago airplanes had
   (a) two pilots (b) no engines (c) no wings

5. In order to get gliders into the air men ran
   (a) down hill (b) through fields (c) up hill

6. Men fastened these planes
   (a) to their arms (b) to animals (c) to their waists

7. A glider is
   (a) a small hill (b) a machine (c) a sort of airplane

8. The longer gliders stayed in the air
   (a) the slower they went (b) the higher they went
   (c) the faster they went

9. The greatest distance was traveled
   (a) by a Frenchman (b) by a German (c) by an American

10. The first airplanes were shaped like
    (a) kites (b) wings of birds (c) birds

11. When gliders stopped they landed
    (a) on a hill (b) on higher ground (c) on lower ground

12. In the early days gliders traveled
    (a) a short distance (b) a great distance (c) 265 miles

13. Long ago there were no engines that could be used
    (a) in airplanes (b) for experiments (c) for inventions

14. The first kind of airplane is
    (a) used for travel (b) called a glider (c) run by an engine

15. Gliders stayed in the air because men knew how
    (a) to run down hill (b) to balance themselves
    (c) to lift them
16. The wind lifted the gliders
   (a) to the hills  (b) great distances  (c) off the ground

17. Men are experimenting with gliders
   (a) in all countries  (b) in Germany  (c) in our day

18. A hill was used in order to
   (a) land a glider  (b) start a glider  (c) make longer
      flights in a glider

19. Men ran down hill to
   (a) start off into the air  (b) land the glider
      (c) glide 165 miles

20. Gliders traveled slower
    (a) when they started  (b) from low ground  (c) the
        farther they glided

21. Before engines were invented
    (a) men made airplanes  (b) men traveled by gliders
        (c) planes looked like birds

22. Long ago gliders were used for
    (a) all travel  (b) experiments  (c) traveling distances

23. Gliders traveled
    (a) on hills  (b) along level ground  (c) in the air
SECTION C

The Cacao Tree

Chocolate and cocoa come from the seeds of the cacao tree. This tree grows in tropical regions as it must have plenty of warmth and moisture. The cacao tree usually grows in the shade of other trees. Pods which resemble cucumbers form on the trees. Each pod has from 25 to 50 seeds. When the pods turn a yellow or a reddish color, the natives know they are ready to be picked. The pods are cut from the trees by sharp knives fastened to long poles. The pods are dried for about a day, then the seeds are removed. The seeds are the size of an almond. They are put on large cement floors and are thoroughly dried before they are shipped to market. America buys much of its cacao from South America.
Idoaa 1
Chocolate and cocoa
2. come from the seed of the cacao tree
3. This tree grows wild in the tropical regions
4. as it must have plenty of warmth and moisture
5. The cacao trees usually grow in the shade
6. of other trees
7. Pods which resemble cucumbers
8. form on the tree
9. Each pod has from 25 to 50 seeds
10. When the pods turn a yellow or reddish color
11. the natives know
12. they are ready to be picked
13. The pods are cut from the trees
14. by sharp knives
15. fastened to long poles
16. The pods are dried
17. for about a day
18. then the seeds are removed
19. The seeds are the size of an almond
20. They are put on large cement floors
21. and are thoroughly dried
22. before they are shipped to market
23. America buys much of its cacao
24. from South America
Underline the right answer.

1. The seeds of the cacao tree are the size of
   (a) cucumber (b) an almond (c) a bean

2. Each pod contains
   (a) 50 seeds (b) 25 seeds (c) 25 to 50 seeds

3. The cacao tree grows in
   (a) warm zones (b) tropical lands (c) cool regions

4. The pods are removed from the trees by
   (a) cutting them (b) picking them (c) shaking the tree

5. We make chocolate from
   (a) pods of a vine (b) seeds of a tree (c) pods of a tree

6. The seeds are dried before they are
   (a) removed from the pods (b) cut from the trees
      (c) shipped away

7. We buy chocolate from
   (a) Central America (b) North America (c) South America

8. The pods resemble
   (a) cucumber seeds (b) almonds (c) cucumbers

9. After the pods are picked they are
   (a) ready to be sold (b) dried (c) shipped away

10. The cacao tree must have
    (a) warm, moist weather (b) dry, warm weather
        (c) wet, cool weather

11. In order to remove the pods from the trees men use
    (a) knives (b) machines (c) saws

12. Before the pods are opened they are left to dry for
    (a) 12 hours (b) one day (c) two days

13. When the pods are ready to be picked they turn a
    (a) yellow or brownish color (b) green or reddish color
        (c) yellow or reddish color

