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# A Consideration of the Relationship Between Memory As Measured by the Stanford-Binet and Reading Achievement as Measured by the California Reading Achievement Test at the Fifth Grade Level

Alfred Owen Fonkalsrud  
*University of Nebraska at Omaha*

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EFFECTS OF MEMORY ON READING

A Consideration of the Relationship Between Memory  
As Measured by the Stanford-Binet and Reading  
Achievement as Measured by the California  
Reading Achievement Test at the  
Fifth Grade Level

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A Thesis

Presented to  
the Graduate Division of  
The University of Omaha

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts

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by

Alfred Owen Fonkalsrud

October 1957

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A. O. F.

## TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION . . . . .	1
Statement of the problem . . . . .	2
Definition of terms . . . . .	3
II. RELATED RESEARCH . . . . .	6
Summary of related research . . . . .	13
III. METHODS . . . . .	15
Selection of cases . . . . .	15
Data card . . . . .	18
Description of tests . . . . .	19
California Reading Achievement Test . . . . .	19
Stanford-Binet Memory Items . . . . .	22
Test Administration . . . . .	27
Statistical Methods . . . . .	27
Delimitations . . . . .	29
IV. RESULTS, SUMMARY, AND CONCLUSIONS . . . . .	30
Results . . . . .	30
Summary . . . . .	34
Conclusions . . . . .	34
BIBLIOGRAPHY . . . . .	36
APPENDIX . . . . .	39

## LIST OF TABLES

TABLE	PAGE
I. Distribution of Cases According to Age and Mean Age . . . . .	16
II. Distribution of Cases by Schools and Number in Each School . . . . .	17
III. Computation of Correlation Between Memory Items Passed and Reading Vocabulary . . . . .	31
IV. Computation of Correlation Between Memory Items Passed and Reading Comprehension . . . . .	32
V. Computation of Correlation Between Memory Items Passed and Total Reading . . . . .	33
VI. Computation of Correlation Between Boys Memory Items Passed and Total Reading . . . . .	40
VII. Computation of Correlation Between Girls Memory Items Passed and Total Reading . . . . .	41

## CHAPTER I

### INTRODUCTION

In the remote past the reading of written and printed symbols had its origin when man first began to use pictures and other characters to send messages and to record events. It occurred very slowly and took a lot of effort to change from picture writing to the use of letters in representing specific sounds.<sup>1</sup>

The Egyptians as early as twenty-five centuries before Christ had analyzed words and syllables into sounds and had developed a series of symbols to represent them. As a result of the ingenuity of the Semites these sounds and symbols were the beginning of the Phoenician alphabet, which later developed in turn the Greek letters and the Roman alphabet.<sup>2</sup>

As the arts of writing and reading improved, they took on more significance in the social life and educational systems of the more advanced nations. An example was in Greece, where reading was a school subject of great importance long before the Battle of Marathon (490 B. C.). However, in other parts of the world the use of reading spread slowly.<sup>3</sup>

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<sup>1</sup>William S. Gray, "Reading," Encyclopedia of Educational Research (2nd ed., 1950), p. 965.

<sup>2</sup>Ibid.

<sup>3</sup>Ibid.

The procedures used and adopted in learning to read have stimulated constant thought and discussion. The seemingly most discussed problem in the previous centuries has been that of methods of teaching beginning reading. Observation and personal judgments were relied on chiefly in securing needed information and in making the decisions relative to methods of teaching reading. It was not until about the middle of the nineteenth century that the use of the scientific method was applied to the problems in reading.<sup>4</sup>

During the recent years various studies have been made, and many opinions have been given as to the nature of causal factors of poor reading achievement. These studies have been undertaken by reading clinics, educators, graduate students, and those persons interested in improving children's reading achievement. Many of these studies point out that poor reading achievement is due to inadequate reading skills, social problems, emotional problems, and many other factors.

The question arose as to what relation there is between memory and reading achievement: Is this relation, if there is one, significant?

Statement of the Problem. This investigation is to ascertain whether or not a significant relationship exists

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<sup>4</sup>Ibid.



between memory, as measured by the memory items of the 1937 Revised Stanford-Binet Scale, Form L, from the eight year level to the thirteen year level and reading achievement as measured by the California Reading Achievement Test, Elementary. The study was based on records obtained from the files of the Child Study Service of the University of Omaha.

Definition of Terms. For reasons of clarity the following terms are defined: Memory, Reading Achievement, Reading, Stanford-Binet, and California Reading Test.

Memory, as used in the 1937 Revised Stanford-Binet Scale, Form L, is defined as "that ability, i.e., power of retention and reproduction."<sup>5</sup>

Reading Achievement, according to Clark and Tiess, is the summation of the scores obtained in the nineteen essential elements of reading skill in the California Reading Achievement Test, Elementary.<sup>6</sup> The nineteen reading skills that make up the four subtests of Reading Vocabulary and the three subtests of Reading Comprehension are listed as follows:

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<sup>5</sup>Quinn McNemar, The Revision of the Stanford-Binet Scale (Chicago: Houghton Mifflin Company, 1942), p. 147.

<sup>6</sup>Willis W. Clark and Ernest W. Tiess, Elementary-Manual-Grades 4-5-6, California Reading Test (Los Angeles: California Test Bureau, 1940), p. 2.

1. Reading Vocabulary
  - A. Word Form:
    - 1) Lower case words
    - 2) Capitals
    - 3) Miscellaneous type faces
  - B. Word Recognition:
    - 1) Gross differences
    - 2) Initial sounds or endings
  - C. Opposites:
    - 1) Basic vocabulary
  - D. Similarities:
    - 1) Basic vocabulary
  
2. Reading Comprehension
  - E. Following specific directions:
    - 1) Simple directions
    - 2) Directions, simple choice
    - 3) Definite and direct
  - F. Reference skills:
    - 1) Parts of book
    - 2) Alphabetizing
    - 3) Table of contents
    - 4) Use of index
  - G. Interpretation of meanings:
    - 1) Topic or central idea
    - 2) Directly stated facts
    - 3) Making inferences
    - 4) Organization of topics
    - 5) Sequence of events<sup>7</sup>

Reading, as defined by Gray, assumes that "the reader not only apprehend the author's meaning but also reflect on the significance of the ideas presented, evaluate them critically, and make application of them in the solution of problems."<sup>8</sup>

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<sup>7</sup>Ibid., p. 6.

<sup>8</sup>William S. Gray, "The Teaching of Reading": A Second Report, Thirty-Sixth Yearbook, N.S.S.E., Part I, Public School, 1937, p. 422.

Stanford-Binet will mean the 1937 Revised Stanford-Binet Scale, Form L.

California Reading Test will pertain to the California Reading Achievement Test, Elementary.

This is the manner in which the terms were used throughout this study.

## CHAPTER II

### RELATED RESEARCH

The purpose of this chapter was to review some of the research and studies that have been completed in the field of reading, with particular emphasis on the relation between memory and reading.

The Monroe Auditory Discrimination and the Gates Test of Auditory Memory Span was given to two groups of nine-year old pupils by Wolfe. One group was retarded in reading achievement and the other group was average. The results of his study indicated that the retarded group scored low more consistently on the tests than did the average group. However, Wolfe felt that none of the functions studied was sufficiently characteristic of retarded readers to be regarded as causative of reading difficulty.<sup>1</sup>

In an article that was written concerning disabilities in reading Hume stated that "the chief 'intrinsic' causes are innate emotional instability and weak specific abilities; e.g., inability to discriminate forms and poor memory for symbols."<sup>2</sup>

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<sup>1</sup>L. S. Wolfe, "Differential Factors in Specific Reading Disability," Journal Genetic Psychology, LVIII, (1941), pp. 57-70.

<sup>2</sup>G. Hume, "Disabilities in Reading," Republic of Britain Association for the Advancement of Science, 1927, p. 372.

An investigation was conducted by Rizzo who studied types of memory span and objective rating of reading ability. The three types of memory span studied were, namely, tachistoscopic visual span, auditory span, and temporal visual span. They were studied by means of three tests which he devised.<sup>3</sup>

The following conclusions were obtained from his data:

- (1) The group method of measuring memory span by his present tests yields reliability coefficients of adequate size for group diagnosis at all levels, and reasonably high coefficients for individual diagnosis at the second grade level.
- (2) Whenever a relation exists between auditory and visual memory span it is more likely to be explained on the basis of similarity in the method of presentation of the tests involved in the relationship than on the basis of the existence of a generalized memory span ability.
- (3) The present tests measure growth in memory span at various age levels.
- (4) These tests cannot be used to predict reading test scores.
- (5) Limited memory span ability might be an important contributing factor, especially with younger subjects in extreme cases of serious retardation in reading achievement.<sup>4</sup>

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<sup>3</sup>N. D. Rizzo, "Studies in Visual and Auditory Memory Span with Special Reference to Reading Disability," Journal of Exceptional Education, VIII, (1939), pp. 208-244.

<sup>4</sup>Ibid.

Mach mentioned that the usual accompaniments of letter and word reversal, frequent and long fixation points, many regressive eye movements, defective articulation, and nervous instability were noted in a study of seven children of normal intelligence with serious deficiencies in reading and writing. It appeared that these children also had very poor memory for complicated geometrical figures and for sounds. He did note, however, that individual cases varied considerably. Such factors as poor home conditions and excessive punishment for school failures were the rule.<sup>5</sup>

In her summary, conclusions, and implications on why pupils fail in reading Robinson stated that pupils who are seriously retarded in reading exhibit many anomalies, that is, physical, mental, social, and emotional deficiencies or disturbances. Her second conclusion was that, as a rule, the greater the number of anomalies, the more serious the retardation in reading. The third conclusion was that many of the anomalies exhibited have little or no relation to reading retardation. In other words, these conditions influencing reading disability should be considered but not taken as the only cause of reading disability.<sup>6</sup>

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<sup>5</sup>L. Mach, "Reading and Writing Deficiencies in Normal Children," Z. Kinderforsch XLVI, (1937), pp. 113-197.

<sup>6</sup>Helen M. Robinson, Why Pupils Fail in Reading (Chicago: University of Chicago Press, 1946), p. 237.

Gray and others stated that "a somewhat more subtle difficulty is failure to remember what has been heard. This frequently results in inability to remember the sounds of words and consequently in confusion or even complete failures in reading."<sup>7</sup>

Auditory memory span, according to Blankenship,<sup>8</sup> has been measured by a variety of methods. Monroe in 1928 compared normal readers and retarded readers with regard to disorientation of drawings reproduced from memory and found no completely reliable differences between the two groups of children on this test.<sup>9</sup> In 1935 Monroe made use of a story and stated: "Children who are taught to read from sentences and stories as units must be able to retain the stories in order to associate them accurately with the words of the text."<sup>10</sup>

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<sup>7</sup>William S. Gray et al., "Remedial Cases in Reading: Their Diagnosis and Treatment," Supplementary Educational Monograph, XXII, 1922, p. 14.

