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AN ANALYSIS AND EVALUATION OF STUDENT RESPONSE
ACTIVITIES INVOLVED IN THE MEASUREMENT
OF READING COMPREHENSION

A dissertation submitted to the Graduate
Faculty of the College of Education ,
University of Cincinnati, in partial
fulfillment of the requirements of
the degree Doctor of Philosophy
in Education.

April , 1 9 2 9

by

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INTRODUCTION

Statement and Nature of the Problem

The primary interest of this problem lies in the measurement of reading comprehension, so far as available existing reading tests are concerned. This thesis does not maintain that the objective standardized reading test is the sole effective measure of comprehension in reading. It does maintain, however, that the objective test is one of the most important measures of reading comprehension now in use.

This thesis will make inquiries into the methods or means used by existing available reading tests in securing a measure of reading comprehension, and from those inquiries undertake the solution of three major problems:

1. To determine, as far as possible, what methods or means have been used by the authors of reading tests in measuring the amount and accuracy of reading comprehension, with particular interest in paragraph units of reading content.

2. To determine, as far as possible, whether any

difference exists between the several "methods or means" in the effectiveness with which each measures comprehension.

3. To determine, as far as possible, which of the so-called "methods or means" best measures comprehension, or which combinations of "methods or means" best measures comprehension.

If the so-called "methods or means" be known as student response activities, the subject of this thesis may then be stated:

An analysis and evaluation of student response activities involved in the measurement of reading comprehension.

Since this problem is based upon the measurement of reading comprehension, it should be understood that in this thesis the term "reading comprehension" means "that ability of the reader correctly to assimilate, mentally, the thoughts presented in the reading content".

Chapter I

HISTORICAL BACKGROUND

In 1838, Horace Mann wrote in his Second Annual Report of the Secretary of the Board of Education, State of Massachusetts:

"Entertaining views of the importance of this subject (reading), , I have devoted especial pains to learn with some degree of numerical accuracy, how far the reading, in our schools, is an exercise of the mind in thinking and feeling, and how far it is a barren action of the organs of speech upon the atmosphere. The result is that more than eleven-twelfths of all the children in the reading-classes, in our schools, do not understand the meaning of the words they read. It would hardly seem that the combined efforts of all persons engaged could have accomplished more in defeating the true objects of reading." ¹

Charles H. Judd gives credit to this criticism by Horace Mann for being the first of the many inquiries into reading which today have produced a complete change in our very concept of reading. ² It is not the purpose here to trace minutely the change from the traditional concept to

¹ Mann, G.C. and Mann, Mary Tyler. Life and Works of Horace Mann. Lee & Shepard (1891), II, p. 508.

² Reading: Its Nature and Development. Supp. Ed. Monographs, Vol. II, No. 4, p. 4. 1918.

the modern. It should be stated, however, that the change has been a slow one. It was a long time after Horace Mann wrote his inquiry that men began to investigate the nature and processes of reading. W. S. Gray divides this development into three periods: ¹

1. The early period (1884-1910) in which are reported thirty-four studies related to reading in England and the United States. More than one-half of these investigations were related to laboratory studies in psychology and physiology. Other problems were: Children's interests, rate of adults' reading, rhythm in oral reading and historical development of school readers.

2. The transition period (1911-1915) marks the transfer to the broad interests of the scientific studies and a larger recognition of the classroom problem. This wide interest in the classroom came about because the early investigations had challenged the traditional methods. This period is transitional because in 1914-1915 two-thirds of the investigations dealt with the organization, standardization and application of reading tests. Investigations had been lifted out of the narrow field of laboratory technique into the broad field of the public school system.

¹ Sup. Ed. Monographs, No. 28, June, 1925, University of Chicago Press.

3. The current period (1915 ---) shows three characteristics:

- a. Tremendous number of studies in reading reported;
- b. The wide variety of problems commanding attention;
- c. The active participation of classroom teachers and school officers in studies of their own or as cooperatives in general studies.

If one statement were to be given which would characterize this change from the traditional to the modern concept of reading, it might be this: Reading no longer is considered a school subject; it is an activity. That reading is considered as an activity may be shown by numerous facts and authorities. Only two references need be cited here. The first is from "Educational Psychology" by Daniel Starch, in which are listed nine steps involved in the reading process: ¹

- 1. Perception upon the retina of the stimuli from the printed page;
- 2. The range of the field of distinct vision on the retina;
- 3. The range of attention in apprehending visual stimuli;

¹ The Macmillan Company, New York City, 1921, p.260.

4. The movement of the eyes;
5. The transmission of the visual impressions from the retina to the visual centers of the brain;
6. The establishment or arousal of association processes whereby the incoming impulses are interpreted;
7. The transmission of the impulses from the visual centers to the motor speech centers;
8. The transmission of motor impulses from the speech centers to the vocal cords, tongue, lips and related parts;
9. Execution of the movements of the speech organs in speaking the words.

Only the first six steps are involved in silent reading alone, but their very character describes activity, both physical (eye) and mental (brain).

The second reference is from "Reading: Its Psychology and Pedagogy", by John A. O'Brien, in which he states:

"The act of reading consists of two main psychophysical processes: (1) The ocular adjustments necessary to perceive the words as visual symbols, and (2) the arousal of the mental associations necessary to give meaning to the visual symbols." ¹

Today, there are reported each year numerous investigations relating to reading. They tap every conceivable phase: Method, content, testing, physical aspects, psychological aspects, etcetera. W. S. Gray has reviewed

¹ The Century Company, New York City, 1926, p.39-40.

these investigations. His first summary was published in 1925. In it he reported 436 investigations having been made previous to that year.¹ In 1926, he reviewed 73 investigations²; in 1927, he reviewed 56³, and in 1928 his summary included 113.⁴ These figures give an idea of the present concern and importance attached to the field of reading.

One part or phase of reading investigations, as they have been known during the last years, has been the desire to establish agencies through which might be determined the amount of gain or loss involved when certain procedures in reading were followed, and the desire to have standards or norms for comparisons between groups or between individuals.

Obviously, this new attitude towards reading has made demands. Thorndike expressed this feeling at the advent of the testing movement in reading. In 1914 he wrote:

"It is obvious that educational science and educational practice need more objective, more accurate

¹ Sup. Ed. Monographs, No. 28 (1925), University of Chicago.

² Sup. Ed. Monographs, No. 28, Sup. No. 1, (1926), University of Chicago.

³ Sup. Ed. Monographs, No. 28, Sup. No. 2, (1927), University of Chicago.

⁴ Sup. Ed. Monographs, No. 28, Sup. No. 3, (1928), University of Chicago.

and more convenient measures of (1) a pupil's ability to pronounce words and sentences seen, (2) a pupil's ability to understand the words and sentences seen, (3) a pupil's ability to appreciate and enjoy what we roughly call 'good literature', (4) a pupil's ability to read orally, clearly and effectively.* 1

The early reading tests attempted to fulfill the demands as expressed by Thorndike. Some of the first tests were interested only in speed; others were interested only in comprehension; while others were interested in both speed and comprehension. A few of the early tests, relating to silent reading, are named here, with a brief description of each.

1. The Starch Silent Reading Tests were developed prior to 1914. For each grade, Starch presented a reading selection and carefully recorded the number of words a pupil could read silently in a fixed amount of time. Standards were set for each grade IV to VIII, giving the number of words read per minute. At the same time, the Starch test attempted to measure comprehension by asking the student to reproduce in writing the content he had read.

2. The Thorndike Scale Alpha (1914) was developed as a visual vocabulary test in which the student examined several groups of words and then followed such instructions

¹ Teachers College Record, Columbia University, New York City, September, 1914.

as these:

- *a. Look at each word and write the letter F under each word that means a flower.
- b. Then look at each word again and write the word BAD under every word that means something bad to be or to do." ¹

This test was intended for grades IV to VIII inclusive.

3. In 1914, E. E. Oberholtzer of Tulsa, Oklahoma, reported the development of a test which measured comprehension by asking pupils to reproduce the thought of the content. But what now seems more important, that same year he reported the effect that a testing program had on a city school system. ²

4. In 1914, H. A. Brown of the New Hampshire Department of Instruction, reported his experiment in measurement of speed and comprehension. ³ In determining comprehension, Brown counted the number of ideas reproduced by the student after he had read the test content. He attempted to check speed, quantity, and quality.

5. The Kansas Silent Reading Tests, devised prior

¹ Thorndike, E.L. Thorndike Scale Alpha II, Bureau of Publications, Teachers College, Columbia University, New York City, 1920.

² 15th Yearbook of the National Society for the Study of Education, Part I, (1914), p. 138-140.

³ Measurement of the Efficiency of Instruction in Reading. Elementary School Teachers, XIV (June, 1914), p. 477-490.

to 1916 by F. J. Kelly, introduced an entirely different method of measurement. These tests attempted to be objective. For example:

Test I, Question No. 2: "Think of the thickness of the peelings of apples and oranges. Put a line around the name of the fruit having the thinner peeling.

Apples

Oranges" 1

These early tests all seem very simple in make-up when compared with our tests today. Starch, Oberholtzer, and Brown asked the pupil to reproduce in writing the thought of the content he had read. Thorndike asked him to indicate words of certain meaning. Kelly asked him to follow certain directions, dependent upon his interpretation of the content read. These tests are just a sampling of the earlier tests, but they indicate the simplicity of the pioneer efforts in measuring reading comprehension.

Present day tests involve many elements. In comparison with the earlier tests, they seem quite comprehensive and complex. The "idea-count" and reproduction methods are no longer used. Today, the Thorndike visual vocabulary test would not be considered a reading test, but a vocabulary test. The Kansas Silent Reading Test today is

¹ Kelly, F.J. Kansas Silent Reading Tests, Kansas State Normal School, Emporia, Kansas, 1916.

considered as much a test of ability "to do" as a test of ability "to comprehend". In place of these tests, schools are using tests which are divided into numerous parts. One recent test is divided into seven different sections,¹ each section to measure comprehension by a different phase of reading. Another recent test, used in a nation-wide survey, asks the student to respond or satisfy seventy items based upon reading content presented in small and large units.²

The aims of the early tests were partially the same as those of today, namely, to secure a measure of the student's comprehension and to establish standards or norms. However, W. S. Gray realized the shortcomings of the earlier tests, for in 1917 he wrote:

"The position taken in this monograph is that the mental processes involved in getting meaning are varied and complex. Each of the tests mentioned above measures certain phases of comprehension. A great variety of methods may and should be used in a thoroughgoing test of one's ability to get meaning. Neither a reproduction test, nor answers to questions, nor Kelly's test, nor all combined, serve as a complete test of comprehension."

In this quotation, Gray seems to contest the adequacy of the measurement value of the early tests in reading. His

¹ Sangren-Woody Reading Test, World Book Company, 1927.

² Public School Achievement Test, Public School Publishing Company, Bloomington, Illinois, 1928.

³ Studies of Elementary School Reading Through Standardized Tests. Sup. Ed. Monographs, No. 1, (1917), p.16.

statement touches one phase which is of interest to the problem of this thesis, namely, "A great variety of methods may and should be used in a thoroughgoing test of one's ability to get meaning."

It is the purpose of this problem to inquire into those methods which have been used in tests attempting to take a measure of ability to get meaning, or ability to comprehend. The problem will be limited to those methods used in reading paragraph units and will proceed first with an examination of all tests which have been developed for the measurement of reading.

Summary

One of the earliest critics of the traditional method of teaching reading was Horace Mann. He stated that it seemed to him as if all factors in the school were combined to defeat the real purposes of reading. Many years passed before any investigations and practices were evolved which might throw accurate information upon what reading and the reading process are.

Today, we look upon reading as an activity and not as a school subject.

There are three stages in the growth from the traditional concept to the modern period. The first has been called the early period, 1884-1910, wherein all investigations

were purely laboratory experiments, and chiefly psychological in nature. The second period, 1910-1915, has been called the transition period in which the findings of the laboratories were applied to the field of teaching reading in the public schools. The third period is the present one which may be characterized by the very wide participation of public school people in the investigations concerning reading.

During the transition period, objective and standard reading tests made their appearance. The earliest tests were simple, when compared with those of today. Present day tests involve many elements or means of measurement. It is the aim of this experiment to inspect these means, and inquire into the effectiveness with which each measures comprehension of paragraph reading.

Chapter II

ANALYSES OF READING TESTS

In Chapter I were mentioned a few of the earliest attempts at measurement of silent reading. From this point forward, consideration will be given only to those tests which at some time have been published for distribution. Listed chronologically, by their dates of publication, the earliest tests are:

1. Starch Reading Test, 1914
2. Gray Silent Reading Test, 1915
3. Holmes Silent Reading Test, 1915
4. Jones Scale for Teaching and Testing Elementary Reading, 1915
5. Kansas Silent Reading Tests, 1915
6. Starch Measurement of Efficiency in Reading, 1915
7. Brown Silent Reading Test, 1916
8. Fordyce Scale for Measuring Achievements in Reading, 1916
9. Courtis Research Tests in Silent Reading, 1917.

Thus the movement, once started, quickly developed

until there appeared several new tests annually. The period of the war years shows a decline in production of new tests. However, during these years there was published the Illinois Examination. One section was given to reading, which has been known as the Monroe Standardized Reading Test.

Beginning with the year 1920, new reading tests again were published with several additions each year until now, excluding literature, English, and vocabulary tests, there can be named sixty-eight so-called objective reading tests developed in the United States. If from this number are subtracted those intended for use solely in the lower primary grades, viz., first and second grades, and those which are now not available or are for special groups, there still can be named forty-six silent reading tests, all attempting in some measure to estimate a pupil's ability to comprehend the material or content which he reads.

Pupil Performance

One might indulge in this very worthy question: If there now are, or have been, a total of sixty-eight so-called objective tests which attempt to measure reading comprehension, by what means have these tests attempted to secure this measurement? The answer is comparatively simple, viewing it in a general way: By determining the amount and accuracy of

student performance, given in response to situations set up by the test(s) before, in, with, or following the reading of the content material. This has been very ably named and described in the following quotation from Monroe:

"We can know of mental ability only as it is manifested in some performance. Ability is ability to do. . . . It has been contended that we are not able to measure mental ability, that we can measure only performance. . . . For every performance there is a corresponding degree of ability." ¹

What reading tests have attempted to do, then, is to offer content selections to be read and then present situations which are to be satisfied by student performance or what herein is called "student response activity."

Some tests ask for only one kind of student response, e.g., the Chapman Unspeeded Reading Tests ask the student to cross out the one word in each paragraph unit whose meaning is incongruous to the remaining paragraph content; or the Gray Silent Reading Test asks questions each of which is answered from memory, the answer having been given directly in the content which was removed before the questions were presented to the student. Other tests offer just two types of student response situations, while still others offer numerous types. The Haggerty Reading Test offers eleven

¹ Monroe, W. S. Theory of Educational Measurement, Houghton Mifflin Company, 1923. p. 19.

different types, the Public School Achievement Test offers twelve different types, etcetera.

Choice of Tests for this Problem

Obviously, it has been necessary to analyze, carefully and minutely, each of the forty-six reading tests available for one or more of the grades III to XII inclusive. Grade III was selected as the lower limit since at that stage there should be definite progress in the mastery of the desired habits of good reading,¹ and where the beginning of extensive silent reading for the average student certainly should be evident.²

Grade XII was selected as the upper limit for two obvious reasons: (1) Those tests for use with the college grades are few and of very recent development; (2) many of them are for combined high school and college use. Upon analysis, the tests for college use alone offer no new student response activities beyond those included in the analyses herein described. Those tests intended for use in both high school and college have been included in the forty-six tests of this analysis.

¹ 24th Yearbook, Public School Publishing Company, Bloomington, Illinois (1925). Chapter III, p. 458.

² Reed, Homer B. Psychology of Elementary School Subjects, Ginn and Company (1927). Chapter VI, p. 72.

Vocabulary tests which offer situations of pure word matching, and word meaning alone, are of peculiar type. These tests, along with objective tests in English and English literature, have been omitted for, although they may be related to the field of reading, they are not of themselves and by intent reading tests. Many reading tests contain content material drawn from the field of literature, and many contain phases of vocabulary testing. These phases, therefore, have not been omitted even though tests whose sole purpose lay in the above are ruled out.

Following are listed the primary reading tests and the special tests omitted from the analysis. The primary tests are:

1. Baltimore Reading Maturity Test
2. Brueckner-Heylman First Grade Diagnostic Reading Test
3. Gates Primary Reading Test
4. Jones Scale for Teaching and Testing Elementary Reading
5. Minneapolis Primary Reading Test
6. Philadelphia Silent Reading Test
7. Pressey First Grade Attainment Scale
8. Pressey First Grade Reading Vocabulary
9. Pressey Second Grade Attainment Scale

10. Seattle First Grade Reading Test
11. Starch Measurement of Efficiency in Reading
12. Watkins Silent Reading Tests for Beginners

The special tests, omitted from this analysis for various obvious reasons, are listed herewith. The reason for elimination from this study is given in each case:

1. The Bolenius Diagnostic Tests for Second and Third Grade Reading accompany the definite study of the Bolenius Readers, and are based solely upon the content of these readers. They would be impractical for use where Bolenius readers are not used.
2. The Boston Research Tests in Silent Reading for grades IV to VIII are unavailable for use outside the Boston City School District, and at present are unobtainable.
3. The Illinois Diagnostic Study Tests are solely for college use.
4. The Illinois Examination is included in the Monree Reading Tests.
5. The Individual Attainment Scale is for clinical use in diagnosing special cases.
6. The Iowa Comprehension Test is intended solely for use with college freshmen.
7. The Merrill Scale for Individual Measurement is for use with special classes.
8. The Minnesota Reading Scale, Beta, is out of print and is no longer obtainable.
9. The Pressey Scale of Attainment, II, is a composite test. The reading section deals only with vocabulary.

10. Woody Silent Reading Test is now included in the Sangren-Woody Reading Tests which are described in detail in this analysis.

Securing Desired Tests

The first problem was to secure copies of all available tests. This required investigating every known source. The Bibliography of Tests, published by Indiana University¹, offers the most complete single list of reading tests and was of great help, but it was found to be incomplete. The list herein given is not claimed as containing all tests ever published or used. To our knowledge, it contains all available tests. Several reading tests are now in the process of construction and within a few months undoubtedly will be published. Such tests are not given herein.

General View of the Analysis

The analysis for response activities was not started "hit-or-miss" or by taking the tests in alphabetical arrangement. The ten most prominent and popular reading tests, as indicated by volume of sales to the public schools, were first analyzed. The activities found in these ten tests covered nearly the whole field of student response activities.

¹ Bulletin of the School of Education, Indiana University, Vol. IV, No. 2 (1927).

It soon was evident that certain activities were recurring again and again, and that if frequencies were tabulated, they would dominate the field. It also was evident that the response activities fell in large general groups, with subdivisions varying from each other by only a shade. These facts are plainly seen in the outline of the response activities. The frequencies of recurrence are reflected by the number of tests using each type of response activity.

The very wide range of activity situations which test authors have used may be realized when the total of thirty-nine distinct activity situations is given. This means that thirty-nine ways or means have been used in attempting to secure measures of the reader's comprehension. Some of these types were more or less closely related; but the fact that nearly forty distinct response activities have been used, shows plainly that the measurement of comprehension has been attempted through many varieties of student performance.

In analyzing the several forms of tests offering two or more forms, one is attracted by the fact that in many tests the type and number of different response activities per form usually is not held constant. However, a few tests do hold these constant. Evidently different activities presented in opportune arrangement have had equal

resulting weight in the measurement of comprehension.

The general response activity groups are these:

Type "T". Activities based upon giving thought stated directly in content.

Type "U". Activities based upon giving thought implied in content.

Type "V". Activities based upon determining whether statements are true or false.

Type "W". Activities based upon following directions.

Type "X". Activities based upon selecting words of similar or synonymous meaning.

Type "Y". Activities based upon recognition of word or content meaning in illustration(s).

Type "Z". Activities of miscellaneous character, not divisible into smaller units.

Details of the Test Analysis

The following is a detailed outline of each of these general types, with the various sub-divisions found:

Type "T". Student response activities based upon giving thought stated directly in content:

1. Question ¹, write answer found directly in content.
2. Question, answer by indicating word or statement (multiple choice) found directly in the content.

¹ In this analysis, the terms "question", "by direction", etcetera, mean that the activity situation was given in the form of a question, a statement of direction, etcetera.

3. By direction, indicate a word (multiple choice) found directly in the content.
4. By direction, indicate best-fitting statement (multiple choice) found directly in the content.
5. By direction, write or indicate a word(s) or statement(s), not multiple choice, found directly in the content.
6. Sentence completion, indicate a word (multiple choice) found directly in the content.
7. Sentence completion, indicate a statement (multiple choice) found directly in the content.
8. Sentence completion, write missing word, not multiple choice, found directly in the content.

Type "U". Student response activities based upon giving thought implied in the content:

1. Question, write answer implied in content meaning; may include simple "yes" or "no".
2. Question, answer by indicating word (multiple choice) implied in content meaning.
3. Question, answer by indicating statement (multiple choice) implied in the content.
4. Question, answer by indicating word or statement (multiple choice) implying paragraph meaning as a whole.
5. By direction, indicate a word (multiple choice) implied in the content meaning.
6. By direction, indicate best-fitting statement(s) (multiple choice) implied in content details.
7. By direction, indicate word or statement(s) (multiple choice) implying paragraph meaning as a whole.

8. Sentence completion, indicate a word (multiple choice) implied in content meaning.
9. Sentence completion, indicate a statement (multiple choice) implied in content meaning.
10. Sentence completion, simple, not related to any previous content, implied meaning, may be multiple choice.
11. Sentence completion, write missing word, meaning implied in the content, not multiple choice.

Type "V". Student response activities based upon determining whether statements are true or false:

1. Indicate true statement or statements.
2. Indicate false statement or statements.
3. Indicate for each statement, true or false, or not known.

Type "W". Student response activities based upon following directions:

1. Follow directions, simple and direct. This type may involve picture completion.
2. Follow directions, dependent upon interpretation of content meaning.

Type "X". Student response activities based upon selecting words of similar or synonymous meaning:

1. Select or give a word or statement from the content synonymous with a given word or statement.
2. Select or give a word or statement synonymous with a word or statement given in the content.

3. Word matching, on their own meanings.

Type "Y". Student response activities based upon recognition of word or content meaning in illustrations:

1. Indicate pictures illustrating events true or relevant to content.
2. Indicate pictures illustrating events not true or irrelevant to content.

Type "Z". Student response activities of miscellaneous character:

1. Indicate a word in a sentence whose meaning is incongruous with remainder of content.
2. Indicate an extra and irrelevant word in a sentence.
3. Answer question from previous experience.
4. Answer question or check statement from own information by "yes" or "no".
5. Indicate a statement (multiple choice) of the best predictive thought.
6. Completion, build a new theme by supplying missing words.
7. Organize thoughts into a regular order.
8. Give objects or thoughts to which given words refer.
9. Determine whether or not the content contains a certain definite idea or fact.

It frankly must be admitted that decisions, as to the exact type and sub-type into which a few student response

activities of some tests should be classified, were difficult to make. There were two reasons for this difficulty: (1) Certain sub-types vary by only a shade of difference, and (2) certain tests so present a few activity situations that they might be classified under more than one sub-type. This was particularly true where the situations were involved and not clearly stated. The writer wishes to point out that all such activity situations were more or less arbitrarily classified under the general type and sub-type which they seemed best to fit. They were not credited under more than one type.

Key to Legend

The analyses of the forty-six tests follow. A short description of each test is given, plus statements of the response activities involved. Each activity is identified by a key, giving its location according to the outline. If the key shows a small "a", the significance is that the content material had been removed before the response activity was presented to the student. Thus, for example, T-1a, in the Adams Silent Reading Tests description, indicates that the activity involved belongs to general Type T, number 1, and that the content had been removed before the student satisfied the response activity situation

presented. Or, in item IV in the Pressey Diagnostic Reading Test, X-3 means that the student response belongs to general Type X, response number 3. Since there is no small "a", the reading content was not removed before the student satisfied the test situation. Throughout these analyses, the figure (m-ch) is used. The meaning of this abbreviation is "multiple choice".

Detailed Analyses of Forty-Six Tests in Silent Reading ¹

I. The Adams Silent Reading Test

The Adams Silent Reading Test was first published in 1920. It is intended for use in grades I to VIII inclusive. Each grade is given a separate selection to read silently. After reading, each student is asked ten questions. Grades I and II are asked these questions orally by the examiner, who then writes the student answers. Grades III to VIII write answers to the ten questions given on their selections. In all cases, the selections read are concealed from view before the questions are given. All questions are based upon the content read. All student responses are of one

¹ Data, giving the names of authors and publishers of each of these tests, are found in the Appendix, p. i to vii inclusive.

type:

1. Question asked, write answer found directly in content. (T-1a) ¹

II. The Burgess Scale for Measuring Ability in Silent Reading

The Burgess Scale for Measuring Ability in Silent Reading was first published in 1920. It is intended for use in grades III to VIII inclusive. Each form consists of twenty reading paragraphs each of whose content is based upon an illustration which accompanies each paragraph. In each paragraph the student is instructed to do certain definite things with reference to the illustration. All student responses are of one type:

1. Follow directions, simple and direct. (W-1)

III. Chapman-Cook Speed of Reading Test

The Chapman-Cook Speed of Reading Test was first published in 1923. It is intended for use in grades IV to VIII. The test consists of thirty reading paragraphs, each one of which has in the latter part one word whose meaning is incongruous with the previous paragraph content. All student responses are of one type:

¹ See page 26, this thesis, for significance of key to legend.

- 1.. Indicate, by crossing out in each paragraph, the one word whose meaning is incongruous with the preceding paragraph content. (Z-1)

IV. Chapman Unspeeded Reading-Comprehension Test

The Chapman Unspeeded Reading-Comprehension Test was first published in 1925. It is intended for grades V to XII inclusive. It consists of thirty-one reading paragraphs, each one of which contains a word in the latter part whose meaning is incongruous with the previous content of the paragraph. All student responses are of one type:

1. Indicate, by crossing out in each paragraph, the one word whose meaning is incongruous with the preceding paragraph content. (Z-1)

V. Courtis Standard Research Tests, Silent Reading

The Courtis Standard Research Tests in Silent Reading were published in 1917. They are intended for grades II to VIII inclusive. Students read the complete story through. From this part of the test the rate of reading is obtained. The second part of the test offers the paragraphs of the story again, but each paragraph is followed by five questions, answers to which are dependent upon the paragraph content. The students need not read the paragraphs in the second part

of the test if they remember the content of the story when read in the whole. In all, there are seventy questions, each answered by "yes" or "no". All student responses fall into one of these two types:

1. Answer questions by "yes" or "no", answer implied from reading content. (U-1)
2. In some instances, these responses are based upon determining whether or not the content contained a certain definite idea or fact. (Z-9)

VI. The Dearborn-Westbrook Reading Tests

The Dearborn-Westbrook Reading Test was first published in 1920. It is intended for grades IV to VI inclusive. Students read a story through. On succeeding pages they are asked to answer questions, fill in missing words in a sentence-completion section, and mark as "correct" or "wrong" certain given illustrations, all based upon the content read. The test also offers a short section of sentences, with the words not spaced but run together. Student responses include the following types:

1. Question, write the answer taken directly from the content. (T-1a)
2. Sentence completion, missing words taken direct from the content. (T-8a)
3. Question, write the answer implied in the content. (U-1a)
4. Sentence completion, missing word implied in content. (U-11a)

5. Indicate pictures illustrating events true or relevant to content. (Y-1a)
6. Indicate pictures illustrating events untrue or irrelevant to content. (Y-2a)
7. Question, answer "yes" or "no" from own information. (Z-4)

VII. Denver Diagnostic Reading Tests

The Denver Diagnostic Reading Tests were first published in 1927. They are intended for use with grades III to VI inclusive. The tests consist of three divisions: One of recreational reading, two of work type reading. Each division is composed of twelve paragraphs. Following each paragraph the student is called upon to satisfy one, two, or three situations. These situations are of two general types: (1) Giving thoughts contained directly in the content, and (2) giving thoughts implied in the content. In detail, the student responses are:

1. Question asked, answer by indicating word (m-ch) ¹ used directly in the content. (T-2)
2. Sentence completion, indicate a word (m-ch) given directly in the content. (T-6)
3. Sentence completion, indicate a statement (m-ch) given directly in the content. (T-7)
4. Question asked, answer by indicating word (m-ch) implied in content. (U-2)

¹ See page 26, this thesis, for significance of key to legend.