14. Before the seeds are sold they are
    (a) thoroughly dried (b) thoroughly washed (c) cut open

15. After the seeds are taken from the pods they are
    (a) spread on cement floors (b) shipped to market
        (c) put into bags
16. The cacao pods grow
   (a) from see s  (b) on trees  (c) under the ground

17. Men who gather the pods are
   (a) plantation owners  (b) Americans  (c) natives

18. The seeds of a tree give us
   (a) cucumbers  (b) chocolate  (c) pods

19. In order to cut the pods the natives fasten their knives to
   (a) long poles  (b) their waists  (c) the tree

20. Men tell by the color of the pods when they are ready to be
   (a) opened  (b) picked  (c) shipped

21. These trees grow best in the
   (a) shade  (b) sun  (c) wet climate

22. When the pods are dry
   (a) they are cut down  (b) they are ready to eat
      (c) the seeds are taken out

23. The cacao tree lives best in the shade
   (a) of other trees  (b) of buildings  (c) of vines

24. Our country buys
   (a) cacao pods  (b) cacao seeds  (c) cacao trees
The chief rice-growing section of our country is the coastal lowlands of Texas and Louisiana. Rice needs a large amount of water when it is growing, so if there is not enough rainfall irrigation is used. The land is drained and flooded again and again during the summer. About six inches of water are kept over the fields, for two months or more. As the rice begins to ripen the water is drawn off so that the plants will ripen better and the fields will become dry. Rice is harvested by machines and put into bundles to dry. After threshing the rice is sent to mills where the brown coat is removed, leaving white rice. The United States exports rice to other countries because we raise more than we need.
SELECTION D

Ideas

1. The chief rice growing section of our country
2. is the coastal lowlands of Texas and Louisiana
3. Rice needs a large amount of water
4. when it is growing
5. If there is not enough rainfall
6. irrigation is used
7. The land is drained and flooded
8. during the summer
9. About six inches of water
10. are kept over the fields
11. for two months or more
12. As the rice begins to ripen
13. the water is drawn off
14. so that the plants will ripen better
15. the fields will become dry
16. Rice is harvested
17. by machines
18. put into bundles to dry
19. After threshing
20. the rice is sent to mills
21. where the brown coat is removed
22. leaving white rice
23. The U. S. exports rice to other countries
24. because we raise more than we need
Underline the right answer.

1. Our country sells rice to other countries because
   (a) they need it  (b) we raise it for them
   (c) we have more than we need

2. Rice is sent to mills
   (a) to have its brown coat removed  (b) to be sold
   (c) for threshing

3. When the rice plant is harvested it is
   (a) threshed  (b) sent to other countries  (c) left to dry

4. The rice fields are kept dry so that the plants will
   (a) ripen better  (b) become white  (c) grow better

5. In order to grow rice the land is
   (a) drained of water  (b) flooded  (c) drained and flooded

6. Men harvest the rice plants
   (a) by hand  (b) by machines  (c) by removing the outer coat

7. When the bundles of rice are dry, the grain is
   (a) threshed  (b) harvested  (c) exported

8. When the rice begins to ripen
   (a) the water is drawn off the fields  (b) the fields
      are flooded  (c) the rice is harvested

9. Rice plants need
   (a) little rainfall  (b) irrigation  (c) a large amount of
      water

10. When the outside coat is removed rice
    (a) becomes white  (b) becomes ripe  (c) becomes brown

11. When the rice plant is growing it needs
    (a) to be kept dry  (b) six inches of water
        (c) a small amount of water

12. The rice that is not needed in our country is
    (a) put into a store house  (b) exported to other countries
        (c) sent to mills

13. After threshing rice is
    (a) harvested  (b) sent to other countries  (c) sent to mills

14. Rice growers irrigate the fields
    (a) to keep them dry  (b) if there is not enough rainfall
        (c) to ripen the rice
15. The coastal lowlands of Texas and Louisiana are
   (a) the sections for irrigation (b) the chief rainfall
   section (c) the chief rice growing section