<sup>8</sup>Albert B. Blankenship, "Memory Span: A Review of the Literature," Psychological Bulletin, XXXV (1938), pp. 1-25.

<sup>9</sup>Marion Monroe, "Methods for Diagnosis and Treatment of Causes of Reading Disability," Genetic Psychology Monograph, 1928.

<sup>10</sup>Marion Monroe, "Reading Aptitude Tests in Beginning Reading," Education, LVI (1935), p. 9.

Digits, consonants, and nonsense syllables were used by Saunders<sup>11</sup> who found that children who talked late, with normal age of walking and dentition, often had poor auditory memory. These children had speech defects earlier in life and were generally slow in acquiring facility with language. She stated that these children were not musical and had difficulty in learning to read. They struggled with phonics and were poor spellers. She found that these children had a particular kind of personality, being shy and retiring and emotionally dependent on parents. Her conclusion was: "While it cannot be stated that all reading disability are allied with poor memory spans, yet it can be stated with certainty that all poor memory spans are allied with difficulty in reading and spelling."<sup>12</sup>

Both Betts and Van Wagenen utilized ascending scales of sentence length to measure auditory memory span in relation to reading readiness. Gates used this technique in his Diagnostic Reading Test. With this test, Lichtenstein<sup>13</sup> found that the auditory memory span of twenty retarded readers was inferior to their learning ability.

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<sup>11</sup>Mary Jane Saunders, "The Short Auditory Span Disability," Childhood Education, VIII, (1931), pp. 59-65.

<sup>12</sup>Ibid., p. 64.

<sup>13</sup>A. Lichtenstein, "An Investigation of Reading Retardation," Journal of Genetic Psychology, LII, (1938), pp. 407-423.



Having studied the characteristics of poor readers, Bond used digits to measure auditory memory span and found a significant difference between the control and the experimental groups in memory for digits.<sup>14</sup>

Harrison in 1936 and again in 1939 summarized the available evidence concerning the factors involved in reading readiness and used both the results of scientific studies and expert opinion. She listed the following essential items necessary to learn to read:

1. The ability to see likenesses and differences
2. The ability to remember word forms
3. Memory span of ideas
4. The ability to do abstract thinking
5. The ability to correlate abstractions with definite modes of responses as this ability is related to the reading process.<sup>15</sup>

Tyler stated that most studies agreed that females excel in memory. Memory tests in general called for the exact repetition of a group of digits or words immediately after presentation, for the reproduction of geometrical figures that have been studied for a short time, or for the

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<sup>14</sup>G. L. Bond, "The Auditory and Speech Characteristics of Poor Readers," Teachers College Contributions to Education LXV, (1935), p. 48.

<sup>15</sup>M. L. Harrison, Reading Readiness, rev. ed. (Chicago: Houghton-Mifflin Company, 1939), pp. 8-9.

recitation of a story or paragraph that has been read aloud. In all these types of tests, female superiority was the general rule.<sup>16</sup>

The coefficients of reliability of the reading section of each form of the California Reading Test are reported below. The coefficients of reliability were determined by averaging the inter-correlations of the different forms of the test for a single grade range (Grade 5). The coefficients and the standard errors of measurement expressed in terms of grade placements are as follows:

<u>Test</u>	<u>Reliability</u>	<u>S.E. Meas.</u>
Reading Vocabulary	.88	0.50
Reading Comprehension	.93	0.39
Total Reading	.93	0.39

The items of the California Reading Test have been developed over a period of years and through four editions. The later 1937, 1943, 1949, and 1950 editions were based on tests given to more than 100,000 pupils in schools throughout the United States.<sup>17</sup>

From each of Forms L and M, 22 memory items were well scattered throughout the age levels. The two sets of memory scores were correlated with each other and each was

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<sup>16</sup>L. E. Tyler, The Psychology of Human Differences, (Chicago: Appleton-Century-Crofts, Inc., 1956), p. 254.

<sup>17</sup>W. W. Clark and E. W. Tiegs, Elementary Manual-Grades 4-5-6, California Reading Test (Los Angeles: California Test Bureau, 1950), p. 4.

correlated with composite mental age. The reliabilities tended to average .70, which when stepped up would indicate a reliability of about .82 for scores based on the items in both scales.<sup>18</sup>

Summary of Related Research. Mach,<sup>19</sup> Lichtenstein,<sup>20</sup> Bond,<sup>21</sup> Gray et al.<sup>22</sup> felt that a poor auditory memory span was a causative factor of poor reading achievement. Wolfe<sup>23</sup> did not completely agree in that he felt poor auditory memory span was related but not a causative factor of poor reading achievement.

Harrison,<sup>24</sup> Rizzo,<sup>25</sup> and Saunders<sup>26</sup> agreed that memory span ability was needed for good reading achievement and without it would result in poor reading achievement.

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<sup>18</sup>Quinn McNemar, The Revision of the Stanford-Binet Scale (Chicago: Houghton Mifflin Company, 1942), p. 146.

<sup>19</sup>Mach, loc. cit.

<sup>20</sup>Lichtenstein, loc. cit.

<sup>21</sup>Bond, loc. cit.

<sup>22</sup>Gray et al., loc. cit.

<sup>23</sup>Wolfe, loc. cit.

<sup>24</sup>Harrison, loc. cit.

<sup>25</sup>Rizzo, loc. cit.

<sup>26</sup>Saunders, loc. cit.

When studying poor reading achievement Rizzo<sup>27</sup> concluded that a general memory span factor or ability existed between auditory and visual memory.

Hume<sup>28</sup> stated poor memory for symbols was a cause of disabilities in reading. Mach<sup>29</sup> felt poor memory to reproduce geometrical designs was related to reading disabilities, and Monroe<sup>30</sup> concluded from one of her studies there was no difference between normal readers and retarded readers when reproducing drawings from memory.

When discussing the number of causative factors of poor reading achievement, Robinson<sup>31</sup> stated that this was due to many factors and not one factor alone.

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<sup>27</sup>Rizzo, loc. cit.

<sup>28</sup>Hume, loc. cit.

<sup>29</sup>Mach, loc. cit.

<sup>30</sup>Monroe, loc. cit.

<sup>31</sup>Robinson, loc. cit.

## CHAPTER III

### METHODS

Selection of Cases. The selection of cases was based on the following that each case:

(1) Must have had a Stanford-Binet Test score and a California Reading Test score while in the fifth grade of school. The purpose was to have all of the test results at the same level of production. This grade was chosen because it is best suited for the California Reading Test. The California Reading Test at the Elementary level tests reading at the fourth, fifth, and sixth grades. As the fifth grade was the mean for that range of testing, the California Reading Test was chosen.

(2) Must have basaled at the eight year level on the Stanford-Binet. This criterion was chosen so that each person would begin at the same level of production and have the same opportunity of passing the various eleven memory items from the eight year level through the thirteen year level.

(3) Must have a California Reading Test score that was given during the same month as the Stanford-Binet during the years 1953, 1954, 1955, and 1956.

(4) Must come from the files of the Child Study Service, University of Omaha. The population for this study was a random sample of the fifth grade students from the

Child Study Service files and a select population in that it came from the Child Study Service, University of Omaha.

Having used the previously stated criteria, one hundred thirty-seven cases were selected for this study. As shown by Table I the distribution of ages was from nine years to fifteen years. The average age of the fifth grade students used for this study was eleven and four-tenths years.

TABLE I  
DISTRIBUTION OF CASES ACCORDING TO AGE  
AND MEAN AGE

Years Old	Number of Cases
15	2
14	1
13	23
12	49
11	44
10	16
9	2
<b>Total</b>	<b>137</b>
Mean Age	11.4 Years
Range	6.0 Years

The distribution of cases by schools and number from each school were found on the following page in Table II. There was a total of forty-six schools from which the various cases originated.

TABLE II

DISTRIBUTION OF CASES BY SCHOOLS  
AND NUMBER IN EACH SCHOOL

Name of School	Number of Cases
1. Adams	2
2. Beals	3
3. Belle Ryan	2
4. Belvedere	2
5. Benson West	4
6. Brown Park	1
7. Central Park	1
8. Clifton Hill	2
9. Columbian	1
10. Comenius	1
11. Corrigan	1
12. Douglas	1
13. Druid Hill	8
14. Dundee	1
15. Florence	3
16. Fontenelle	2
17. Franklin	9
18. Harrison	2
19. Hawthorne	1
20. Highland	3
21. Howard Kennedy	7
22. Jackson	2
23. Jefferson	1
24. Jungeman	2
25. Kellom	13
26. Lake	2
27. Long	3
28. Lothrop	6
29. Madison	5
30. Mason	1
31. Miller Park	1
32. Minne Lusa	5
33. Monmouth Park	2
34. Monroe	3
35. Park	1
36. Robbins	5
37. Rosehill	2
38. Saratoga	1
39. Saunders	1

TABLE II (Continued)

Name of School	Number of Cases
40. South Lincoln	3
41. Vinton	2
42. Walnut Hill	1
43. Washington	6
44. Webster	1
45. Westside	9
46. Windsor	<u>2</u>
Total	137

Data Card. The following information was collected and placed on a data card for each case:

- (1) The child's name.
- (2) School attended.
- (3) Grade in school.
- (4) Chronological age (CA).
- (5) The score obtained on each of the eleven memory items in the Stanford-Binet from the eight year level through the thirteen year level.
- (6) The total number of memory items passed.
- (7) The Reading Vocabulary raw score for the California Reading Test.
- (8) The Reading Comprehension raw score for the California Reading Test.



(9) The total raw score for the California Reading Test.

Description of Tests. Following is a description of the California Reading Test and the memory items of the Stanford-Binet from the eight year level through the thirteen year level.

California Reading Test. Each form of the California Reading Test is divided into two parts: Reading Vocabulary (Test 1) and Reading Comprehension (Test 2). Each of these parts has been designed to sample the fundamental reading skills. The two parts are divided into several sections and are described in the following paragraphs.<sup>1</sup>

Reading Vocabulary-Test 1. This test consists of four sections. Section A is a test of Word Form. The ability to recognize words is tested in Section B. Ninety words make up Sections C and D. In order to make the correct response each of these ninety words must be properly identified. The words used in this section were chosen from the first four thousand in the Thorndike Word Book and were presented in gradually increasing difficulty. The key words of Section C were identified by matching them with a word of the opposite meaning selection from the four listed; those of Section D, by matching them with words of similar meaning.<sup>2</sup>

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<sup>1</sup>Willis W. Clark and Ernest W. Tiegs, Elementary-Manual-Grades 4-5-6, California Reading Test (Los Angeles: California Test Bureau, 1950), p. 3.