5. Question asked, answer by indicating statement (m-ch) implied in content. (U-3)
6. Question, answer by indicating word or statement implying paragraph meaning as a whole. (U-4)
7. Sentence completion, indicate a word (m-ch) implied in content. (U-8)
8. Sentence completion, indicate a statement (m-ch) implied in content. (U-9)

VIII. The Detroit Examination in Reading

The Detroit Examinations in Reading were developed in 1922-23. In all, the tests cover usage in grades I to IX inclusive. Tests 2, 3, and 4 are to be used from grades III to IX. These tests are built upon paragraph reading. Each test consists of twelve paragraphs, following each of which are two questions. The responses are of two general types: (1) Giving a thought stated directly in the content, and (2) giving a thought implied in the content. Test 6 is for use in grades III to VIII. This is a vocabulary test, built upon sentence completion, not based upon any previous content. The student responses are of these types, considering only Tests 2, 3, 4 and 6:

1. Question asked, answer by indicating word (m-ch) used directly in content. (T-2)
2. Sentence completion, indicate a word (m-ch) used directly in content. (T-6)

3. Question asked, answer by indicating word (m-ch) implied in content. (U-2)
4. Question asked, answer by indicating a word or statement (m-ch) implying paragraph meaning as a whole. (U-4)
5. Sentence completion, indicate a word (m-ch) implied in content. (U-8)
6. Sentence completion, simple, not related to any previous content, implied meaning, (m-ch). (U-10)

IX. Detroit Reading Tests

The Detroit Reading Tests were published in 1927. They are intended for grades II to IX inclusive. Each test contains twelve paragraphs. Each paragraph is followed by two situations which the student is called upon to satisfy. These situations involve giving a thought used directly by the content or implied in the content. Specifically stated, the student responses are these:

1. Question, answer by indicating a word (m-ch) used directly in the content. (T-2)
2. Sentence completion, indicate a word (m-ch) used direct in the content. (T-6)
3. Question, answer by indicating a word (m-ch) whose meaning is implied in content. (U-2)
4. Sentence completion, indicate a word (m-ch) whose meaning is implied in content. (U-8)

**X. Fordyce Scale for Measuring Achievements
in Reading**

The Fordyce Scale for Measuring Achievements in Reading was published in 1916. It is intended for use in grades III to IX inclusive. The students are handed a short selection of several paragraphs to read once. The selection is removed and a separate sheet of several questions is given each student. The student proceeds to write the answers to the questions, from memory, all based upon the content read. Test I contains fourteen questions; Test II contains twenty questions. All student responses are of one type:

1. Question asked, write answer directly from paragraph content. (T-1a)

**XI. Fordyce Test for Measuring Ability in
Reading**

The Fordyce Test for Measuring Ability in Reading was published in 1923. It is intended for use in grades VI to IX inclusive. In make-up, it is very similar to the Fordyce Scale. The students are given a selection of several paragraphs to read. They read the selection through twice. Ten questions are then given. These are based upon the content of the selection read. The answers are given from what the

students remember. All student responses are of one type:

1. Question asked, write answer directly from paragraph content. (T-1a)

XII. Gates Silent Reading Test

The Gates Silent Reading Test was published in 1926. It is intended for grades III to VIII inclusive. The test is divided into four types: (1) General significance; (2) predicting outcomes; (3) reading of directions; (4) noting details. The student responses are of four types:

1. Question, answer by indicating word (m-ch) found directly in content. (T-2)
2. Question, answer by indicating thought (m-ch) implying content meaning as a whole. (U-7)
3. Follow directions dependent upon interpretation of content meaning. (W-2)
4. Indicate a statement (m-ch) of the best predictive thought. (Z-5)

XIII. Gray Silent Reading Test

The Gray Silent Reading Test was published in 1915. It is intended for use from grades II to VIII inclusive. The student is asked to reproduce the story and to satisfy questions whose answers are found in the content. The content is concealed before the questions are asked. The student response used is:

1. Question asked, write answer found directly in content details. (T-1a)

XIV. Haggerty Reading Examination

The available tests of the Haggerty Reading Examination were published in 1919 and 1921. The first test is intended for use in grades I to III inclusive. The third test is for use in grades VI to XII. The second test is not published as yet. In the first test, students are asked to follow directions in various ways and to answer questions from their own information. In the third test, students are called upon to do numerous things. This test has a section of word-matching, one of answering questions from own information, and a third section of paragraph reading. In detail, the student responses used in the Haggerty Reading Examination are these:

1. By direction, indicate a word (m-ch) used directly in content. (T-3)
2. Sentence completion, indicate a statement (m-ch) given directly in content. (T-7)
3. By direction, indicate a word (m-ch) implied in the content. (U-5)
4. Sentence completion, indicate a word (m-ch) implied in content. (U-8)
5. Sentence completion, indicate a statement (m-ch) implied in content. (U-9)
6. Indicate true statement or statements. (V-1)
7. Indicate false statement or statements. (V-2)

8. Follow directions, simple and direct. This may involve the use of illustrations. (W-1)
9. Follow directions, dependent upon interpretation of content meaning. (W-2)
10. Word matching, matching words in their own meanings. (X-3)
11. Question asked, answer by "yes" or "no" from own information. (Z-4)

XV. The Holmes Reading Test

The Holmes Reading Test is intended for use with grades II to VIII inclusive, and was published in 1915. The students are given a short selection of several paragraphs to read. Following this, they are given a number of questions, each one of which is based upon the reading content and which is to be answered from memory. The student responses are all of one type:

1. Question asked, write answer from memory as given directly in the content. (T-1a)

XVI. The Indiana Composite Achievement Test

The Indiana Composite Achievement Test was published in 1927. One section of the test is devoted to reading. The first two parts of the reading section are given to short articles of several paragraphs each. Following each selection are ten statements each of which is to be judged

true, false, or not known. The last part of the reading section is devoted to sentence completion involving word matching. The first seventy items in this section are general, the remaining thirty being devoted to information on literature courses and are excluded in this analysis, which is based upon the 1927 edition. The student responses are of these types:

1. Indicate, for each statement given, whether it is true, false, or not known. (V-3)
2. Word matching, on own meanings (m-ch). (X-3)

XVII. Iowa Silent Reading Tests

The Iowa Silent Reading Tests were published in 1927. They are intended for use in grades VII to XII inclusive. The test is published in the form of a booklet which is divided into seven general parts: Paragraph comprehension, word meaning, sentence meaning, sentence organization, paragraph organization, use of the index, silent reading for rate and memory. In detail, the student response activities involved are:

1. Question, write answer found directly in content. (T-1)
2. By direction, indicate statements found directly in the content which answer given questions. (T-5)
3. Sentence completion, indicate a statement (m-ch) found directly in content. (T-6)

4. Sentence completion, indicate a statement whose meaning is implied but not related to previous content, (m-ch). (U-10)
5. Follow directions, simple and direct, (alphabetizing). (W-1)
6. Answer question from own information by checking "yes" or "no". (Z-4)
7. Organize thoughts into a regular order. (Z-7)

XVIII. Kansas Silent Reading Tests

The Kansas Silent Reading Tests were published in 1915. In all, there are three tests, the total range being from grades III to XII inclusive. Each test is composed of sixteen exercises, which vary in the kind of student activity asked for. In detail, the student responses are of these types:

1. Question asked, write the answer implied in content meaning. (U-1)
2. Follow directions, simple and direct. (W-1)
3. Follow directions, dependent upon interpretation of content meaning. (W-2)
4. Question asked, write answer from previous information. (Z-3)

XIX. Lippincot-Chapman Classroom Products

Survey Tests

The Lippincot-Chapman Classroom Products Survey Tests were published in 1920-21. There are four divisions

to the test: Arithmetic fundamentals, arithmetic problem, reading continuous passage, and reading selections. In the reading continuous passage division, each student is required to read a long paragraph, following which are given twenty-seven questions whose answers are to be written in spaces provided. The reading selections test is composed of eighteen paragraphs arranged in increasing difficulty. Each paragraph is followed by one of two situations to be satisfied by the student: (1) Write answer to question on some detail of the paragraph content, or (2) underline a word (m-ch) implying the paragraph meaning as a whole. Summarized, the student response activities are:

1. Question asked, write answer found directly in content. (T-1)
2. By direction, indicate a word (m-ch) implied in content meaning as a whole. (U-7)

XX. The Lion and Mouse Reading Test

The Lion and Mouse Reading Test was published in 1923. It is intended for use in grade II. It also is known as the "Minneapolis Second Grade Reading Test." The test consists of twelve short paragraphs. Following each paragraph, the student is asked to draw a line around one

of four words. The student activity involved in all cases is of this type:

1. By direction, indicate a word (m-ch) used directly in the content. (T-3)

XXI. Los Angeles Elementary Reading Test

The Los Angeles Elementary Reading Test was published in 1926. It is intended for use in grades III to VIII inclusive. The test consists of numerous reading paragraphs, each one of which is followed by one or more situations which the student is called upon to satisfy. The types of student responses are varied. There are forty-five questions in each form. They are grouped in fifteen types:

1. Question asked, write answer which is given directly in content. (T-1)
2. By direction, write a word or words used directly in content. (T-5)
3. Sentence completion, write missing word (not m-ch) used directly in content. (T-8)
4. Question asked, write answer implied in content. (U-1)
5. Question asked, answer by indicating word implied in content meaning (m-ch). (U-2)
6. By direction, indicate a word (m-ch) implied in content. (U-5)
7. By direction, indicate best fitting statement (m-ch) implied in content. (U-6)
8. Indicate word or phrase (m-ch) implying paragraph meaning as a whole. (U-7)

9. Sentence completion, indicate a word (m-ch) implied in content meaning. (U-8)
10. Sentence completion, indicate a statement (m-ch) implied in content. (U-9)
11. Sentence completion, write missing word implied in content, not m-ch. (U-11)
12. Indicate true statement or statements. (V-1)
13. Select word or statement synonymous with a word or statement given in content. (X-2)
14. Organize thoughts into a regular order. (Z-7)
15. Give object or thought to which given words refer. (Z-8)

XXII. The Los Angeles Primary Reading Test

The Los Angeles Primary Reading Test was published in 1925. It is intended for use in grades I to III inclusive. It is composed of twenty-four exercises, some of them being complete in themselves and some dependent upon paragraphs read previously in the test. The student responses are numerous and varied:

1. Question asked, write answer found directly in the content. (T-1)
2. By direction, indicate a word or words found directly in content, not m-ch. (T-5)
3. Question asked, write answer implied in content. (U-1)
4. By direction, indicate a word (m-ch) implied in content. (U-5)

5. By direction, indicate a word or phrase (m-ch) implying paragraph meaning as a whole. (U-7)
6. Sentence completion, indicate word (m-ch) implied in content. (U-8)
7. Indicate true statement or statements. (V-1)
8. Follow directions, simple and direct. (W-1)
9. Select a word from the content, synonymous with a given word or words. (X-1)
10. Determine whether or not the content contains a given idea or fact. (Z-9)

XXIII. The Lowry Reading Tests

The Lowry Reading Tests were published in 1926. They are divided into four tests, together covering usage in grades I to VI inclusive. Considering the tests for grades III to V, we find that students are given a selection of several paragraphs to read. This selection is then removed from sight and questions are asked. Two student responses are involved. They are:

1. Sentence completion, indicate a statement (m-ch) implied in content. (U-9a)
2. Determine whether or not the content stated a certain idea or fact. (Z-9a)

XXIV. Monroe Standardized Silent Reading Test Revised

The Monroe Standardized Silent Reading Tests, as revised, were published in 1920. They are divided into three

tests, covering a range from grades III to XII inclusive. Each test is divided into numerous paragraphs following which the student is asked to satisfy one situation. The student response activities are varied. They involve these types:

1. Question asked, write answer found directly in content. (T-1)
2. Question asked, answer by indicating word (m-ch) found directly in content. (T-2)
3. By direction, indicate a word found directly in content, (m-ch). (T-3)
4. By direction, write or indicate a word or thought found directly in content, (not m-ch). (T-5)
5. Question asked, answer by indicating word (m-ch) implied in content. (U-2)
6. By direction, indicate a word (m-ch) implied in content. (U-5)
7. Follow directions, dependent upon interpretation of content. (W-2)

XXV. Natural Group Reading Tests

The Natural Group Reading Tests were published in 1922. They are intended for use in grade IV. The student reads a complete selection of several paragraphs and then answers several questions on the content. The story read is removed from sight before the questions are answered. The student response is of one type:

1. Question asked, write answer found directly in content. (T-1a)

**XXVI. North Carolina High School Senior
Examination**

The North Carolina High School Senior Examination first was published in 1927. Considering the 1928 edition, the student response activity is of one type:

1. Indicating directly from the content the answer to a question given. (T-5)

XXVII. Poley Precis Test

The Poley Precis Test was published in 1927. It is intended for use in secondary schools and colleges. It aims to test a student's ability to discriminate between satisfactory and unsatisfactory precis. Because of this function, it becomes a test of reading accuracy. In the manual, quoting from a previous work by L. F. Tucker, the author discusses "How to Write a Precis". Herein is quoted Rule I:

"Read the selection or selections carefully for general sense. Be sure to grasp the whole idea, for much depends upon the first reading."¹

This statement gives the cue for the use of the Poley Test as a reading test.

¹ Suggestions for Precis Writing. The English Leaflet, May, 1924.

Students are given eight well-chosen selections, each of one or more paragraphs. Following each selection are given five precis or abstracts of the content just read. The student is asked to indicate the following: (1) The best precis; (2) the inadequate precis; (3) the precis which are wrong. Thus, generally, the student response activities follow these types:

1. By direction, indicate the statements (the precis) which imply the details of content. (U-6)
2. By direction, indicate the statements (the precis) implying paragraph meaning as a whole. (U-7)
3. By direction, indicate the statements (the precis) which are false. (Y-2)

XXVIII. Pressey Diagnostic Reading Test

The Pressey Diagnostic Reading Test was published in 1925. The test is intended for use in grades III to VI inclusive. It is divided into three parts: (1) Word matching; (2) paragraph reading; and (3) selecting irrelevant words. The student response activities involved are:

1. Question asked, answer by indicating word (m-ch) found directly in content. (T-2)
2. Question asked, answer by indicating word (m-ch) implied in content. (U-2)

3. Question asked, answer by indicating statement (m-ch) implied in content. (U-3)
4. Word matching on their own meanings. (X-3)
5. Indicate an extra and irrelevant word in a sentence. (Z-2)

XXIX. Pressey Narrative Reading Test

The Pressey Narrative Reading Tests were published in 1922. They are intended for use in grades III to VI inclusive. These tests follow the reading of several chapters of content material, which is given as two separate stories - "The Little Cliff Dwellers" and "Robinson Crusoe". Most frequently, this test is referred to simply by these two titles. The title we give above is our own descriptive title used for convenience. The reading material is not in the hands of the student when the tests are given. The student response activities are as follows:

1. Question asked, answer by indicating a word or statement (m-ch) found directly in content. (T-2a)
2. By direction, indicate best fitting statement (m-ch) found directly in content. (T-4a)
3. Question asked, answer by indicating word (m-ch) implied in content. (U-2a)
4. By direction, indicate best fitting statement (m-ch) implied in content. (U-6a)

XXXI. Pressey Speed of Silent Reading Tests

The Pressey Speed of Silent Reading Tests were published in 1921. They are intended for grades II to IV inclusive. The tests are composed of a series of sentences each one of which contains an extra and irrelevant word. The student response is of one type:

1. Indicate an extra and irrelevant word in a sentence. (Z-2)

XXXI. Pressey Third Grade Attainment Scale

The Pressey Third Grade Attainment Scale was published in 1921 and revised in 1923. It purports to measure the achievement of third grade students in spelling, arithmetic, and reading. The section on reading is divided into numerous paragraphs, following each of which are four questions. The student response activities are of these types:

1. Question asked, answer by indicating word (m-ch) used directly in content. (T-2)
2. Question asked, answer by indicating word (m-ch) implied in content. (U-2)

XXXII. Public School Achievement Test

The Public School Achievement Test was published in 1928. It is intended for use in grades II to VIII inclusive.

The test is composed very largely of a series of paragraphs which are followed by different situations to be satisfied. The final section of the test involves the completion of an entirely new theme not based upon any previous content. The student activities involved are:

1. Question asked, answer found directly in content. (T-1)
2. Question asked, answer by indicating a word or statement (m-ch) found directly in the content. (T-3)
3. By direction, write or indicate a word or words found directly in content, not m-ch. (T-5)
4. Sentence completion, indicate word (m-ch) found directly in content. (T-6)
5. Sentence completion, write a missing word, not m-ch, found directly in content. (T-8)
6. Question asked, write answer implied in content. (U-1)
7. Question asked, answer by indicating word (m-ch) implied in content. (U-2)
8. By direction, indicate a word (m-ch) implied in content. (U-5)
9. By direction, indicate best fitting statement (m-ch) implied in content. (U-6)
10. By direction, indicate a word (m-ch) implying paragraph meaning as a whole. (U-7)
11. Sentence completion, indicate a word (m-ch) implied in content. (U-8)
12. Sentence completion, write missing word meaning implied in content, not m-ch. (U-11)

XXXIII. Regents Preliminary Silent Reading Test

The Regents Preliminary Silent Reading Test was first published in 1922. It is intended for use with students who have just completed the eighth grade. The test for the year 1928 contains the following student responses:

1. Question asked, write answer found directly in content. (T-1)
2. By direction, write or indicate a word or thoughts found directly in content, not m-ch. (T-5)
3. Sentence completion, write missing word, not m-ch, found directly in content. (T-8)
4. Question asked, write answer implied in content. (U-1)
5. By direction, indicate best fitting statement (m-ch) implied in content. (U-6)
6. Indicate true statements. (V-1)
7. Write a word synonymous with a word given in the content. (X-2)

XXXIV. Sangren-Woody Reading Tests

The Sangren-Woody Reading Test was published in 1926. It is intended for use in grades IV to VIII inclusive. It is divided into seven divisions. Each division aims to measure a certain definite factor in reading comprehension,

or speed. The student responses are of these types:

1. Question asked, write answer found directly in content. (T-1)
2. By direction, indicate best-fitting statement (m-ch) implied in content. (U-6)
3. Question, answer by indicating a statement (m-ch) implying paragraph meaning as a whole. (U-4)
4. Sentence completion, simple, not related to any previous content, implied meaning, m-ch. (U-10)
5. Following directions, simple and direct. (W-1)
6. Following directions, dependent upon interpretation of content. (W-2)
7. Organize thoughts into a regular order. (Z-7a)
8. Determine whether or not the content contains a certain definite idea. (Z-9)

XXIV. Stanford Achievement Test

The Stanford Achievement Test was published in 1922. It is intended for use in grades IV to VIII inclusive. The sections on reading are divided into three parts: (1) Paragraph meaning; (2) sentence meaning; (3) word meaning. The student responses are of these types:

1. Sentence completion, write missing word (not m-ch) found directly in content. (T-8)
2. Sentence completion, simple, not related to any previous content, meaning implied, (m-ch). (U-10)

3. Sentence completion, write missing word, meaning implied in content, (m-ch). (U-11)
4. Answer question from own information, "yes" or "no". (Z-4)

XXXVI. The Starch Reading Test

The Starch Reading Test was published in 194. It is divided into separate tests for each grade, running from grade II up to and through college. The student response is of one type. The content is concealed from view before response is given.

1. By direction, write thoughts found directly in the content, not m-ch. (T-5a)

XXXVII. Stone Series of Narrative Reading Tests

The Stone Series of Narrative Reading Tests was published in 1922. It is intended for use in grades III to IX inclusive. The student reads a selection of several paragraphs which then is hidden from view. Following this, he has two types of responses:

1. Question asked, answer by indicating statement (m-ch) found directly in content. (T-2a)
2. Question asked, answer by indicating statement (m-ch) implied in content. (U-3a)

XXXVIII. Thorndike-McCall Reading Scale

The Thorndike-McCall Reading Scale was published in 1922. It is intended for use in grades II to XII inclusive. The test is composed of ten or more paragraphs, each of which is followed by a series of questions. The student responses vary and are of the following types:

1. Question asked, write answer found directly in content. (T-1)
2. By direction, write word or thoughts found directly in content, not m-ch. (T-5)
3. Question asked, write answer implied in content. (U-1)
4. Select or give a word from the content synonymous with a given word. (X-1)
5. Select or give a word synonymous with a word given in the content. (X-2)
6. Determine whether or not the content contains a certain definite idea or fact. (Z-9)

XXXIX. Thorndike Reading Scale Alpha II

The Thorndike Reading Scale Alpha II was published in 1926. It is supposed to be used with grades III to XII inclusive. It is divided into two parts, the first for the lower grades, and the second for the upper grades and high school. Generally, the material is composed of paragraphs, followed by questions. The student responses

are:

1. Question asked, write answer found directly in content. (T-1)
2. Follow direction, simple and direct. (W-1)
3. Select or give a word from the content synonymous with a given word. (X-1)

XL. Van Wageningen Reading Scales

The Van Wageningen Reading Scales were published in 1922. They are intended for use in grades VII to XII inclusive. The tests are composed of a series of paragraphs, each one being followed by a number of statements which are to be checked as relating to the content of the paragraph. There are two types of responses. They are:

1. By direction, indicate best-fitting statement (m-ch) found directly in content. (T-4)
2. By direction, indicate best-fitting statement (m-ch) implied in the content. (U-6)

XLI. Virginia, Minnesota, Silent Reading Test

The Virginia, Minnesota, Silent Reading Test is divided into two divisions: (1) D for grades III to V inclusive, and (2) E for grades VI to VIII inclusive. Each test offers a series of paragraphs following which the student is asked to satisfy at least one response. The types

of responses are:

1. Question asked, write answer found directly in paragraph. (T-1)
2. Question asked, write answer implied in content. (U-1)
3. Question asked, answer by indicating word (m-ch) implied in content. (U-2)
4. By direction, indicate a word (m-ch) implying paragraph meaning as a whole. (U-7)
5. Follow directions, dependent upon interpretation of content. (W-2)

XLII. Whipple High School and College

Reading Test

The Whipple High School and College Reading Test was published in 1926. The test is composed of one continuous selection of several paragraphs. The situations calling for student responses are included in the paragraph reading. The types of responses are the following:

1. Question asked, write answer found directly in content. (T-1)
2. By direction, write or indicate a word or words found directly in content, not m-ch. (T-5)
3. Question asked, write answer implied in content. (U-1)
4. By direction, indicate a word (m-ch) implied in the content. (U-5)
5. Follow directions, dependent upon interpretation of content. (W-2)

XLIII. Williams Primary Reading Test

The Williams Primary Reading Test was published in 1926. It is intended for use in grades I to III inclusive. The first part of the test is based upon work with illustrations. The second part is built of several paragraphs, each followed by questions or other requests. The student response activities are:

1. Question asked, write answer directly from content. (T-1)
2. Sentence completion, indicate a word (m-ch) implied in content meaning. (U-8)
3. Write a word from the content synonymous with a given word. (X-1)

XLIV. Wisconsin Supervisory Tests in Reading

The Wisconsin Supervisory Tests in Reading were published in 1922. They are intended for use in the lower grades. The tests are composed of a series of sentence statements each one of which is to be checked "yes" or "no", from the student's own information. The response is of one type:

1. Check statement from own information by "yes" or "no". (Z-4)

XLV. The Witham Silent Reading Test

The Witham Silent Reading Test was published in 1921. It is intended to be used with grades IV to XII inclusive.

The tests consist of a series of stories, the sentences of which are disarranged. The student is to organize these sentences into a regular order. There is just one student response:

1. Organize thoughts into a regular order. (Z-7)

XLVI. Wyoming Uniform State Examination in Reading

The Wyoming Uniform State Examination in Reading is intended for use in grades VI, VII and VIII. Considering the 1928 issue, the examination is composed of ten paragraphs each of which is followed by several questions whose answers are to be written. The student response is of one type:

1. Question asked, write answer contained directly in the content. (T-1)

Summary of Analyses

Table I presents, in abbreviated form, the findings of the test analyses described earlier in this chapter. In this table are given:

1. The sub-type of each student response activity appearing in each test.
2. The total of the sub-types appearing in each test.

Table I. Detailed Analysis of Reading Activities Involved in 46 Available Reading Tests

Name of Test	Type "T"								Type "U"											"V"		"W"		"X"			"Y"			Type "Z"								
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10	11	1	2	3	1	2	1	2	3	1	2	1	2	3	4	5	6	7	8	9
1. Adams	x																																					
2. Burgess																					x																	
3. Chapman-Cook																																						
4. Chapman-Uns'p																																						
5. Courtis St. Res.																																						
6. Dearborn-West.	x							x	x																													
7. Denver Diagnos.		x					x																															
8. Detroit Exam.		x																																				
9. Detroit Test		x																																				
10. Fordyce Scale	x																																					
11. Fordyce Test	x																																					
12. Gates Silent		x																																				
13. Gray Silent	x																																					
14. Haggerty Exam.			x					x																														
15. Holmes	x																																					
16. Ind. Compos. Ac.																																						
17. Iowa Silent	x				x	x																																
18. Kans. Silent																																						
19. Lippinc.-Chap.	x																																					
20. Lion-Mouse			x																																			
21. Los Angeles El.	x					x			x	x																												
22. Los Angeles Pr.	x					x																																
23. Lowry Test																																						
24. Monroe Silent	x	x	x			x																																
25. Natural Group	x																																					
26. N.C.H.S. Sr.						x																																
27. Poley Precis																																						
28. Pressey Diagn.		x																																				
29. Pressey Narra.		x		x																																		
30. Pressey Speed																																						

(Table continued on next page)

Table I. Detailed Analysis of Reading Activities Involved in 46 Available Reading Tests
(Continued)

Name of Test	Type "T"								Type "U"										"V"			"W"		"X"			"Y"		Type "Z"										
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10	11	1	2	3	1	2	1	2	3	1	2	1	2	3	4	5	6	7	8	9	
31. Pressey 3rd Gr		x								x																													
32. Pub. Sch. Ach.	x	x			x	x		x	x	x			x	x	x	x	x		x															x	x				
33. Regents	x	x			x			x	x											x																			
34. Sangren-Woody	x			x								x			x				x																x		x		
35. Stanford Ach.								x											x	x																			
36. Starch					x																																		
37. Stone Narra.		x									x																												
38. Thornd.-McC.	x				x				x																												x		
39. Thorndike Sc.	x																																						
40. VanWagenen Sc.				x																																			
41. Va., Minn. Sil.	x								x	x																													
42. Whipple H.S.	x				x				x																														
43. Williams Pr.	x																																						
44. Wisc. Superv.																																							
45. Witham Silent																																					x		
46. Wyoming State	x																																						
Total	2-1-10-3-3-10-5-2-5-10-10-3-3-6-7-7-8-4-4-4-4-1-1-8-5-4-3-3-1-2-2-2-1-5-2-1-4-1-5																																						

Number of Tests using the different Types: T:35; U: 28; V: 5; W: 10; X: 9; Y: 3; Z: 19.

KEY to Types of Activities:

- Type "T": Activities based upon giving thought stated directly in content.
Type "U": Activities based upon giving thought implied in content.
Type "V": Activities based upon determining whether statements were true or false.
Type "W": Activities involving the following of directions.
Type "X": Activities involving the selection of words of similar or synonymous meaning.
Type "Y": Activities involving the recognition of word or content meaning in illus.
Type "Z": Activities of miscellaneous character.

4. The total of the general types appearing in each test.
5. The total number of tests using each sub-type.
6. The total number of tests using each general type.

This table presents a picture of the number of tests using distinctive types of student response activity. It does not show the number of times a certain test uses a particular type of response activity. As stated before, this condition is variable.¹ Using the data given by Table I, these totals may be mentioned:

1. Thirty-five tests use general Type T, "Giving a thought stated directly in the content."
2. Twenty-eight tests use general Type U, "Giving a thought implied in the content."
3. Five tests use general Type V, "Determining whether statements are true or false."
4. Ten tests use general activity W, "Following directions."
5. Nine tests use general Type X, "Selecting words of similar or synonymous meanings."
6. Two tests use general Type Y, "Recognizing word or content meaning in illustrations."

¹ See p. 21, this thesis.

7. Two tests use Type Z-1, "Indicating a word whose meaning is incongruous with the remainder of the sentence."

8. Two tests use Type Z-2, "Indicating an extra or irrelevant word in a sentence."

9. One test uses Type Z-3, "Answering questions from previous experience."

10. Five tests use Type Z-4, "Answering or checking statement from own information."

11. Two tests use Type Z-5, "Indicating a statement of the best predictive thought."

12. One test uses Type Z-6, "Building a new theme by supplying missing words."

13. Four tests use Type Z-7, "Organizing thoughts into a regular order."

14. One test uses Type Z-8, "Giving objects or thoughts to which given words refer."

15. Five tests use Type Z-9, "Determining whether or not the content contains a certain definite idea or fact."

These totals show that some types are very prominent, while others have been used only a few times. Whether or not test authors have employed only the "efficient" types, the foregoing analyses do not indicate. Since, to the best

of our knowledge, that information never has been determined,¹ it is the purpose of this thesis to reveal the measurement values of the various types.

Chapter III will describe the interpretations which may be placed upon the findings presented in Table I.

Summary

Sixty-eight known tests have been published which attempt by some means to measure reading comprehension. Of these sixty-eight, twelve have been written exclusively for use in grades I and II, and ten others have been written for special purposes or are unavailable. The forty-six remaining tests were analyzed for the student response activities involved in their construction. Some activities have been used frequently, while others have been used only a few times. Table I shows, in concrete form, the number and type of response activities found in each of the forty-six tests.

The importance given some types of response activities probably has not been because of the effectiveness with which they measure comprehension as against other types, since it is not known that the difference in measurement value has ever been determined.

¹ See letters from test authors, p.viii-xvii, this thesis. (Appendix)

Chapter III

INTERPRETATION OF ANALYSES OF READING TESTS

In order better to examine the data of Table I, a second table has been constructed which sets forth the totals taken from Table I. Table II shows the total number of tests using each general type and the total using each sub-type of each general type. Inasmuch as numerous tests use several sub-types under a single general type, the number of tests using a general type may be less than the sum of all those enumerated in the sub-types. For example: 35 tests use General Type T, and if the frequencies for all the sub-types of "T" were added, the sum would be 59. Obviously, numerous tests are using several sub-types under "T".

Table II. Numbers of Tests Using General and Sub-Types of Student Response Activities.

Gen'l Type	Total	Sub-Types										
		1	2	3	4	5	6	7	8	9	10	11
T	35	21	10	3	3	10	5	2	5			
U	28	10	10	3	3	6	7	7	8	4	4	4
V	5	4	1	1								
W	10	8	5									
X	9	4	3	3								
Y	3	1	2									
Z	19	2	2	1	5	2	1	4	1	5		

An inspection of Table II reveals the following:

1. General Type T has been used in a larger number of tests than any other general type. Stating this in terms of response activity, it means that asking students for ideas found directly in reading content occurs in more tests than any other type of student response situation. These thirty-five tests have presented this student response situation in eight different ways (sub-types), with a total frequency of 59.

2. General Type U has been used in the second largest number of tests. Stating this differently, asking students for ideas implied in the reading content occurs in the second largest number of tests. However, the twenty-eight tests using General Type U have presented it in eleven different ways (sub-types), with a total frequency of 68. These figures indicate a preponderance of use of Type U.

3. General Type V has been used by only five tests which means that only a few tests have presented true-false statements, based upon the reading content, as student response situations. This general type has been presented in three ways (sub-types) with a total frequency of 6.

4. General Type W has been used ten times. This type (following directions) has been presented in two ways

or sub-types with a total frequency of 13.

5. General Type X, selecting words of synonymous or similar meanings, has been used by nine tests, being presented in three ways with a total frequency of 10.

6. General Type Y, recognition of word or content meanings in illustrations, has been used only in two tests, presented in two ways (sub-types) and with a total frequency of 3.

7. General Type Z, which includes these miscellaneous response situations not divisible into sub-types, shows a wide scatter over the units included in its organization.

Briefly stated, these figures show:

- a. Two tests require students to indicate incongruous words.
- b. Two tests require students to indicate irrelevant words.
- c. One test asks for student's previous experience.
- d. Five tests ask for responses from student's own information.
- e. Two tests ask students to indicate statements of the best predictive thought.
- f. One test requires students to supply missing words in building a new theme.
- g. Four tests require students to organize thoughts into a regular order.
- h. One test requires students to give objects or thoughts to which given words refer.

- i. Five tests require students to determine whether or not the content contained a definite given idea.

The Meaning of These Findings

These totals mean that certain types of student response activity have been very important in testing reading comprehension, while others have been of less and less importance. That importance is due, not to the efficiency with which the different types measure comprehension, but to the greater or less use to which they have been put.

It is evident that General Type T and General Type U dominate in the number of times they are used for the measurement of reading comprehension. All other types are used by far fewer tests.

The Analyses and This Problem

The original inquiry of this thesis problem was: Of the student response activities employed in existing reading tests, which contribute most in the measurement of comprehension so far as paragraph units are concerned? The analyses which have just been discussed propose a second question: Of the student response activities employed in existing reading tests, which are applicable to general reading of paragraph units?

In order to answer this second question, a further examination of the different types is necessary. On pages 22 to 26 inclusive (Chapter II), the different General Types and sub-types have been described in full. An inspection of Types T and U reveals that the sub-types differ mainly in the form in which the activities are presented. For example, in General Type T (activities based upon giving thought stated directly in content), T-1 asks a question and the student is to write the answer found directly in the content; T-3 is sentence completion, supplying missing word found directly in the content. In General Type U, activities based upon giving thought implied in content: U-2 asks question, answer by indicating word (m-ch) implied in content meaning; U-6, by direction indicate best-fitting statement implied in the content.

There is one fundamental difference in the sub-types. All of the sub-types of General Type T are based upon content details, while of the sub-types of General Type U, some are based upon details and some upon content meaning as a whole (U-4, U-7). This is a fundamental difference which first was called to public attention by Woody.¹ He contended that there was a real difference between the "general sense"

¹ Woody, Clifford. Measurement of a New Phase of Reading. Journal Educational Research, VIII, November, 1923, p. 315-326.

of a paragraph and other phases of reading. He proceeded experimentally to prove his contention by correlating student responses on content meanings as a whole with returns from other tests, and he found:

	<u>Grades</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>
r (Woody-Monroe Standardized)		.40	.53	.53	.50	.50
r (Woody-Thorndike-McCall)		.51	.36	.63		
r (Woody-Burgess)		.47	.45	.47		

These r's are sufficiently low to show a real significance between giving meanings as a whole and other types of activity. It should be stated, however, that Woody was not interested in this experiment as a student response activity. He considered content meaning, as a whole, as a phase of reading, not a device of measuring comprehension.

In answer to the question as to which types are applicable to general reading of paragraph units, the following statements are offered in explanation of the decisions made for the work of this thesis:

1. Type T, activities based upon giving thoughts stated directly in the content details, is applicable to any type of paragraph reading.
2. Type U, activities based upon giving thoughts implied in the content, is applicable to paragraph units of

general reading. This type may be used in two phases:

- a. Content details;
- b. Content meaning as a whole.

3. Type V, activities based upon determining whether given statements are true or false. The given statements are constructed in light of the paragraph content. Type V is applicable to general paragraph reading.

4. Type W, activities based upon following directions, is not applicable to all types of general reading. If the content itself contains instructions or directions, such activities are applicable.¹ This type was tried experimentally and found inapplicable.²

5. Type X, selecting words from the content of synonymous or similar meanings, may be used with paragraph units of general reading. This involves giving the student a word or thought and asking him to indicate a word in the paragraph content which has the same meaning.

6. Type Y, activities based upon recognition of content meanings in illustrations, is applicable when especially constructed illustrations accompany the reading content.

7. Types Z-1 and Z-2 presuppose the content to contain incongruous and irrelevant words. If paragraphs are so

¹ The Whipple High School and College Reading Test is an example of a test making such use of "following directions."

² See page 82f, this thesis.

constructed, these types are applicable.

8. Types Z-3 and Z-4, answering questions upon student's previous experience and information, are unrelated to any content and are inapplicable to paragraph reading.

9. Type Z-5, indicating a statement of the best predictive thought, is applicable to those paragraphs so devised that the thought or theme outcome is unsatisfied or unanswered.

10. Type Z-6, completing a new theme by supplying missing words, is applicable only where the paragraph content itself offers blanks to be written in.

11. Type Z-7, organizing thoughts into a regular order, is applicable to paragraph reading. The content is presented out of sequence and the student is asked to number the statements in the order in which he thinks they should appear.