16. When the rice plants are dry enough they are
   (a) harvested (b) exported (c) irrigated

17. Rice grows during the
   (a) fall (b) summer (c) spring

18. Rice ripens better when
   (a) it is harvested (b) irrigation is used (c) the fields
   are dry

19. The chief rice section of the U. S. is
   (a) the Atlantic Coastal Plain
   (b) the coastal lowlands of Texas and Louisiana
   (c) the coastal lowlands of Georgia and Florida

20. When the rice fields are not getting enough rainfall
    (a) irrigation is used (b) the crop is harvested
    (c) the fields are drained

21. The growing season of rice is about
    (a) two months (b) twenty days (c) three months

22. A large amount of water is needed
    (a) to thresh rice (b) to ripen rice (c) to grow rice

23. During the growing season water is
    (a) not needed (b) kept over the fields (c) kept off
    the field

24. After two months rice
    (a) starts to grow (b) is irrigated (c) starts to ripen
The southeastern part of the Brazilian Highlands in South America is called "Coffee Land". Three fourths of all the world's coffee is raised here, and coffee has brought much wealth to the people. There are miles and miles of coffee plantations where millions of coffee trees cover the hillsides. One reason why so much coffee is raised in this part of the Brazilian Highlands is that the climate and soil are just right for the best growth of the coffee plant. Another is that coffee-growing made an early start here, and as yet no other part of the world has caught up with Brazil in coffee production.

Coffee is raised on evergreen trees which are usually obtained by planting seeds. In many places the trees are only allowed to grow about six or eight feet high so that the berries may be easily picked. Harvest season on the Brazilian coffee plantation begins in May and lasts until October. During that season you will see the plantation workers gathering the ripe, red berries from the trees. A common way of picking berries is to pull them off and let them fall on large sheets which are spread under the trees.

The berries look somewhat like red cherries and each one contains two seeds, or "beans", buried in soft pulp. After the berries have been picked there are
several ways of preparing the coffee for market. One way is to spread the berries out on drying floors to dry in the sun. This takes two or three weeks, and from time to time the berries are stirred with rakes so that they will dry evenly. After the drying, the berries are put through machines which remove the dried skin and pulp and clean and polish the beans. When the beans are finally ready to be sold, they are packed in large bags and sent for export. One half of all the coffee which is shipped from Brazil is sent to the United States.
1. The southeastern part of the Brazilian Highlands
2. in South America
3. is called "Coffee Land"
4. three fourths of all the world's coffee is raised here
5. coffee has brought much wealth to the people
6. there are miles and miles of coffee plantations
7. where trees cover the hillsides
8. the climate and soil are just right for the best growth
9. coffee-growing made an early start here
10. no other part of the world has caught up with Brazil
11. coffee is raised on evergreen trees
12. which are usually obtained by planting seeds
13. the trees are allowed to grow about six or eight feet high
14. so that the berries may be easily picked
15. harvest season begins in May and lasts until October
16. plantation workers gather ripe, red berries from the trees
17. one way of picking them is to pull them off
18. and let them fall on large sheets which are spread under the trees
19. the berries look somewhat like red cherries
20. and each one contains two seeds or "beans"
21. buried in soft pulp
22. there are many ways of preparing coffee for market
23. one way is to spread the berries on drying floors in the sun
24. this takes two or three weeks
25. the berries are stirred with rakes so they will dry evenly

26. machines remove the skin and pulp

27. and clean and polish the beans

28. the beans are packed in bags for export

29. one half of all the coffee from Brazil

30. is sent to the United States.
1. Coffee growing has brought wealth to the people of
   (a) the United States (b) Brazil (c) Argentina

2. In harvest time the berries are allowed to fall on
   (a) large sheets (b) drying floors (c) the ground

3. Brazil is called
   (a) "Cherry Land" (b) "Banana Land" (c) "Coffee Land"

4. Each berry contains
   (a) two beans (b) one bean (c) many beans

5. While the berries are drying they are
   (a) not disturbed (b) stirred with rakes (c) put into piles

6. In Brazil coffee is grown
   (a) in the southeastern part (b) near the Amazon River
       (c) in the northern part

7. The leaves of the coffee tree
   (a) are always green (b) turn yellow (c) drop off in
       the fall

8. Before the beans are sent to market machines
   (a) cut them in two (b) polish them (c) count them

9. After the berries are picked they are
   (a) sent to market (b) stored until they are needed
       (c) prepared for market