<sup>2</sup>Ibid.

Word Form-Section A. Twenty-five pairs of identical and different words were contained in this test. Included were lower-case printed words, capitals, and italics. The pupils were tested on their ability to recognize similarities and differences in word forms of these different varieties. A failure in this test might indicate not only lack of familiarity with word forms but other difficulties as well, such as defective vision.<sup>3</sup>

Word Recognition-Section B. The pupil identified twenty sets of four words each which were pronounced to him. Included were lower-case words, italics, and capitals. The range of the material was from gross differences in sound and word form to minor differences in pronunciation and included certain phonetic difficulties. The test was useful in revealing the inability of pupils to identify the word as it was seen. Other difficulties such as defective vision or hearing may be indicated by this test.<sup>4</sup>

Meaning of Opposites-Section C. Twenty-three words were contained in this test which the pupil identified with words of opposite meaning. These words ranged from concrete terms to abstract ideas and provided a measure of a pupil's vocabulary.<sup>5</sup>

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<sup>3</sup>Ibid.

<sup>4</sup>Ibid.

<sup>5</sup>Ibid.

Meaning of Similarities-Section D. In the same manner, the pupil identified twenty-two words by matching them with words of similar meaning.<sup>6</sup>

Reading Comprehension-Test 2. Following Directions-Section E. Ten reading situations were included in this test which required the following specific directions. These ranged from directions requiring a choice to understanding definitions. Ability to follow specific directions was essential for silent reading comprehension.<sup>7</sup>

Reference Skills-Section F. The extent to which the pupil is familiar with the vocabulary and skills needed for reference and library research was tested by this section.<sup>8</sup>

Interpretation of Meanings-Section G. In this section was included the situation for the measurement of the pupil's ability to comprehend directly stated facts, to select best titles, to make inferences and deductions, and to understand an author's organization of topics. Also in this section were included three short stories. The same basic elements appeared in the first two. Some of the basic elements plus a test on sequence of events appeared in the third.<sup>9</sup>

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<sup>6</sup>Ibid.

<sup>7</sup>Ibid.

<sup>8</sup>Ibid.

<sup>9</sup>Ibid.

Stanford-Binet Memory Items. The following was a description of the various eleven memory items on the Stanford-Binet from the eight year level to the thirteen year level.

Memory for Stories III. The second sub-test at the eight year level consisted of a story which contained a number of facts. The story was read aloud to the child by the examiner as the child followed the story by reading it on a printed card. The child's copy of the selection was removed after the story was finished being read, and then he was asked six questions. The test was passed if five of the questions were answered correctly.<sup>10</sup>

Memory for Sentences III. The sixth sub-test at the eight year level consisted of two sentences that were read aloud to the child. The first sentence contained fourteen elements, and the second sentence contained thirteen elements. The test was passed if one or more of the sentences were repeated with no errors. "Errors include omissions, substitutions, additions, changes in words or in order of words."<sup>11</sup>

Memory for Designs (Same as XI, 1). The third sub-test at the nine year level of the Stanford-Binet and the

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<sup>10</sup>Maud A. Merrill and Lewis M. Terman, Measuring Intelligence (Boston: Houghton Mifflin Company, 1937), p. 102.

<sup>11</sup>Ibid., p. 102.

first sub-test at the eleven year level were the same. The child was shown two designs for ten seconds; then he was asked to reproduce them from memory on the test blank. The first figure or design (a) was made up of one continuous line forming squares which turned inward at either end of the figure and with an open rectangular elevation between them.<sup>12</sup>

According to the Binet manual this design was to be scored plus 1, plus 1/2, or -, according to the accuracy of the reproduction. For full credit on design (a) "all of the elements of the design must be reproduced and the relationship between these elements maintained." "Slight irregularities due to lack of motor skill or hasty execution are disregarded." For half credit on design (a) "all of the elements must be present, but inaccuracies due to omission or addition of details or to irregularities in size and shape of the figures are overlooked."<sup>13</sup>

The second figure or design (b) was made up of a large rectangle inside of which there was a smaller rectangle offset to the right, and which was joined to the larger rectangle by lines running from the four corners to the four corners of the larger rectangle. The Binet manual stated that for full

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<sup>12</sup>Ibid., p. 104.

<sup>13</sup>Ibid., p. 248.

credit on design (b) these four conditions must be met:

- (1) The outer figure must be rectangular.
- (2) The inner rectangle must be off center to the right.
- (3) The inner figure may appear square but must not be noticeably higher than wide.
- (4) The lines from the corners of the inner rectangle must meet the corners of the outer rectangle fairly accurately.<sup>14</sup>

For half credit on design (b) "no essential part must be omitted or any part added, but there is greater latitude in scoring than above." "An inverted design or one whose inner rectangle is in the center or off center to the left receives half credit." In relation to the outer figure the inner rectangle may be taller than wide. "The outer rectangle may be square or may be rectangular in the opposite direction from the original figure. Less accuracy is required of the radiating lines, but they must show a tendency to meet the corners, otherwise the score is minus." "The test is passed if one credit is earned on the designs."<sup>15</sup>

Repeating Four Digits Reversed. The sixth sub-test at the nine year level consisted of the child's repeating a series of four digits reversed to the examiner. The examiner gave an example of what was wanted and then the test was begun.

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<sup>14</sup>Ibid., pp. 248-249.

<sup>15</sup>Ibid., p. 249.

"The series must be repeated backwards in correct order without error after a single reading." A score of plus one was needed to pass this test.<sup>16</sup>

Reading and Report. The third sub-test at the ten year level consisted of a paragraph containing twenty-four facts that were read aloud by the child being tested. "The test is passed if the selection is read in thirty-five seconds with not more than two errors, and if the report contains at least ten memories."<sup>17</sup>

Repeating Six Digits. The sixth sub-test at the ten year level consisted of three series of numbers, six numbers in each series. The digits were pronounced distinctly and with perfectly uniform emphasis at the rate of one per second. "The series must be repeated in correct order without error after a single reading." A score of plus one was needed to pass this test.<sup>18</sup>

Memory for Designs (Same as IX, 3). The first sub-test at the eleven year level and the third sub-test at the nine year level were the same. The difference at this level was that a score of one and a half was needed to pass this test.<sup>19</sup>

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<sup>16</sup>Ibid., p. 105.

<sup>17</sup>Ibid., p. 256.

<sup>18</sup>Ibid., p. 107.

<sup>19</sup>Ibid., p. 259.

Memory for Sentences IV. The fourth sub-test at the eleven year level consisted of two sentences that were read aloud to the child. The first sentence contained fifteen elements and the second sentence contained sixteen elements. To pass this test at least one of the sentences must be repeated without error.<sup>20</sup>

Repeating Five Digits Reversed. The fourth sub-test at the twelve year level consisted of the child's repeating a series of five digits reversed to the examiner. The procedure was the same as the previous sixth sub-test at the nine year level. A score of plus one was needed to pass this test.<sup>21</sup>

Memory for Words. The second sub-test at the thirteen year level consisted of two series of words, five words in each series. Both series of words were read to the child, and he has to repeat them without error. "Errors include omissions, substitutions, additions, changes in words or in order of words."<sup>22</sup> A score of plus one was needed to pass this test.

Copying a Bead Chain from Memory II. The sixth sub-test at the thirteen year level consisted of stringing nine

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<sup>20</sup>Ibid., p. 264.

<sup>21</sup>Ibid., p. 269.

<sup>22</sup>Ibid., p. 274.



beads on a string in the same pattern as demonstrated by the examiner. The score needed to pass this test was no error in the pattern of the beads.<sup>23</sup>

Test Administration. The Stanford-Binet tests were administered at the Child Study Service, University of Omaha.

The California Reading tests were administered in the various fifth grade homerooms by their respective homeroom teachers.

Statistical Methods. The mean, range, and standard deviation were computed for the Reading Vocabulary, Reading Comprehension, Total Reading, and Memory scores.

The Product-Moment method of correlation was used to determine the relation between the number of memory items passed and the Reading Vocabulary, Reading Comprehension, and Total Reading test scores.

For the purpose of this study, unless otherwise indicated, the following formulas were used in this study:

$$I. \text{ Mean} = \text{assumed mean} \left( \frac{\sum fd}{N} \times \text{size of class interval} \right)$$

M = the mean

f = frequency of cases in each class interval

d = deviation in number of class intervals from the assumed mean

fd = the total deviations (f x d) in each class interval

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<sup>23</sup>Ibid., p. 277.

$\Sigma$  = sum

$\Sigma fd$  = the sum of the deviations<sup>24</sup>

II. Range = H - L

R = the range

H = the highest measurement in the series

L = the lowest measurement in the series<sup>25</sup>

III. Standard Deviation

$$\sqrt{\frac{\Sigma fd^2}{N} - \left(\frac{\Sigma fd}{N}\right)^2} \times \text{size of class interval}$$

$\sigma$  = the standard deviation

f = frequency of cases in each class interval

d = deviation in number of class intervals from the assumed mean

N = the number of cases

fd = the total deviations (f x d) in each class interval

fd<sup>2</sup> = the total of the squares of the deviations (f x d<sup>2</sup>) in each class interval

$\Sigma fd$  = the sum of the deviations

$\Sigma fd^2$  = the sum of the squares of the deviations

$\Sigma$  = the sum<sup>26</sup>

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<sup>24</sup>Harry Grove Wheat, Foundations of School Learning (New York: Alfred A. Knopf, 1955), pp. 352-353.

<sup>25</sup>Allen L. Edwards, Statistical Analysis (New York: Rinehart and Company, 1946), p. 33.

<sup>26</sup>Wheat, op. cit., pp. 352-354.

## IV. Product-Moment Correlation

$$\frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}}$$

$\sqrt{xy}$  = the correlation coefficient of X on Y

$\sum xy$  = the sum of the cross-products

$\sum x^2$  = the sum of squares for X

$\sum y^2$  = the sum of squares for Y

X = the scores on the Memory Items

Y = the scores on the Reading Tests<sup>27</sup>

Delimitations. This study was limited to the fifth grade pupils in Omaha who have been tested in the Child Study Service, University of Omaha.

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<sup>27</sup>Edwards, op. cit., p. 88.

## CHAPTER IV

### RESULTS, SUMMARY, AND CONCLUSIONS

Results. The correlation between the number of Memory items passed and Reading Vocabulary was .165, which was not significant. See Table III.

The correlation between the number of Memory items passed and Reading Comprehension was .201, which was significant at the five per cent level. See Table IV. This means that one would not get a correlation lower than this more than five times out of a hundred by chance.

The correlation between the number of Memory items passed and Total Reading was .1719, which was significant at the five per cent level. See Table V. This means that one would not get a correlation lower than this more than five times out of a hundred by chance.