12. Type Z-8, giving object or thoughts to which given words refer, is based upon the details of the content and is applicable to general reading.

13. Type Z-9, determining whether or not the content contains a certain definite idea or fact, like Type V, is applicable to general content.

Since it was the aim of this thesis problem to discover the measurement value of the various types of student

response activity applicable to general content of paragraph reading, certain eliminations were made. These eliminations fall into groups. They are:

1. Elimination because of unrelation to content: Types Z-3, Z-4 (answering questions upon student's previous experience and information).

2. Elimination because of demanding a particular kind of content: Type Z-5 (selecting statement of best predictive thought); Type W (following directions); Types Z-1 and Z-2 (incongruous and irrelevant words); Type Z-7 (organizing thoughts into a regular order).

3. Elimination because of demanding special physical make-up of test: Type Y (connecting meanings with illustrations); Type Z-6 (building a new theme).

Of those types which were eliminated because they require a particular kind of content, four are used singly by several tests on the market today. These four are:

1. Type W, following directions. ¹
2. Type Z-1, Type Z-2, incongruous and irrelevant words. ²
3. Type Z-5, selecting statement of best predictive thought. ³

¹ Gates Silent Reading Test, Type C, Teachers College, Bureau of Publications, Columbia University, New York City

² Chapman-Cook Speed of Reading Test, J.L. Lippincott Company, Philadelphia.

³ Gates Silent Reading Test, Type B, Teachers College Bureau of Publications, Columbia University, New York City

4. Type Z-7, organizing thoughts into a regular
¹
 order.

The comprehension measurement value of these four types of responses is being checked by two contemporary experiments ² in which scores on these types are compared with scores earned on the experimental test developed from the seven types accepted as applicable to general paragraph reading, as listed below.

This experiment, then, deals with seven types of student response activity, since these seven are applicable to general reading of paragraph units. They are:

1. Type T, activities based upon giving thoughts stated direct in the content details.

2-3. Type U, activities based upon giving thoughts implied in the content.

- a. Details
- b. As a whole

4. Type V, activities based upon determining whether given statements are true or false.

5. Type X, activities based upon selecting words of synonymous or similar meanings.

¹ Witham Silent Reading Test, J. L. Hammett Company, Cambridge, Mass.

² Experiments of Mr. C. C. Dove, Chatteroy, W. Va.; Mr. Alie Stingley, Wilmington, Ohio.

6. Type Z-8, activities based upon giving objects or thoughts to which given words refer.

7. Type Z-9, activities based upon determining whether or not the content stated a certain definite fact.

In order to simplify the identification of these types in the experimental test, they were rearranged and renamed. In Chapter IV, these identifications will be explained.

Summary

An inspection of the analyses of the forty-six available reading tests revealed that certain student response activities had been used much more than others. The two types most used were: (1) Activities based upon giving thoughts stated directly in the reading content; and (2) activities based upon giving thoughts implied in the content. Other types were used much less frequently than the two mentioned. The frequency of use was not based upon the efficiency with which the several types have measured reading comprehension, since that efficiency never has been determined.

Of the whole group of student response activities,

certain types were considered inapplicable to paragraph reading and were eliminated from use in the experimental test. Those eliminated types were:

1. Answering questions based upon student's previous information and experience.
2. Connecting paragraphs with illustrations illustrating content meaning.
3. Building a new theme by filling in the blanks of an especially constructed content.

There was a second group of response activities applicable to special tests of reading comprehension. The types were:

1. Following directions.
2. Predicting outcomes.
3. Organizing thoughts into a regular order.
4. Indicating incongruous or irrelevant words.

The final group of student activities was found to be applicable to general paragraph reading. This group consisted of seven general types:

1. Activities based upon giving thoughts stated direct in the content details.
- 2-3. Activities based upon giving thoughts implied in the content.
 - a. Details
 - b. As a whole
4. Activities based upon determining whether given statements are true or false.
5. Activities based upon selecting words of synonymous or similar meaning.

6. Activities based upon giving objects or thoughts to which given words refer.
7. Activities based upon determining whether or not the content stated a certain definite fact.

Chapter IV

DEVELOPMENT AND ADMINISTRATION OF THE EXPERIMENTAL TESTS

The analyses described in Chapter III were not completed and the totals computed before the experimental test was given. Chapter III presents in regular order all of the work attending test analysis. Because of delays in the analysis, over which there seemed to be no immediate control, the development of the experimental test was started and completed before the work described in Chapter III was accomplished. These facts are stated here inasmuch as they explain several situations which were tried and later were abandoned. These situations will be referred to.

The development of the experimental tests was begun in February, 1928. From the beginning, the aim was to complete an experimental test for use in the month of May, 1928, and from experiences and results of that test to develop a second or more refined test for use in the fall, October, 1928. These tests are identified, in this thesis, by calling them the May Test and the October Test.

Purpose of the May Test

In March, 1928, the following questions ¹ were formulated as inquiries which the May Test should attempt to answer:

1. Can several student response activities be identified, determined, and applied to a single paragraph of reading content?
2. Can these same activities be applied to each of numerous paragraphs?
3. Will one or two types of activities, which, when measured, give a better indication of reading comprehension than others?
4. Do the eight proposed response activities cover sufficiently the types represented by a thorough analysis of other tests and the propositions of reading specialists?

This note was attached to the above listed inquiries:

"The purpose of the test is not so much to secure definite and conclusive answers to these questions, but to take 'soundings' of the material wherein the answers lie. The definite answers can come only after thorough testing." ¹

¹ Presented in the outline handed to Advisory Committee, March 20, 1928.

Developing the May Test

The first problem in constructing the May Test was to determine the scope of its use. Two tests were decided upon: Test I, grades IV to VIII inclusive, and Test II, grades IX to XII, inclusive. It then became necessary to secure paragraphs of content material graded to these group levels. This was attempted by securing paragraphs from the materials read by the students of these various grades.

The thought content desired was from a variety of fields. The selections were made with the idea of offering material which would be interesting, well written, properly graded to the desired student level, and informational. In other words, abstract discussions were not included. The paragraphs of May Test I included selections from the fields of arithmetic, literature (narrative), history, government, agriculture, travel, and hygiene. May Test II included paragraphs from literature (narrative), government, geography, science, mathematics, history, and travel.

Each of the May Tests contained ten paragraphs of content material, besides the one paragraph offered as a trial exercise. Following each paragraph there were presented to the student eight questions, each one representing a particular type of student response activity. Those types

are:

I. Question,¹ answer by indicating a word or statement (m-ch), whose meaning is implied in the content as a whole.

II. Question, answer by indicating a word or statement (m-ch) whose meaning is given direct in the content details.

III. Question, answer by indicating whether the content contained a given idea, or stated just the opposite, or made no mention of it.

IV. Indicate the word or thought (m-ch) to which a given word refers.

V. Determine whether or not statements are true or false.

VI. Follow directions, dependent upon the interpretation of content meaning.

VII. Select a word from the content which is synonymous with a given word.

VIII. Checking the "Higher Values" of reading.

Figure I offers a good example of the material presented in the May Test. This paragraph was number three of

¹ The term "Question" means that the activity situation was presented in the form of a question.

Figure I. Sample Paragraph of May Test

Sometime before, there had been rumors of wolves infesting the hills and displaying in their forays an all but human boldness and cunning. Then other tales began to be whispered. The peasantry huddled early about their turf-fires and the shepherds of the Abbey sought counsel from their superior. They got small comfort from the Abbot who curtly ordered them to attend to their duties and avoid neighborhood stories.

- I. What word correctly describes the picture in the paragraph?
 (a) fear (b) peace (c) confidence (d) joy _____
- II. What word best tells about the Abbot?
 (a) fearful (b) quiet (c) old (d) curt _____
- III. Were the tales true?
 (a) yes (b) no (c) does not say _____
- IV. To whom or what does "they" refer?
 (a) peasantry (b) wolves (c) hills
 (d) Abbey shepherds _____
- V. Check only true statements:
 (a) The peasants thought that wild animals lived in the hills. (a)
 (b) Tales about the wolves were the only tales they heard. (b)
 (c) The peasants stayed in the fields until quite late. (c)
 (d) The Abbot did not believe the rumors. (d)
- VI. If this is a picture of today, write "yes" in the blank at the right; if not, write "no". _____
- VII. The word "commanded" has the same meaning as what word in the paragraph? _____
- VIII. Was the Abbot fair in his reply to the shepherds of the Abbey? ("yes" or "no"). _____

Test II and was one of the easier selections for the high school group, grades IX to XII inclusive.

Questions numbered VI and VIII should receive further explanation. Question VI is an example of an attempt to tie-up that response activity of "following directions" to general paragraph reading. The first use of this appeared in the Kansas Silent Reading Test.¹ An inspection of Figure I will present the following difficulties with regard to question VI (following directions):

1. What the student does is dependent upon his ability to interpret the content, or his ability to guess at the interpretation.
2. The student may read the content correctly and mis-read the directions, giving his test sheet an error, or
3. He may misinterpret the content and mis-read the directions, giving his test sheet a credit of success, which would not be deserved, or
4. He may misinterpret the content and read the directions correctly which would give his test sheet an error he deserved.

This type of student response, when tied up with general paragraph content, does not show "why" the student

¹

See p. 39, this thesis, and p. iii, Appendix.

made errors or made successes. This query was evident: Does this type of response measure comprehension of the paragraph content or does it measure something else? The type was included in the May Test as an experiment.

Question VIII was introduced in the May Test purely as an experimental factor. To the writer's knowledge, no reading test has used a type of question such as this. It may be called a question involving the higher values of reading. The first suggestion of its use in the May experimental test came from one of the authors¹ of the Twenty-fourth Yearbook of the National Society for the Study of Education.² The meaning of this type of response may be stated as follows: In reading content, the student should feel more and see more than what is merely stated by the words and sentences of the paragraph. He should realize the attending thoughts and situations.³ He should be able to "read between the lines."⁴ Question VIII was used as an attempt to measure this factor of higher values.

¹ Miss Frances Jenkins, College of Education, University of Cincinnati.

² Public School Publishing Company, Bloomington, Illinois, 1925.

³ A description of higher values may be found in Chapter VI, Twenty-fourth Yearbook, p. 142, 158.

⁴ Lyman, R.L. The Teaching of Assimilative Reading in the Junior High School. School Review, 28, October, 1920, p. 600.

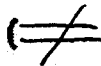
The Form in which Each Type was Presented

The May Test was so arranged that the student's physical performance was kept at a minimum. For that reason the multiple choice arrangement of answers was used. Four possible answers to questions I, II, and IV were provided. Previous investigations have shown that if four choices are offered, the element of chance is negligible.¹ For question III, there were only three possible determinations: (1) The content gave an affirmative reply to the question; (2) the content stated a negative reply to the question; (3) the content stated no information in reply to the question.

Question V offered four statements, of which the true statements only were to be checked. Four statements were provided since four possible choices were offered in questions I, II, and IV. These four statements were not regularly arranged as two true and two false for each paragraph. In some instances, there was only one true statement, in others there was only one false statement. The student was given credit for all "rights". A false statement unmarked was considered a "right". In computing the student's

¹ Ruch, G. M. Improvement of the Written Examination, Scott, Foresman and Company (1924), p. 115-117.

composite score, on comparable basis, the sum of all scores on this type of question was divided by four, inasmuch as a raw perfect score for this type per paragraph would have been four, while on any other type of question it would have been one. The formula of "rights minus wrongs" did not apply since minus scores would have been deducted from the scores of the other type of questions. Such a condition would have been invalid. ¹

Question VI was based upon "following directions" in which each was a type unto itself. In some paragraphs students were instructed to draw two horizontal lines with a third line crossing the first two () , dependent upon the content meaning.

Question VII presented the student with a word which was synonymous with one word in the content. He was to select the synonym from the content and write it in the blank provided. It is obvious that there was no chance element involved.

Question VIII usually was answered by writing "yes" or "no" in the proper blank. This answer depended entirely upon interpretation. The results from this question were interesting and are presented later in the thesis.

¹ This is explained from a different point of view later in the chapter. See p.137f, this thesis.

Arrangement of May Test

The ten paragraphs of Test I were presented in regular order to each student: Paragraphs A, B, C, D, E, F, G, H, I, J, K. Since this test was intended for grades IV to VIII inclusive, those paragraphs thought to be easiest were presented first, with the remaining paragraphs arranged in order of difficulty, determined solely according to judgment and the sources from which the paragraphs were obtained.

The ten paragraphs of Test II were arranged in no regular order per test. Test II was intended for grades IX to XII inclusive, wherein it was felt the difference in levels of comprehension are not so great as between grades IV to VIII. In Test II, a student may have received a very difficult paragraph immediately after completing the trial exercise. This irregular arrangement gave to each paragraph the advantages and disadvantages of each position of order, since it probably occupied all rankings from one to ten. The test returns would minimize the influences of familiarity and fatigue by holding them constant per paragraph. This was done as an experiment only. It was not followed in the subsequent October Test.¹

¹ The October Tests were printed. An irregular arrangement would have been prohibitive in cost.

The May Tests were mimeographed. Page 1 provided for such information as student's name, name of school, student's age, student's grade. On this page the student read a short explanation of the purpose of the test and simple directions for taking it. Page 2 gave a complete trial paragraph, followed by the eight type questions. The remaining ten pages were given to the ten paragraphs of reading content and test questions. The whole test was in booklet form, the twelve pages having been clipped together.

Administering the May Test

The May Test was given to about 625 students in grades IV to XII in the following schools:

- Test I. Grades IV, V, VI. Prospect School, East Cleveland, Ohio.
- Test I. Grades IV, V, VI, VII, VIII, IX.¹ West Carrollton Grade School, West Carrollton, Ohio.
- Test I. Grades IV, V, VI, VII. Newport Schools, Newport, Kentucky.
- Test II. Grades IX, X, XI, XII. Wyoming High School, Wyoming, Ohio.
- Test II. Grades VIII, IX, X, XI, XII.¹ Newport High School, Newport, Kentucky.
- Test II. Grades X, XI, XII. West Carrollton High School, West Carrollton, Ohio.

¹ A few ninth grade students were given Test I, and a few eighth grade students were given Test II, for overlapping.

In addition, eighty University of Cincinnati seniors and special students were administered the test.

The writer gave the tests in Wyoming and Newport, and supervised indirectly the work in West Carrollton and East Cleveland. The instructions for giving the tests were simple. One full period of forty-five minutes was allowed for explanations, the trial exercises, and taking the test proper. Except for the very slow students, this was far more than enough time. Some of the twelfth grade students of Wyoming High School completed the test proper in less than twenty minutes. Ten minutes usually were required for the introduction and trial page. The aim was to secure as many completed tests as possible.

Results of the May Test

The results of the May Test scores were not elaborately worked out. All tests were scored and all pupil scores were analyzed. Samplings were taken for special analysis. Student and teacher criticisms were asked for and from them came some very valuable suggestions. These findings will be presented in brief form. ¹

First, we give answers to the questions proposed on page 78 of this thesis.

¹ From outline handed to Advisory Committee, March, 1928.

1. Question: Can several student response activities be identified, determined, and applied to a single paragraph of reading content?

Answer: Several student response activities can be applied to a single paragraph of reading content, but not all types of activity situations. This answer was made in view of the May Test and the completed test analyses discussed in Chapter III, this thesis. The experience from the May Test, for instance, showed that "following directions" became more and more a factor extraneous to the original paragraph content. This type of student response is an important one ¹, but inapplicable to general reading.²

2. Question: Can these same activities be applied to each of numerous paragraphs?

Answer: They can, within limits. That means, a set of student response activities applicable to one paragraph of general reading content is applicable to other such paragraphs. This answer is given from the experience in constructing the May Test.

3. Question: Will one or two types of activities, when measured, give a better indication of reading compre-

¹ Gates, Arthur I. The Improvement of Reading, Chapter VIII, p. 188, "Reading to Understand Precise Direction". The Macmillan Company, 1928.

² See p. 82, this thesis.

hension than others?

Answer: It seemed that they would. This answer is given from the findings quoted here, wherein types of activity scores were correlated with test composite scores. Data from West Carrollton High School, where forty-eight ninth-grade students took Test II, are given herewith: ¹

r	(Implied content meaning as a whole - Test composite)	✓ .809
r	(Direct question on content details - Test composite)	✓ .650
r	(Question or statement of definite idea - Test composite)	✓ .814
r	(References - Test composite)	✓ .600
r	(True-false statements - Test composite)	✓ .869
r	(Follow directions - Test composite)	✓ .501
r	(Synonyms - Test composite)	✓ .841
r	(Higher values - Test composite)	✓ .611

These r's should be considered indices only. They represent the measurement value of one type as correlated

¹ West Carrollton students were selected for report in this thesis because the student group represents several types: City, industrial, city professional, and rural. This information is given from communication from the superintendent of schools and the school principal.

with the measurement value of all types combined.¹ They show a possible real difference between values of the several types and indicate a field for more accurate and exacting examination. The data of other schools were analyzed, separately, the obtained r 's being comparable to those given on the foregoing page.

4. Question: Do the eight proposed response activities cover sufficiently the types represented by thorough analysis of other tests and the propositions of reading specialists?

Answer: They do not. In explaining this answer, it should be restated that the May Test was organized long before the analysis of other tests was completed. The May Test provided for one question whose answer was implied in the content meaning as a whole. Later, this was found to be too narrow a conception of implied meaning. Such implied meaning is based upon two phases:²

- a. Content as a whole
- b. Content details

The May Test did not provide for implied questions on content details.

¹ This procedure is explained in detail later in the analysis of the findings of the October Test. See p. 160, this thesis.

² This has been referred to and explained in Chapters II, III, p. 23, 68.

Other Results of the May Test

There were other results from the May testing which seemed to be just as valuable as those already stated, but which cannot be described in so definite a form.

The student interest in the test was marked. Whether this was due to the variety of the test details or the intrinsic interest of the content of the paragraphs, the writer does not know. However, this interest was shown by all grades which took the test under the writer's personal direction and was reported by the other cooperating schools. This interest led to two resolves or conclusions:

1. The test detail was not too complicated.
2. Only paragraphs for future testing would be selected whose content material of itself would be interesting.

Type Question VIII (higher values) created active discussion among students after the test was completed. Such remarks as these were made: "What was he after in number eight?" "I answered it the way I thought the teacher wanted it answered." "What did number eight have to do with the way I read the paragraph?" Two seniors from Wyoming asked the writer what was meant by number eight. One of them, referring to the paragraph about the Abbot and the monks, Figure I, page 81 this thesis, stated that

if he considered the Abbot's authority, the answer would be "yes"; if he considered the shepherds (monks) of the Abbey, his answer would be "no".

Numerous test papers showed student uncertainty since short explanatory marginal notes were written on the test papers. The answers or scores from this type rarely differed from what was considered the right answer in the key. However, the writer feels that Question type VIII is a measure of some factor in reading other than comprehension of content in regular reading. In other words, the "higher values" represent something entirely different from determining whether statements are true or false, or answering questions upon implied details. This view was concurred in by the teacher criticisms of the May Test. The students' attitude would show that they recognized a difference between number VIII and the other seven type questions.

This type was not continued in the October Test for three reasons:

1. The uncertainty and dissatisfactions of the experience in the May Test.
2. Very many paragraphs of random reading do not contain acceptable opportunities for application of the

"higher values".

3. It was not contained in the analyses of other tests which placed it beyond the range stated for this problem.

This item of "higher values" has proven very interesting. That it may be applied, in testing, may be very true. Experiment and expansion with it should be a worthwhile topic for future study, but as a contributing factor in the measurement of comprehension of general paragraph reading, it was found inapplicable.

Inspection of the tests showed clearly that certain type questions were more difficult than others. This was determined by the students' total scores per type. If the most difficult type of question be defined as the one on which there were the lowest number of successes, type Question VII (synonyms) ranked first in difficulty, with type Question IV second in difficulty, and type Question V (true-false statements) the last in difficulty, or the easiest. The other type questions in rank were:

- Rank 3 "Follow directions"
- Rank 4 "Question on direct details"
- Rank 5 "Determining whether the content stated a given idea"
- Rank 6 "Question on implied meaning as a whole"
- Rank 7 "Higher Values"

These rankings are not incomparable with those found in the October Test. ¹ Details of this development are not given in this chapter since full explanation is given later for the October findings.

Conclusions Governing the Construction of the October Test

The complete detail of the analyses of the forty-six available reading tests was given in Chapter II. From those conclusions, eleven student response activities were found applicable to paragraph reading. Of those eleven activities, four were determined to be applicable only to special kinds of paragraphs. The seven accepted types of response were:

1. Question, answer found directly in the content details. (Type A) ²

¹

See page 155, this thesis.

²

Chapter II dealt with all responses as they were found in reading tests. For the convenience of the analysis, these types were identified by letters T to Z inclusive, with suitable subdivisions. Concurrent with the analysis, The May Test was in construction, wherein the response activities were identified by questions I to VIII inclusive. This use of separate schemes of identification need not be confusing, since the types are named by brief phrases, e.g., "following directions", "true-false statements", etc., wherever necessary. For the October Test, seven distinct types of student response activity had been selected from the findings of the analyses and the May Test. As a matter of convenience, the seven accepted types were reidentified as A, B, C, D, E, F, G. From this point on, these types will receive those particular identifications and none other.

2. Question, answer implied in the content details. (Type B)
3. Question, answer implying the content meaning as a whole. (Type C)
4. Determining whether the content stated a definite given idea. (Type D)
5. Selecting the object or thoughts to which a given word or thought refers. (Type E)
6. Determining whether given statements are true or false. (Type F)
7. Selecting a word from the content synonymous with a given word. (Type G)

The four types considered applicable only to special reading content were:

1. Following directions
2. Predicting outcomes
3. Organizing thoughts into a regular order
4. Indicating incongruous or irrelevant words.

Only one of these four types (following directions) was used in the May Test, and it was found inapplicable. The other three could not be used, since they required especially constructed paragraphs.

The October Test employed only those types applicable to paragraphs of general reading. Those types were found to be the seven grouped on the foregoing page and at the top of this page, Types A to G inclusive.

Checking Previous Investigations

Since it was the purpose of this investigation to determine the relative value of different types of student response activity in the measurement of reading comprehension, and since the seven types of activity had been selected, it was necessary to determine if possible the extent to which previous investigations might have covered the field.

W. S. Gray's "Summaries of Investigations" was carefully inspected.¹ No reported investigation seemed to have approached reading testing with the point of view held in this problem.

Several investigations seemed to have done one or two phases related to this problem. One such research work has been referred to.² In this report, Woody gives the correlations he found between questions involving content meaning as a whole and scores from other reading tests, and teachers' estimates. Woody did not consider this as a type of student response activity, but as a phase of reading. He did not compare it with other types. However, his correlations with teachers' estimates is interesting, since the same thing was done in this problem in the treatment given

¹ See p. 7, this thesis.

² Woody, Clifford. Measurement of a New Phase of Reading, Journal Educational Research, VIII, November, 1923, p. 315-326.

the October returns. The findings from Woody's comparisons with teachers' marks will be given later.¹

Gates seemed to be discussing the problem of this research in his book "The Improvement of Reading."² In Chapter VIII, "Upper Grade Diagnosis", p. 180-181, he says:

"These facts - that there are several types of reading abilities, that an individual may be competent in some and not in other forms of reading, and that each type is best developed by instruction directed specifically to it - have a clear bearing on the problem of measuring reading ability and of following up the results revealed. In the first place, the typical reading test which yields a single gross score can scarcely measure general reading skill since no single ability exists. Scores from such tests fail to reveal many aspects of reading technique which are of prime importance as a guide to instruction. Even if an elaborate test did measure general reading ability, the mere information that a pupil or class is, in general, good or average or poor would be much less useful to the teacher than a knowledge of strengths and weaknesses in particular types of reading techniques. Instruction aimed at reading in general is likely to be wasteful and ineffective. The nature of reading abilities indicates the need of a number of tests, each of which measures specifically an important type of reading ability. If the pupil shows weakness in one or more of these reading techniques, the type of instruction required is indicated by the nature of the test itself."

Later, in the same chapter, Gates discusses the selection of the four reading techniques which proved to be

¹ See page 192, this thesis

² The Macmillan Company, Chicago, 1928.

the best for the purpose of diagnosing difficulties. ¹

Those techniques were:

1. Reading to appreciate the general significance of a paragraph.

2. Reading to predict the outcome of events.

3. Reading to understand precise directions.

4. Reading to note details.

Two other types of techniques had been tried and were discarded. ² Those two types are as follows:

1. Reading to get the main idea.

2. Reading to outline a paragraph.

Gates states that these two techniques were discarded, first because each involved a procedure closely related to one of the first group of four, and second because the other types gave better returns in testing. ³ "Reading to get the main idea" was related to "Reading to get the general significance", "Reading to outline a paragraph" was related to "Reading to note details". These relations were determined by correlations.

The investigation of Gates seems very nearly to be the same as that of the present problem. The difference

¹ op. cit. p. 184-191.

² Gates, Arthur I. Methods of Construction and Validating the Gates Silent Reading Tests. Teachers College Record, November, 1927, p. 148-159.

³ Ibid.

lies in this: Gates constructed different and separate tests for each technique he was employing, and attempted to determine a pupil's ability in each technique, not the ability of each technique (type) to measure the pupil comprehension of the same selection of reading content.

Later in this thesis, a letter from Gates to the writer is quoted in which this difference is admitted. ¹

It might be well to restate that the October Test offers a paragraph of reading content, following which the student is provided with seven response situations, each based upon the content before him. This scheme is much different from that used by the Gates Silent Reading Test. ²

Another vital difference between the work of Gates and the work of the present experiment is that Gates checked the returns from each of the six techniques (types) with itself and then with each of the remaining techniques, while in the present experiment the use of three criteria is employed.

One other recent investigation seemed to come near the present problem. That investigation has been reported in full by Paul V. Sangren in "The Measurement of Achievement in Silent Reading." ³ In his thesis report, Sangren

¹ Page 103, this thesis; Appendix, p. viii.

² The Gates test is analyzed on p. 35, this thesis.

³ Western State Teachers College, Kalamazoo, Michigan, 1927.

states:

"To make more specific the plan of measurement of silent reading proposed in this dissertation, there is listed below the phases of the process which have received consideration.

- "1. The rate of silent reading.
2. The knowledge of word meanings.
3. The interpretation of materials read in a variety of clearly distinguished silent reading situations. Specifically these situations are:
 - a. Reading to get the facts from paragraphs.
 - b. Reading to follow directions.
 - c. Reading to grasp total meaning of paragraphs.
 - d. Reading to find the central thoughts of paragraphs.
 - e. Reading to make a logical organization of paragraphs."

An inspection of this test ¹ and explanatory discussion in the above-mentioned thesis revealed that Sangren had offered separate and distinct content units for each "phase of the reading process", as he has called them. Of those phases quoted above, the following find parallels in the October Test:

Sangren-Woody Test

Fact Material

Total Meaning

Central Thought

October Test

Question on direct content details

Question on implied content meaning as a whole

Question on implied details, and combinations of the first mentioned.

¹ Sangren-Woody Reading Test, World Book Company, 1927.

Sangren correlated these types with the test composite score. This is the same as one of the procedures described in Chapter V, this thesis.¹ However, Sangren did not attempt to determine which of the seven "phases of the reading process" best contribute to the measurement of reading comprehension.

Letters from Research Men and Women

One other check-up for previous investigations was followed. Certain test authors and men prominent in research were written to. These letters were mailed during April, 1928, and contained definite inquiry concerning:

1. Any possible determination on the part of the test author as to the relative measurement value of the several student response activities involved in the test mentioned.

2. Why certain forms of student response activities were used instead of others.

3. Which type was found easier.

The replies were entirely liberal in caring for question number one, but only a few gave information on numbers two and three. These letters are quoted from, selecting those parts bearing upon the questions. The complete letters will be found in the Appendix. The letters of

¹

See p. 160, this thesis.

Whipple and Kelley are especially interesting.

A. From Dr. A. I. Gates, Teachers College, Columbia University:

"There have been several studies which have been more or less closely related to the problem you mention, although perhaps none exactly like it.

"In the development of what are known as the Gates Reading Tests, I, myself, tried out a variety of comprehension exercises. A very brief report on some of the studies made here appears in the Teachers College Record ¹ of November, 1927, pages 148-159." ²

B. From Dr. L. C. Pressey, Ohio State University, Columbus, Ohio:

"Your suspicions with regard to the relation of direct and implied answers in the diagnostic reading test ³ is quite correct. . . . We have never done anything to find out whether the questions whose answer is obvious or the question whose answer must be implied is the better measure of reading ability." ⁴

C. From Dr. Walter S. Monroe, University of Illinois, Urbana, Illinois:

"The question that you raised in your letter of April 11, is answered, so far as I have information, on page 12 of the bulletin giving the account of the derivation of the Illinois Examination ⁵" ⁶

¹ Reference has been made to this article by Gates. See page 99, this thesis.

² For complete letter, see Appendix, p. viii, this thesis.

³ Pressey Diagnostic Reading Test, Public School Publishing Company, Bloomington, Illinois, 1925.

⁴ For complete letter, see Appendix, p. ix, this thesis.

⁵ For complete letter, see Appendix, p. x, this thesis.

⁶ Page 12 of University of Illinois, Bureau of Educational Research, Bulletin No. 6, discusses the "Equivalence of Duplicate Forms" of the Monroe Standardized Silent Reading Tests, not equivalence of types of student response activity used in the test.

D. From Dean M. E. Haggerty, College of Education,
University of Minnesota, Minneapolis, Minnesota:

"I regret that I have no statistical data bearing
on the question raised in your letter of April eleventh." ¹

E. Miss C. M. Parker, Assistant Supervisor of
Reading, Detroit Public Schools, Detroit,
Michigan:

". . . . In constructing the tests ², we felt it
desirable to measure as much as possible in as simple
a manner as possible. It seemed that two of the phases
most commonly needed in the reading situation were
ability to infer and ability to select one fact from
many, We do not find the two types measure
comprehension equally. We have data on this, but have
not yet completed it in form to make definite statements." ³

F. From Dr. Guy M. Whipple, Secretary, The National
Society for the Study of Education, Danvers,
Massachusetts.

". . . . The introduction of different types of
response ⁴ was likewise done in order, again to avoid
the tendency which otherwise appeared for the students
to become habituated quickly to one type of response and
hunt for that in the material to come as they read." ⁵

G. Dr. E. L. Thorndike, Professor of Education,
Teachers College, Columbia University, New York
City:

"As far as I know, neither Dr. McCall nor anyone

¹ For complete letter, see Appendix, p. xi, this thesis.

² The Detroit Reading Tests, World Book Company, 1927.

³ For complete letter, see Appendix, p. xii. The
Detroit Reading Test involves only two types of student
response activity. See p. 33, this thesis.

⁴ Whipple's High School and College Reading Test, Public
School Publishing Company, Bloomington, Illinois.

⁵ For complete letter, see Appendix, p. xiii, this thesis.

else has treated separately answers obtained by writing an answer which uses a word or phrase given directly in the paragraph and answers requiring a word or phrase that is only implied in the paragraph. . . . * 1

H. From Dr. Paul V. Sangren, Director of Research,
Western State Teachers College, Kalamazoo,
Michigan.

* . . . I think that the best answers I could give to your questions are contained in the monograph ² which I shall send you on the Measurement of Achievement in Reading.* ³

I. From Dr. Truman L. Kelley, Professor of
Education, Stanford University, Stanford
University, California.

No such study as you mention has been made, but the point has been considered at some length by the authors of the test ⁴ and they felt that both types of paragraphs should be represented in a paragraph meaning test. . . . If you do make a study of this matter, I should be very much interested in your results. ⁵

Construction of the October Test

The May Test had been divided into two divisions:

- (a) Test I Grades IV, V, VI, VII, VIII
- (b) Test II Grades IX, X, XI, XII

Certain pupils in the eighth grade had been given Test II,

¹ For complete letter, see Appendix, p. xiv, this thesis

² This work has been referred to in this connection.
See p. 100, this thesis.