10. The fruit of the coffee tree is
    (a) green (b) red (c) yellow

11. Coffee beans are exported in
    (a) cartons (b) barrels (c) bags

12. The country that raises the most coffee is
    (a) Mexico (b) Brazil (c) South America

13. Coffee is grown
    (a) in valleys (b) by rivers (c) on hillsides

14. This tree is allowed to grow
    (a) very tall (b) about eight feet tall (c) about twenty
       feet tall

15. The berries look like
    (a) grapes (b) oranges (c) cherries
16. Harvest season lasts from
(a) April until September  (b) July until December
(c) May until October

17. Coffee is grown in
(a) South America  (b) North America  (c) United States

18. The coffee beans are enclosed in a
(a) hard shell  (b) soft covering  (c) long pod

19. The skins are removed from the berries by
(a) machine  (b) hand  (c) drying

20. The coffee tree is kept small in order to
(a) grow more trees  (b) pick the berries easier
(c) spray the trees

21. Coffee trees are planted
(a) far apart  (b) on plantations  (c) very close together

22. Brazil ranks first in
(a) coffee-growing  (b) cherry-growing  (c) raising beans

23. Coffee grows best in Brazil because the climate is
(a) just right  (b) warm and moist  (c) cool and dry

24. The coffee tree is grown by planting
(a) many berries  (b) a small branch  (c) seeds

25. Our country buys
(a) one half of Brazil's coffee  (b) all of Brazil's coffee
(c) one fourth of Brazil's coffee

26. In order to dry the berries they are
(a) spread in the sun  (b) put into a machine  (c) cut open

27. In harvest time the berries are
(a) carefully cut from the trees  (b) shaken from the trees
(c) pulled from the trees

28. A large amount of Brazil's coffee is
(a) used in Brazil  (b) used in South America
(c) sent to United States

29. Coffee has been grown in Brazil for
(a) a few years  (b) ten years  (c) many years

30. It takes two or three weeks to
(a) grow the coffee trees  (b) dry the berries
(c) pick the berries
The rubber tree grows wild in the Amazon Lowlands, and rubber is the only important export of the region. The men who gather the rubber are Indians and Mestizos who live in little huts in the forest. When the rubber-gatherer starts out for work in the morning, he carries a small hatchet and a supply of tin cups. Following a narrow path through the forest, he soon reaches the first rubber tree. With his hatchet he cuts several grooves in the bark and hangs a cup at the lower end of each one. The white juice which looks somewhat like cream begins to ooze out of the tree and drips slowly into the cup. This juice is called "latex". By noon the rubber-gatherer has "tapped" all the trees and is back home.

In the afternoon the rubber-gatherer starts out again, this time carrying a large bucket. Following the path from tree to tree, he pours the latex from the tin cups into the bucket. When the bucket is full he builds a fire of sticks and palm nuts near his hut. Over the blaze he places a metal cone with the small end up so that the smoke will pass through it. On each end of the fire is a post with a forked end. A pole rests loosely between the forks so that it can be turned over and over.