The correlation between the number of Memory items passed by the Boys and Total Reading was .09, which was not significant. See Table VI.

The correlation between the number of Memory items passed by the Girls and Total Reading was .75, which was significant at the one per cent or five per cent level. See Table VII.

TABLE III  
 COMPUTATION OF CORRELATION BETWEEN MEMORY  
 ITEMS PASSED AND READING VOCABULARY

		Memory Items Passed									
		2	3	4	5	6	7	8	9	f	
R E A D I N G	85				3	2		2		7	
	80		4		5	3	1		3	16	
	75			2	1	3	3		1	10	
	70		1	2		1	1	1		6	
	V O C A B U L A R Y	65	1	6	4	1	4	1	1	1	19
		60	1		1	4	2	1	1		10
		55	1		3	1	3	2	2	2	14
		50		4	3	1	3	1	1		13
		45		1		7	2	3	2		15
		40		2	6	3		1			12
35				3	1		1			5	
30		1		1	2		1			5	
25				1	2	1				4	
20					1					1	
f		4	18	26	32	24	16	10	7	137	

$$r_{xy} = .165$$

Not significant at 5% level

TABLE IV  
 COMPUTATION OF CORRELATION BETWEEN MEMORY  
 ITEMS PASSED AND READING COMPREHENSION

		Memory Items Passed								
		2	3	4	5	6	7	8	9	f
R E A D I N G  C O M P R E H E N S I O N	39				2	1				3
	36				1	1	2	1	2	7
	33			1	1	3	1	1		7
	30		3	1	1	2	1		2	10
	27		3	2	4	2	1	1		13
	24	1	2		1	4				8
	21	1	1	1	9	5	2	2	2	23
	18		3	4	4	1	3	1		16
	15		1	8	2	1	1	3	1	17
	12	1	4	2	2	2	2			13
	9			2	1					3
	6	1	1	5	3	1	3	1		15
	3					1				1
0				1					1	
f		4	18	26	32	24	16	10	7	137

$$r_{xy}$$

.206

Significant at 5% level

TABLE V  
COMPUTATION OF CORRELATION BETWEEN MEMORY  
ITEMS PASSED AND TOTAL READING

		Memory Items Passed								
		2	3	4	5	6	7	8	9	r
TOTAL READING	125					1				1
	120				4	1		2	1	8
	115		1			2	1		1	5
	110		3	1	1	2	2		1	10
	105			1	2	2			1	6
	100				2		1	1		4
	95		1	1		2	2			6
	90	1	5	2		3				11
	85		1	2	3	1			1	8
	80	1		1	1	1	1	2		7
	75	1		1	2	4	2	2	2	14
	70		1	2	2	1		1		7
	65	1	2	3	6		1			13
	60		1	3		2	1	1		8
	55		1	2	1	1	3			8
	50		2	1	3			1		7
	45			3	1		1			5
	40			2	1		1			4
	35			1						1
	30				2	1				3
25									0	
20				1					1	
r		4	18	26	32	24	16	10	7	137

$$r_{xy} = .1719$$

Significant at 5% level

Summary. This study was designed to investigate the relation between the number of Memory items passed by the fifth grade students tested by the Child Study Service on the Stanford-Binet from the eight year level through the thirteen year level and the California Reading Vocabulary, Reading Comprehension, and Total Reading test scores.

The correlations were computed between the number of Memory items passed by the Boys and Total Reading scores and also the number of Memory items passed by the Girls and Total Reading scores.

The correlation between the number of Memory items passed and Reading Vocabulary scores was not significant. The correlation between the number of Memory items passed and Reading Comprehension and Total Reading was significant at the five per cent level. The correlation between the number of Memory items passed by the Boys and Total Reading was not significant. The correlation between the number of Memory items passed by the Girls and Total Reading was significant at the five per cent level.

Conclusions. From the previously stated data concerning the fifth grade students tested at the Child Study Service, University of Omaha, the following conclusions have been made:



(1) Memory as measured by the Stanford-Binet was not a significantly related factor to the California Reading Vocabulary Test.

(2) Memory as measured by the Stanford-Binet was a significantly related factor to the California Reading Comprehension Test.

(3) Memory as measured by the Stanford-Binet was a significantly related factor to the California Total Reading Test.

(4) There was no significant difference between the number of Memory items passed between the boys and the girls.

**B I B L I O G R A P H Y**

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**A P P E N D I X**

TABLE VI  
 COMPUTATION OF CORRELATION BETWEEN BOYS  
 MEMORY ITEMS PASSED AND TOTAL READING

		Memory Items Passed								
		2	3	4	5	6	7	8	9	f
T O T A L  R E A D I N G	125					1				1
	120				1	1		1		3
	115		1			3			1	5
	110		3			1	1			5
	105			1	1	2				4
	100				2			1		3
	95						2			2
	90	1	3	2		3				9
	85			2	2				1	5
	80			1		1		1		3
	75	1		1		3	1	1	1	8
	70		1	2	2			1		6
	65	1	1	2	3		1			8
	60		1	2		2	1	1		7
	55			1	1	1	1			4
	50		2	1	2			1		6
	45			2	1	1	1			5
	40			2	1		1			4
	35			1						1
	30				2	1				3
25									0	
20				1					1	
		3	12	20	19	20	9	7	3	93

$\sqrt{xy}$

.090

Not significant at 5% level

TABLE VII  
 COMPUTATION OF CORRELATION BETWEEN GIRLS  
 MEMORY ITEMS PASSED AND TOTAL READING

		Memory Items Passed								
		2	3	4	5	6	7	8	9	f
T	125									
O	120				3			1	1	5
T	115									0
R	110			1	1	1	1		1	5
E	105				1				1	2
A	100						1			1
D	95		1	1		2				4
I	90		2							2
N	85		1		1	1				3
G	80	1			1		1	1		4
	75				2	1	1	1	1	6
	70					1				1
	65		1	1	3					5
	60			1						1
	55		1	1		1	1			4
	50				1					1
		1	6	5	13	7	5	3	4	44

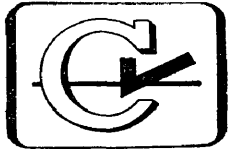
$$r_{xy} = .75$$

Significant at 5% level

## TESTS USED

1. California Reading Achievement Test
2. Stanford-Binet Memory Items





Elementary • GRADES 4 - 5 - 6 • form AA

# California Reading Test

(Formerly: Progressive Reading Test)

DEvised BY ERNEST W. TIEGS AND WILLIS W. CLARK

## INSTRUCTIONS TO STUDENTS:

This is a reading test. In taking it you will show how many words you know and how well you understand what you read. No one can do the whole test correctly, but you should answer as many items as you can. Work as fast as you can without making mistakes.

**DO NOT WRITE OR MARK ON THIS TEST BOOKLET UNLESS TOLD TO DO SO BY THE EXAMINER.**



**DIRECTIONS:** If two words are the same or mean the same, mark S as you are told. If they are different or mean different things, mark D.

			Correct Test Booklet Mark		Correct Answer Sheet Mark
SAMPLE:	A.	dog.....dog	dog.....S.....dog	A	S   D
SAMPLE:	B.	boy.....girl	boy.....girl	B	S   D

**TEST 1 — SECTION A**

1. tell.....go
2. plan.....plan
3. father.....father
4. boat.....beat
5. ability.....ability
6. separate.....separate
7. shepherd.....sheriff
8. industrious.....indirection
9. necessary.....necessary
10. mother.....matter
11. robber.....rubber
12. minor.....minus
13. opinion.....opinion
14. euphonium.....euphemism
15. interpolation.....interpellation
16. ORPHAN.....ORPHAN
17. POLITIC.....POLITE
18. REDBREAST.....REDBREAST
19. HISTORIC.....HISTRIONIC
20. perambulate.....PERAMBULATE
21. WALL.....WAIL
22. PRECEDE.....proceed
23. procession.....POSSESSION
24. exhibition.....exhibition
25. peremptory.....peremptory

**STOP** NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. A Score (number right).....

**DIRECTIONS:** Look at the words which are given on the lower part of this page. Each line is numbered and each word has a smaller number, 1, 2, 3, or 4 in front of it. There are four words on each line. The examiner will pronounce one word from each line. You are to mark as you are told the number of the word that is pronounced.

**PRACTICE EXERCISE**

		Correct Booklet	Test Mark	Correct Sheet	Answer Mark								
<b>SAMPLE:</b>	<b>C.</b> <sup>1</sup> cow <sup>2</sup> horse <sup>3</sup> dog <sup>4</sup> goat	3	c	C	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>  </td> <td>  </td> <td>  </td> <td>  </td> </tr> </table>	1	2	3	4				
1	2	3	4										
	In this sample the word is dog, so the 3 is marked.												
<b>SAMPLE:</b>	<b>D.</b> <sup>1</sup> run <sup>2</sup> jump <sup>3</sup> throw <sup>4</sup> swing		D	D	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>  </td> <td>  </td> <td>  </td> <td>  </td> </tr> </table>	1	2	3	4				
1	2	3	4										
	You are to mark the number of the word that was pronounced. It is number 4.												

**TEST 1 — SECTION B**

✓ Mark as you have been told the number of the word pronounced.