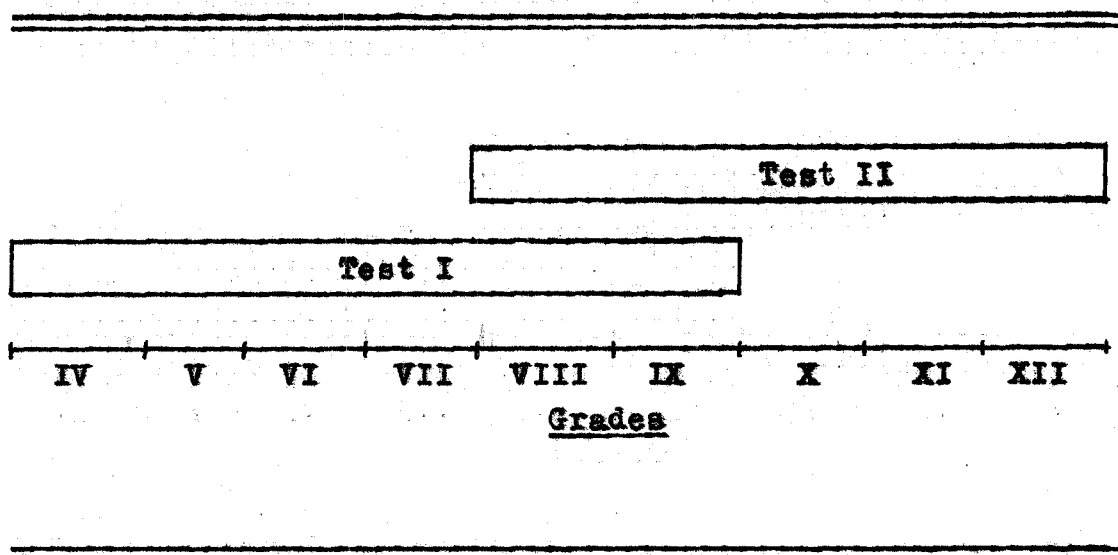
³ For complete letter, See Appendix, p.xv, this thesis

⁴ Stanford Achievement Test. See p. 51, this thesis

⁵ For complete letter, see Appendix, p.xvi, this thesis

and certain pupils in the ninth grade had been given Test I, for overlapping.¹ Graphically expressed, the May Test covered the following grades:

Figure II. Extent of School Grades Covered by Each Division (Test) of the May Test.



It was decided to add grade III to the extent of the October Test, and to divide this test into three unit tests:

- (a) Test I Grades III, IV, V, VI
- (b) Test II Grades VII, VIII, IX
- (c) Test III Grades X, XI, XII

Roughly, this arrangement would provide an elementary school test, a junior high school test, and a senior high

¹ See p. 87, this thesis.

school test. Also, this arrangement of tests would provide a field of ten school grades for this experiment and would cover two and partially cover one more of the four periods of reading instruction, as recommended by the National Committee on Reading.¹ The two periods completely covered are:

Period III. Grades IV, V, VI. Period of wide reading to extend and enrich experience and to cultivate important reading attitudes, habits, and tastes.

Period IV. Grades VII, VIII, IX, X, XI, XII. Period of refinement of specific reading attitudes, habits and tastes.

The period only partially covered is:

Period II. Grades II and III. Period of rapid progress in fundamental attitudes, habits and skills. This period is only partially reached by the October Test. Grade III was used in the October Test for the sake of the experimental problem and to determine whether pupils of Grade III could handle profitably a test of the detail such as the October Test contained.

With the seven types of student response activity determined upon, and the school grades selected for the

¹ The Twenty-fourth Yearbook of the National Society for the Study of Education, Part I, Chapter III, especially p. 24-25. (1925). Public School Publishing Company, Bloomington, Illinois.

experiment, the October tests were developed with the idea of securing, if possible:

1. Materials for test content which would be graded to the school level of the students taking each test.

2. Content paragraphs of intrinsic interest to each student group.

3. Content paragraphs from as many fields of subject matter as possible.

4. Content paragraphs from a wide range of sources.

5. Content paragraphs of a general type of reading.

6. Paragraphs within each test which would increase in difficulty.

7. Paragraphs which were well written from the standpoints of correct English, acceptable organization, and coherence.

Since the material used in the October Test later was to be used for the construction of a possible standardized test in paragraph reading, enough reading material was placed in the October Test to provide three forms for the final standardized test. The May Test had given ample evidence that students could take ten paragraphs of reading content and satisfy the student response situations in less than one half-hour. This amount seemed to be ample for one form of such a test. Each of the three October Tests (I, II,

III) contained thirty paragraphs of reading content and thirty sets of student response situations of seven types each (Types A to G, inclusive.) This amount of material provided an extraordinary length for an experimental test. Since we know that lengthening a test enhances its reliability^{1,2}, it may be stated that the October Tests should have been a very reliable instrument for measuring the desired factors.

No student could have completed the thirty paragraphs of reading content with the accompanying student response situations in one sitting, without serious fatigue. It was decided to rank (by judgment) the thirty paragraphs according to difficulty and place alternate paragraphs in two separate groups, known as Division I and Division II. This arrangement provided each student two divisions of test material, each division comprising the equal of one and one-half forms of the final standardized test. Forty-five minutes were allowed for each division of the test. This amount of time proved to be sufficient for the purposes of the October work. The two divisions were given to the students within the same school week.

¹ Monroe, Walter S. Introduction to the Theory of Educational Measurements, Chapter IX, p. 202-205, Houghton Mifflin Company, 1923.

² Garrett, H. E. Statistics in Psychology and Education, Chapter VI, p. 268-272, Longmans, Green and Company, 1926.

In order to minimize the influence of familiarity, by equally distributing it, one-half the students of each grade took Division I first and Division II second. The other half of the students for each grade took Division II first and Division I second.

This general picture of the organization of the three tests having been given, it may be seen that the October tests attempted to do the following things:

1. Provide ample reading material for each student taking the test.
2. Provide a wide variety of interesting content in the material of the tests.
3. Provide a wide field for the operation of the experiment in the ten school grades, grades III to XII inclusive.
4. Minimize the influence of familiarity by distributing it equally.
5. Apply each type of student response activity to each grade level, in numerous content units.

Difficulties in Developing the October Test

The total number of paragraphs used in the three October Tests was ninety. Ninety paragraphs may seem a small number when compared with the countless books, magazines,

pamphlets, papers, etcetera, at anyone's command. Securing ninety acceptable paragraphs was the most difficult problem in developing the October tests. Selecting these paragraphs began in February, 1928, since several used in the May tests also were used in the October tests, and was completed in late September, 1928. The selection was completed at that time, not because the best ninety had been selected, but because no more time could be taken for that factor. All sources known to be used by school students were examined. Those sources from which the final paragraphs were selected were:

School readers

School books of supplementary reading

School literature

School textbooks

School magazines

School papers

Student themes

Reference books

State papers

Current magazines

Current newspapers

Books on travel, history, geography, business, narrative, description, etc., not included in the above.

Each paragraph first was put to these two tests:

1. Is the content of intrinsic interest to the age and grade level for which it is intended?
2. Is it sufficiently well written to be acceptable from the standpoint of English, organization, and coherence?

The detailed inspection given the forty-six reading tests available convinced the writer that many such tests had not given consistent attention to these all-important factors. Students, like other people, deserve to have interesting material to read, and they deserve to have well-written content to read. A reading test situation is artificial enough without containing elements of poor intrinsic interest and poor content construction.

Of these two factors, probably paragraphs of interesting content were the easier to find. It was very difficult to secure paragraphs which were well-written. This was of particular importance, since one type of student response activity depended upon paragraph meaning as a whole. In the field of literature, such paragraphs were fairly easy to obtain, when other factors had been met, but in the field of school textbooks and current publications, the problem became serious.

In 1923, when Woody first proposed asking a student to give the "general sense" of a paragraph ¹, he states

¹ Woody, Clifford. op. cit. See p. 97, this thesis

that he found it very difficult to find suitable paragraphs wherein this type might apply.

In discussing the development of the Monroe Standardized Silent Reading Tests ¹, Monroe states that he had great difficulty in finding suitable paragraphs in the content of school texts.

It may be interesting to note the manner in which several tests using Type C (content meaning as a whole) have secured paragraphs for this purpose:

a. The Sangren-Woody Test (1927):

"The test (Test IV, Total Meaning) is composed of a number of short disconnected paragraphs selected from the reading materials of the grades under consideration." ²

b. Gates Silent Reading Tests (1926):

". . . . All of the materials were prepared by persons of special fitness after a period of apprenticeship in the task. The paragraphs used were selected as the best of a much larger number." ³

c. Poley Precis Test (1927): An examination of Form I reveals that of the eight selections, four were taken from literature, one from an editorial in a standard newspaper, and two from high school textbooks. ⁴

In selecting paragraphs for the October tests, the following steps were taken:

¹ Monroe, Walter S. The Monroe Standardized Silent Reading Tests. Journal Educational Psychology, IX: 303-312, June, 1918.

² Sangren, Paul V. Op. cit. p. 18. Sangren does not state definite sources.

³ Gates A.I. The Improvement of Reading, The Macmillan Company, 1928. Chapter VIII, p. 184.

⁴ Poley, Irvin G. The Public School Publishing Company, Bloomington, Illinois, 1927.

1. An exhaustive study was made of all school texts and supplementary books available in the University of Cincinnati Library and the private collection of one of the University faculty members.

2. A further study was made in the large textbook library of the College of Education, Ohio State University, Columbus, Ohio.

3. A concurrent study of magazines, papers, and other publications was made in the University of Cincinnati Library.

4. Many paragraphs which were considered suitable were copied and held in reserve for criticism and selection.

5. All paragraphs were checked for general criticism by individuals other than the writer. The ninety paragraphs thus chosen were handed to an expert in the field of English Composition for further criticism and suggested revision.

6. Revision of paragraph composition was needed for several school text contents.

7. The paragraphs on mathematical topics alone were written especially for the October Test. All other paragraphs are adaptations of, or quotations from, existing sources.

After the questions, following each paragraph presenting

the student response activities , had been developed by the writer, they too received the same criticisms and revision mentioned for the paragraph content.

The paragraphs and response activity questions of Test I were checked with the Thorndike Word Count.¹ This was done to graduate the paragraphs from grade III level to grade VI level. However, paragraphs taken from a few current school third grade readers contain a few words too difficult for that grade. Such words will be changed or the paragraphs omitted from the final test.

The Form of Each Type Question

Final decision had to be made with regard to the form in which each type of student response situation was to be presented. These decisions were made in the light of information gained from the completed analyses of the forty-six available reading tests and the experiences of the May tests. Each type will be discussed separately:

Type A. (Activity based upon giving thought stated directly in the content details). Most of the forty-six available tests had presented this type in the form of a question whose answer was to be written by the student. The

¹ Thorndike, E. L. The Teachers Word Book. Teachers College, Columbia University, New York City, 1921.

May Test results were satisfactory enough to show that this form was applicable, and therefore was continued in the October tests. This form also has the advantage of involving no element of chance. The questions were so stated that writing one word from the content would answer them.

Type B. (Activity based upon giving thoughts implied in the content details). This type had not been used in the May tests. Since the answer was implied in the content and could not be specifically taken from the paragraph, suggested answers to the questions were given to the student. It was his responsibility to select the correct suggestion and indicate it in the proper blank. Four suggestions were offered.

Type C. (Activity based upon giving thoughts implying the content meaning as a whole). Type C was the same in form as Type B, excepting that the suggested answers were not based upon possible details. One suggestion correctly stated the content meaning as a whole.

Type D. (Activities based upon determining whether or not the content stated a given idea). This type was not changed in form from the May tests to the October tests. The situation was stated in the form of a question with only

three possible answers: (1) The content contained an affirmative reply to the question; (2) the content contained a negative reply to the question; (3) the content contained no reply to the question.

Type E. (Activities based upon giving words or thoughts to which given words refer). Type E had been presented in the form of a question with four suggested answers taken from the content. In order not to make this a work in formal English, broad use of Type E was employed. The suggested answers were given to simplify the student activity. The May Test returns showed no reason for change, and the form was continued to the October Test.

Type F. (Activities based upon judging statements true or false). The completed analyses of the forty-six tests showed that some tests asked students to indicate the true statements, some to indicate the false statements, and some to mark each statement true or false. Obviously, if the true statements are marked, the unmarked statements would be considered false. The May and October Tests both asked for an indication of only the true statements, believing this would be as easy or easier than any other method.

The contention that stating an error is wrong has been proven groundless. Giles M. Ruch offers several disclaimers

to the contentions: (1) The contention has never passed the stage of being merely an assertion; (2) no trustworthy evidence has been produced to give backing to the contention; (3) there is no drill or prolonged exposure given to the falsehood, which would "fix" the wrong thought connections; (4) in actual life, students always will be called upon to discriminate between the true and the false. ¹

Type G. (Indicating words from the content synonymous with or similar to given words). Several forms for the use of this type might have been employed. Suggested synonyms might have been given, one of which would have been correct, but the element of suggestion might have been strong. This was not necessarily a vocabulary or word matching activity. It was to be a thought meaning activity, therefore synonyms of "key words" of the content were given, the student being required to write the proper word on the blank provided.

More will be said of the forms used for these types when discussing scoring the test. ²

The October Test Compared with Established Criteria of Good Tests

It may be interesting to compare the material and

¹ Op. cit. p.125-126.

² See Chapter V, p. 136-143, this thesis.

construction of the October Test with accepted and established criteria for good objective tests. In the first place, it must be born in mind that the October Test was an experimental test, developed primarily to furnish data for an experiment in the measurement of reading comprehension. These data would be more valuable if the test measured up to known standards of a good test, and incidentally the final test would be a better instrument in measuring reading comprehension if all possible angles were checked at each stage of the test development.

In 1924, Ruch published a thorough-going and critical analysis of standard tests.¹ He set forth certain criteria which should be met. Quotations are given freely from this book:

"I. Validity - the degree to which a test measures what it purports to measure.

"Validity cannot be expressed in purely quantitative terms. . . . The degree of validity must be left in part to the judgment of competent persons and expressed in statements of the methods by which the validation of the test materials was guaranteed. . . . The more important methods of validation may be stated as follows:

1. Judgments of competent person.
2. By correlation against an outside criterion.
3. By computing the percentages of pupils answering each item correctly at successive age levels.

1

Op. cit. Chapter II, p. 13-39.

4. By experimental studies of social utility.
5. By harmonizing with the studies of educational committees and bodies on curricula, courses of study, minimum essentials, etc.
6. By analysis of textbooks and courses of study.
7. By combinations of the above.*

Items 1, 2, 5, and 6 have been employed in the development of the October Test. Item 3 will be used in developing the final test. Item 6 formed the basis of the whole experiment. As an instrument of measuring reading comprehension, the October Test should have a high validity, if any such reading test bears a valid relationship with reading comprehension.

*II. Reliability - the degree to which a test or examination measures what it really does measure, not necessarily what it purports to measure (synonymous with accuracy of measurement).

*. . . . By practical necessity, measurement is always sampling. The causes of unreliability fall into several main groups:

1. Subjectivity
2. Brevity
3. Coarse units
4. Nature of the function to be measured
5. Actual variations in the pupils tested from time to time. *

By these standards, the October Test should have been a reliable measure of reading comprehension, since it is not subjective; it is exceptionally long; the units of the test are not "coarse" but are paragraphs, each followed by

seven student response situations; it measures a function which has been considered measureable, by objective tests, for more than fifteen years; the pupil variations were found not to be extreme. ¹

III. Objectivity - the degree to which the personal element or judgment is eliminated in the score of the answers.

The October Tests were all scored by adults who had no connection with or knowledge of the students taking the tests.

IV. Ease of Administering and Scoring.

There was only one fatiguing element in scoring the October Test. Each Test was twelve pages long. Otherwise, the scoring consisted only of laying a key alongside the columns of student answers and checking.

V. Standards - the question of standards or norms is not applicable in the technique of written examinations proper. . . . This properly is left to the standard test.

The October Tests involved no norms or standards. The final tests will have such data.

The criteria listed by Ruch alone have been quoted. Similar criteria have been suggested by other authorities in

¹

This refers to data given in Chapter V, this thesis

the field of test construction and criticism, e.g.,

William A. McCall ¹, Walter S. Monroe ², Ruch and Stoddard ³,
Levine and Marks ⁴, Green and Jorgensen ⁵, and others.

Physical Set-Up of the October Test

Six hundred copies of the May Tests had been given to students in grades IV to XII. The plans for the October testing called for a far wider and far more numerous testing. The May Tests had been mimeographed. Since the October Tests were to be given to about twelve thousand students in all, with each test three times the length of one of the May Tests, it was necessary to print the October Tests. Twelve thousand October Tests were equivalent to thirty-six thousand May Tests, so far as amount of material was concerned.

¹How to Measure in Education, Chapters VII, XI, p. 105-, 307-, The Macmillan Company, 1922.

²The Theory of Educational Measurements, Chapter IX, p. 182-231, Houghton Mifflin Company, 1923.

³Tests and Measurements in High School Instruction, Chapter IV, p. 45-58, The World Book Company, 1927.

⁴Testing Intelligence and Achievement, Chapter VI, p. 188-236, The Macmillan Company, 1928.

⁵The Use and Interpretation of Educational Tests, Chapter IV, section B, p. 72-87, Longmans, Green and Company, 1929.

As stated previously, each of Tests I, II and III was divided into two divisions, of fifteen paragraphs each. These divisions were printed separately, each one being six pages in length.

The printed tests of the October group will be found in the Appendix, following page xxviii, this thesis. An inspection of each division will reveal the proper blanks for information concerning the student and a paragraph of explanation and the trial exercises. This paragraph of explanation and the trial exercises are now felt to be inadequate. The explanation should be longer and the trial exercises should be more numerous. These features in Test I were found to be more satisfactory than those of Tests II and III. The final tests will attempt greatly to improve these factors.

The actual content of the test begins on page one of the test. This feature may be criticized adversely. Experience showed that the students were over-eager to begin and less careful to note the instructions and the fore exercises. No content of the final test proper ¹ will be placed on page one of the final test.

The student responses were to be given in the proper blanks arranged in columns at the right following each

¹ The completed test intended for publication.

paragraph. This arrangement was provided to afford exact conditions for each paragraph unit of the test content and to facilitate scoring. The student responses in all cases consisted of writing one word or one numeral.

In arranging the seven types of activity situations, following the paragraphs, they were placed in no regular order. However, they are numbered from I to VII. A small letter, a, b, c, d, e, f, g, was placed to the right of each question type that it might be easily identified when the scoring and statistical analysis were done following the administration of the tests. This means that Question I may be Type A for one paragraph and Type E for the second, Type F for the third, and so on.

Administering the October Tests

The October Tests were given to students in the following school systems and in the following grades of those systems:

Table III. School Systems Participating in the October Testing, with Grades Used in Each System

School Systems	3	4	5	6	Grades		9	10	11	12
					7	8				
Athens, Alabama	X	X	X	X	X	X	X	X	X	X
Athens, Georgia	X	X	X	X	X	X	X	X	X	X
Auburn, Indiana					X	X	X	X	X	X
Canton, Ohio	X	X	X	X	X	X	X	X	X	X
Chattaroy, W. Va.	X	X	X	X	X	X	X	X	X	X
Chillicothe, Ohio							X	X	X	X
Clinton County, Ohio	X	X	X	X	X	X	X	X	X	X
Covington, Kentucky	X	X	X	X						
Isabel, S. D.	X	X	X	X	X	X	X	X	X	X
Liberty, Indiana	X	X	X	X	X	X	X	X	X	X
Praise, Kentucky	X	X	X	X	X	X	X	X	X	X
Remington, Indiana				X	X	X	X	X	X	X
Rochester, New York	X	X	X	X	X	X	X			
Springfield, Mo.	X	X	X	X	X	X	X	X	X	X
St. Bernard, Ohio					X	X	X	X	X	X
Union, Kentucky	X	X	X	X	X	X	X	X	X	X
Williamsport, Pa.				X	X	X	X			
Willow City, N. D.	X	X	X	X	X	X	X	X	X	
No. of States represented							11			
No. of School Systems							18			
No. of Schools							53			
No. of Students (gross)							11751 ^a			

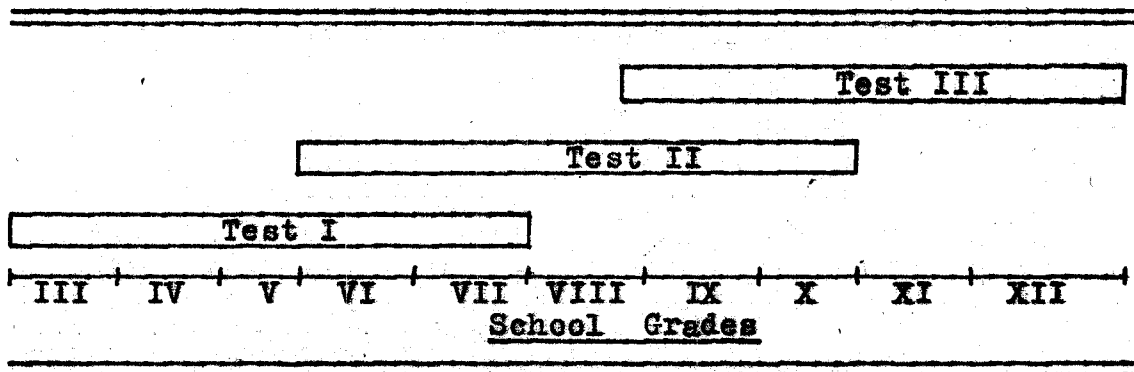
^a The 11751 students include 2000 used in the supplementary experiments conducted at Chattaroy, W.Va. and Clinton County, Ohio.

The instructions to teachers for administering the test were comparatively simple, and contained, in brief, these items: ¹

1. Explanation of test divisions.
2. Time limit of 45 minutes.
3. Emphasis on explanation to students, inviting questions by them.
4. Permission to use blackboard for explanations to students.
5. Request for returning tests.

Certain students in grades VI-VII and VIII-IX were given the tests intended for the grades above and below their grade. These were cases of overlapping. Figure II presents graphically the field covered by the separate tests.

Figure III. Extent of School Grades Covered by Each Test of the October Test Group.



¹ See Appendix, p. xviii, this thesis.

The total number of tests given per grade was not constant. Table IV gives the gross total number of students taking both divisions of one of the tests.

Table IV Gross Number of Students Participating in the October Testing.

School Grades	Number of Students
III	959
IV	965
V	946
VI	1011
VII	1295
VIII	1188
IX	1278
X	736
XI	728
XII	645
Gross Total	9751 ^a

Tables III and IV, together with Figure II, present in brief form the plans which were culminated in the administration of the October testing. Two main points were completed in that testing. They were:

1. To provide a wide field of school grades for the operation of this experiment in student response activities.
2. To secure an adequate number of students for the

^a This number does not include those students used as subjects in the two supplementary experiments at Chatteroy, W. Va. and Clinton County, Ohio.

operation of the experiment, scattered over a large geographic section of the country.

This information concludes the account of the development and administration of the experimental tests. The returns received from the October Test comprise the data of this experiment. Succeeding chapters will explain the refinement and treatment of those data.

Summary

Analyses of forty-six available reading tests indicated, and the results of the experimental test given in May, 1928 showed conclusively, that there were eleven types of student response activity applicable to paragraph reading.) Four of the eleven types were proven to be "special", i.e., applicable only where special paragraph contents were developed. The four special types were:

1. Following directions
2. Predicting outcomes
3. Organizing thoughts into a regular order
4. Indicating incongruous or irrelevant words

The seven types ^{which were} applicable to general paragraph reading were:

1. Direct question on content details
2. Implied question on content details

↑
same

3. Implied question on content meaning as a whole
4. Determining whether or not the content stated a given idea
5. Indicating words to which given words refer
6. Indicating true statements from true-false
7. Giving words from content, synonymous with given words

Results from the May experimental tests also demonstrated the inapplicability of a measurement of the so-called "higher values" of reading, when applied to a complex test of this kind.

The October Test was divided into: Test I, grades III, IV, V, VI; Test II, grades VII, VIII, IX; Test III, grades X, XI, XII. Each Test consisted of two divisions, of fifteen paragraphs of reading content each. The materials for the test were gathered from all general sources of students' reading; only the paragraphs of arithmetic content were written especially for this Test.

The October Test was administered to nearly twelve thousand students, in eighteen school systems located in eleven different states. The tests were given during the last two weeks of October and the first two weeks of November, 1928. All tests, excepting the 2000 used in the two supplementary experiments, were returned to Cincinnati by December, 1928, when scoring and tabulating were begun.

Chapter V

SELECTION AND TREATMENT OF DATA

Selection of the Tests

Table IV, given on page 127, presented the following aggregate totals of tests given per grade:

<u>Grade</u>	<u>Gross Total Number of Tests Given</u> ^a
III	959
IV	965
V	946
VI	1011
VII	1295
VIII	1188
IX	1278
X	736
XI	728
XII	645
Sum	<u>9751</u>

Out of this total number, certain pupils were given the tests intended for students above or below their grade for overlapping. ¹ The results thus obtained contribute toward the refinement of the test, as such, but are not an integral factor of this experiment. The gross totals per

^a From this point on, totals and other data will not include the 2000 cases of the two supplementary experiments.

¹ See Figure III, p. 126.

grade contributing to this experiment then become:

<u>Grade</u>	<u>Gross Total Number of Tests Used</u>
III	959
IV	965
V	946
VI	911
VII	1085
VIII	1188
IX	1058
X	606
XI	728
XII	645
Sum	9081

The tests returned by the cooperating schools were carefully inspected. Where a test was found with the middle sheet lost, the test was discarded. If a pupil took only one division of the test, that pupil's test was thrown out. In no case was a test discarded because of the character of pupil work. The handling of these thousands of tests by some fifty schools was remarkably accurate. After the incomplete tests were removed, the totals per grade were:

<u>Grade</u>	<u>Final Total Number of Tests Used</u>
III	906
IV	903
V	897
VI	906
VII	1070
VIII	1172
IX	1048
X	598
XI	715
XII	640
Sum	8855

From the final total, given on the foregoing page, the samplings were taken.

It was desirable to secure random or unbiased samplings from each grade. Therefore, the order in which the tests were received from the schools was not disturbed. The schools returned the tests in the order they had been taken from the classes. It was desirable to have approximately three hundred tests per grade.¹ Therefore, the samplings were made in the following manner:

Elementary Grades: Every third test was selected. This represents a straight $33\frac{1}{3}$ per cent sampling.

The Middle Grades: Every third test was selected, and from the tests thus selected in grades VII and IX, every sixth test was removed. In grade VIII, every fourth test was removed from the selected group. This represents a sampling of slightly less than $33\frac{1}{3}$ per cent.

Senior High School Grades: Every second test was selected. In grade XI, every seventh test was removed from the selected group. This represents a sampling of slightly less than 50 per cent.

The total numbers for the selected groups-per-grade used for sampling will be found on the page immediately following:

¹ See p. 174 , of this thesis.

<u>Grades</u>	<u>Total Number of Tests Used for Sampling</u>
III	302
IV	301
V	299
VI	302
VII	300
VIII	302
IX	317
X	299
XI	286
XII	301
Sum	3009

The aggregate total of subjects contributing to this experiment is 8855 (total of numbers per grade from Table page 131).

The aggregate total of subjects used in the sampling is 3009 (total of numbers per grade from Table above).

Scoring the Tests

These 3009 tests were scored between Thanksgiving and Christmas, 1928. It might be well to state again that each test was composed of two divisions, totaling thirty paragraphs of reading content. Each paragraph was followed by an aggregate of ten student response opportunities. In other words, the task of scoring necessitated checking 902,700 student responses. The scoring was accomplished by laying the columns of the keys along the side of the columns

of student answers. The right answers were marked. The errors were left unmarked. Obviously, this took longer to score the tests than it would to have checked only the errors. However, it was necessary to record each student's response returns. Since these returns were to be recorded in the form of student's successes, the successes or rights were checked on the tests.

Nine competent adults scored the tests. With the exception of the writer, each scorer handled the material of only one grade. This removed the necessity of familiarity with more than one test. The scoring was comparatively easy and rapid. However, recording the scores on the proper student record sheet was a different kind of task. The record sheet was prepared so as to show the following data: Name of pupil and school; identification of test, grade, and age; pupil's score for each type of response activity for each paragraph of each division; pupil's total score for each paragraph; pupil's total score for each type of activity throughout the test; the aggregate total score.

A glance at the accompanying score sheet, Figure IV, will give a picture of the record of a real case selected at random from grade IX. The sums of columns a to g inclusive represent the totals earned per type. The sums of the rows

Figure IV. Sample Student's Score Sheet, October Test.

Score: 273School: Washington Jr.Pupil: Elizabeth DickersonTest: I (II) IIIGrade: C9 Basr.Age: 14-0
Yr; Mo.A.A. = 85
I.Q. = 120Legend:Score: Pupil total
score on test.School: Name of school
where test was given.Pupil: Pupil's name.Test: A circle drawn
around I, II, or III
identifies which
test the pupil took.Div. I-II: Division I
or Division II of the
test.a, b, c, etc.: Types of
student response
activity.Total: Total of
pupil's score per
type or per para-
graph.A, B, C, etc.: The
thirty paragraphs.

Div.		Types of Activity							Total
I-II		a	b	c	d	e	f	g	
A		/	/	/	/	/	3	/	9
	A	/	/	/	/	/	4	/	10
B		/	/	/	/	/	4	/	10
	B	/	/	/	/	/	2	/	8
C		/	/	/	/	/	4	/	10
	C	/	/	/	/	/	4	/	10
D		/	/	/	/	/	4	/	10
	D	/	/	/	/	/	4	/	10
E		/	/	/	/	/	4	/	10
	E	/	/	/	/	/	4	/	10
F		/	/	/			4	/	8
	F	/	/	/	/	/	3	/	9
G		/	/	/		/	4	/	9
	G	/	/	/	/		4	/	9
H		/	/	/	/	/	4	/	10
	H	/	/	/	/	/	3	/	9
I		/	/	/	/	/	3	/	9
	I		/	/	/	/	4	/	9
J		/	/	/	/	/	3	/	9
	J	/	/	/	/	/	3	/	9
K		/	/	/		/	3	/	8
	K			/	/	/	4	/	8
L		/	/	/	/	/	4	/	10
	L	/	/	/	/	/	4	/	10
M		/	/	/	/	/	4	/	10
	M	/	/	/	/	/	4		9
N		/	/			/	4	/	8
	N	/	/			/	4		7
O		/	/			/	2	/	6
	O	/	/	/	/	/	4	/	10
Total		28	29	27	24	28	109	28	273

represent the totals per paragraph. These numbers represent raw scores. The total raw score is the sum of the column headed "Total".

Since, in the test, the different types were given in no regular order following each paragraph,¹ the recorder needed to be very careful in setting down a pupil's performance on the record sheet. The aggregate total score was checked. If it were secured from the sum of the paragraph totals, it was compared with the sum of the type totals, or vice versa.

Each individual scorer's work was checked. It may be said, with confidence, that few errors were discovered. The results may be accepted as an accurate record of the performance of the 3009 students used in the sampling.

Method of Computing Scores

One of the most important decisions made in collecting the data for this experiment lay in the choice of the method for computing the scores of the tests. All of the "rights" were marked by the scorers, but how were these "rights" to be counted, with so many types of questions and so many forms in use? It is obvious that asking a question with four suggested answers is different from presenting

¹ See p. 124, this thesis.

four true-false statements. Each set of student responses involved:

1. Two questions whose answers were to be written, without suggestions being given.
2. Three questions whose answers were to be indicated from four suggested responses.
3. One question whose answer was to be indicated from three suggested responses.
4. Four true-false statements of which the true statements were to be indicated.

A brief glance at this situation might convince one that the circumstances involved were highly technical and nothing less than a statistical tangle.

The earlier writers in the field of the "new type tests" have proposed formula for computing the scores for each of the last three groups mentioned above. These formulae had been recommended since the element of chance was supposed to be very influential. Four of the formulae are given here:¹

1. Where test items provided for the choice of one answer from two

The score = Rights - Wrongs, or

¹ Douglass, Harl R. Modern Methods in High School Teaching, Chapter XVI, p. 451-453, Houghton Mifflin Company, Chicago, 1926.

2. Where test items provided for the choice of one answer from two

$$\text{The score} = \frac{\text{Total number of items} - \text{twice the number of wrongs}}{1}$$

3. Where test items provided for the choice of one answer from three

$$\text{The score} = \frac{\text{Rights} - \text{Wrongs}}{2}$$

4. The general formula for choice of one answer from several (x)

$$\text{The score} = \frac{\text{Rights} - \text{Wrongs}}{x-1}$$

These formulæ were said to furnish the most likely true score, but "it is quite likely that one will guess correctly a few more or a few less than the number due to chance. To the extent that this happens, the score assigned is not an accurate index of the ability of the pupil".²

It certainly would have been an easier task to have counted all the "rights" and ignored the "wrongs" than to have applied the suggested formulæ. It was the element of chance that had to be cared for in the decision.

Fortunately, several careful investigations had been

¹ McCall, William A. How to Measure in Education, Chapter IV, p. 121-123, Macmillan Company, Chicago, 1922.