The rubber-gatherer pours the latex over the middle of the pole just above the smoke, turning the pole
as he does so. The heat and smoke harden the latex, forming a coating around the middle of the pole. When a large ball of hardened rubber has been formed, it is pulled off the pole and a new one started. The work of gathering rubber and hardening it into balls goes on in the forest from November until May. By the end of the rubber-gathering season a large number of big balls are ready for market.
I. The rubber tree grows wild in the Amazon Lowlands
2. rubber is the only important export of the region
3. men who gather the rubber are Indians and Mestizos
4. who live in little huts in the forest
5. When the rubber-gatherer starts out for work in the morning
6. he carries a small hatchet and a supply of tin cups
7. he follows a narrow path through the forest from tree to tree
8. he cuts several grooves in the bark of each tree
9. and hangs a cup at the lower end of each groove
10. the white juice which looks somewhat like cream
11. begins to ooze out of the tree
12. and drips slowly into the cup
13. this juice is called "latex"
14. by noon the rubber-gatherer has "tapped" all the trees
15. in the afternoon he starts out again carrying a large bucket
16. he pours the latex from the tin cups into the bucket
17. he builds a fire of sticks and palm nuts near his hut
18. over the blaze he places a metal cone
19. with the small end up so that the smoke will pass through it
20. on each end of the fire is a post with a forked end
21. a pole rests between the forks so that it can be turned over
22. the rubber-gatherer pours the latex on the pole above the smoke
23. turning the pole as he does so
24. the heat and smoke harden the latex
25. when a large ball of hardened rubber has been formed
26. it is pulled off and a new one started
27. the work of gathering rubber and hardening it into balls
28. goes on in the forest from November until May
29. by the end of the rubber-gathering season
30. a large number of balls are ready for market
Underline the right answer.

1. The word "latex" means
   (a) rubber tree  (b) the juice of the rubber tree  (c) mestizos

2. The most important export of the Amazon Lowlands is
   (a) rubber  (b) latex  (c) palm nuts

3. The rubber-gatherer pours the latex over the
   (a) palm nuts  (b) forks in the post  (c) pole above the smoke

4. Latex oozes out of trees
   (a) rapidly  (b) moderately  (c) slowly

5. The workers gather the rubber in a
   (a) large cup  (b) bucket  (c) small tin cup

6. Latex becomes hardened into rubber by
   (a) heat and smoke  (b) smoke  (c) pouring it out over heat

7. The juice of the rubber tree drips into
   (a) cups on branches  (b) a bucket  (c) cups at each groove

8. With his hatchet the rubber-gatherer cuts
   (a) many grooves  (b) a few grooves  (c) one long groove

9. The workers start off to gather the rubber in the
   (a) afternoon  (b) morning  (c) evening

10. Rubber is gathered from
   (a) May until November  (b) November until May  (c) November until April

11. The rubber gatherers live
    (a) near the river  (b) in houses in the forest  (c) in huts in the forest

12. Rubber grows wild in the
    (a) forest  (b) Amazon River region  (c) United States

13. The pole on which the rubber is made rests on
    (a) the cone  (b) the rubber tree  (c) posts with forked ends

14. The rubber-gatherer makes his fire of
    (a) sticks and poles  (b) sticks and palm nuts  (c) palm nuts and poles
15. Many balls of rubber are ready for market when the gathering season
   (a) has ended (b) has begun (c) has been going on for a month

16. The rubber-gatherer carries a hatchet when he starts out
   (a) in the morning (b) in the afternoon (c) to build a fire

17. These men who gather rubber are
   (a) Mexicans (b) farmers (c) Indians and Mestizos

18. The juice of the rubber tree is
   (a) a dark color (b) white (c) yellow

19. After a ball of rubber has been made it is taken off the pole and
   (a) sent to market (b) another one started (c) melted again

20. As latex is poured on the pole the rubber gatherer
   (a) turns the pole (b) pulls off the ball (c) builds the fire

21. In order to smoke rubber a metal cone is placed over the
   (a) pole (b) rubber (c) fire

22. The pole over the fire rests on forks so that it can be
   (a) lifted off (b) pulled off (c) turned over

23. As soon as the tree is tapped
   (a) the juice drips out (b) a ball forms (c) a fire is built

24. In order to tap the trees the worker carries a
   (a) knife and cups (b) hatchet and cups (c) saw and cups

25. When latex is poured on the turning pole it makes
   (a) a large ball (b) a lot of smoke (c) many balls

26. By the end of the season these workers send a large number
   of balls (a) to be smoked (b) to market (c) to huts

27. The rubber-gatherers follow
   (a) wide paths (b) the rivers (c) narrow paths

28. By noon the workers have
   (a) gathered the rubber (b) tapped the trees (c) hardened the rubber

29. The smoke from the fire must pass through the small end of the
   (a) stick (b) pole (c) cone

30. The work of the rubber-gatherer is to
   (a) make large rubber balls (b) gather sticks and palm nuts
   (c) gather rubber and harden it