26.	<sup>1</sup> tree	<sup>2</sup> ball	<sup>3</sup> my	<sup>4</sup> this	_____26
27.	<sup>1</sup> growl	<sup>2</sup> great	<sup>3</sup> grunt	<sup>4</sup> grand	_____27
28.	<sup>1</sup> write	<sup>2</sup> wrist	<sup>3</sup> wreck	<sup>4</sup> wrath	_____28
29.	<sup>1</sup> Monday	<sup>2</sup> Wednesday	<sup>3</sup> Tuesday	<sup>4</sup> Thursday	_____29
30.	<sup>1</sup> singing	<sup>2</sup> moulting	<sup>3</sup> singeing	<sup>4</sup> chattering	_____30
31.	<sup>1</sup> August	<sup>2</sup> January	<sup>3</sup> June	<sup>4</sup> July	_____31
32.	<sup>1</sup> thoroughfare	<sup>2</sup> thought	<sup>3</sup> throughout	<sup>4</sup> through	_____32
33.	<sup>1</sup> practical	<sup>2</sup> practice	<sup>3</sup> prairie	<sup>4</sup> precious	_____33
34.	<sup>1</sup> warrant	<sup>2</sup> waltz	<sup>3</sup> wanness	<sup>4</sup> warship	_____34
35.	<sup>1</sup> efficient	<sup>2</sup> elasticity	<sup>3</sup> elimination	<sup>4</sup> electrocute	_____35
36.	<sup>1</sup> <i>primary</i>	<sup>2</sup> <i>political</i>	<sup>3</sup> <i>public</i>	<sup>4</sup> <i>premium</i>	_____36
37.	<sup>1</sup> <i>blotch</i>	<sup>2</sup> <i>bluster</i>	<sup>3</sup> <i>blight</i>	<sup>4</sup> <i>blizzard</i>	_____37
38.	<sup>1</sup> <i>arrival</i>	<sup>2</sup> <i>avenue</i>	<sup>3</sup> <i>acquire</i>	<sup>4</sup> <i>associate</i>	_____38
39.	<sup>1</sup> YACHT	<sup>2</sup> YOUNG	<sup>3</sup> YAM	<sup>4</sup> YIELD	_____39
40.	<sup>1</sup> WHIRL	<sup>2</sup> WHARF	<sup>3</sup> <i>whole</i>	<sup>4</sup> <i>whistle</i>	_____40
41.	<sup>1</sup> <i>receipt</i>	<sup>2</sup> <i>recital</i>	<sup>3</sup> regime	<sup>4</sup> recipe	_____41
42.	<sup>1</sup> <i>cafeteria</i>	<sup>2</sup> <i>carnival</i>	<sup>3</sup> cautious	<sup>4</sup> contagious	_____42
43.	<sup>1</sup> MENAGERIE	<sup>2</sup> <i>maximum</i>	<sup>3</sup> <i>material</i>	<sup>4</sup> massacre	_____43
44.	<sup>1</sup> charlatan	<sup>2</sup> chauffeur	<sup>3</sup> chapeau	<sup>4</sup> chloroform	_____44
45.	<sup>1</sup> pneumonia	<sup>2</sup> pneumatics	<sup>3</sup> rheumatic	<sup>4</sup> rheometer	_____45

**DIRECTIONS:** Mark as you are told the number of the word that means the opposite or about the opposite of the first word.

SAMPLE:	E.					Correct Test	Correct Answer						
		1	2	3	4	Booklet	Mark	Sheet	Mark				
		little	1 blue	2 run	3 big	4 rich	3	E	E	1	2	3	4

**TEST 1 — SECTION C**

46. begin	1 free	2 end	3 tent	4 kite	_____46
47. color	1 blind	2 cold	3 cut	4 colorless	_____47
48. asleep	1 rebuild	2 awake	3 trolley	4 salmon	_____48
49. offer	1 jolly	2 ivy	3 refuse	4 ever	_____49
50. dry	1 moist	2 evil	3 alive	4 bid	_____50
51. married	1 near	2 accept	3 single	4 improve	_____51
52. knowledge	1 early	2 pain	3 par	4 ignorance	_____52
53. dull	1 bright	2 space	3 learn	4 dead	_____53
54. sharp	1 age	2 blunt	3 effect	4 youth	_____54
55. captive	1 tight	2 space	3 free	4 second	_____55
56. forbid	1 pension	2 swallow	3 wage	4 allow	_____56
57. ascend	1 descend	2 refuse	3 accept	4 moist	_____57
58. discourage	1 enthusiast	2 encourage	3 historical	4 league	_____58
59. success	1 ignorant	2 improve	3 failure	4 work	_____59
60. peak	1 ache	2 entire	3 bench	4 valley	_____60
61. wilt	1 meter	2 numb	3 point	4 blossom	_____61
62. ambitious	1 attorney	2 navigate	3 confuse	4 lazy	_____62
63. depart	1 arrive	2 near	3 depot	4 sale	_____63
64. prosperity	1 sheriff	2 depression	3 rustle	4 produce	_____64
65. coarse	1 channel	2 near	3 fine	4 lender	_____65
66. gorgeous	1 procure	2 plaster	3 pear	4 plain	_____66
67. pleasure	1 pain	2 deed	3 harm	4 mist	_____67
68. expenditure	1 explanation	2 necessity	3 receipt	4 hastily	_____68

**DIRECTIONS:** Mark as you are told the number of the word that means the same or about the same as the first word.

SAMPLE: F.	large	1 pretty	2 run	3 big	4 rich	Correct Test	F	Correct Answer					
						Booklet Mark		Sheet	1	2	3	4	
						3		F					

**TEST 1 — SECTION D**

69. touch	1 have	2 go	3 feel	4 run	_____	69
70. power	1 strength	2 wrong	3 turn	4 second	_____	70
71. thief	1 volcano	2 robber	3 thick	4 wriggle	_____	71
72. parade	1 seek	2 wind	3 procession	4 harm	_____	72
73. weather	1 hoarse	2 glad	3 feature	4 climate	_____	73
74. quarrel	1 pension	2 swallow	3 disagree	4 wage	_____	74
75. order	1 birth	2 jolly	3 down	4 arrange	_____	75
76. wilderness	1 jungle	2 learn	3 disorder	4 deed	_____	76
77. aid	1 bare	2 help	3 acre	4 meet	_____	77
78. passage	1 lender	2 near	3 channel	4 early	_____	78
79. melody	1 scribble	2 poverty	3 rider	4 music	_____	79
80. groan	1 moan	2 hurl	3 paste	4 grocer	_____	80
81. ruler	1 refuse	2 authority	3 moist	4 hoard	_____	81
82. brace	1 worse	2 bread	3 effect	4 support	_____	82
83. increase	1 strengthen	2 rebel	3 prefer	4 leather	_____	83
84. judgment	1 lesson	2 puddle	3 decision	4 junction	_____	84
85. survive	1 cut	2 vanish	3 remain	4 early	_____	85
86. consent	1 efficient	2 frown	3 hardly	4 permit	_____	86
87. agriculture	1 farming	2 clumsy	3 depress	4 traitor	_____	87
88. inform	1 prevent	2 disclose	3 rot	4 statue	_____	88
89. entreat	1 store	2 arrive	3 improve	4 plead	_____	89
90. novel	1 trophy	2 notable	3 unusual	4 value	_____	90

**STOP**

NOW WAIT FOR  
FURTHER INSTRUCTIONS

Sec. D Score  
(number right).....

**DIRECTIONS:** Read the following directions. Mark as you are told the number or letter of each correct answer.

**TEST 2—SECTION E**

91. By crossing out two letters, you can make **the** out of the word, **these**. Mark the number of the two letters which would be crossed out.  
1 se    2 th    3 he    4 te    \_\_\_\_\_91

92. Find the name of the smallest animal and mark its number.  
1 cat    2 dog    3 rat    4 goat    \_\_\_\_\_92

93. Some of the Roman numerals and their values are:  
IX=9    XIX=19  
          XX=20    XXI=21  
Mark the letter of the Roman numeral for 9.  
a XXI    b IX    c XIX    d XX    \_\_\_\_\_93

94. Mark the number of the eighth word in this sentence.  
1 word    2 in    3 fourth    4 line    \_\_\_\_\_94

95. Mark the letter which must be added to **hous** to make **house**.  
i        a        s        e        \_\_\_\_\_95

96. Mark the third letter of the last word in this sentence.  
e    a    n    r    t        \_\_\_\_\_96

97. Read the following names:  
**Arthur Bertha Mary Archie**  
Mark the number which shows the first letter of the boys' names.  
1 B        2 A        3 M        \_\_\_\_\_97

98. Read these numbers:  
6    3    4    8    5    2    1    9  
Mark the letter of the third number to the right of 4.  
a 2        b 1        c 9        d 6        \_\_\_\_\_98

99. The suffix *ish* can be added to some words to modify the meaning; such as baby, babyish. If the suffix *ish* is added to the word, book, mark the number that tells what the new word is.  
1 babyish    2 ish    3 book    4 bookish    \_\_\_\_\_99

100. Words ending with *e* generally drop the *e* before suffixes beginning with a vowel; such as guide, guidance. Mark the number of the word which has the suffix *ance* added to the word, **assurc**.  
1 assurance        2 guidance  
3 assurance        4 ance        \_\_\_\_\_100

**STOP** NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. E Score (number right).....

**DIRECTIONS:** Mark as you have been told the number or letter of each correct answer.

**TEST 2 — SECTION F**

101. The title is found in what part of a book?  
 1 beginning 2 middle 3 end \_\_\_\_\_101
102. The appendix is usually found in what part of a book?  
 1 beginning 2 middle 3 end \_\_\_\_\_102

✓ Read this list of words:

- |      |      |
|------|------|
| pay  | quit |
| bird | her  |
| kite | yard |
| ring | sale |

If the above words were arranged alphabetically,

103. her would come next after  
 1 bird 2 yard 3 kite \_\_\_\_\_103
104. pay would come next after  
 1 game 2 sale 3 kite \_\_\_\_\_104

✓ Look at the following and find the answers to items 105, 106, and 107.

Table of Contents

Chapter	Page
1. Corn and Its Cultivation.....	1
2. The Rubber Tree.....	21
3. The Mushroom Family.....	43
4. Wheat of the Grass Family.....	52
5. The Bean Family.....	69
6. Strong Man Oak.....	74

105. Mark the letter of the page which shows where "The Bean Family" begins.  
 a 43 b 52 c 69 d 74 \_\_\_\_\_105
106. Mark the number which shows what story begins on page 74.  
 1 Corn and Its Cultivation  
 2 Strong Man Oak  
 3 The Bean Family \_\_\_\_\_106

107. Mark the number which shows to which chapter the material on page 33 belongs.  
 1 2 3 4 5 \_\_\_\_\_107

✓ Look at this partial index and find the answers to items 108, 109, and 110.

INDEX

- Coffee: in Africa, 351; in Arabia, 379; in Brazil, 247; from Central America, 231; in Colombia, 252; countries leading in production of, 247; in East Indies, 394; in Ecuador, 254; in Madagascar, 351; in Paraguay, 266; in Puerto Rico, 210; from Venezuela, 250.
- Cold grasslands: where they are, 52. See also Grassland.
- Colon: 46, 232, 233.
- Colorado: beef cattle in, 179; cities of, 184; irrigation in, 179; minerals in, 176; sugar beets in, 187; vegetables and fruits in, 180.
- Colorado plateau: ruins of, 87; scenery of, 87.
- Colorado River: 183.

108. Mark the letter which shows on what page information concerning the Colorado River will be found.  
 a 8 b 183 c 87 d 179 \_\_\_\_\_108

109. Mark the letter which shows on what page information concerning coffee in Puerto Rico will be found.  
 a 351 b 250 c 210 d 247 \_\_\_\_\_109

110. Mark the letter which shows on what page information concerning minerals in Colorado will be found.  
 a 179 b 180 c 183 d 176 \_\_\_\_\_110

**STOP** NOW WAIT FOR FURTHER INSTRUCTIONS

Sec. F Score (number right).....



## TEST 2—SECTION G

✓ Read this story:

The leopard is a member of the cat family. His body color varies with the country in which he lives. He leaps upon other animals from the boughs of trees. He is hunted for his skin, which is used in the making of coats, rugs, and trimmings.