² Douglass, Harl R. Op. cit., p. 451-453.

made in recent years which aided in making the decision of computing the score. These investigations do not agree with McCall's conclusions made in 1922.¹ However, his statements were made upon the basis of penny tossing and penny matching, not students solving multiple response tests.

Ruch reports the following reliability of 100 items offered in the following types of tests:²

<u>Type of Question</u>	<u>Reliability coefficient</u>
Recall	.90
5-Response	.89
3-Response	.75
2-Response	.85
True-False	.71

If there is a set limit of time instead of a fixed number of items, the reliability is:

<u>Type of Question</u>	<u>Reliability coefficient</u>
Recall	.90
5-Response	.90
3-Response	.81
2-Response	.90
True-False	.82

The increased reliability of the two and three response types lies in the fact that more such items may be covered in a given unit of time than with recall types. Length increases

¹

McCall, William A. Op. cit., p. 123.

²

Ruch, G.M. The Improvement of the Written Examination, Chapter V, p. 111-113. Scott, Foresman and Company, New York City, 1924.

reliability.

The experiment was carried further. Each of the types was corrected for the questionable element of chance, and the reliability for each then computed:

<u>Reliability Coefficient</u>		
<u>Type of Question</u>	<u>Uncorrected for Chance</u>	<u>Corrected for Chance</u>
Recall 1,2	.81	.81
5-Response	.80	.77
3-Response	.60	.67
2-Response	.74	.68
True-False	.56	.41

With all types of multiple response, correction for chance lowered the reliability, excepting for 3-response.

Quoting from pages 118-119, Ruch observes: ³

"The 3-response test, it will be seen, has behaved rather erratically throughout all of our experiments, proving to be much less reliable than the 2-response type, even when not corrected. The reasons for this are unknown, and the difference may not be great enough to possess statistical significance. By and large, there is no reason for our feeling confidence in the validity of corrections for chance, as far as present data are concerned. . . . The recommendation is therefore tentatively put forth that multiple-response tests should not be corrected for chance."

Ruch adds similar data from the Terman Group Test of

-
- 1 Similar to Type A (direct details) of the present problem.
 - 2 There is no correction for chance in Recall types.
 - 3 Op. cit.

Mental Ability to show that corrections for chance lowered the reliability and increased the variability.

One other phase of this scoring has been described by Douglass.¹ That is the matter of counting scores according to scientifically arrived at "weights" for the several test items. He gave a series of equated tests to a number of classes. The one series was "weighted", the second series was "unweighted". The correlations between the two ranged from $r = .961$ to $r = .999$. These r 's are extremely high, indicating that determining weights in computing scores gained little or nothing insofar as accuracy of measurement was concerned.

Charters² reported practically the same results. He secured an r of "something over $r = .90$ " between equated tests, one "weighted for scoring", the other unweighted.

Final consideration of these investigations may best be given by quoting directly from two men already referred to:

1. Ruch gives these items in his summary on

¹ Douglass, Earl R. "Is it Necessary to Weight Exercises in Standard Tests?" *Journal Educational Psychology*, 14: 109-112. February, 1923.

² Charters, W.W. *Journal Educational Research*, Vol. I, 225. April, 1920.

"Studies of Types of Examinations":¹

"(A).

(B).

(C). Correction for chance by the usual methods does not seem promising. The reliabilities are probably decreased by such corrections.

(D). It is probably better to increase the length of objective examinations somewhat in order to eliminate chance successes rather than to give short examinations and depend upon statistical corrections.

(E). Guessing is probably relatively infrequent in examinations of the proper degree of difficulty."

2. Douglass, in his "Modern Methods of High School Teaching", states:²

"It is also true that the relative standing of the pupils would not be changed if one simply took the number of correct answers as the score. There is a distinct advantage in following this latter procedure in the case where a test consists of more than one variety of test exercises, as, for example: 5-response items, 3-response recognition items, a true-false series, and a completion series - or similar combination. . . . In addition, it has been shown that the correction for chance tends to decrease slightly the reliability of the scores."

In the light of these investigations, the October Test scores were computed by counting the "rights". A pupil's

¹ Ruch, G.M. Op. cit., Chapter V, p. 121.

² Douglass, Earl R. Chapter XIV, p. 453, Houghton Mifflin Company, Chicago, 1926.

gross raw score, then, equals the total number of rights he earned on the two divisions of the test - Division I and Division II. When correlations were computed, the matter of weighting was considered. Explanation will be given later.

Character of the Test Returns (Test I)

After all scoring and recording were done, the data were inspected to show some measuring qualities of the test. The means of the raw scores per grade were computed. First considering the Elementary Test, these means are:

Table V. Means of Raw Scores. Test I ^a

	<u>Grades</u>			
	III	IV	V	VI
Total Score	84.60	148.20	186.30	226.86
Type A	8.42	15.28	19.49	23.58
Type B	8.39	15.64	19.39	24.22
Type C	7.63	15.33	20.75	24.58
Type D	8.24	15.02	18.44	22.31
Type E	6.95	12.87	15.53	20.38
Type F	44.80	70.56	85.44	96.12
Type G	3.25	7.31	11.66	16.76

^a The S. D.'s of these distributions are given in Table I of the Appendix, p. xx, this thesis.

When Type F¹ scores are reduced to a basis comparable with the other types, the table shows:

Table VI. Scores on Comparable Basis. Test I

	<u>Grades</u>			
	III	IV	V	VI
Total Score	51.00	95.28	120.72	154.77
Type A	8.42	15.28	19.49	23.58
Type B	8.39	15.64	19.39	24.22
Type C	7.63	15.33	20.75	24.58
Type D	8.24	15.02	18.44	22.31
Type E	6.95	12.87	15.53	20.38
Type F	11.20	17.64	21.36	24.03
Type G	3.25	7.31	11.66	16.76
Number of Cases	302	301	299	302

When the differences of mean scores between grades are figured for the types and total scores, the comparable basis scores used, we have:

(For Table VII, see following page)

¹ The raw scores on Type F were divided by 4, since there were four possible responses to "F", and only one each to the other types. Dividing raw "F" by 4 also changes the total score.

Table VII. **Increments in Mean Scores Between Grades**
Test I

	<u>Grades</u>		
	III-IV	IV-V	V-VI
Total Scores	44.28	24.44	34.05
Type A	6.86	4.21	4.09
Type B	7.25	3.75	4.83
Type C	7.70	5.42	3.83
Type D	6.78	3.42	3.87
Type E	5.92	2.66	4.85
Type F	6.40	3.72	2.67
Type G	4.06	4.35	5.10

The greatest difference occurs between grades III-IV for all types, excepting Type G, where the greatest increment occurs between grades V-VI, having gained steadily from 4.06 to 4.35 to 5.10. Generally speaking, for the October testing, grade IV advanced farther beyond grade III than did grade V beyond grade IV, or grade VI beyond grade V. Also, grade VI advanced slightly more beyond grade V than did grade V beyond grade IV.

Considering that type of response activity the easiest which gives the highest score (comparable basis), and ranking the returns per grade from most difficult to least difficult, the returns are as given in Table VIII, on the following page:

Table VIII. Rank of Scores by Types. Test I

	<u>Grades</u>			
	III	IV	V	VI
Type A	6	4	5	4
Type B	5	6	4	6
Type C	3	5	6	7
Type D	4	3	3	3
Type E	2	2	2	2
Type F	7	7	7	5
Type G	1	1	1	1

This Table reveals the following facts relative to the elementary grades:

1. Type G is consistently the most difficult.
2. Type E is consistently the second most difficult.
3. Type C starts as the third most difficult and progresses to the least difficult in grade VI.
4. Type D steps up in difficulty from grade II (rank 4) to grade IV (rank 3), retaining this position throughout the elementary grades.
5. Type F remains consistently easy, having a rank of 7 in all grades except grade VI where it ranks as 5.
6. Types A and B assume irregular rankings - 4, 5, and 6 - without any consistent arrangement.

Character of the Test Returns. (Test II)

The means of raw scores for Test II are given in

Table IX:

Table IX. Means of Raw Scores. Test II ^a

	<u>Grades</u>		
	VII	VIII	IX
Total Scores	178.05	202.30	217.17
Type A	18.27	21.20	22.57
Type B	19.05	22.77	23.96
Type C	16.42	20.06	21.90
Type D	17.29	20.31	21.34
Type E	15.06	18.88	20.53
Type F	81.31	89.20	94.00
Type G	10.79	13.89	16.66

With scores on Type F reduced to a basis comparable with the other types, the Table shows the following:

(For Table X, see the following page)

^a The S. D.'s of these distributions will be found in the Appendix, Table II, p. xx, this thesis.

Table X. Means of Scores on Comparable Basis. Test II ^a

	<u>Grades</u>		
	VII	VIII	IX
Total Scores	116.77	135.40	146.67
Type A	18.27	21.20	22.57
Type B	19.05	22.77	23.96
Type C	16.42	20.06	21.90
Type D	17.29	20.31	21.34
Type E	15.06	18.88	20.53
Type F	20.33	20.30	23.50
Type G	10.79	13.89	16.66
Number of Cases	300	302	317

When the differences of mean scores between grades are figured, using Table X, we have the following:

Table XI. Increments in Scores between Grades. Test II

	<u>Grades</u>	
	VII-VIII	VIII-IX
Total Scores	18.63	11.27
Type A	2.93	1.37
Type B	3.72	1.19
Type C	3.64	1.84
Type D	3.02	1.03
Type E	3.82	1.65
Type F	1.97	1.20
Type G	3.10	2.77

^a See footnote, p. 144, this thesis.

It may be noticed that in every case, excepting Type F, the increment of mean score between grades VII and VIII is greater than between grades VIII and IX. Again, the increments of Type G are more nearly the same. These returns tend to show that the comprehension increase between grades is nearer consistency than is the case with Test I.

Again using the scores figured on a comparable basis and ranking (using the data of Table X), the ranks are:

Table XII. Means of Scores Ranked by Types, Test II

	<u>Grades</u>		
	VII	VIII	IX
Type A	5	5	5
Type B	6	7	7
Type C	3	3	4
Type D	4	4	3
Type E	2	2	2
Type F	7	6	6
Type G	1	1	1

The foregoing Table shows the following:

1. Types G and E are again the most difficult and second most difficult, respectively.

2. Types C and D are the third and fourth most difficult, Type C beginning third most difficult in grade VII and proceeding to fourth most difficult in grade IX. Type D

proceeds in just the opposite manner, beginning as the fourth most difficult and ending as the third most difficult.

3. Type A remains the fifth most difficult throughout all three grades.

4. Types E and F interchange from the sixth and seventh most difficult respectively, to the seventh and sixth most difficult, respectively. One difference of change between these two types and between Types C and D (see *2.* on the foregoing page), is that the change takes place between grades VII and VIII, whereas the change between Types C and D occurred between grades VIII and IX.

Character of the Test Returns. (Test III)

The means of raw scores in Test III, for grades X, XI, and XII, may be tabulated as follows:

Table XIII. Means of Raw Scores. Test III ^a

	<u>Grades</u>		
	X	XI	XII
Total Scores	197.60	220.05	236.21
Type A	22.29	24.54	25.93
Type B	21.41	23.84	25.63
Type C	18.93	23.33	25.81
Type D	20.37	22.56	24.10
Type E	21.44	22.45	24.16
Type F	84.53	92.02	97.52
Type G	12.60	16.72	19.20

^a The S.D.'s of these distributions will be found in the Appendix, Table III, p. xxi, this thesis.

With the scores on Type F reduced to a basis comparable with the other types, the figures in the foregoing Table become the following:

Table XIV. Means of Scores Figured on Comparable Basis.
Test III. ^a

	X	<u>Grades</u>	
		XI	XII
Total Scores	131.17	151.03	163.07
Type A	22.29	24.54	25.93
Type B	21.41	23.84	25.63
Type C	18.93	23.33	25.81
Type D	20.37	22.56	24.10
Type E	18.44	21.45	24.16
Type F	21.14	23.00	24.38
Type G	12.60	16.72	19.20
Number of Cases	299	286	301

When the differences of mean scores between grades are computed, using Table XIV, the increments between grades are as shown in Table XV, the following page:

^a

See footnote, p. 144, this thesis.

Table XV. **Increments in Scores Between Grades. Test III**

	<u>Grades</u>	
	X-XI	XI-XII
Total Scores	17.86	11.04
Type A	3.25	1.93
Type B	2.43	1.79
Type C	4.40	2.48
Type D	2.19	1.54
Type E	2.01	2.71
Type F	1.86	1.38
Type G	4.12	2.48

It may be noticed that in seven cases, the increment of mean score between grades X and XI is greater than the increment between grades XI and XII. There is a smaller difference between the two series of increments in Test III than in Test II. This would indicate, according to the measuring efficiency of the October Test, that the comprehension of students in the senior high school group progresses more slowly, and also more steadily.

Using the data of Table XIV, and ranking according to difficulty, the ranks are as follows:

(For Table XVI, see the following page)

Table XVI.Means of Scores Ranked by Type.
Test III

	<u>Grades</u>		
	X	XI	XII
Type A	7	7	7
Type B	6	6	5
Type C	3	5	6
Type D	4	3	2
Type E	2	2	3
Type F	5	4	4
Type G	1	1	1

According to the rankings of Table XVI, the following conclusions may be drawn:

1. Type G continues to be the most difficult, while Type E holds second place up to grade XII where it steps to third.
2. Type A remains consistently the easiest, meaning that senior high school students find it easiest to satisfy questions whose answers are found direct in the content.
3. Type F has approached its highest point of difficulty in grades XI-XII, ranking fourth.
4. The other types fluctuate. Type D becomes increasingly difficult, Type C increasingly easier. Type B remains consistently easy.

Character of the Test Returns as a Whole

Since each Test is a distinct set of material gauged to the level of the pupils taking it ¹, the data of one grade could be comparable only to the data of the other grades taking that particular Test. However, a composite Table of the ranks of difficulty may reveal some features of relative interest and worth.

The following shortcomings are present in such a composite study:

1. Rank in difficulty alone does not tell the whole story.
2. Difficulty increments between mean grade scores are not constant.
3. Actual difference between mean scores of types per one grade are not constant. Sometimes this difference is quite small (Table XIV, grade XII, Types D and E); sometimes it is comparatively great (Table X, grade VII, Types G and E).

The data of a composite study may be seen more easily when presented in a single table. Table XVII, on the following page, provides such arrangement:

¹ Note p. 110 f., Chapter IV, this thesis.

Table XVII. Composite Table. Means of Scores Ranked by Type. Tests I, II, III.

	Grades										Mean Rank
	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Type A	6	4	5	4	5	5	5	7	7	7	5.5
Type B	5	6	4	6	6	7	7	6	6	5	5.8
Type C	3	5	6	7	3	3	4	3	5	6	4.5
Type D	4	3	3	3	4	4	3	4	3	2	3.3
Type E	2	2	2	2	2	2	2	2	2	3	2.1
Type F	7	7	7	5	7	6	6	5	4	4	5.8
Type G	1	1	1	1	1	1	1	1	1	1	1.0

From the rankings of Table XVII, we may observe:

1. Type G (giving words of synonymous meanings) is the most difficult for all grades.

2. Type E (giving objects or thoughts to which words refer) is the second in difficulty in all grades, except grade XII. According to Table XIV, the mean of Type E is only .06 greater than the mean of Type D, indicating that the shift from rank two to rank three was made on very negligible grounds.

3. Type F is the easiest type (rank seven) in the lower grades. From there it increases in difficulty to rank four, in fairly regular steps.

4. Types D and C keep close to the middle of the road with slightly more of a fluctuation in C than in D.

5. Type B is fairly consistently easier than Type C, even though both are based upon giving thoughts implied in content, - Type B is based upon details, while Type C is based upon the content meaning as a whole.

6. Type A is slightly more difficult than Type B, but both are based upon details of content. These two types exchange rankings from grade to grade. Type A consistently becomes easier from the lower grades to grades X, XI, XII. Type B fluctuates in rank throughout the ten grades.

In summing up this inspection given to the Test, certain facts are pertinent:

1. None of the Tests I, II, III in the October form compose a scale, since the material was not weighted.

2. The increment of mean score from grade to grade is greater in Test I than in Tests II-III. This parallels the recent findings of Sangren whose composite means show these increments: ¹

Grades:	<u>IV-VB</u>	<u>VB-VIB</u>	<u>VIB-VIIB</u>	<u>VIIB-VIIIB</u>
	10.64	14.86	8.03	5.83

3. In every type, in each Test, there is an increment of score from one grade to the one above. It is reasonable

¹ Sangren, Paul V. Measurement of Achievement in Reading, Kalamazoo State Teachers College, Kalamazoo, Michigan, p. 38, Table XII.

to assume that with careful refining and weighting, the October Test may be developed into a scale.

4. Assuming that the highest scores are made with the easiest types of student response activity, we may state with a fair degree of accuracy that

- a. Giving words of synonymous meanings is the most difficult type throughout the ten grades.
- b. Giving objects or thoughts to which words or stated ideas refer is the second most difficult type throughout the ten grades.
- c. Determining whether or not the content states a certain definite thing, and indicating the content meaning as a whole, lie midway between most difficult and easiest types.
- d. Determining whether statements are true or false progresses from the easiest type in the lower elementary grades to a position of median difficulty in the latter senior high school grades.
- e. Satisfying questions whose answers are found directly in the content details proceeds from a position of median difficulty in the lower elementary grades to the easiest type in the upper senior high school grades.
- f. Satisfying questions whose answers are implied in content details remains comparatively easy throughout the ten grades, appearing easiest in the junior high school years.

The rough elements of the returns from the October testing have been pointed out. It is believed, however,

that these elements partially exist because the test material was not weighted, but was arranged according to assumptions and judgment. However, the extraordinary length of the Test (Divisions I-II) should make it a fairly accurate measuring stick in determining the relationships existing between the types of student response activities and the three items with which they will now be compared, viz., student composite scores, teachers' marks, and intelligence quotients.

It is believed, also, that the very wide scatter of the cooperating schools and the care used in administering and scoring the tests provide a reliable set of data for the subsequent statistical treatment.

With this general inspection of the Test completed, and with the condition of the returns in mind, a study of the student composite scores is herewith given.

Types of Student Response Activity

Chapter II discussed in full the detailed types of student response activity. The seven types selected as integral parts of this Test represent the seven general student response activities applicable to paragraph reading. There were four other types which were not considered as generally applicable to paragraph reading. It may be well

to recall those two groups of types.

The four "special" types were: ¹

1. Following directions
2. Selecting statements of best predictive thought
3. Arranging thoughts into a regular order
4. Indicating irrelevant and incongruous words

The seven general types are:

A. Giving thoughts stated directly and specifically
in the content details

B. Giving thoughts implied in the content details

C. Giving thoughts implied in the content meaning
as a whole

D. Determining whether or not the content stated
a certain definite idea

E. Giving objects or thoughts to which given words
refer

F. Determining whether statements are true or false

G. Selecting words in the content meaning synonymous
with given words

The position of these seven general types may be
restated by naming the function they play in this experiment.
The seven general types represent those student response

¹ The defense of this decision may be found in
Chapter III, p. 72-74, this thesis.

activities which are used in our present-day measurement of reading comprehension. A student's composite score (total score) therefore represents his comprehension record when all types are brought into play, or, stating it differently, this score represents his comprehension record when present-day methods of measurement are employed.

The Composite Score

Out of this idea may come the question: If the composite score represents the efforts of all types of activity used today, which type, alone, contributes most to that measurement? Or, which type correlates highest with the composite?

It is immediately admitted that the proposition is this: $r A (ABCDEFG)$, wherein we are seeking the relation between "A" and a composite of which "A" is a factor. This is not a disturbing element, since that composite of seven factors represents a complete body of measurement effort. If the situation were to change to $r A (BCDEFG)$, it would have to be said that "A" correlates 0 plus or minus with all measurement factors less one. That is not the desired point. The relationship between "A" and a definite fixed body of factors must be known (the composite score), not to be juggled or disturbed, but to be left and used as found.

Garrett mentions the exact proposition faced in this feature of the problem. He says: ¹

"It should be noted that when several tests are all of the same - or approximately the same - length, the amount of spurious correlation which will result from correlating any test with a composite of them all is approximately constant.

$$\frac{(\text{Number of elements in a test})}{(\text{Number of elements in composite})} \quad 2$$

"For this reason, it is valid to compare the correlations of the separate tests with the composite in order to discover which tests are most representative of the capacity measured by them all. "

The relationship existing between the different types and the respective composite scores may now be considered. A glance at the student record sheet, found between pages 134 and 136 of this study, will show that it is a matter of securing the correlation between the totals of the columns of types and the student's total score. All of these correlations were solved by the Pearson formula for product moment r . ³

The Composite Score (Test I)

Here are now presented the r 's obtained from Test I

¹ Garrett, H.E. Statistics in Psychology and Education. Chapter V, p. 261. Longmans, Green & Company, 1926.

² loc. cit. The formula for the amount of spurious element when a test is correlated with a composite of which it is a part.

³
$$r = \frac{\sum xy - cx \cdot cy}{\sqrt{\sum x^2 - (cx)^2} \sqrt{\sum y^2 - (cy)^2}}$$
 Holzinger, Karl. Statistical Methods for Students in Education. Ginn & Company, 1928. p. 149-154.

in grades III, IV, V, VI, remembering that an r is r^A (ABCDEFG), or r^F (ABCDEFG), etcetera.

Table XVIII. r 's (Types with Composite Scores). Test I ^a

	<u>Grades</u>			
	III	IV	V	VI
Type A	$\nearrow$.837	$\nearrow$.837	$\nearrow$.863	$\nearrow$.862
Type B	.872	.931	.909	.936
Type C	.912	.962	.973	.957
Type D	.862	.902	.851	.920
Type E	.833	.904	.837	.920
Type F	.974	.949	.913	.881
Type G	.581	.739	.778	.851
No. of Cases	302	301	299	302
No. of Schools	16	15	16	14
No. of States	9	8	9	8

The outstanding feature is that all types of activity correlate positively with the composite. On first thought, this may seem very obvious, but suppose for Type C, that a student's composite were above the mean of the composite, and that his score for C were below the mean of C's. Simultaneously, if a second student's composite were below the mean of composites and if his score for C were above the mean of C's, there would be two cross-products with negative values. It could be possible that enough students would be

^a The P.E.'s of these r 's are given in the Appendix, Table IV, p. xxii.

similarly grouped to make ¹ C(ABCDEFG) equal a negative quantity. Table XVIII shows, however, that each type has contributed positively in the measurement of reading comprehension. This fact is also true with the results in Tests II and III. This may explain the statement made earlier relative to the irregular arrangement of types in different forms of certain tests. ¹

The main inquiry then becomes: What relative amount of correspondence exists between each type and the composite; how does this compare with the other r's of the same grade and the same type r's in other grades?

Inspection of Table XVIII reveals:

1. Type G shows the lowest amount of correspondence with the composite in all grades, but consistently improves its value from grade III to grade VI ($\nearrow$.581, $\nearrow$.739, $\nearrow$.778, $\nearrow$.851). This would seem to indicate that as a present-day measuring stick of reading comprehension, Type G is the poorest, but improves in efficiency as the grades advance. ²

2. Type F starts with the highest correspondence in grade III and descends gradually to the second from the lowest in grade VI ($\nearrow$.974, $\nearrow$.949, $\nearrow$.913, $\nearrow$.881). This

¹ See p. 20-22, this thesis.

² Table XVIII, p. 162, this thesis.

would indicate that Type F falls off slightly in measurement from grade to grade. However, the total decrement from $r = .974$ to $r = .881$ cannot be considered serious.

3. Type A practically remains constant in grades III and IV but rises in amount of correspondence for grades V and VI where it remains practically constant. This rise between grades IV and V is not great, it being only $r = .026$.

4. The amount of correspondence of Type B with composite score rises in value from $r = .872$ in grade III to $r = .936$ in grade VI. The rise is unsteady, the r 's being: $r = .872$, $r = .931$, $r = .909$, $r = .936$. It may be noticed that Types B and A were both based upon asking for content details. However, in each grade, Type B has a higher correspondence than Type A.

5. Type C maintains high value r 's throughout the elementary grades, rising rapidly from $r = .912$ in grade III to $r = .973$ in grade V. It falls back to $r = .957$ in grade VI, failing to maintain the peak of correspondence achieved in grade V. Type C seems to be a better measuring factor than Type B throughout these grades, even though both types are based upon implied meanings. Type C maintains the highest value r in all grades, except in grade III.

6. The r 's of Types D and E fluctuate with each other, but independently of the other five types. Before

concluding that these measures are unstable, their correspondence with a criterion should be inspected. It is worth noting that the value of their r 's is within a short range: Type D, r .851 to r .920; Type E, r .833 to r .920.

The Composite Score. (Test II)

Test II for grades VII, VIII, and IX, may now be considered.

Table XIX. r 's (Types with Composite Scores). Test II ^a

	<u>Grades</u>		
	VII	VIII	IX
Type A	r .815	r .851	r .851
Type B	.895	.897	.921
Type C	.899	.922	.930
Type D	.803	.864	.831
Type E	.794	.874	.869
Type F	.903	.920	.958
Type G	.783	.813	.887
No. of Cases	300	302	317
No. of Schools ^b	9	13	11
No. of States ^b	9	10	9

^a The P.E.'s of these r 's will be found in the Appendix, Table V, p. xxii.

^b The smaller number of cooperating schools and states represented in grades VII and IX is caused by having removed tests given for overlapping. See p. 126, this thesis.

Again, all r 's are positive. When analyzed by types, Table XIX shows:

1. Type G remains the lowest correspondence with the composite until grade IX is reached where it advances over Types A and D. Type G increases from grade to grade throughout the extent of this Test. Its efficiency as a measurement of comprehension seems to increase with age and school advancement of the student groups taking the Test. These facts find a parallel in the r 's of Test I.

2. Type F r 's change their course from that of decreasing correspondence in Test I (Table XVIII) to one of increase in Test II. Type F progresses with an r of $\swarrow .903$ in grade VII to $\swarrow .920$ in grade VIII and to $\swarrow .958$ in grade IX. However, this is below the r (F-Composite Score) in grade III ($\swarrow .974$).

3. Type A r 's remain constant in grades VII and VIII, but increase some in grade IX ($\swarrow .815$, $\swarrow .815$, $\swarrow .851$).

4. Type B r 's do practically the same as Type A r 's ($\swarrow .895$, $\swarrow .897$, $\swarrow .921$). Type B r 's remain consistently higher per grade than Type A r 's. This was true with Test I. (Note 4, following Table XVIII).

5. Type C r 's again remain higher than Type B r 's. Type C r 's steadily increase from grade VII to grade IX ($\swarrow .899$, $\swarrow .922$, $\swarrow .930$). Both of these facts find parallels

in Test I (note 5, Table XVIII)).

6. The r 's of Types D and E continue their fluctuations as in Test I.

Upon comparing the r 's of Test I with the r 's of Test II, the relationships between r 's within the Tests are found to remain about the same, excepting the r 's of Type F. However, the r values in Test II do not present the great range that the r 's of Test I have. Test II being of different content material, it might be expected that there would be a sudden change between grades VI and VII. With relative comparisons within the tests kept in mind, it might safely be said that the correspondence between types and composite scores tend to come closer together in the junior high school grades than in the elementary school grades, maintaining strikingly similar relations with each other.

The Composite Score. (Test III)

Turning to Test III, the following figures are found, presented in Table XX on the page immediately following:

Table XX. r 's (Types with Composite Scores). Test III ^a

	Grades		
	X	XI	XII
Type A	$\nearrow$.820	$\nearrow$.900	$\nearrow$.857
Type B	.902	.884	.874
Type C	.858	.917	.959
Type D	.837	.832	.872
Type E	.853	.902	.901
Type F	.872	.924	.940
Type G	.785	.861	.857
No. of Cases	299	286	301
No. of Schools	12	12	12
No. of States	8	8	8

Again, all r 's are positive. An inspection of Table XX reveals the following relationships between types:

1. Excepting in grade XII, Type G remains the lowest in correspondence with the total score. In grade XII, it is joined with Type A for that position. Throughout the grades of the senior high school, Type G generally progresses upward in correspondence, the r 's being $\nearrow$.785, $\nearrow$.864, and $\nearrow$.857. This approaches the conditions of Test I and Test II.

2. Type F follows the conditions of the junior high school grades, progressing from $\nearrow$.872 to $\nearrow$.924 to $\nearrow$.940.

¹ The P.E.'s of these r 's will be found in the Appendix, Table VI, p. xxiii.

This, again, is opposite the condition of the elementary school grades.

3. Type A r 's fluctuate from $\nearrow .820$ to $\nearrow .900$ to $\nearrow .857$. This was not true with the previous tests, where Type A showed constant progress upward.

4. Type B progresses downward in correspondence with composite scores. The r 's are $\nearrow .902$, $\nearrow .884$, and $\nearrow .874$. This does not parallel the findings in Tests I and II, where progress upward was noted.

5. Type C progresses decidedly upward in correspondence with composite score, from $\nearrow .858$, to $\nearrow .907$, to $\nearrow .959$. This parallels the findings in Test I and Test II.

6. r 's for Types D and E continue the fluctuations set in Tests I and II. It would seem that their correspondence with the composite scores was not dependent upon increase in student grade or student age. It will be interesting later to note their behavior when correlated with a criterion and two combined criteria.

The Composite Score. All Tests

It might be well now to consider all of the r 's for types and composite scores. Table XXI presents all the r 's of Tables XVIII, XIX, and XX combined. The breaks between grades VI-VII and IX-X may easily be noticed. These breaks

undoubtedly are due to the use of different tests in these grades. It would not be fair to assume that direct comparisons of the r 's of grades VI-VII and IX-X were valid. Just what the introduction of the more difficult tests in grades VII and X has done to the r 's, these data do not show, but these data will show the relative comparisons of r 's between grades III, IV, V, VI; VII, VIII, IX; and X, XI, XII. Table XXI presents these relative comparisons:

Table XXI. Composite Table. r 's (Types Student Response Activity - Composite Score). Tests I, II, III. ^a

	<u>Grades</u>				<u>Grades</u>				<u>Grades</u>	
	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Type A	.837	.837	.863	.862	.815	.851	.851	.820	.900	.857
Type B	.872	.931	.909	.936	.895	.897	.921	.902	.884	.874
Type C	.912	.962	.973	.957	.899	.922	.930	.858	.917	.959
Type D	.862	.902	.851	.920	.803	.864	.831	.837	.832	.872
Type E	.833	.904	.837	.920	.794	.874	.869	.853	.902	.901
Type F	.974	.949	.913	.881	.903	.920	.958	.872	.924	.940
Type G	.581	.739	.778	.851	.783	.813	.887	.785	.864	.857
No. Cases	302	301	299	302	300	302	317	299	286	301
No. Schools	16	15	16	14	9	13	11	12	12	12
No. States	9	8	9	8	9	10	9	8	8	8

^a The P.E.'s of these r 's have been referred to. See Table XVIII, p. 162; Table XIX, pl. 165; Table XX, p. 168.

Table XXI presents in composite form all of the correlations between student response activities and test composite scores. In order to get these data in a form that is more easily examined, it will be necessary to compute the means of all the r 's of Tests I, II, and III.

Computing means of r 's is not a new procedure. Several examples from investigations in the field of reading may be cited:

Sangren makes frequent use of the "average of coefficients of correlation."¹ He presents the following table with full discussion of such use.

*Correlations between Scores on the Constructed Silent Read-Tests and Scores on Other Tests of Achievement.² Sangren.

Part A;	r	P.E.
Word Meaning & Thorndike Word K's	.800	.027
Word Meaning & Stanford Word M'g	.827	.021
Word Meaning & Thorndike plus Stanford		
Word Meaning	.852	.018
Rate and Monroe (Revised) Rate	.763	.027
Fact Material & Thorndike-McCall	.517	.048
Following Directions and Burgess	.680	.037
Total Meaning & Monroe Comprehension	.763	.027
Central Thought & Woody Reading	.743	.028
Average of Coefficients	.74	---

¹ Sangren, Paul V. Op. cit., Chapter III, p. 23-24.

² Results based upon 115 cases, grades VI-VII.

***Part B:**

r P.E.