✓ Mark as you have been told the number of each correct answer. You may look back to find the answers.

111. The best title for the above story is  
1 Wild Animals 2 The Leopard  
3 Cats \_\_\_\_\_111
112. Leopards catch their prey by hiding  
1 on the ground 2 near a river  
3 in the boughs of trees \_\_\_\_\_112
113. His skin is  
1 useless 2 useful 3 ugly \_\_\_\_\_113
114. His body color is  
1 like his surroundings 2 plain  
3 always one color \_\_\_\_\_114
115. The leopard is  
1 tame 2 ugly 3 wild \_\_\_\_\_115
116. His home is in the  
1 forests 2 deserts 3 cities \_\_\_\_\_116

✓ Read this story:

A very large territory located in the Arctic Region of North America is called Alaska.

Alaska has a great variety of climate and surface features. The curving coast includes many inlets, straits, and bays. In the high mountains are snow fields and glaciers. There are large areas which have seldom been visited by white men.

Alaska is rich in minerals such as gold, silver, and copper. Salmon fishing, canning, and fur farming are profitable industries. Agriculture, oil, and coal have fine possibilities for future development.

✓ Mark the number of each correct answer. You may look back to find the answers.

117. The above story is about  
1 Arctic Regions 2 Alaska  
3 Large Territories \_\_\_\_\_117
118. Alaska's surface features are  
1 much the same all over  
2 plain  
3 of great variety \_\_\_\_\_118
119. Alaska's glaciers are found  
1 on plateaus  
2 in the mountains  
3 on the plains \_\_\_\_\_119
120. The climate of Alaska is  
1 changeable 2 very dry  
3 equatorial \_\_\_\_\_120
121. Choose the best statement:  
1 Alaska has a moderate climate  
2 Alaska has no industries  
3 Alaska has unsettled areas \_\_\_\_\_121

**GO**

RIGHT ON TO  
THE NEXT STORY

**GO**

RIGHT ON TO  
THE NEXT PAGE

**TEST 2 — SECTION G (Continued)**

✓ Read this story:

**Production of Rubber**

Rubber trees are found principally in South America, India, Central America, and Africa.

To obtain the latex, or sap, the tree is tapped by the making of a vertical, circular, or diagonal gash in the bark. A small vessel, either of metal or clay, is attached to the trunk of the tree, usually by means of clay or mud. Each evening the tapper collects the contents of his cups. These are emptied into larger cans.

The collected latex is poured into vats containing an equal volume of water. The rubber is coagulated or thickened by the action of dilute acetic acid. The rubber particles form thick, doughlike sheets that are put through several processes. Rolling, washing, and drying provide variations which give sheets of different colors and elasticity.

✓ Mark the number of each correct answer. You may look back to find the answers.

122. Rubber is obtained from  
 1 mines    2 trees    3 clay  
           4 minerals                      \_\_\_\_\_122

123. An acid used in rubber production is  
 1 nitric    2 hydrochloric  
           3 acetic    4 sulphuric                      \_\_\_\_\_123

✓ Read the six titles below. You are to select the one that would make the best title for each of the three paragraphs of the story.

**Titles**

1. Countries
2. Location of Rubber Trees
3. Collecting the Latex
4. Tapping the Trees
5. Changing Latex into Rubber
6. Pouring into Vats

124. The best title for the first paragraph is number  
 1    2    3    4    5                      \_\_\_\_\_124

125. The best title for the second paragraph is number  
 2    3    4    5    6                      \_\_\_\_\_125

126. The best title for the third paragraph is number  
 2    3    4    5    6                      \_\_\_\_\_126

The following things are mentioned in the story:

- Collecting the latex
- Mixing latex and water
- Coagulating the latex
- Tapping the tree

The order in which the above things were mentioned in the story is as follows:

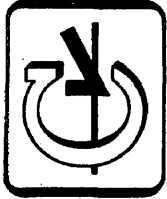
127. Collecting the latex was  
 1st    2nd    3rd    4th                      \_\_\_\_\_127

128. Mixing latex with water was  
 1st    2nd    3rd    4th                      \_\_\_\_\_128

129. Coagulating the latex was  
 1st    2nd    3rd    4th                      \_\_\_\_\_129

130. Tapping the tree was  
 1st    2nd    3rd    4th                      \_\_\_\_\_130

**STOP** NOW WAIT FOR FURTHER INSTRUCTIONS



# California Reading Test

## elementary form AA

GRADES  
4 - 5 - 6

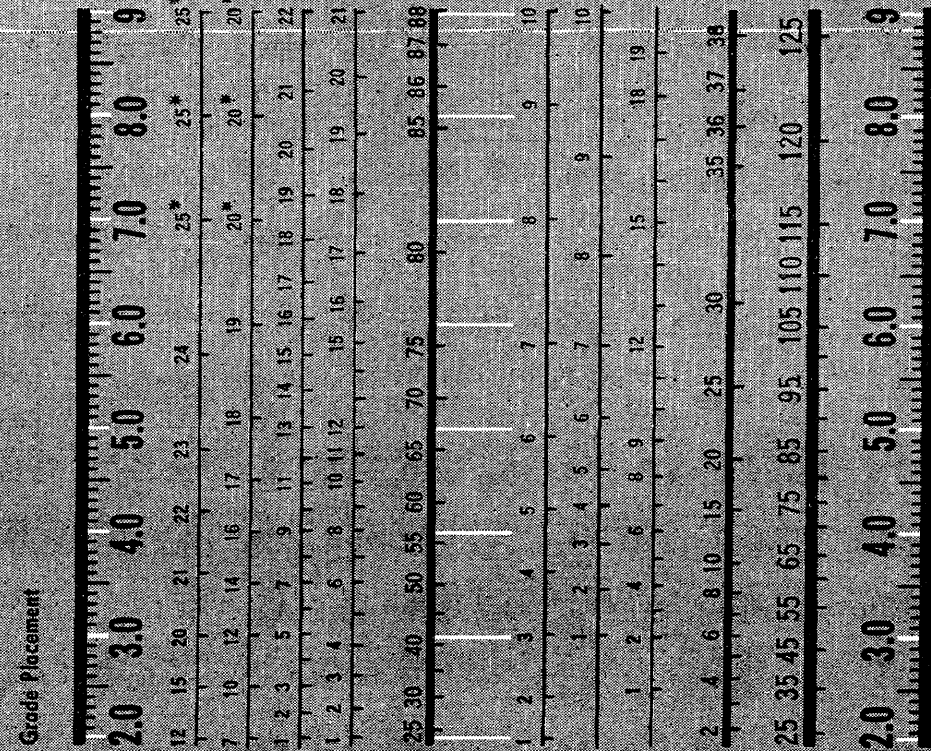
Occupation or Grade ..... Boy .. Girl  
 Name ..... Last ..... First ..... Middle .....  
 Date of Test ..... Month ..... Day ..... Year  
 Date of Birth ..... Month ..... Day ..... Year

DEvised BY ERNEST W. TIEGS AND WILLIS W. CLARK Examiner (.....) Pupil's Age (.....)

### DIAGNOSTIC ANALYSIS OF LEARNING DIFFICULTIES

- 1. Reading Vocabulary**
- A. WORD FORM:**
- 1-15 Lower case words
  - 16, 17, 18, 19 Capitals
  - 20, 21, 22, 23, 24, 25 Miscell. type faces
- B. WORD RECOGNITION:**
- 26, 29, 31 Gross differences
  - 27, 28, 30, 32, 45 Initial sounds or endings
- C. OPPOSITES:** 46-68 Basic vocabulary
- D. SIMILARITIES:** 69-90 Basic vocabulary
- 2. Reading Comprehension**
- E. FOLLOWING SPECIFIC DIRECTIONS:**
- 91, 95 Simple directions
  - 92, 93, 94 Direct, simple choice
  - 96, 97, 98 Defn. and direct.
  - 99, 100
- F. REFERENCE SKILLS:**
- 101, 102 Parts of book
  - 103, 104 Alphabetizing
  - 105, 106, 107 Table of contents
  - 108, 109, 110 Use of index
- G. INTERPRETATION OF MEANINGS:**
- 111, 117 Topic or central idea
  - 112, 113, 118 Directly stated facts
  - 119, 122, 123 Making inferences
  - 114, 115, 116, 120, 121 Organ of topics
  - 124, 125, 126 Summary of contents
  - 127, 128

### DIAGNOSTIC PROFILE (Chart Pupil's Scores Here)



See MANUAL for instructions on preparation of Diagnostic Profile and Diagnostic Analysis of Learning Difficulties.

\*When maximum score is achieved, plot the score which most nearly conforms to Total Reading Grade Placement.

# RECORD BOOKLET — *Form L*

## FOR THE REVISED STANFORD-BINET SCALE

as described in Terman and Merrill's Measuring Intelligence

No. ....

Series .....

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Name ..... Examiner ..... C.A. ....

Sex ..... Birthdate ..... Date ..... M.A. ....

School ..... Grade ..... I.Q. ....

Parent ..... Address .....

Birthplace ..... of father ..... of mother .....

Occupation of father ..... of mother .....

Race ..... Nationality of descent .....

### TEST BEHAVIOR

<b>Willingness</b>	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----	
	enthusiastic eagerness	enters actively into task	normal attitude because proper	disagreeable task	active objection
<b>Self-confidence</b>	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----
	extremely self-confident; relies on own ability	rather self-confident	neither distrustful nor entirely self-reliant	inclined to distrust own ability	extremely lacking in self-confidence; constantly distrustful of own ability
<b>Social confidence</b>	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----
	perfectly assured in personal contacts	rather confident	normal for age	rather shy	shy, reserved, reticent
<b>Attention</b>	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----	----- ----- ----- -----
	completely absorbed by task	little interference from distracting stimuli	normal; attention to outside stimuli does not impair efficiency	easily distracted by extraneous stimuli or by own ideas, but returns readily to task	abstracted; difficult to get and hold attention

### TEST SUMMARY

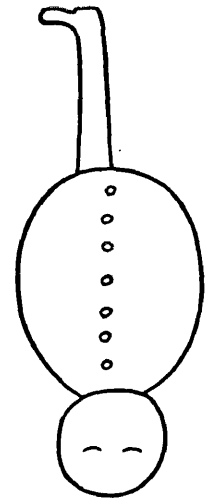
Yrs.	Mos.	Yrs.	Mos.	Yrs.	Mos.
II.....	.....	VI.....	.....	XIII.....	.....
II-6.....	.....	VII.....	.....	XIV.....	.....
III.....	.....	VIII.....	.....	A.A.....	.....
III-6.....	.....	IX.....	.....	S.A. I.....	.....
IV.....	.....	X.....	.....	S.A. II.....	.....
IV-6.....	.....	XI.....	.....	S.A. III.....	.....
V.....	.....	XII.....	.....	_____	_____
Time.....	.....			Total.....	.....