Composite & Teachers' Marks	.664	.037
Composite & Stanford Total Reading	.795	.027
Composite & Burgess	.887	.016
Composite & Thorndike-McCall	.605	.041
Composite & Monroe Rate	.708	.032
Composite & Monroe Comprehension	.829	.021
Average of coefficients	.75	

***Part C:**

Composite & Stanford Arithmetic	.411	.055
Composite & Stanford Nature & Science	.534	.047
Composite & Stanford History & Literature	.541	.047
Composite & Stanford Language	.420	.054
Composite & Stanford Spelling	.404	.056
Average of coefficients	.46	

"The important facts appearing in this table may be summarized as follows: (1) the average coefficient of correlation between scores on the separate constructed tests and scores on tests which measure somewhat similar aspects of silent reading is .74; (2) the average coefficient of correlation between the composite scores of the constructed tests and scores on other silent reading tests is .75; (3) the average coefficient of correlation between the composite scores of the constructed tests and the scores on tests of achievement in other school subjects is .46."

Gates gives a table presenting the correlations of six experimental reading tests, with themselves (self correlations) and with each of the remaining five experimental tests. These r's are listed throughout all the grades of the tests: V, VI and VII. Two tables are quoted on the following page: ¹

¹ Gates, Arthur I. Methods of Constructing and Validating the Gates Reading Tests. Teachers College Record, XXIX, No. 2, p. 148-159.

*Gates Table A. Correlations of Test I, "Reading to get the General Significance of a Passage", with itself and Five Other Tests, as Indicated.

Grades	Test I Self	Test II Main Idea	Test III Outcome of Events	Test IV Precise Out- line Direct- ions	Test V Out- line	Test VI Details
V	.90	.78	.86	.65	.52	.75
VI	.94	.76	.80	.55	.60	.71
VII	.81	.75	.71	.63	.61	.68
Average	.883	.763	.79	.61	.577	.713

*Gates Table B. Correlations of Test II "Reading to get the Main Idea", with itself and Five Other Tests, as Indicated.

Grades	Test II Self	Test I Gen'l Signif.	Test III Outcome of Events	Test IV Precise Direct- ions	Test V Outline	Test VI Details
V	.80	.78	.85	.61	.53	.77
VI	.75	.76	.84	.68	.73	.80
VII	.80	.75	.68	.82	.71	.74
Average	.783	.763	.79	.703	.657	.77

Gates' discussion of the Tables explains his use of the means of correlations in the following quotation, which

is clear in itself:

"We sought first for a test of reading for the purpose of apprehending the main point. . . . of the paragraph as given. . . . Tests I and II were both possible choices. Of Tests I and II, the former was chosen for four reasons: (1) The reliability coefficient (.883) was higher for Test I than Test II (.783; (2) Test I gives a lower average intercorrelation with the remaining four tests. The two average coefficients are .672 ^a for Test I and .73 ^b for Test II. Test II, in other words, although of lower reliability, duplicates more the other elements of the other tests than does Test I. (3) (4) "

Gates has made use of averaging correlation coefficients in each explanation of the remaining four tests mentioned above. It is interesting to note the number of cases (students): Grade V, 83; grade VI, 78; grade VII, 69.

Odell ^{1,2}, of the University of Illinois Bureau of Educational Research, offers this caution in the practice of averaging coefficients of correlation: The *r*'s should be weighted according to the number of subjects (students) or the number of subjects should be kept fairly constant. In order to satisfy this caution, the number of students per grade in the present study was kept close to 300. These

^a .672 is secured by adding the average *r*'s, .79, .61, .577 and .713, and dividing by 4 (Table A, Gates). In other words, Gates averaged the average *r*'s.

^b .73 is secured by adding the average *r*'s, .79, .703, .657, and .77 and dividing by 4 (Table B, Gates).

¹ Odell, C. W. Educational Statistics. The Century Company (1925). Chapter V, p. 179.

² Odell, C.W. The Interpretation of the P.E. and Coefficient of Correlation. Bulletin No. 32, Bureau of Educational Research, University of Illinois, Chapter III, p. 48-49.

totals are relatively much closer than those totals given by Gates.

Table XXII presents the means of the r 's derived from Table XXI.

Table XXII. Means of r 's (Types Student Response-Activity-Composite Score) ^a

	<u>Test I</u>	<u>Test II</u>	<u>Test III</u>
	Grades: III, IV, V, VI	VII, VIII, IX	X, XI, XII
Type A	.849	.839	.859
Type B	.912	.904	.886
Type C	.951	.917	.911
Type D	.885	.833	.837
Type E	.874	.846	.885
Type F	.929	.927	.912
Type G	.737	.828	.834

Before stating any conclusions evident from the above Table, the following data are quoted from Sangren.

Comparable Data from Sangren

Sangren reports findings from an investigation, some parts of which are not incomparable to the data of the last two Tables presented in this thesis - Table XXI, Table XXII. In part, he correlated scores from several types with the test composite scores. ¹ Roughly compared, three of those

^a There are no P.E.'s for mean r 's.

¹ Sangren, Paul V. Op. cit., Chapter III, p. 25.

types are similar to three types used in the October Test.

Sangren-Woody

Fact Material
Total Meaning
Central Thought

October Test

Direct Details
Content as a Whole
Implied Details

His r 's, as reported, are: 1,2

r (Fact Material - Test Composite)	=	.894	.008
r (Total Meaning - Test Composite)	=	.816	.013
r (Central Thought- Test Composite)	=	.740	.018

Table XXII distinctly shows the following trends of relationship when the seven general types of student response activity are correlated with the total body of factors now used in measurement of reading comprehension (herein represented by the composite score).

1. Type A, "Satisfying a question on details whose answer is found direct in the content", decreases slightly in correspondence from the lower elementary grades to the junior high school grades. In the senior high school grades, this type increases again slightly beyond its rating in the lower grades. These fluctuations are slight - .849 to .839 to .859. The general statement may be made that the correspondence of Type A with the composite score remains very

1

Loc. cit. Taken from Table II.

2

Results based upon 320 cases from grades IVB, VB, VIB, VIIB, VIIIB.

close to the same level throughout the school grades III to XII with a slight general trend toward rising as the grades advance.

2. Type B, "Satisfying a question on details whose answer is implied in the content", ranks consistently higher in correspondence with the composite score than Type A, discussed in "1" above. However, this correspondence becomes consistently lower from the lower grades to the end of high school, the mean r 's being .912, .904 and .886.

3. Type C, "Satisfying questions whose answers are dependent upon the content meaning as a whole", remains consistently higher in correspondence with the composite score than Types A and B. However, Type C, like Type B, decreases in this correspondence from the lower grades to the completion of the high school years. The mean r 's are .951, .917, and .911. The mean r of .951 is the highest in any type for any test group.

4. Type D, "Determining whether or not the content stated a definitely given idea", decreases in correspondence with the composite score from the mean r of .885 in the elementary years to .833 and .837 in the junior high school years. The difference between .833 and .837 may be considered insignificant. In other words, this correspondence remains at the same level for the groups of Tests II and III.

5. Type E, "Giving objects or thoughts to which given words refer", shows relatively decided fluctuations in correspondence with the composite score. Its correspondence is lowest in the junior high school years and rises above the level of the elementary school years. The mean r 's are: .874, .846, .885.

6. Type F, "Determining whether statements are true or false", like Type C, remains consistently high in correspondence with the composite score. It tends to decrease slightly as the school grades advance, but that decrease is negligible, the mean r 's being .929, .927, and .912.

7. Type G, "Selecting words in the content synonymous with given words", consistently shows the lowest amount of correspondence with the composite score. This correspondence increases with the advance in grade. The mean r 's are: .737, .828, and .834.

This completes the presentation of the relationship of the different types with the composite body of measuring factors. Before the recommendations of the uses of the findings are given, the relationships these types hold to the two criteria should be considered. Again, the considerations are given by test groups.

The Use of Criteria

Up to this point, the correspondence between the types

and the composite scores alone has been checked. Although certain definite trends may have been noted, it is highly desirable to check the scores by types against two absolutely different sets of data. The two new sets of data were selected in order to secure, first, data of entirely different origin from the source of the October Test scores, and second, data which could be used as criteria against which the scores on types might be checked to secure relative values of the separate types as measures of reading comprehension.

As previously mentioned, the criteria selected were: Teachers' Marks, and Intelligence Quotients. The use of teachers' marks is divided into two groups:

1. Teachers marks in reading: Grades III, IV, V, VI, or the Test I group.
2. Teachers' academic achievement marks: Grades VII, VIII, IX, Test II group; grades X, XI, XII, Test III group.

Teachers' marks are one of the measures of reading comprehension. Numerous other measures of reading comprehension were available in test scores from other reading tests now on the market. The scores from other tests were discarded largely because they represent, somewhat, a duplication of the use of the composite score on the October Test,

and because no one Test measures in a manner other than by some smaller or greater combination of the same student response activities. Since the use of other test scores was eliminated, teachers' marks alone remained as a checking agency. Teachers' marks in reading were used in the grades where available - III to VI, inclusive. These reading marks were not available from all schools where grades VII-VIII were used. Therefore, some other form of teachers' mark was required for grades VII-XII, inclusive. Since there was no preference as to subject in Test II-III groups, the mean of all the academic achievement marks per student, as given by teachers, was secured.

Use of Teachers' Marks ¹

Correlating scores from objective reading tests with teachers' marks has been used previously for the sake of comparisons. For example, Monroe compares the findings of correlations of nine reading tests with teacher ratings. ² One of the tests is the Monroe Test which, as is indicated in his study, correlates highest with teachers' marks in grades IV and VII.

In the requests for a record of achievement marks, the

¹ An excellent discussion of the validity of teachers' marks appears in "Testing Intelligence and Achievement", Levine and Marks, Macmillan Company, 1928. p. 258-262.

² Monroe, W. S. A Critical Study of Certain Silent Reading Tests. Bureau Educational Research, University of Illinois, Bulletin no. 8, p. 38-39.

schools cooperating in this present study were urged to compute the average of the achievement marks for the past school year and to send the same expressed in terms of 100 per cent. This means that for grades III-VI, inclusive, the average marks in reading were collected, computed from the past school year. For grades VII-XIII, the average of all the academic achievement marks per student was computed and sent in. The 100 per cent basis was suggested since it is mathematical in form ¹ and is a system into which translations from other marking methods may be made. Every cooperating school complied, excepting one which sent in all grade averages expressed in letters accompanied by a key. These grades in letters were translated into numerical percents here.

The problem of whether or not scores for all schools should be thrown together or should be treated separately immediately presented itself. For experimental purposes, two large city schools and one small town school were treated separately, comparing r's (scores of types - teachers' marks). No material difference was found. It is the judgment of the writer that the careful computations of marks by the teachers and their averaging has made this result

¹ Inasmuch as correlations later were to be computed, the mathematical form was necessary.

possible, plus the fact that the samplings cover the whole grade regardless of the number of teachers per grade.

Table XVI of the Appendix shows these results. ¹

The r's (Types - intelligence quotients) would not need to be treated by separate school groups, for the best assumption of the use of an objective test is its elimination of the variable of teachers' judgment.

Since the first criterion selected was teachers' marks, the second one should be a different kind of data. Teachers' marks cannot be termed an objective measurement, consequently the second criterion should be an objective measurement. The reason for not using an objective measurement of reading comprehension has been stated. ² There remained the use of an objective measurement of achievement or a measurement of intelligence. Inasmuch as the first criterion (Test II-III groups) included data based upon academic achievement, an objective measurement of intelligence remained as the second criterion, if a positive duplication were undesirable. ³

The Use of Intelligence Quotients

The use of intelligence quotients as a standard for

¹ Appendix Table XVI, p. xxviii.

² p. 179, this thesis

³ Further argument for the use of I.Q.'s will be found subsequently on p. 206, this thesis.

checking is no innovation. For example, Irion, in 1925, checked his experimental Literature Comprehension Test with intelligence quotients of 170 ninth grade students, finding an r of $\sqrt{.6312}$.¹ He also checked the Thorndike-McCall Reading Test scores for the same students, finding an r of $\sqrt{.6748}$.

The intelligence quotients were taken from the office record cards of the cooperating schools. These data were secured by the schools, using whatever intelligence examinations they chose. The following tests had been used: Dearborn Test, National Intelligence Test, Otis Group Intelligence Test, Otis Self-Administering, and the Terman Group Intelligence Test.

In the three large city school systems and in one of the smaller systems, the intelligence quotients were computed by taking the mean of two or more of the above test measurements. Not all of the schools contributing to the October testing were able to furnish intelligence quotients. For that reason, the number of schools represented will be less than those reported for the first correlations. No school which furnished teachers' marks only was used. The number of cases per grade will be found lower than those used

¹ Irion, T.W.H. Comprehension Difficulties of Ninth Grade Students in Study of Literature. Teachers College Contributions to Education, no. 189, Chapter V, p. 39.

for r (Types-Composite Scores).

In grade III, only two schools were able to furnish intelligence quotients. Since the sampling would have been so small and comparatively unrepresentative geographically, no r 's (Types-Intelligence Quotients) for grade III were computed.

The Standard Score

In computing the r 's for comparisons with the two criteria, the Pearson formula was used.¹ One adaptation was employed, however. The scores of each type and total score for each grade were reduced to standard scores. With each score reduced to a standard score, each type and total score was, in effect, weighted. Tables V, IX, and XIII show the gross differences between means of the types in each test. It is obvious, then, that the optimum r 's could be obtained only through weighting. Reducing scores to "Standard scores" simply means securing the deviation of each score from the true mean of the array and dividing that deviation by the standard deviation. This process of "weighting" has the advantage of making the application of the Pearson Product-Moment formula very simple.

Kelley gives credit for the development of the

¹ See footnote, p. 161, this thesis.

standard measure to Francis Galton.¹ Under the heading "Standard Measures Method", Kelley reasons that

1. Mean scores are comparable.
2. Standard deviations are comparable.
3. The same proportion as between standard deviations holds for all equivalent deviations from the mean.
4. Equal standard measures are comparable. Therefore:

$$\frac{X_1 - M_1}{\sigma_1} = \frac{X_2 - M_2}{\sigma_2}$$

In 1912, Woodworth proposed that since a standard measure was $\frac{x}{\sigma_x}$, a student's score or rating on two series of data could easily be correlated inasmuch as the correlation ratio was equal to $\frac{\sum xy}{N\sigma_x\sigma_y}$.² This means that the students' standard scores on series "A" of the present study would be multiplied by their respective standard scores on series "B", the products to be added, and the sum divided by the number of cases.³

Summing the arguments of Kelley and Woodworth, this

¹ Kelley, Truman L. *Statistical Method*. The Macmillan Company (1924). Chapter VI, p. 114-117.

² Woodworth, H.C. *Combining the Results of Several Tests, A Statistical Study*. *Psychological Review*, XIX, 1912, p. 97-123.

³ It may be interesting to note that Sangren transmuted all scores into standard scores before correlating with his assumed criterion (a composite of scores on four reading tests and teachers' reading marks). *Op.cit.*, p. 25-26.

procedure simultaneously weights the scores and finds the correlation between the two series of data.

Weighting to Secure Optimum Composite

In obtaining the composite scores (student total scores) for correlation with the criteria, Types E, F, and G were weighted to secure a composite score based upon the most comparable series.¹ This was done by multiplying each student score in Types E, F, and G by that fraction which would bring the means of these three types to the level of the means of the other four types. Table XXIII gives the fractions by which each of the types was multiplied for this weighting.

Table XXIII. Fractions by which Types E, F, and G were Multiplied to Obtain a Composite Score of the Most Optimum Series.

	<u>Grades</u>									
	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Type E	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Type F	.2	.2	.2	.25	.2	.25	.25	.25	.25	.25
Type G	4.0	1.5	1.8	1.5	1.7	1.5	1.3	1.7	1.45	1.0

¹ Garrett, H. E. Statistics in Psychology and Education, Chapter VI, p. 279-281. Longmans, Green and Company, 1926.

From the data given in the foregoing Table, it is evident that the scores of grade III needed more "treatment" than those of any other grade.

For the Tables which follow, it might be well to recall that:

1. Scores for each type for each grade have been weighted before correlations with the criteria were computed. This weighting was done by reducing all scores, by Types, to standard scores.

2. Student total scores for correlation with the criteria were secured after Types E, F and G were weighted so as to secure the most optimum composite score.

Character of the Groups for Teachers' Marks in Reading

Before considering the correlations between the reading scores¹ and teachers' marks,² a glance at the whole group of teachers' marks is given. The accompanying figures give the means per grade of teachers' marks in reading, computed on the basis of 100 per cent:

<u>Grades</u>	<u>Reading Marks</u>	<u>Deviation from Mean Mark</u>
III	85.55 %	+ 1.113
IV	84.90 %	+ .463
V	83.10 %	- 1.337
VI	84.20 %	- .237
<u>Mean of Grades</u>		84.437 %

¹ October Test Scores

² Teachers' marks in reading for classroom work.

There seems to be but slight variation in the mean reading marks, 2.45% being the greatest difference, lying between grades III and V. Grades IV and VI vary by only .7 of 1%, which indeed is very slight. The variations from the mean show the differences from another standpoint. Judging by teacher rating, these composite student groups, from grade to grade, are very similar in reading performance.

Correlating with the Criterion. (Teachers' Marks)

Table XXIV. r's (Total Scores and Type Scores - Teachers' Marks in Reading). Grades III, IV, V, VI, Test I. ^a

	<u>Grades</u>				Mean r
	III	IV	V	VI	
Total Score	.700	.680	.667	.703	.6875
Type A	.566	.594	.615	.640	.604
Type B	.610	.619	.590	.578	.599
Type C	.597	.538	.679	.666	.620
Type D	.600	.596	.545	.500	.560
Type E	.563	.549	.574	.633	.580
Type F	.687	.649	.635	.634	.676
Type G	.475	.480	.530	.640	.531
No. of Cases	66	62	58	60	
No. of Schools	6	6	6	7	
No. of States	5	5	5	5	

A study of Table XXIV reveals the following trends:

1. The students' composite scores correlate highest

^a The P.E.'s of these r's will be found in the Appendix, Table XVII, p. xxiii.

with teachers' marks in reading in grades III and VI. These correlations are but slightly lower in grades IV and V.

2. Type A, "Satisfying a question whose answer is found directly in the content details", increases steadily in correspondence with teachers' marks as the grades advance, the r 's being: .566, .594, .615, and .640.

3. Type B, "Satisfying a question whose answer is implied in the content details", decreases slightly in correspondence with teachers' marks as the grades advance. The r 's are: .610, .619, .590, and .578.

4. Type C, "Satisfying a question whose answer involves content meaning as a whole", fluctuates in its correspondence with teachers' marks. There is no apparent reason for this fluctuation for Table VIII shows that Type C becomes steadily easier in relative comparison with the other types.

5. Type D, "Determining whether or not the content contains a given definite thought", decreases steadily in its correspondence with teachers' marks. The r 's are: .600, .596, .545, and .500.

6. Type E, "Giving the objects or thoughts to which words refer", decreases in correspondence with teachers' marks from grade III to grade IV, but from that point steadily rises. The r 's are: .563, .549, .574, and .633.

7. Type F, "Determining whether given statements are true or false", maintains the highest correspondence with teachers' marks in grades III-IV, but is exceeded by Type C in grade V and Types A, C and G in grade VI. Type F itself continues a decrease in correspondence as the grades advance. The r 's are: .687, .649, .635, and .634. It may be noted that Type F is the least difficult as indicated by Table VIII.

8. Type G, "Giving words from the content of meanings synonymous with given words", correlates the lowest with teachers' marks in all grades, excepting in grade VI. Type G is the most difficult type. Its correspondence with this criterion maintains a steady rise, the greatest of the types. The r 's are: .475, .480, .530, and .640.

Findings from Previous Studies

It may be interesting to compare these findings with those of another recent investigation. Sangren compared the results of his test with a composite criterion of four other reading tests and teachers' marks in reading secured from a period of three months.¹ These data relate only slightly to the work of the present problem, but the following correlations are interesting:

¹ Sangren, Paul V. Op. Cit., p. 26-27.

Correlations between Criterion Scores and
Scores on the Constructed Silent Reading
Test (320 Pupils, Grades IVB-VIIIW, incl.)

(Table abbreviated from Sangren)¹

	<u>r</u>
Criterion & Word Meaning	.888
Criterion & Fact Material	.901
Criterion & Central Thought	.688
Criterion & Total Meaning.	.753
Criterion & Composite	.897

Roughly, these divisions correspond to the following Types of this experiment:

Word Meaning	Type G, "Synonyms"
Fact Material.	Type A, "Details"
Central Thought.	Type B, "Implied Meanings"
Total Meaning.	Type C, "Content Meaning as a Whole"

Sangren explains the low r's of Central Thought and Total Meaning by stating that the assumed composite criterion contained no measures of these factors. No r's are offered by Sangren for the correlations with the units of the composite or for the separate grades. His findings show this similarity with the present investigation: Wherein his criterion contains no elements common with his test, Criterion and Total Meaning correlate higher than do Criterion and

¹ The Sangren-Woody Test is divided into seven parts: Word Meaning, Rate, Fact Material, Following Directions, Total Meaning, Central Thought, Organization.

and Central Thought, $r = .753$ and $r = .688$ respectively.

Similar r 's (mean r 's, Table XXIV) for the same elements in the present test are: $r = .620$ and $r = .599$ (checked Types C and B with teachers' marks).

In 1922, Woody proposed that asking a student to give the content meaning as a whole would be a worthwhile method of ascertaining degree of comprehension.¹ He correlated scores on such an experimental test and concluded that this method would be ineffective below grade IV. He reports these r 's (Content meaning as a whole - teachers' marks in reading):

<u>Grades</u>	<u>r's</u>
IV	.60
V	.70
VI	.73
VII	.75
VIII	.82

These r 's are considerably higher than those of Table XXIV. It should be noted, however, that Woody offered only one type of response. The October Test offered seven, arranged in no regular order.

Character of the Groups for Student Intelligence Quotients

This completes the analysis of the correspondence of

¹ Woody, Clifford. Measurement of a New Phase of Reading. Journal Educational Research, VIII, November, 1923, p. 315-326.

the Types with teachers' marks. The remaining criterion is objectively obtained. The following data present the mean intelligence quotients for grades IV, V, and VI:

<u>Grades</u>	<u>Mean Intelligence Quotient</u>	<u>Deviation from Mean</u>
IV	96.8	- 2.16
V	97.0	- 1.96
VI	103.1	✓ 4.04
<u>Mean for Grades</u>		98.96

Obviously, the groups used for sampling are of greater difference in intelligence than in teachers' marks. A closer similarity of intelligence between groups may be desirable, but the intelligence quotients collected for this experiment show the means given.

The following data show the correspondence between teachers' marks and intelligence quotients for the students in grades IV, V, and VI:

<u>Grades</u>	<u>r(Teachers' marks - Intelligence Quotients)</u>
IV	✓ .560
V	✓ .550
VI	✓ .590

The relationship between these two variables is fairly constant, rising slightly with the sixth grade. These data would tend to show that the objective intelligence tests and teachers' marks in reading are measuring different factors,

thus giving these data important worth as separate criteria so far as they are related to each other. It may be noticed that the rise in mean intelligence quotient from grades IV to V to VI is not accompanied by a rise in mean teachers' marks.¹ These variables seem to be somewhat independent of each other.

Correlating with the Criterion. (Student Intelligence Quotients)

The following Table presents the correlations of the test scores and intelligence quotients, the second criterion:

Table XXV. r's (Total Scores and Type Scores - Student Intelligence Quotients). Grades IV, V, VI, Test I.^a

	<u>Grades</u>			<u>Mean r</u>
	IV	V	VI	
Total Score	.663	.658	.651	.6573
Type A	.516	.550	.586	.5506
Type B	.567	.567	.501	.5447
Type C	.520	.559	.638	.5723
Type D	.566	.486	.401	.4857
Type E	.474	.518	.614	.5353
Type F	.593	.572	.600	.5886
Type G	.497	.590	.629	.5720
No. of Cases	62	58	60	
No. of Schools	6	6	7	
No. of States	5	5	5	

¹ See p. 187, this thesis.

^a The P.E.'s for these r's will be found in the Appendix, Table VIII, p. xxiv.

An inspection of Table XXV will reveal the following points:

1. The Test as a whole correlates less with student intelligence quotients as the grades advance. This is an interesting relation when compared with Table XXIV, $r(\text{Test Scores} - \text{Teachers' Marks})$.
2. Type A increases in its correspondence with student intelligence quotients as the grades advance.
3. Type B seems to have identical correspondence with student intelligence quotients in grades IV and V, but drops materially when grade VI is reached. The assumption safely may be made that Type B decreases in correspondence with student intelligence quotients as the grades advance.
4. Type C shows steady and material increases in correspondence with student intelligence quotients. This parallels the data in Table XXIV.
5. Type D shows material decrease in correspondence with student intelligence quotients as the grades advance. The r 's are: .566, .486, and .401.
6. Type E shows just the opposite influence with the advance of the grade, its correspondence with student intelligence quotients materially increasing from grade to grade. The r 's are: .474, .518, and .614.
7. Type F shows fluctuation of correspondence with

student intelligence quotients, keeping close to the mean r of $\nearrow .589$. In its correspondence with teachers' marks, it showed steady decreases.

8. Type G, as in Table XXIV, again shows material increases in correspondence when correlated with intelligence quotients. The r 's are: .497, .590, and .629.

Findings from Previous Studies

It is interesting to check the data of Table XXV with previous findings of other investigations. A few are listed here:

1. True made an elaborate study of 218 pupils, grades IV to VIII, in which he correlated the returns from three intelligence examinations with the returns from four silent reading tests.¹ His r 's were from $-.10$ to $\nearrow .87$. The mean r between the Terman Test (Stanford Revision of Binet) and silent reading records was $\nearrow .50$. The general correlation was greatest in the fourth grade and relatively as high in the fifth and sixth grades.² These data parallel the figures on Total Score r 's in Table XXV of the present study. True also found that the r 's between returns

¹ True, John Albert. A Study of Interpretation in Silent Reading. Unpublished master's thesis, University of Chicago, 1922. Intelligence tests used: Illinois Examination, Otis Group and Stanford Revision of Binet. Reading Tests were: Monroe, Courtis, Burgess, and Illinois Examination.

² Gray, W.S. Summary of Investigations in Reading. Supp. Ed. Monographs, No. 28, p. 45-46.

on group intelligence tests and reading scores were higher than for the Stanford Test.

2. Madsen found practically the same relationships when he correlated returns from grades VB, VIB, and VIIB on Terman Group Test and Thorndike Reading Scale, Alpha II. ¹

$r = \sqrt{.53}$.

3. Hilliard gave three intelligence tests and four reading tests to five classes of fifth grade students. ²

The r 's between the two sets of scores ranged from .38 to .90, with most r 's above .60.

4. Gates found a correlation of $\sqrt{.69}$ between intelligence quotients and the scores on the Thorndike-McCall Reading Tests. ³

These investigations show that there is a fair degree of relationship between student intelligence quotients and reading comprehension in the elementary school grades. The r 's given in these references tend to run very close to the

¹ Madsen, I. N. Intelligence and Accomplishment. Educational Administration and Supervision, IX: 17-23. (January, 1923).

² Hilliard, George H. Probable Types of Difficulties Underlying Low Scores in Comprehension Tests. University of Iowa Studies in Education, Vol. II, no. 6, p. 60. University of Iowa, Iowa City, Iowa. (1924).

³ Gates, Arthur I. An Experimental and Statistical Study of Reading and Reading Tests. Journal of Educational Psychology, XII, (Sept., Oct., Nov., 1921), p. 303-314, 378-391, 445-464.

r's found in the present problem. It might be expected that the r's of the present problem would run slightly higher, since more distinct measures (types) are used. Were the test carefully weighted and scaled, that expectation would certainly be realized. These arguments and references also might be considered further material for the validation of the use of intelligence quotients as one of the criteria.

Considering the Two Criteria

Table XXIV presented the correlations between the several types and teachers' marks. Table XXV gave the correlations between the several types and student intelligence quotients. Table XXVI shows these correlations presented together.

(For Table XXVI, see the following page)

Table XXVI. r's (Total Scores, Type Scores - Teachers' Marks) and r's (Total Scores, Type Scores - Student Intelligence Quotients). Grades IV, V, VI, Test I. ^a

		<u>Grades</u>			Mean r's
		IV	V	VI	
Total Scores	(TM	.680	.667	.703	.6875
	(IQ	.663	.658	.651	.6573
Type A	(TM	.594	.615	.640	.6040
	(IQ	.516	.580	.586	.5506
Type B	(TM	.619	.590	.578	.5990
	(IQ	.567	.567	.501	.5447
Type C	(TM	.538	.679	.666	.6200
	(IQ	.520	.559	.638	.5723
Type D	(TM	.596	.545	.500	.5600
	(IQ	.566	.486	.401	.4857
Type E	(TM	.549	.574	.633	.5800
	(IQ	.474	.518	.614	.5353
Type F	(TM	.649	.635	.634	.6760
	(IQ	.593	.572	.600	.5886
Type G	(TM	.480	.530	.640	.5310
	(IQ	.497	.590	.629	.5720

Certain facts are evident upon inspection of Table XXVI. These facts are:

1. The composite scores (test as a whole) correlate higher with teachers' marks in reading than with student

^a The P.E.'s of these r's have been referred to.

intelligence quotients throughout the grades of the elementary school. Or, stating this differently, teachers' marks in reading are better indices of reading comprehension than are student intelligence quotients,

2. Six of the seven types of student response activities correlate higher with teachers' marks than with student intelligence quotients.

3. Type G, "Giving words of synonymous meanings", correlates higher with student intelligence quotients than with teachers' marks in reading, except in grade VI where the correlation is higher with teachers' marks. The difference in grade VI is slight, $\nearrow .011$. From this observation, we may conclude that the ability to select synonyms from content is more dependent upon intelligence than upon reading comprehension, as measured by teachers' marks.

4. Fluctuations, from grade to grade, in r 's for one series of data are not accompanied by similar fluctuations in the other series of data. For instance, in Types B and C, the differences in fluctuations are seen directly. In other types, where the differences figured by per cents of increase or decrease, these per cents would vary with the TM data and the IQ data.

Combining the Two Criteria

Since the r 's between the Total Scores and Type Scores and teachers' marks in reading and student intelligence

quotients have been given and discussed, these two criteria should be combined into a single criterion for correlation. This combination is made and the correlation between it and the scores is solved by means of the formula for multiple correlation. This solution is based upon having the following data:

1. $r(\text{Test Scores} - \text{Teachers' Marks in Reading})$
2. $r(\text{Test Scores} - \text{Student Intelligence Quotients})$
3. $r(\text{Teachers' Marks} - \text{Student Intelligence Quotients})$

All of these data have been presented previously. The formula for multiple R then is applicable.¹ This formula means for this experiment that the correlation between Test Scores (for types and total test) and the two single criteria combined may be computed. For example:

R
Type A (Teachers' Marks, Student I.Q.)

or

R
Total Test Score (Teachers' Marks, Student Intelligence Quotients) etc.

gives the R 's when Test and Type Scores are correlated with

$$^1 \text{ Multiple } R = \sqrt{\frac{r_{12}^2 + r_{13}^2 - 2r_{12}r_{13}r_{23}}{1 - r_{23}^2}} \quad \text{wherein:}$$

1 = Test Scores; 2 = Marks in Reading; 3 = Student I.Q.'s.
See Otis, Arthur S. Statistical Method in Educational Measurement. Chapter V, p. 239-240. World Book Company, 1925.

Teachers' Marks in Reading and Student Intelligence Quotients combined.

Table XXVII. Multiple R's for Total Combined Scores and Type Scores (Teachers' Marks in Reading and Student Intelligence Quotients), Grades IV, V, VI. Test I. ^a

	<u>Grades</u>			<u>Mean R</u>
	IV	V	VI	
Total Score	.759	.754	.761	.7580
Type A	.620	.676	.689	.6616
Type B	.683	.651	.610	.6480
Type C	.570	.716	.730	.6720
Type D	.659	.589	.517	.5883
Type E	.586	.624	.684	.6313
Type F	.700	.689	.691	.6933
Type G	.563	.639	.696	.6326
No. of Cases	62	58	60	
No. of Schools	6	6	7	
No. of States	5	5	5	

Inspection of the Table above clearly reveals, by numerical values, which types stand out as highest measures of reading comprehension. The detailed statements following deal only with the types as student response factors used throughout the elementary school grades.

The original question of this thesis asked which of the seven general types of student response activity best

^a The E.E.'s of these R's may be found in the Appendix, Table IX, p. xxiv.

measures reading comprehension or, in other words, which correlates highest with accepted and established criteria. Table XXVII offers the answer to this question insofar as the elementary school grades are concerned. Then, accepting Table XVII as a basis for the elementary grades, these statements may be made in answer to the question proposed by this research:

1. Type F, "Determining whether statements are true or false", consistently is the highest single student response factor in the measurement of reading comprehension, in paragraph units.
2. Type C, "Satisfying questions whose answers involve the content meaning as a whole", is the second highest student response factor in the measurement of reading comprehension.
3. Type A, "Satisfying questions whose answers are found directly in the content details", is third as a student response factor in the measurement of reading comprehension.
4. Type B, "Satisfying questions whose answers are implied in the content details", is fourth as a student response factor in the measurement of reading comprehension.
5. Because of the closeness of the returns, Type H, "Giving the word or thought to which given words refer", and Type G, "Selecting words in the content of synonymous meaning

to given words", are fifth in measurement of reading comprehension or, they are next to the lowest.¹

6. Type D, "Determining whether or not the content states a certain definite fact", as a student response factor, shows the lowest amount of measurement of reading comprehension.

The Criteria for Tests II-III

The criterion of teachers' marks is changed in the grades above the elementary school. Reference has been made to the fact that marks in reading were not obtainable from all schools for grades beyond the sixth. However, the majority of schools could have furnished such marks for grades VII and VIII. Even though all schools could have furnished such marks for grades VII and VIII, there remained grades IX, X, XI, and XII, for which another criterion would be necessary. There had to be a break. The point between grades VI and VII seemed the best. Test I ends and Test II begins at that point.

With teachers' marks in reading unavailable, the best possible substitute was the average of all achievement marks earned by the students. These average achievement marks were

¹ The purely statistical rank of 5.5 and 7 is hardly necessary, as only relative rating is necessary.

computed on the immediate past year of the student's school life. They were translated to the 100 per cent basis for the same reasons as given in the elementary grades.¹

The differences between teachers' marks in reading and the average of achievement marks, so far as their use as criteria in this experiment is concerned, should be pointed out:

1. (a) Teachers' marks in reading represent a subjective measurement of the same performance as the experimental test attempts objectively to measure.

(b) Average achievement marks represent a subjective measurement of accomplishment and performance in wide and varied fields, all including some elements common with the performance as measured objectively by the test.

In other words:

2. (a) Teachers' marks in reading represent a measurement of a narrower but closer field to that of the test, while

(b) Average achievement marks represent a measurement of a broader and more distant field to that of the test.

A change in relation to the correspondence between the test and reading marks may be expected for the test and

¹

See p. 180-181, this thesis.

average achievement marks. The use of the intelligence quotients should provide a criterion continuous throughout the school grades, the correspondence then being effected only by the use of the different tests: Tests I, II and III.

Also, a different correlation between the two criteria themselves may be expected. All of these elements show in the tables presenting the findings from the data.

Character of the Student Groups, Test II

Attention should now be turned toward a consideration of the student groups. Because of continued school elimination with the advance of the school grades and the change of character in the academic studies pursued, it might be well to consider grades VII, VIII and IX in one group, and grades X, XI and XII in another. For the middle grades, these means of academic achievement were found:

<u>Grades</u>	<u>Mean Academic Achievement Mark</u>	<u>Deviation From Mean Mark</u>
VII	83.2 %	/.47
VIII	83.7 %	/.97
IX	81.3 %	-1.43

Mean for Grades 82.73%

Grades VII and VIII are about the same in mean academic achievement. Grade IX is lower, caused by what these data

do not reveal. One cause may be the number of retentions in the grade coming before the entry into senior high school.

In mean student intelligence quotients, these grades fall in somewhat different relationships. Notice these figures:

<u>Grades</u>	<u>Mean Intelligence Quotients</u>	<u>Deviation from Mean</u>
VII	102.5	- .13
VIII	102.4	- .23
IX	103.0	/ .37

Mean for Grades 102.63

These three grades are more closely related in intelligence than in academic achievement, or in other words, their academic achievement tends more to vary than does their intelligence rating.

It is plainly evident that these two criteria are measures of different factors. This is a repetition of similar findings for the elementary grades, for teachers' marks and student intelligence quotients. The r 's between the student intelligence quotients and achievement marks show these relations:

<u>Grades</u>	<u>r(Academic Achievement Marks-Student Intelligence Quotients)</u>
VII	.522
VIII	.550
IX	.526

Evidently the correspondence between these two array of data does not vary greatly within these grades, the highest r being for grade VIII.

The Use of the Criterion - Academic Achievement

Marks

These features picture the make-up of the student groups for grades VII, VIII and IX. The correspondence between test scores and academic achievement marks is shown in the following table:

Table XXVIII. r 's (Total Scores, Type Scores - Academic Achievement Marks). Grades VII, VIII, IX - Test II. ^a

	<u>Grades</u>			<u>Mean r</u>
	VII	VIII	IX	
Total Scores	.627	.616	.619	.6210
Type A	.422	.466	.539	.4756
Type B	.557	.544	.517	.5393
Type C	.544	.536	.542	.5406
Type D	.524	.508	.440	.4906
Type E	.483	.492	.483	.4926
Type F	.603	.550	.545	.5660
Type G	.512	.525	.517	.5180
No. of Cases	66	68	66	
No. of Schools	5	5	5	
No. of States	3	4	3	

^a The P.E.'s of these r 's may be found in the Appendix, Table X, p. xxv.

From the findings presented in this Table, the following facts are evident:

1. The composite test correlates fairly constantly with achievement marks throughout these grades, slightly higher in grade VII and lower in grades VIII and IX. The greatest difference between any two grades is only .011. It may be noted that the r 's of this Table are consistently lower than the r 's of Table XXIV wherein the test scores were correlated with marks in reading.
2. Type A remains consistently low in correspondence with academic achievement marks. In only grade IX does it exceed any other Type. Its correspondence increases as the grades advance.
3. Type B decreases in correspondence with academic achievement marks, as the grades advance, and for the three grades as a group is higher than Type A (both questions based upon content details).
4. Type C, based upon content meaning as a whole, is second highest in correspondence with academic achievement marks. This corresponds to its rating in Table XXIV, $r(\text{Test Scores} - \text{Reading Marks})$. Type C shows very slight variation from grade to grade.
5. Types D and E show about the same mean r 's with academic achievement marks; Type D steadily decreasing in

correspondence, Type E maintaining its level constantly.

6. Type F again shows highest correlation with the criterion throughout these grades.

7. Type G fluctuates some, keeps at a fair level, not varying much from its mean r of .518.

8. Variations in Table XXVIII are generally lower than in Table XXIV. This may mean that Test II is a more steady measuring stick (which would presuppose its being more nearly a scale than Test I), or that the academic achievement marks make a less variable criterion than reading marks. Further, these data may show that the student groups were more constant in performance from grade to grade than were the student groups in grades III, IV, V, and VI. Any of these factors would enhance the value of the r 's of Table XXVIII.

Findings of Previous Studies

In comparing these findings with those of previous researches, somewhat lower r 's are found. In 1924-25, Dickenson used the Thorndike-McCall Reading Scale and correlated the scores with achievement marks in the following grades and subjects: ¹

¹ Dickenson, Charles. Unpublished master's thesis, School of Education, Indiana University. "A Study of the Relation of Reading Ability to Scholastic Achievement". 1924.

<u>Grade VIII</u>	<u>r (Subject -</u> <u>Reading Comprehension</u>
English	.408
Mathematics	.404
History	.506
Science	.368
 <u>Grade IX</u>	
English	.604
Mathematics	.433
History	.542
Foreign Language	.491
 <u>Grade X</u>	
English	.516
Mathematics	.470
History	.510
Foreign Language	.448

Dickenson, in discussing this research¹, says that if proper consideration be given all the possible inaccuracies involved, i.e. the chances of unreliability due to teachers' marks and scores on tests, and the fact that they are not attempts to measure the same thing, these coefficients of correlation prove that there is a rather close relation between ability to read and ability to make progress in the several school subjects.

This phase of the present problem differs from Dickenson's in that he did not correlate ability to read with a composite of school achievement marks. Had he made

¹ Dickenson, Charles. A Study of the Relation of Reading Ability to Scholastic Achievement. School Review, XXXIII, October, 1925, p. 621.

a composite of the achievement marks, his r 's would at least have been slightly higher per grade, and reasonably constant from grade to grade. It also may be noted that the Thorndike-McCall Test does not use as many student response factors as does the October Test. However, Dickenson's data corroborate the findings of Table XXVIII.

Earlier studies show returns of somewhat lower r 's. Briefly stated, several such results obtained are:

Fretwell	¹	Grade IX: r (Reading Comprehension - Mean Academic Achievement Marks)	.43
Case	²	Grade IX: r (Reading Comprehension - Mean Academic Achievement Marks)	.42 .39 ^a
Smith	³	Grade IX: r (Reading Comprehension - Mean Academic Achievement Marks)	.46 .54 .51 .40 ^a

None of the r 's of these earlier experiments go as high as the r 's obtained in this present problem, but none

¹ Fretwell, E.K. A Study in Educational Prognosis. Teachers College Contributions to Education, No. 99, 1919. p. 1-56.

² Gray, W.S. Op. cit., p.20. This is a quotation from the unpublished master's thesis of Luther Case, Two Standardized Tests for Measuring Comprehension in 9th Grade Reading. Department of Education, University of Chicago, 1920.

³ Smith, B.M. Correlating Ability in Reading with General Grades in High School. School Review, XXVII, September, 1919, p. 493-511.

^a Use of different tests gave different r 's.

of the previous experiments collected as numerous data nor from so wide a field. However, the Smith r of .54 is in excess of a number of the r 's of Table XXVIII and is exceeded by few. The findings in Table XXVIII are not inconsistent with those of previous studies.

The Use of the Criterion - Student Intelligence

Quotients

In seeking comparisons with student intelligence quotients for Test II, the higher correlations immediately will be noticed. In the returns from Test I, the r 's with student intelligence quotients were lower generally than the r 's with teachers' marks in reading. With Tests II and III, just the opposite position is assumed by student intelligence quotients as a criterion. In other words, the returns from the October Test correlate higher with student intelligence quotients than with mean academic achievement marks. The conclusion should not be made that Tests II and III are more akin to measurements of intelligence than Test I. The conclusion may be made, however, that Mean academic achievement marks have a lower correspondence with reading comprehension for the upper grades than teachers' marks in reading for the lower grades. Table XXIX generally shows higher r 's all through than Table XXVIII.

Table XXIX. r 's (Total Scores, Type Scores - Student Intelligence Quotients). Grades VII, VIII IX. Test II.^a

	Grades			Mean r
	VII	VIII	IX	
Total Scores	.657	.676	.735	.6893
Type A	.519	.555	.562	.5453
Type B	.545	.646	.600	.5970
Type C	.544	.612	.622	.5926
Type D	.483	.610	.632	.5750
Type E	.615	.595	.601	.6036
Type F	.637	.625	.613	.6250
Type G	.597	.632	.649	.6260
No. of Cases	66	68	68	
No. of Schools	5	5	5	
No. of States	3	4	3	

From an inspection of Table XXIX, the following observations may be made:

1. The October Test increases in correspondence with student intelligence quotients as the grades advance. This increase is marked, precluding similar advances by Types.
2. In general, all types, except B, E, and F, increase in correspondence with student intelligence quotients as the grades advance.
3. Type B fluctuates, being highest in correspondence

^a The P.E.'s of these r 's may be found in the Appendix, Table XI, p. xxv.

in grade VIII. No reason for this is evident from these data, since grade IX has only slightly different mean intelligence quotients than grade VIII.¹ It may be said that Type B increases in correspondence irregularly. Type B is greater in correspondence than Type A (both involving content details), showing for the Test II group that satisfying questions whose answers are implied in content details is more dependent upon intelligence than one whose answer is given directly in the content.

4. Type E also fluctuates in correspondence with student intelligence quotients, being lowest in grade VIII. These fluctuations are very slight, however.

5. Type F steadily decreases in correspondence with student intelligence quotients as the grades advance. This may indicate that the ability to judge true statements from false is less and less dependent upon intelligence than upon other factors. The mean r of Type F is only slightly lower (.001) than the mean r of Type G, meaning for Type G that its performance is increasingly dependent upon intelligence, as involved in the October Test.

Findings from Previous Investigations

Previous investigations reveal some interesting

¹ See p. 207, this thesis.

correlations. Dickenson's work also included correlations with student intelligence quotients.¹ For the ninth grade, 149 cases, he found an r of $\sqrt{.649 \pm .032}$ between scores of the Thorndike-McCall Reading Scale and the "Cross-Out" Intelligence Test, Schedule E. This r is somewhat less than that found between the October Test and student intelligence quotients for grade IX (.735).

Brooks, of Johns Hopkins University, found a correlation of $\sqrt{.774}$ between reading comprehension and mental age for seventh grade students (108 cases).²

Madsen found an r of $\sqrt{.53}$ between reading comprehension as measured by the Thorndike Reading Scale, Alpha 2, and intelligence quotients as measured by the Terman Group Test.³ These findings were based upon grades VB, VIB, and VIIB.

Theisen found an r of $\sqrt{.44}$ between reading comprehension as measured by the Monroe Standardized Silent Reading Test and intelligence as measured by the Illinois Examination.⁴

¹ Dickenson, Charles. loc. cit.

² Brooks, Fowler D. Chronological Age as a Factor in Reading Achievement. *School and Society*, XX, December 27, 1924, p. 826-828.

³ Madsen, I. N. Op. cit., p. 17-23.

⁴ Theisen, W.W. The Relative Progress of VIIB Groups Sectioned on the Basis of Ability. *Journal of Educational Research*, V, April, 1922, p. 295-305.

This study included VIIB students from fourteen schools.

In discussing these previous investigations, Gray
says: ¹

"Tentative conclusions and problems for further study. With very few exceptions, the studies to which reference has been made show a greater or less degree of positive correlation between general intelligence and reading achievement. It is in harmony with natural expectation that accomplishment in reading should vary with the level of intelligence of the learner. The fact that the coefficients vary widely is not so easily explained. When different reading and intelligence tests are used, variations in coefficients of correlation may be due to the fact that somewhat different abilities are measured. At least, this problem merits additional study. . . . At this stage in the study of the relation between intelligence and reading achievement it is very important that measures of the abilities involved be refined and that causes of variation in the degree of correlation be determined."

Considering the Two Criteria

Separate views of the relationships between the test scores and the two criteria have been given. Table XXX combines the data of Tables XXVIII and XXIX.

(For Table XXX, see the following page)

¹
Gray, W. S. Summary of Investigations Relating to Reading. Supp. Educational Monograph, No. 28, June, 1925. p. 48.

Table XXX. r's (Total Scores, Type Scores - Average Achievement Marks) and r's (Total Scores, Type Scores - Student Intelligence Quotients). Grades VII, VIII, IX. Test II. ^a

		<u>Grades</u>			Mean r
		VII	VIII	IX	
Total Scores	{ AAM	.627	.616	.619	.6210
	{ IQ	.657	.676	.735	.6893
Type A	{ AAM	.422	.466	.539	.4756
	{ IQ	.519	.555	.562	.5453
Type B	{ AAM	.557	.544	.517	.5393
	{ IQ	.545	.646	.600	.5970
Type C	{ AAM	.544	.536	.542	.5406
	{ IQ	.544	.612	.622	.5926
Type D	{ AAM	.524	.508	.440	.4906
	{ IQ	.483	.610	.632	.5750
Type E	{ AAM	.483	.492	.483	.4926
	{ IQ	.615	.595	.601	.6036
Type F	{ AAM	.603	.550	.545	.5660
	{ IQ	.637	.625	.613	.6250
Type G	{ AAM	.512	.525	.517	.5180
	{ IQ	.597	.632	.649	.6260

Summing the discussion of Tables XXVIII and XXIX, Table XXX reveals the following relationships between the two sets of r's:

1. The r's of types and intelligence quotients are higher than the r's of types and academic achievement marks,

^a The P.E.'s of these r's have been referred to.

excepting in grade VII: Type B, r with academic achievement mark is higher than r with intelligence quotients (.557 and .545 respectively), and Type C where both r 's are the same ($\sqrt{}$.544), and Type D where r with academic achievement mark is .524 and with intelligence quotients is .483. If there would seem to be a change of correspondence between the October Test and intelligence quotients, it may occur in the seventh grade as well as at the junction of grades VI and VII. Or, viewing the situation from another angle, if there is a shift in the correspondence between the October Test results and achievement marks (regardless of their character), it occurs within the seventh grade as well as the junction of grades VI and VII.

2. Correspondence between the October Test results and the two separate criteria are closer in grade VII, differing for total score by only .030. Compare this difference with .060 in grade VIII and .116 in grade IX. It would seem that with the advance in grade, reading comprehension corresponds relatively higher and higher with student intelligence quotients.

3. The r 's of Type B with academic achievement marks decrease with rise in grade, while the r 's with intelligence quotients increase with the rise of grade. The same trends are true with the r 's of Type D.

4. The r 's of Type A for both criteria increase with the rise of grade, while the r 's of Type F decrease with rise of grade.

5. In Types G, E, and C the r 's fluctuate for one or both r 's.

Combining the Two Criteria

These points seem superficially to point a lack of definite trends of correspondence for the types, but only when the two criteria are combined can the most valid correspondence be noted. Table XXXI gives the multiple R 's for (Total Scores, Type Scores - Academic Achievement Marks and Student Intelligence Quotients combined).

Accepting the combined student achievement marks and student intelligence quotients, given in this Table, as the criterion for judging the measurement efficiency of the seven student response activities, an inspection of the Table will uphold the statements following it.

(For Table XXXI, see the following page)

Table XXXI. Multiple R's for (Total Scores, Type Scores - Academic Achievement Marks and Student Intelligence Quotients combined). Grades VII, VIII, IX. Test II. ^a

	<u>Grades</u>			Mean R
	VII	VIII	IX	
Total Scores	.737	.731	.786	.7513
Type A	.559	.592	.630	.5936
Type B	.634	.689	.644	.6556
Type C	.623	.667	.670	.6533
Type D	.638	.649	.644	.6436
Type E	.638	.630	.632	.6333
Type F	.711	.677	.666	.6846
Type G	.669	.672	.681	.6740
No. of Cases	66	68	66	
No. of Schools	5	5	5	
No. of States	3	4	3	

From the data of Table XXXI, these conclusions are evident:

1. The correspondence between the October Test (as a whole) and the criteria combined remains practically the same for grades VII and VIII, but increases with grade IX. The general levels of correspondence between Test I combined criteria and Test II combined criteria are practically the same. This means that the October Test measures reading comprehension at about the same level of

^a The P.E.'s of these R's may be found in the Appendix, Table XII, p. xxvi.

efficiency for grades III, IV, V, and VI (as a group) and grades VII, VIII, IX (as a group). This statement does not overlook the fluctuations from grade to grade. It does suggest, however, that the October Test measured the same factors in reading comprehension, from grade to grade.

2. Type F, "Determining whether statements are true or false", remains the highest single student response activity in correlation with the criteria combined.

3. Type G, "Selecting words from the content of synonymous meaning to given words", is second in correspondence with the criteria.

4. Types B and C (both based on satisfying questions whose answers are implied in the content) vary but little and might be classed as third in correspondence with the criteria.

5. Types D and E follow as close fourths in correspondence.

6. Only Type A, "Satisfying questions whose answers are found directly in the content details", trails the larger part of the student response activities in correspondence with the combined criteria.

7. This fact is clear: For grades VII, VIII and IX, six of the seven student response activities are very close in their measurement of reading comprehension. The

type which is below the others must measure less closely because of its peculiar nature. Inspection of Table XII¹ (relative difficulty of types) shows Type A not to be the easiest (being succeeded in difficulty by Types B and F) and not to be the most difficult because it is preceded in difficulty by Types G, E, C, and D.

The returns from the senior high school grades do not differ materially from those of the middle grades, i.e., in the comparison of types of response activity. Because of student elimination, the mean student numbers per grade grow less. It is not necessary to step from the field of this investigation to find evidences of shrinkage of student numbers in the school years X, XI, XII. When the October Tests were sent out, requests for all students per grade were given. In every school, the totals per grade grew less as the grades advanced from grade VII to grade VIII.

The means of the academic achievement marks for these grades are:

<u>Grade</u>	<u>Mean Academic Achievement Mark</u>	<u>Deviation from Mean Mark</u>
X	84.0 %	- .2
XI	82.7 %	- 1.5
XII	84.2 %	/ 1.7
<u>Mean for Group</u>		84.2 %

¹ See p. 149, this thesis

The high average of grade XII is very noticeable. This is the highest of the six grades included above the elementary years. Grade XI is lowest of these three grades. Comparing this group in scholastic achievement with grades VII, VIII and IX ¹, it may be said that the senior high school groups vary the more.

In student intelligence quotients, these grades show these means:

<u>Grade</u>	<u>Mean Intelligence Quotients</u>	<u>Deviation from Mean Intelligence Quotients</u>
X	100.9	- 1.4
XI	99.4	- 2.9
XII	106.6	+ 4.3
<u>Mean for Group</u>		102.3

The mean intelligence quotients of the grades vary considerably, especially when compared with the mean intelligence quotients of the middle grades. These data do not afford an explanation of these variations. It is noticeable that with the senior high school grades, fluctuations from the mean in academic achievement marks are accompanied by similar fluctuations from the mean in student intelligence quotients. The correlations between the academic achievement marks and student intelligence

¹

See p. 206, this thesis.

quotients are:

<u>Grade</u>	<u>r (Mean Academic Achievement Mark - Student Intelligence Quotients)</u>
X	.361
XI	.466
XII	.514

When the r's (Academic Achievement Marks - Student Intelligence Quotients) for grades VII, VIII and IX¹ are compared with the same r's for grades X, XI, and XII, the variations between the two groups is striking. Wherein the data for the middle grades were consistently at a level, those for the senior high school grades progress upward by the advance of grade. There is every indication to bear out the observation that the data for grades X, XI, and XII present the widest variations of any of the material of this experiment. However, those are the findings and from them one conclusion alone can be made: There seems to be less correspondence between measures of intelligence and measures of achievement in senior high school work, than was found in the two student groups studied previously. Yet, the student scores on the October Test, No. III, progress upward from grade to grade.² The application of the criteria with the October returns show consistent

¹ See p. 207, this thesis.

² For increments between grades, see p. 152, this thesis.

relationships between types and criteria, altogether comparable with such comparisons with Tests I and II. These conclusions must be modified by the fact that the number of schools contributing data to the two criteria of Test III is lower than for those of Tests I and II. There seem to be very few senior high schools which keep on file student intelligence quotients. All cooperating schools contributed mean academic achievement marks, but only the few which could furnish both criteria data could be used. Such may be indicated as one of the weaknesses of this experiment. On the other hand, there is no method of checking "how much" or "how little" that supposed weakness is.

Findings from Previous Investigations

Having pointed out a possible weakness in the data, findings from other investigations may offer some material.

In 1921, Madsen reported the following correlations between student intelligence quotients and teachers' achievement marks, for one semester: ¹

(For correlations, see following page)

¹ Madsen, I.N. Group Intelligence Tests as a Measure of Prognosis. Journal of Educational Research, III-I, January, 1921, p. 43-52.

r's (Intelligence Quotients - School Marks)

	<u>r's</u>	<u>No. of Cases</u>	<u>Weighted r's</u>	1
Sophomore Boys	.27	33	.329	
Sophomore Girls	.37	49		
Junior Boys	.38	28	.454	
Junior Girls	.50	46		
Senior Boys	.51	22	.410	
Senior Girls	.36	47		

All of these students were from South High School, Omaha, Nebraska.

In 1921, West reported the correlations secured between student intelligence quotients and teachers' marks in a Massachusetts high school.² The r's per grade were:

<u>Grade</u>	<u>r (Intelligence Quotients- Academic Achievement Marks)</u>
X	.55
XI	.59
XII	.66

It may be noticed that the r's (Student Intelligence Quotients - Academic Achievement Marks) secured in the present experiment lay between these two sets of r's quoted from other works. The Massachusetts experiment shows r's

¹ The writer has weighted these r's according to the suggestion of Odell. See p. 174, this thesis.

² West, Roscoe L. An Experiment with Otis Group Intelligence Tests in Needham, Massachusetts, High School. Journal of Educational Research, III-IV, April, 1921, p. 261-268.

which increase with the advance of grade. Such increase is true with the returns from the October Test subjects.

One other experiment reported in 1928 and conducted under the personal direction of E. L. Thorndike shows a wide variety of r 's between Marks in Academic Subjects and Student Intelligence Quotients.¹ This study covers the average of achievement marks over a four-year period in two four-year New York City high schools. The study covers a sampling of thirty-three seniors out of a class of 208. The sampling is random. The numerous r 's given represent correlations between two sets of achievement marks (each set representing a combination of alternate semester grades), and returns from two different intelligence tests:

r (Achievement in English - Intelligence Quotients)	.50, .49, .50, .49
r (Achievement in Mathematics - Intelligence Quotients)	.49, .42, .31, .30
r (Achievement in History - Intelligence Quotients)	.40, .53, .26, .18
r (Achievement in Science - Intelligence Quotients)	.49, .41, .25, .07
r (Achievement in Foreign Language - Intelligence Quotients)	.31, .31, .27, .21

¹ Miles, D.H. Silent Reading and Pupils' Progress in High School. Contributions to Education (New York City) Vol. II, 1928, p. 113-121.

The cases in the New York City experiment are fewer than those of the other data, but the r 's are not incomparable. If an r (Composite Academic Achievement Mark - Intelligence Quotients) were available, it would at least be just slightly above the .50 observed between English and Intelligence quotients, inasmuch as Academic Achievement Marks represent a composite, in a sense.

The findings from the subjects of the October Test returns reflect the trends indicated in these other three works, and especially do they resemble the r 's of the Massachusetts study, but are not of such high value mathematically.

Use of the Criterion - Academic Achievement Marks

Table XXXII. r 's (Total Scores, Type Scores - Academic Achievement Marks). Grades X, XI, XII, Test III ^a

	<u>Grades</u>			<u>Mean r</u>
	<u>X</u>	<u>XI</u>	<u>XII</u>	
Total Scores	.600	.643	.647	.6300
Type A	.528	.560	.506	.5313
Type B	.503	.538	.564	.5350
Type C	.572	.550	.554	.5583
Type D	.419	.558	.551	.5093
Type E	.495	.589	.510	.5313
Type F	.441	.516	.524	.4936
Type G	.463	.558	.577	.5326
No. of Cases	73	65	66	
No. of Schools	5	5	5	
No. of States	3	3	3	

^a The P.E.'s of these r 's may be found in the Appendix, Table XIII, p. xxvi.

An inspection of Table XXXII reveals:

1. Test III of the October Test increases slightly in correspondence with academic achievement marks as the grades advance. The mean r for the Test as a whole is slightly higher than the similar mean r for Test II ($.6210$).

2. Types A and B (both questions on content details) are very close in mean correspondence with academic achievement marks. Type B rises with advance in grade, while Type A fluctuates irregularly.

3. Type C (content meaning as a whole) has the highest single correspondence with the criterion.

4. Types E (references) and G (synonyms) are very close in mean correspondence and close also to Types A and B.

5. Type D (determining whether or not the content contains a given definite idea) is next to the lowest in mean correspondence.

6. Type F shows the greatest change in the senior high school grades, becoming the lowest in correspondence with the criterion. In Test III, it occupies a median position of difficulty.¹ It is evident that its increase in difficulty is not accompanied by an increase in correspondence with teachers' marks. However, from grades

¹ See Table VIII, p. 146, this thesis.

X to XII, it rises in correspondence.

Findings from Previous Studies

A glance at the findings of previous studies may be interesting. In 1924, Miles reported these r 's for 290 second year high school students, representing scholastic averages for two years of high school work, and scores on the Thorndike-McCall Scale: ¹

<u>Subject</u>	<u>r(Academic Achievement Marks-Reading Compre- hension)</u>
English	.60
Mathematics	.48
Foreign Language	.40
Civics - History	.20

Miles later reports these findings for the averages of four years of high school work and scores on the Thorndike-McCall Scale: ²

r (Achievement English, Reading Comprehension)	.59,.50,.67,.57
r (Achievement Math. , Reading Comprehension)	.16,.05,.40
r (Achievement History, Reading Comprehension)	.17,.18,.18,.13
r (Achievement Science , Reading Comprehension)	.006,.03,.28,.18
r (Achievement For.Lang, Reading Comprehension)	.09,.04,.19,.03

Again, if Miles had made a composite of the Academic achievement marks, the r 's would have run slightly higher than

¹ Miles, D. H. Contributions to Education, New York City, (1924), Vol. I: 296.

² Ibid, Vol. II: 116. (1928)

the r 's for English.

These findings are not incomparable with the r 's found in the present experiment for grades X, XI, and XII. The r 's between teachers' marks and English marks run slightly higher in some cases than do the r 's (Total Score - Academic Achievement Marks). The returns from Miles' experiment are corroborated by the data of the October Test.

Use of the Criterion, Student Intelligence Quotients

Table XXXIII. r 's (Total Scores, Type Scores - Student Intelligence Quotients), Grades X, XI, XII. Test III. ^a

	<u>Grades</u>			<u>Mean r</u>
	<u>X</u>	<u>XI</u>	<u>XII</u>	
Total Scores	.614	.689	.674	.6590
Type A	.566	.580	.543	.5630
Type B	.532	.646	.609	.5956
Type C	.591	.601	.570	.5873
Type D	.534	.630	.608	.5906
Type E	.594	.613	.606	.6043
Type F	.594	.539	.534	.5556
Type G	.596	.679	.666	.6470
No. of Cases	73	65	66	
No. of Schools	5	5	5	
No. of States	3	3	3	

Table XXXIII shows that:

^a The P.E.'s of these r 's may be found in the Appendix, Table XIV, p. xxvii.

1. The r 's for grade XI (mean intelligence quotients, 99.4) are consistently higher than for grade XII (mean intelligence quotients, 106.6). Although the mean intelligence quotients fluctuate from grade to grade, the r 's for Types and Total Scores do not fluctuate in the same manner. Evidently a rise in correspondence between the October Test and student intelligence quotients is not dependent upon an actual rise of student intelligence quotients.

2. The mean r (Total Score-Student Intelligence Quotients) for the grades as a group is lower than for Test II (.6893). This would seem to indicate a lower correspondence between reading comprehension and student intelligence.

3. Even though the fluctuations in r 's from grade XI to grade XII are "down", and those between grades X and XI are "up", there definitely is a rise in general correspondence from grade X to grades XI and XII. In this respect, Test III findings parallel those of Tests I and II.

4. Considering the mean r 's of Table XXXIII for comparative values of types, it is evident that Type G (synonyms) ranks highest in correspondence with intelligence quotients.

5. Type E (references) is second in comparison with intelligence quotients.

6. Types B (implied details), C (implied meaning as a whole), and D (determining whether content states a definite given idea) are very close in correspondence with intelligence quotients. This condition is not unlike that of Test II for the same types.

7. Type A (details found directly in content) is second from the lowest in correspondence. In this respect, Test III differs from Test II, where Type A was considerably lower than all the other types.

8. Type F (true-false statements) is lowest in correspondence, but only slightly below Type A.

9. The fact remains that the correspondence between Types and student intelligence quotients does not vary in any great extent from type to type. In this respect, Table XXXIII (r's: Types-Intelligence Quotients) shows a steadiness not shown in Table XXXII (r's: Types-Academic Achievement Marks).

Findings from Previous Studies

In Miles' experiment, reported last year ¹, he found the following correlations between reading comprehension and intelligence: .48, .45, .31, .72. Two reading tests

¹

Miles, D.H. Loc. cit. (1928)

were given (Thorndike-McCall and Haggerty), and two intelligence tests were given (National and Miller). The four r 's are for the several possible correlations. With the exception of the r of .72 (Miller-Haggerty), these r 's are all lower than the r 's of Table XXXIII. It happens that the Haggerty Reading Test offers a variety of student response activities.¹ This may indicate the closeness of the r 's between the October Test student intelligence quotients and the r of .72 given above.

Considering the Two Criteria

Consideration has been given to the correspondence between types and the two criteria. Table XXXIV presents the data of Tables XXXII and XXXIII together.

(For Table XXXIV, see following page)

¹

See p. 36, this thesis.