**HOUGHTON MIFFLIN COMPANY**

The Riverside Press Cambridge

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**YEAR III (6 tests, 1 month each; or 4 tests, 1½ months each)**

- 1. Stringing beads (4+) (2 min.) No. strung.....
- 2. \*Picture vocabulary (same as II, 5; II-6, 4; III-6, 2; IV, 1) (12+)
- 3. \*Block building: Bridge
- 4. \*Picture memories (1+) a) b)
- 5. Copying a circle (1+) a) b) c)
- 6. \*Repeating 3 digits (1+)  
a) 6-4-1..... b) 3-5-2..... c) 8-3-7.....

Alternate. Three-hole form board: Rotated (same as II-6, 6) (2+)

**Mos.**.....

**YEAR III-6 (6 tests, 1 month each; or 4 tests, 1½ months each)**

- 1. \*Obeying simple commands (3+)  
a) b) c)
- 2. \*Picture vocabulary (same as II, 5; II-6, 4; III, 2; IV, 1) (15+)
- 3. Comparison of sticks (3 of 3, or 5 of 6)  
a) b) c) d) e) f)
- 4. Response to pictures I (2+)  
a) Dutch Home  
  
b) Canoe  
  
c) Postoffice
- 5. \*Identifying objects by use (same as II-6, 1) (5+)
- 6. \*Comprehension I (1+)  
a) b)

Alternate. Drawing a cross

**Mos.**.....



**YEAR VI (6 tests, 2 months each; or 4 tests, 3 months each)**

1.\*Vocabulary (5+) No. words.....

2.\*Copying a bead chain from memory I (2 min.)

3. Mutilated pictures (4+)

*a)*

*b)*

*c)*

*d)*

*e)*

4.\*Number concepts (3+) *a)*

*b)*

*c)*

*d)*

5.\*Pictorial likenesses and differences (same as IV-6, 3) (5+)

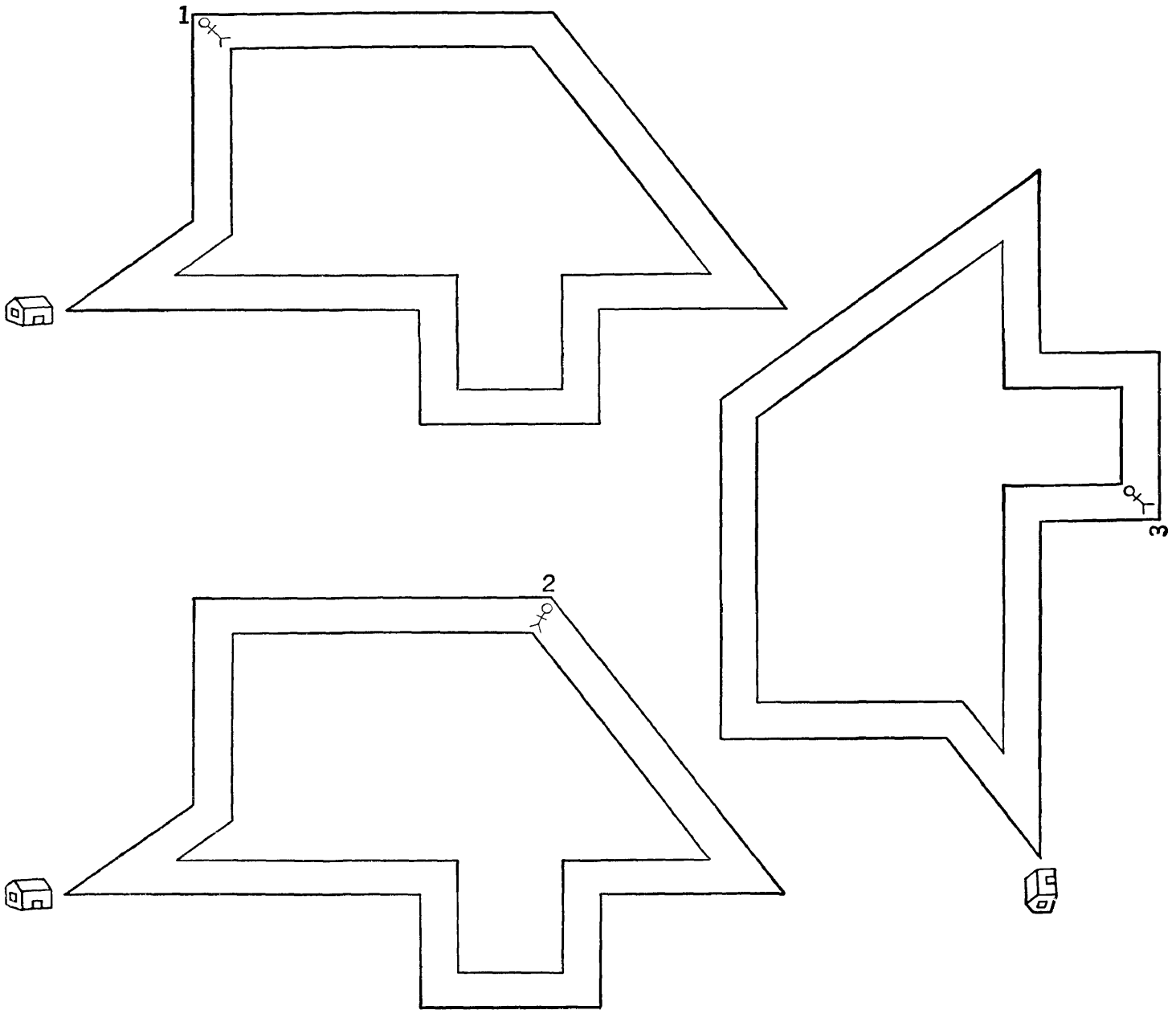
6. Maze tracing (2+) *a)*

*b)*

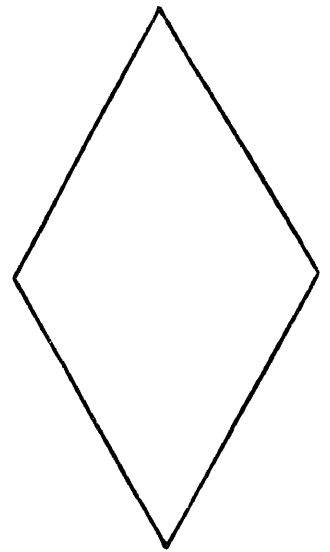
*c)*

*d)*

**Mos.**.....







**YEAR VII (6 tests, 2 months each; or 4 tests, 3 months each)**

1. Picture absurdities I (3+)

*a)*

*b)*

*c)*

*d)*

2. \*Similarities: Two things (2+)

*a)* Wood and coal

*b)* Apple and peach

*c)* Ship and automobile

*d)* Iron and silver

3. \*Copying a diamond (2+)

*a)*

*b)*

*c)*

4. Comprehension III (2+)

*a)*

*b)*

*c)*

5. \*Opposite analogies I (same as IV-6, 6) (5+)

*a)*

*b)*

*c)*

*d)*

*e)*

6. \*Repeating 5 digits (1+)

*a)* 3-1-8-5-9.....

*b)* 4-8-3-7-2.....

*c)* 9-6-1-8-3.....

**Mos.**.....

**YEAR VIII (6 tests, 2 months each; or 4 tests, 3 months each)**

1. \*Vocabulary (8+) No. words.....

2. Memory for stories: The Wet Fall (5+)

*a)* ..... *b)* ..... *c)* ..... *d)* .....

*e)* ..... *f)* .....

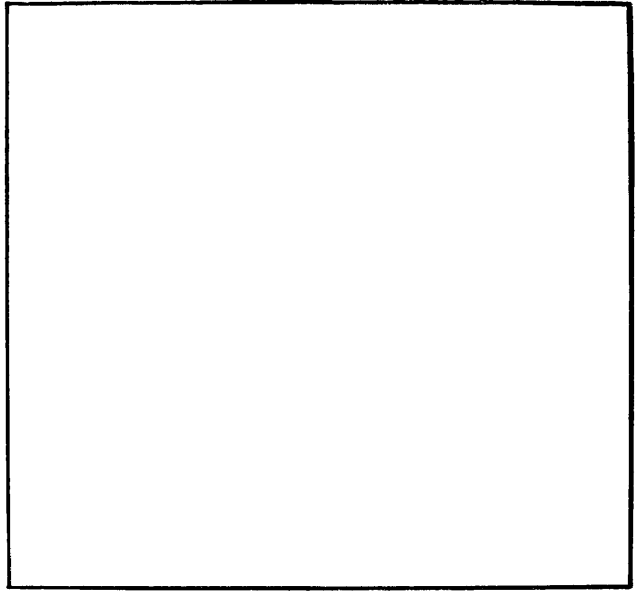
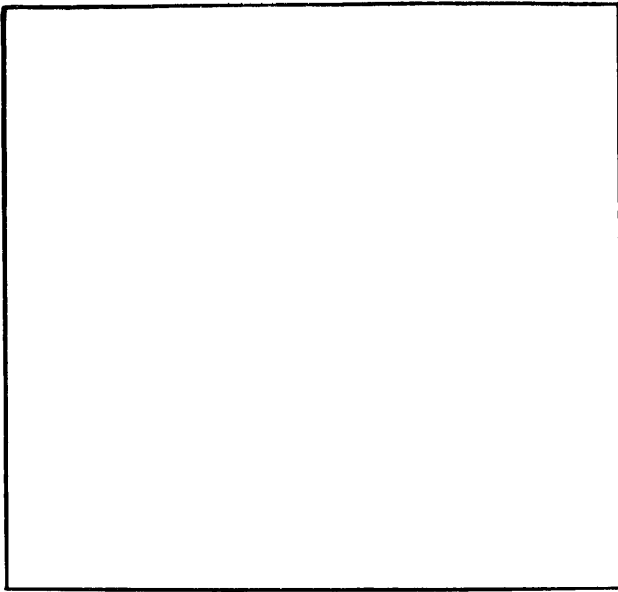
3. \*Verbal absurdities I (3+)

*a)*

*b)*

*c)*

*d)*



**YEAR VIII (Continued)**

- 4. \*Similarities and differences (3+)
  - a) Baseball — orange
  - b) Aeroplane — kite
  - c) Ocean — river
  - d) Penny — quarter

- 5. \*Comprehension IV (2+)
  - a)
  - b)
  - c)

- 6. Memory for sentences III (1+)
  - a) Fred asked his father to take him to see the clowns in the circus.
  - b) Billy has made a beautiful boat out of wood with his sharp knife.

**Mos.**.....

**YEAR IX (6 tests, 2 months each; or 4 tests, 3 months each)**

- 1. Paper cutting I (same as XIII, 3) (1+)                      **a)**                      **b)**

- 2. Verbal absurdities II (same as XII, 2) (3+)
  - a)
  - b)
  - c)
  - d)
  - e)

- 3. \*Memory for designs (same as XI, 1) (1+ or 2 with ½ credit each)
  - a)                      b)

- 4. \*Rhymes: New form (3+)
  - a)                      b)                      c)                      d)

- 5. \*Making change (2+)
  - a) 10-4.....                      b) 15-12.....                      c) 25-4.....

- 6. \*Repeating 4 digits reversed (1+)
  - a) 8-5-2-6.....                      b) 4-9-3-7.....                      c) 3-6-2-9.....

**Mos.**.....

**YEAR X (6 tests, 2 months each; or 4 tests, 3 months each)**

1. \*Vocabulary (11+) No. words.....

2. Picture absurdities II — Frontier Days

3. \*Reading and report (35 seconds, 2 errors, 10 memories)

Memories..... Time for reading..... Mistakes.....

New York | September | 5th. | A fire | last night | burned | several houses | near the center | of the city. | It took some time | to put it out. | The loss | was fifty thousand | dollars, | and seventeen | families | lost their homes. | In saving | a girl | who was asleep | in bed, | a fireman | was burned | on the hands.

4. \*Finding reasons I (2+)

a)

b)

5. \*Word naming (28 words in one minute)

6. Repeating 6 digits (1+)

a) 4-7-3-8-5-9..... b) 5-2-9-7-4-6..... c) 7-2-8-3-9-4.....

**Mos.**.....

**YEAR XI (6 tests, 2 months each; or 4 tests, 3 months each)**

1. \*Memory for designs (same as IX, 3) (1½+)

2. \*Verbal absurdities III (2+)

a)

b)

c)

3. \*Abstract words I (3+)

a) Connection

b) Compare

c) Conquer

d) Obedience

e) Revenge

4. Memory for sentences IV (1+)

a) At the summer camp the children get up early in the morning to go swimming.

b) Yesterday we went for a ride in our car along the road that crosses the bridge.

5. Problem situation

6. \*Similarities: Three things (3+)

a) Snake — cow — sparrow

b) Rose — potato — tree

c) Wool — cotton — leather

d) Knifeblade — penny — piece of wire

e) Book — teacher — newspaper

**Mos.**.....

**YEAR XII (6 tests, 2 months each; or 4 tests, 3 months each)**

- 1. \*Vocabulary (14+) No. words.....
- 2. \*Verbal absurdities II (same as IX, 2) (4+)
- 3. Response to pictures II: Messenger Boy

- 4. Repeating 5 digits reversed (1+)  
a) 8-1-3-7-9..... b) 6-9-5-8-2..... c) 5-2-9-4-1.....

- 5. \*Abstract words II (same as XIV, 6) (2+)  
a) Constant  
b) Courage  
c) Charity  
d) Defend

- 6. \*Minkus completion (same as S.A. I, 3) (2+) (5 min.)

Mos.....

**YEAR XIII (6 tests, 2 months each; or 4 tests, 3 months each)**

- 1. Plan of search
- 2. Memory for words (1+)  
a) Cow, sand, glass, chair, bell.  
b) Grace, truth, worth, peace, doubt.

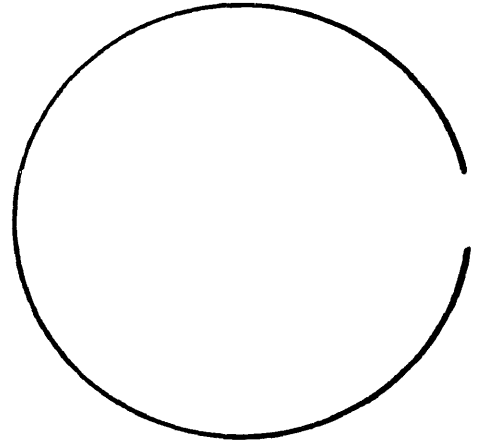
- 3. \*Paper cutting I (same as IX, 1) (2+)

- 4. \*Problems of fact (2+)  
a)  
b)  
c)

- 5. \*Dissected sentences (2+) (1 min. ea.)  
a)  
b)  
c)

- 6. \*Copying a bead chain from memory II (2 min.)

Mos.....



**YEAR XIV (6 tests, 2 months each; or 4 tests, 3 months each)**

- 1. \*Vocabulary (16+) No. words.....
- 2. \*Induction a) b) c) d) e) f) Rule:

- 3. Picture absurdities III: The Shadow

- 4. \*Ingenuity (same as A.A., 6) (1+) (3 min. ea.)  
a)  
b)  
c)

- 5. Orientation: Direction I (3+) a) b) c) d) e)

- 6. \*Abstract words II (same as XII, 5) (3+)

Mos.....

H U R R Y

H U R R Y

BDNPLNDF SUNP KMNFMOCEPMPMO  
C O M E T O L O N D O N

D P N F U P M P O E P O  
C O M E T O L O N D O N

**AVERAGE ADULT (8 tests, 2 months each; or 4 tests, 4 months each)**

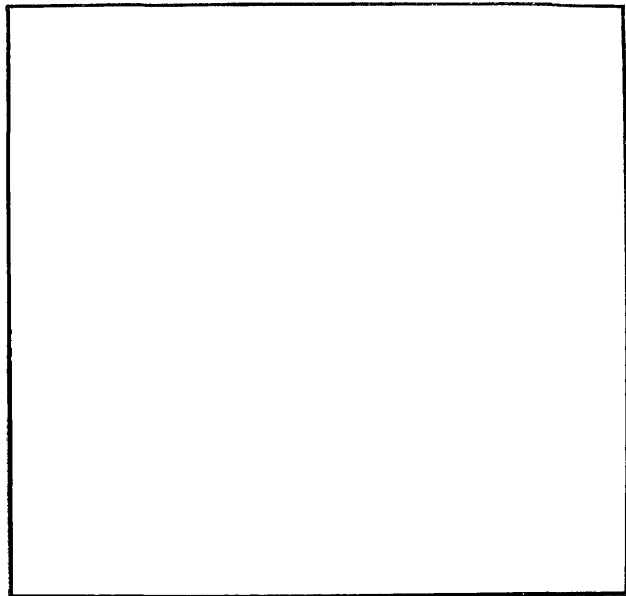
- 1.\*Vocabulary (20+) No. words.....
- 2.\*Codes (1½+) (3 min. ea.) a) b)
- 3.\*Differences between abstract words (2+)
  - a) Laziness and idleness
  - b) Poverty and misery
  - c) Character and reputation
- 4. Arithmetical reasoning (2+) (1 min. ea.) a) b) c)
- 5. Proverbs I (2+)
  - a)
  - b)
  - c)
- 6.\*Ingenuity (same as XIV, 4) (2+) (3 min. ea.)
- 7. Memory for sentences V (1+)
  - a) The red-headed woodpeckers made a terrible fuss as they tried to drive the young away from the nest.
  - b) The early settlers had little idea of the great changes that were to take place in this country.
- 8. Reconciliation of opposites (same as S.A. II, 5) (3+)
  - a) Heavy — light
  - b) Tall — short
  - c) Sick — well
  - d) More — less
  - e) Outside — inside
  - f) Asleep — awake

**Mos.**.....

**SUPERIOR ADULT I (6 tests, 4 months each; or 4 tests, 6 months each)**

- 1.\*Vocabulary (23+) No. words.....
- 2. Enclosed box problem (3+) a) b) c) d)
- 3.\*Minkus completion (same as XII, 6) (3+) (5 min.)
- 4.\*Repeating 6 digits reversed (1+)
  - a) 4-7-1-9-5-2.....
  - b) 5-8-3-6-9-4.....
  - c) 7-5-2-6-1-8.....
- 5.\*Sentence building (2+)
  - a) Benefactor — institution — contribution
  - b) Civility — requirement — employee
  - c) Attainment — fortune — misery
- 6. Essential similarities (2+)
  - a) Farming and manufacturing
  - b) Melting and burning
  - c) An egg and a seed

**Mos.**.....



**SUPERIOR ADULT II (6 tests, 5 months each; or 4 tests, 7½ months each)**

1. \*Vocabulary (26+) No. words.....

2. \*Finding reasons II (2+)

a)

b)

3. \*Repeating 8 digits (1+)

a) 7-2-5-9-4-8-3-6.....

b) 4-7-1-5-3-9-6-2.....

c) 4-1-9-3-5-8-2-6.....

4. \*Proverbs II (2+)

a)

b)

5. Reconciliation of opposites (same as A.A., 8) (5+)

6. Repeating thought of passage: Value of Life

Many opinions have been given on the value of life. | Some call it good, | others call it bad. | It would be nearer correct to say that it is mediocre, | for on the one hand our happiness is never as great as we should like, | and on the other hand our misfortunes are never as great as our enemies would wish for us. | It is this mediocrity of life which prevents it from being radically unjust.

**Mos.**.....

**SUPERIOR ADULT III (6 tests, 6 months each; or 4 tests, 9 months each)**

1. \*Vocabulary (30+) No. words.....

2. \*Orientation: Direction II (2+)

a)

b)

3. \*Opposite analogies II (2+) a)

b)

c)

4. Paper cutting II

5. \*Reasoning (5 min.)

6. Repeating 9 digits (1+)

a) 5-9-6-1-3-8-2-7-4.....

b) 9-2-5-8-4-1-7-3-6.....

c) 4-7-2-9-1-6-8-5-3.....

**Mos.**.....

- a) One cannot always be a hero,.....one can always be a man.  
 b) The streams are dry.....there has been little rain.  
 c) .....either of us could speak, we were at the bottom of the stairs.  
 d) He is.....well grounded in geography.....his brother,.....he is not so quick in arithmetic.

**MINKUS COMPLETION**

**VOCABULARY**

Score.....

1. orange.....
2. envelope.....
3. straw.....
4. puddle.....
5. tap.....
6. gown.....
7. eyelash.....
8. roar.....
9. scorch.....
10. muzzle.....
11. haste.....
12. lecture.....
13. Mars.....
14. skill.....
15. juggler.....
16. brunette.....
17. peculiarity.....
18. priceless.....
19. regard.....
20. disproportionate.....
21. shrewd.....
22. tolerate.....
23. stave.....
24. lotus.....
25. bewail.....
26. repose.....
27. mosaic.....
28. flaunt.....
29. philanthropy.....
30. ochre.....
31. frustrate.....
32. incrustation.....
33. milksop.....
34. harpy.....
35. ambergris.....
36. piscatorial.....
37. depredation.....
38. perfunctory.....
39. limpet.....
40. achromatic.....
41. casuistry.....
42. homunculus.....
43. sudorific.....
44. retroactive.....
45. parterre.....