Table XXXIV. r's (Total Scores, Type Scores - Academic Achievement Marks) and r's (Total Scores, Type Scores - Student Intelligence Quotients), Grades X, XI, XII. Test III ^a

		<u>Grades</u>			Mean r
		X	XI	XII	
Total Scores	(AAM	.600	.643	.647	.6300
	(IQ	.614	.689	.674	.6590
Type A	(AAM	.528	.560	.506	.5313
	(IQ	.566	.580	.543	.5630
Type B	(AAM	.503	.538	.564	.5350
	(IQ	.532	.646	.609	.5956
Type C	(AAM	.572	.550	.554	.5583
	(IQ	.591	.601	.570	.5873
Type D	(AAM	.419	.558	.551	.5093
	(IQ	.534	.630	.608	.5906
Type E	(AAM	.495	.589	.510	.5313
	(IQ	.594	.613	.606	.6043
Type F	(AAM	.441	.516	.524	.4936
	(IQ	.594	.539	.534	.5556
Type G	(AAM	.463	.558	.577	.5326
	(IQ	.596	.679	.666	.6470

An analysis of Table XXXIV will reveal these facts:

1. The r's (Scores - Academic Achievement Marks) are lower in all cases than are the r's (Scores - Student Intelligence Quotients). This relation between the r's is the same as that begun with grade VII.

^a The P.E.'s of these r's have been referred to.

2. Correspondence between the test results and the separate criteria seems to be closer in grade X. The difference between the two r 's (Total Scores - Criteria) in that grade is only .014. In grade XI, that difference is .046 and in grade XII it is .027.

3. Type A r 's present an unusual arrangement compared with the usual r values from grade to grade. With most types, the r 's increase in value between grades X and XI, but decrease from grades XI to XII. That decrease with Type A is greater than the previous increase. In other words, Type A corresponds less with the criteria in grade XII than in grade X. The difference is not great, but may only indicate a trend.

Combining the Two Criteria

When the two criteria are combined, and multiple R 's computed, the October Test III shows the following relative measurements of comprehension so far as total and type scores are concerned.

(For Table XXXV, see following page)

Table XXXV. Multiple R's (Total Scores, Type Scores - Academic Achievement Marks and Student Intelligence Quotients, combined). Grades X, XI, XII. Test III. ^a

	X	Grades XI	XII	Mean R
Total Scores	.736	.784	.7595	.7598
Type A	.665	.657	.604	.6420
Type B	.628	.698	.675	.6670
Type C	.702	.675	.631	.6693
Type D	.587	.698	.668	.6513
Type E	.666	.702	.648	.6720
Type F	.666	.646	.674	.6620
Type G	.655	.726	.719	.7000
No. of Cases	73	65	66	
No. of Schools	5	5	5	
No. of States	3	3	3	

The following is revealed by the above Table:

1. For the general level of correspondence between the Test as a whole and the criteria combined, the October Test III remains the same as Test I and Test II. This statement is based upon the value of the mean R of Table XXXV, R(Total Score-Criteria Combined), and the same mean R's of Tables XXVII (Test II) and XXXI (Test I). In order, Tests III, II, and I, those R's are: .7598, .7513, and .7580. Only one conclusion may come from these R's: Generally, the three tests of the October group measure reading comprehension

^a The P.E.'s of these R's may be found in the Appendix, Table XV, p. xxvii.

at the same level of efficiency throughout the nine grades, grades IV to XII. This is a desired quality, which in testing is called "validity". The statement above is not meant to imply that detail features of the test are dead level fixtures. It does imply, however, that in certain grades some factors rate high in the measure of comprehension, other factors trail. In other grades, these positions may be turned about. The test does provide enough types of student response activity such that the measurement efficiency of the test is kept at a fair degree of constancy. In other words, the student, regardless of his grade level, is provided with those student response activities which best measure reading comprehension at his grade. For worthwhile-ness, this fact is a big element in the measuring success of the October Test.

2. Type A, (answering direct questions on content details), has the lowest general measure of comprehension in the senior high school grades. It gradually decreases in correspondence with the criterion from grades X to XI to XII. The mean R is .6420.

3. Type D, (determining whether or not the content stated a given definite idea), is second lowest in comprehension measurement. The mean R is .6513.

4. Types B, (answering implied questions on details),

C, (answering implied questions on content as a whole), and F, (true-false statements) maintain the same general level of measurement for these upper grades. The mean R's are all .66/ .

5. Type E, (references); is next highest in correspondence with the combined criteria. The mean R is .6720.

6. Type G, (synonyms), is highest in correspondence with the combined criteria. It gradually has attained this rank from where it stood in Tests I and II. The mean R is .7000. In grade XI, the R for Type G is especially high. It might be well to indicate that the academic achievement marks and student intelligence quotients for this grade both are below those of grades X and XI.

Should the conclusion be made that students ranking lower in intelligence better indicate their reading comprehension through the medium of word meanings than through other types of performance? The data of this experiment are not sufficient to indicate an answer to this question, but the facts herein mentioned propose the question.

6. Even though the criterion data seemed of greater spread than those of Tests I and II, the R's (Scores - Combined Criteria) are much closer together than similar R's for Test II and Test I. The different response factors seem

more equally to measure comprehension with advance in school grade, which is accompanied with advance in chronological age. The wide differences between R's have disappeared in Table XXXV. This may be a result of student elimination, or it may be the result of a change in the purposes of reading in the high school grades. ¹

Similarly, it may be noted that for Type F, the R's are .666, .646, and .674, showing that the true-false activity is somewhat lower in correspondence in grade XI, the grade with the lower mean student intelligence quotients. The differences are slight, scarcely warranting anything more than another interesting inquiry: In the upper high school grades, does the true-false response activity measure less accurately for students lower in intelligence than for students of higher intelligence? These inquiries might be proposed for future study, expanding them to all response activities.

Summary

About ten thousand October Tests were given in providing data for this experiment. Two thousand additional

¹ This question recently was brought out by G.A. Yoakam in "Reading and Study", Chapters X-XI. The Macmillan Company, 1928.

tests were given for the two experiments supplementary to the problem of this thesis. Of the original ten thousand given, eliminations for one reason or another reduced the number of tests used for this thesis problem to 8855. 3009 tests were chosen as samplings. The 3009 tests were scored and all scores were recorded such that each student's record per response activity type, per paragraph and gross test score, was known.

This experiment was interested in discovering the amount of correspondence existing between each type of response activity and three criteria: Composite Test Score, Teachers' Marks, and Student Intelligence Quotients. These correlations were completed for each type, for each grade. In addition, teachers' marks and student intelligence quotients were combined as a single criterion with which the type scores and the composite test scores were correlated. Ample quotations and citations from previous experiments bear out or support the findings from the data of the October Test.

Without reviewing the numerous tables given in this chapter, these data seem to indicate that there is a difference in the amount of correspondence between the seven types and the three criteria; that the amount of correspondence between any one type and the criteria is not constant

throughout the elementary, middle, and high school years; that certain types, in correspondence with the criteria, fluctuate more from grade to grade than others and that when the two criteria are combined, the amount of correspondence is increased and "steadied" from grade to grade.

Chapter VI will present these facts in graphical and more available form. It, in a sense, is a review of Chapter V.

Chapter VI

SUMMARY AND CONCLUSIONS

In Chapter V have been presented, in detail, the results of the numerous comparisons existing between the different types of student response activity and composite score, teachers' marks in reading, academic achievement, student intelligence quotients, and the latter two combined. Comparisons also were given between teachers' marks and student intelligence quotients. All of these comparisons were expressed in terms of amounts of correspondence as shown by the Pearson Product Moment formula for correlation. It would be entirely unsatisfactory not to combine these several sets of data. In Chapter VI, an effort will be made to gather the numerous tables of Chapter V into three tables. The data in these three tables are not new; they are taken from the group tables of Chapter V.

The P. E.'s of all the r 's and R 's of these three tables have been referred to, and are given in the Appendix. The first table given here is repeated from page 170, this thesis. It shows the r 's between the seven types and student

composite score for grades III to XII inclusive. Some interpretation of this table has been given ¹, but consideration from a different viewpoint is planned here.

Repeated Table XXI. r's (Types Student Response Activity-Composite Score), Grades III-XII, inclusive. Tests I, II, III. ^a

	<u>Grades</u>									
	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Type A	.837	.837	.863	.862	.815	.851	.851	.820	.900	.857
Type B	.872	.931	.909	.936	.895	.897	.921	.902	.884	.874
Type C	.912	.962	.973	.957	.899	.922	.930	.858	.917	.959
Type D	.862	.902	.851	.920	.803	.864	.831	.837	.832	.872
Type E	.833	.904	.837	.920	.794	.874	.869	.853	.902	.901
Type F	.974	.949	.913	.881	.903	.920	.958	.872	.924	.940
Type G	.581	.739	.778	.851	.783	.813	.887	.785	.864	.857
No. Cases	302	301	299	302	300	302	317	299	286	301
No. Schools	16	15	16	14	9	13	11	12	12	12
No. States	9	8	9	8	9	10	9	8	8	8

This Table shows in purely mathematical expressions the relation existing between the types, in different grades, and reading comprehension as measured by the October Test. It would require careful and detailed study to acquire the significance of all the material of this Table were it left

¹ See p. 169-175, this thesis.

^a The P.E.'s of these r's have been referred to. See Tables IV, V, VI of the Appendix, p. xxi, xxiii.

merely in the form of mathematical terms. However, these data should be so presented that they may be compared with the relations found between the types and the criteria. For that purpose, other tables are herewith given.

Table XXXVI. r's (Total Scores, Type Scores - Teachers' Marks) Grades III-XII inclusive. Tests I, II, III. ^a

	<u>Grades</u>									
	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Total Scores	.700	.680	.667	.703	.627	.616	.619	.600	.643	.647
Type A	.566	.594	.615	.640	.422	.466	.539	.528	.560	.506
Type B	.610	.619	.590	.578	.557	.544	.517	.503	.538	.564
Type C	.597	.538	.679	.666	.544	.536	.542	.572	.550	.524
Type D	.600	.596	.545	.500	.524	.508	.440	.419	.558	.551
Type E	.563	.549	.574	.633	.483	.492	.483	.495	.589	.510
Type F	.687	.649	.635	.634	.603	.550	.545	.441	.516	.524
Type G	.475	.480	.530	.640	.512	.525	.517	.463	.558	.577
No. of Cases	66	62	58	60	66	68	66	73	65	66
No. of Schools	6	6	6	7	5	5	5	5	5	5
No. of States	5	5	5	5	3	4	3	3	3	3

Table XXXVI assembles the data of Tables XXIV, XXVIII, and XXXII. The remarks made on Table XXI are true for Table XXXVI. The data are expressed in purely mathematical terms (Pearson Product Moment r's) and are difficult of comprehension without detailed examination. Table XXXVI shows, in a composite,

^a The P.E.'s of these r's have been referred to. See Tables VII, X, XIII of the Appendix.

the relationship existing between the types and teachers' marks. It is worth mentioning again that the criterion changes in character between grades VI and VII.

Table XXXVII assembles in composite form the data of Tables XXV, XXIX, and XXXIII. There are no changes in the character of the criterion as in Table XXXVI. Again, these data are purely mathematical expressions (Pearson Product Moment r 's), and as such have been analyzed in Chapter V. Data for grade III were not available. These data show the relationship existing between the types and test as a whole and the student intelligence quotients.

Table XXXVII. r 's (Total Scores, Type Scores - Student Intelligence Quotients), grades^a IV-XII inclusive. Tests I, II, III.

	<u>Grades</u>								
	IV	V	VI	VII	VIII	IX	X	XI	XII
Total Scores	.663	.658	.651	.657	.676	.735	.614	.689	.704
Type A	.516	.550	.586	.519	.555	.562	.566	.580	.543
Type B	.567	.567	.501	.545	.646	.600	.532	.646	.609
Type C	.520	.559	.638	.544	.619	.622	.591	.601	.570
Type D	.566	.486	.401	.483	.610	.632	.534	.630	.608
Type E	.474	.518	.614	.615	.595	.601	.594	.613	.606
Type F	.593	.572	.600	.637	.625	.613	.594	.539	.534
Type G	.497	.590	.629	.597	.632	.649	.596	.699	.666
No. of Cases	62	58	50	66	68	66	75	55	65
No. of Schools	6	6	7	5	5	5	5	5	5
No. of States	5	5	5	3	4	3	3	3	3

^a The P.E.'s of these r 's have been referred to, Tables VIII, XI, XIV of Appendix.

In the next table are assembled, for review, the data of Tables XXVII, XXXI and XXXV. These data are purely mathematical in form, expressing the value of multiple R's, showing the relationship between types and the two criteria combined. R's for grade III were not obtainable since student intelligence quotients for that grade were not obtained.

Table XXXVIII. Multiple R's (Total Scores, Type Scores - Combined Criteria). Grades IV-XII inclusive. Tests I, II, III. ^a

	<u>Grades</u>								
	IV	V	VI	VII	VIII	IX	X	XI	XII
Total Scores	.759	.754	.761	.737	.731	.786	.736	.784	.7595
Type A	.620	.676	.689	.559	.592	.630	.665	.657	.604
Type B	.683	.651	.610	.634	.689	.644	.628	.698	.675
Type C	.570	.716	.730	.623	.667	.670	.702	.675	.631
Type D	.659	.589	.517	.638	.649	.644	.587	.698	.668
Type E	.586	.624	.684	.638	.630	.632	.666	.702	.648
Type F	.700	.689	.691	.711	.677	.666	.666	.646	.674
Type G	.563	.639	.696	.669	.672	.681	.655	.726	.719
No. of Cases	62	58	60	66	68	66	73	65	65
No. of Schools	6	6	7	5	5	5	5	5	5
No. of States	5	5	5	3	4	3	3	3	3

One other set of data has played a vital part in this experiment. Those data show the relationship existing between

^a The P.E.'s of these R's have been referred to. See Tables IX, XII, XV of the Appendix.

the two criteria themselves:

Table XXXIX. r's (Teachers' Marks - Student Intelligence Quotients. Grades IV-XII inclusive.

	<u>Grades</u>									
	IV	V	VI	VII	VIII	IX	X	XI	XII	
r's (TM (IQ	.560	.550	.590	.522	.550	.526	.361	.466	.514	

There now have been assembled the following data:

1. r's (Type Scores - Composite Test Scores), grades III to XII inclusive.
2. r's (Total Scores, Type Scores - Teachers' Marks), grades III to XII inclusive.
3. r's (Total Scores, Type Scores - Student Intelligence Quotients), grades IV to XII inclusive.
4. R's (Total Scores, Type Scores - Criteria Combined), grades IV to XII inclusive.
5. r's (Teachers Marks - Student Intelligence Quotients), grades IV to XII inclusive.

It is obvious that these tables contain factors which are inter-related. Each set, except Table XXXIX, attempts in some manner to show a measure of reading comprehension as

involved in the October Test. It now becomes the task of this problem to gather these measures of comprehension in some comparable basis and out of these presentations to draw conclusions which are evident from the analyses of the October testing.

The difficulty in analyzing the composite tables of r's and R's has been referred to. Only close and detailed study will show trends. Very careful study would be required to show the underlying relationships between tables. Solely to overcome this difficulty, these table summaries are re-presented in the form of figures. These figures are just as accurate as the tables, inasmuch as they are based upon the data of the tables. However, figures enable the eye graphically to follow the changes in measurement as evidenced by the tables.

In detail, the first group of figures shows:

1. Measurement value of types as compared with test composite.
2. Measurement value of types as compared with teachers' marks.
3. Measurement value of types as compared with student intelligence quotients.
4. Measurement value of types as compared with teachers' marks and student intelligence quotients combined.

The second group of figures shows:

1. Measurement value of Type A compared with that of Type B.
2. Measurement value of Type B compared with that of Type C.
3. Measurement value of Type A compared with that of Type F.
4. Measurement value of Type B compared with that of Type F.
5. Measurement value of Type A compared with that of Type G.
6. Measurement value of Type B compared with that of Type D.
7. Measurement value of Type B compared with that of Type E.

The third and last group of figures shows:

1. Measurement value of all types separately as compared with the test composite, shown on one graph.
2. Measurement value of all types separately as compared with the combined criteria, shown on one graph.
3. Measurement value of the October Test as compared with teachers' marks.
4. Measurement value of the October Test as compared with student intelligence quotients.
5. Measurement value of the October Test as compared with teachers' marks and student intelligence quotients combined.
6. Relationship between teachers' marks and student intelligence quotients.

Following each figure, interpretative statements and

conclusions are given. These statements are the answers to the original inquiry of this problem: Of the student response activities now being used in objective reading tests for the measurement of reading comprehension, which types best measure that comprehension?

Before considering these figures, it may be well to re-present the following facts:

1. The junction points between grades VI-VII, IX-X, represent divisions between Tests I-II and II-III.
2. The junction point between grades VI-VII represents the change from teachers' marks in reading to average achievement marks for academic subjects pursued.
3. Part of the students in grades VII, VIII and IX were junior high school students, part were of the formal VII and VIII grades, while part of grade IX were students of a four-year senior high school.
4. The cases used represent random samplings from an aggregate of 8855 students, taken from a geographic extent of eleven states, from eighteen different school systems and from fifty-three schools.
5. The school systems range from those of large cities to those of centralized schools of small towns.
6. The three Tests, I, II, III, differ none in the

character of make-up. Each consisted of two divisions presented within the same school week, and contained a total of thirty reading paragraphs. All tests were given between October 20th, 1928, and November 15th, 1928. Student intelligence and teachers' marks were secured in December, 1928.

7. All r 's were solved by the Pearson Product Moment formula, after scores were weighted. All R 's were solved by the Otis formula. The P. E.'s of all r 's and R 's are given as are the S. D.'s of all distributions.

The figures and analyses follow:

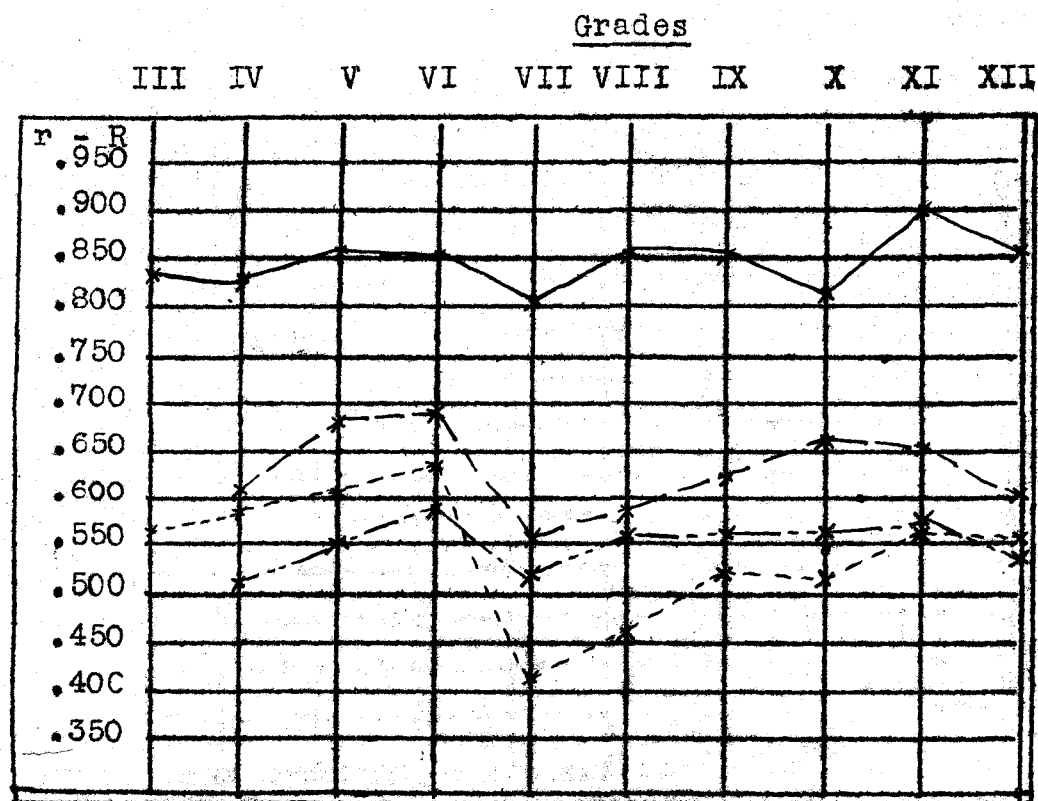
Figure V. Type A.

1. The graph line of Type A, satisfying questions whose answers are found direct in the content details, passes close to $\nearrow .850$ in correspondence with the test composite score throughout the school grades.

2. In correspondence with the combined criteria, it varies above and below $\nearrow .625$. Fluctuations in correspondence with the composite score are accompanied by sharper and deeper fluctuations in correspondence with the combined criteria.

3. As a measurement of reading comprehension, Type A is lowest in grade VII. This may be due to one or all of three things: (1) A change of grade; (2) a change of

Figure V. Graph lines of Type A correlated with Test Composite and Criteria



Legend:

r 's (Type Scores - Composite Test Scores) _____
 r 's (Type Scores - Teachers' Marks)
 r 's (Type Scores - Student Intelligence Quotients) - - - - -
 R 's (Type Scores - Criteria Combined) - - - - -

test; (3) a change of one of the criteria.

4. As compared with the other types, Type A is a fairly consistent measure of reading comprehension throughout the school grades.

5. In comparison with the four data with which the types are correlated, it ranks fairly close to the middle ground of measurement value in determining comprehension.¹

6. In the proposed general test of reading², Type A of the student response activities, should be retained as an effective agency for determining comprehension of the content.

1

Statements such as number 5 above will be made following each Figure. These statements are made from the standpoint of empirical inspection of all assembled data as represented by the Figures or graphs. There is no way whereby the numerous r's and R's may be thrown together and averaged without grave and serious assumptions. It also would be a point of vulnerable attack to combine r's and R's for averaging, or even to combine the three r's.

2

One of the expected outcomes of this research has been the construction of a test of reading comprehension to be organized and made available in three Tests (I, II, III) of three forms each. The statement, "The proposed general test of reading" refers to this anticipated marketable test. Only slight mention has been given it throughout this thesis, as it did not enter into the conduct of the solution of the three major problems undertaken.

Figure VI. Type B.

1. Type B, satisfying questions whose answers are implied in the content details, passes very close to $\nearrow .900$ in correspondence with the test composite score, throughout the school grades.

2. In correspondence with the combined criteria, Type B fluctuates above and below $\nearrow .600$. These fluctuations are not deep, when compared with those of several other types.

3. Type B shows its greatest variation in correspondence with student intelligence quotients. This would indicate that satisfying questions upon implied details is less dependent upon student intelligence than upon other factors, inasmuch as the mean student intelligence quotients held no great variations from grade to grade.

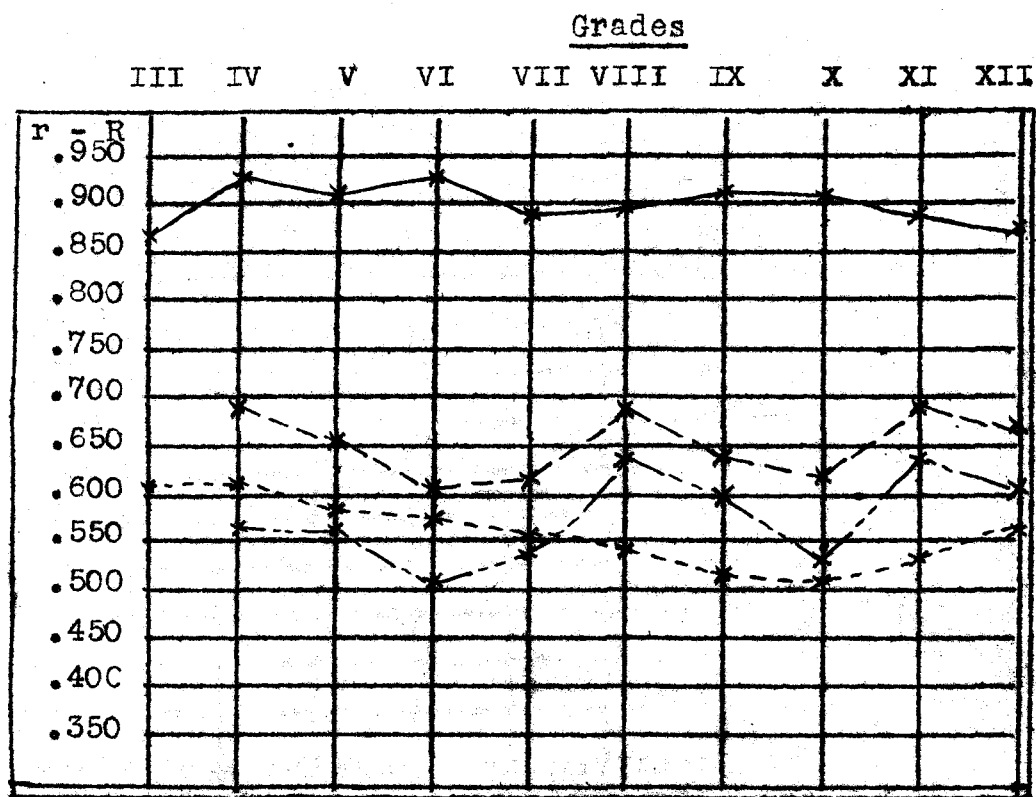
4. Type B shows steady decline in correspondence with teachers' marks until grade X is reached, where there is a slight turn upward. The behavior of this line in Figure VI is a most interesting outcome of this problem.

5. Type B is one of the most consistent measures of reading comprehension, as shown by comparisons with the four sets of data. It is one of the best measures of reading comprehension as shown by these outcomes.

6. In the proposed general test of paragraph reading ¹

¹ See footnote 2, p. 255, this thesis.

Figure VI. Graph Lines of Type B Correlated with Test Composite and Criteria.



Legend:

- r 's (Type Scores - Composite Test Scores) _____
- r 's (Type Scores - Teachers' Marks)
- r 's (Type Scores - Student Intelligence Quotients) - .. - .. - .. - ..
- R 's (Type Scores - Criteria Combined) - - - - -

Type B should be retained as an effective agency for determining comprehension of reading content.

Figure VII. Type C.

1. Type C, satisfying questions whose answers are implied by the content meaning as a whole, varies in its measurement of reading comprehension from grade group to grade group. This variation is true when it is correlated with the test composite and when correlated with the criteria.

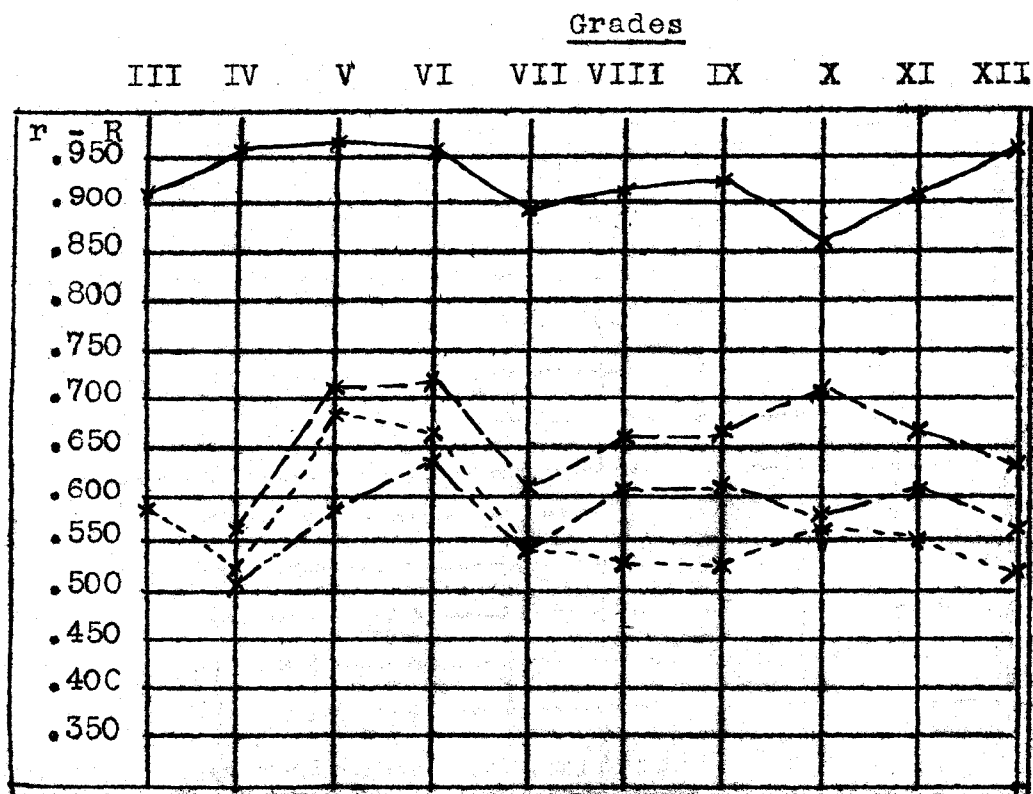
2. It seems to measure with the highest degree of correspondence in the latter elementary school grades, generally lower in the middle grades, and fluctuating again in the upper high school grades.

3. Fluctuations in correlation with the test composite are accompanied by like fluctuations with the criteria, excepting in grades X, XI, and XII where the fluctuations are the opposite.

4. The graph line of Type C fluctuates above and below a median line of about .915 when compared with test composite and above and below a median line of about .660 when compared with the criteria.

5. Because of the fluctuations, as shown in all lines of Figure VIII, Type C cannot be considered an even

Figure VII. Graph Lines of Type C Correlated with Test Composite and Criteria



Legend:

r 's (Type Scores - Composite Test Scores) _____
 r 's (Type Scores - Teachers' Marks)
 r 's (Type Scores - Student Intelligence Quotients) - .. - .. - .. - .. -
 R 's (Type Scores - Criteria Combined) - - - - -

measure of reading comprehension from grade to grade. In fact, in a broad general view, Type C is the only type giving evidence of opposite fluctuation mentioned in item 3 on the foregoing page. However, its correspondence with the standards of this Test make it a worthy means of measuring comprehension.

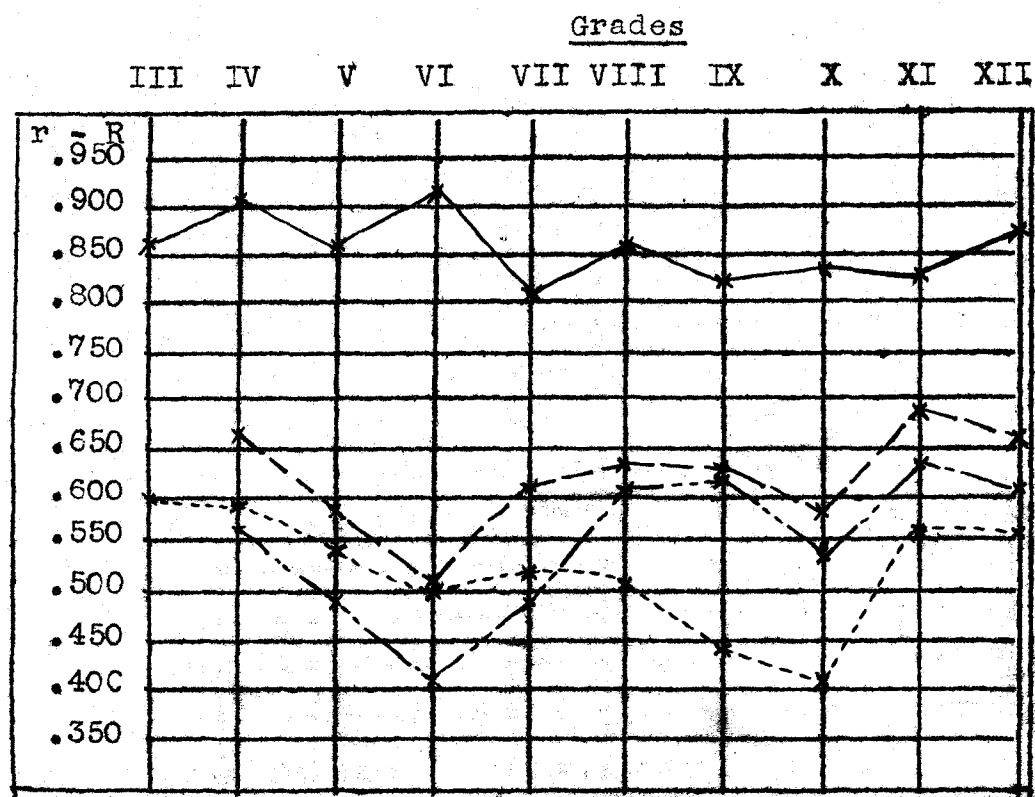
6. In the proposed general test of paragraph reading, Type C should be retained as an effective agency for determining comprehension of reading content.

Figure VIII. Type D.

1. The graph line of Type D, determining whether or not the content stated a definite given idea, like Type C, fluctuates from grade to grade. It does not seem to reach a consistent level until in the latter years of the middle grades. In the elementary grades its correspondence with the composite score is higher than for the remainder of the grades. The median level for the elementary grades is about .875, but for the grades beyond the sixth, that level is about .840.

2. When compared with the criteria, Type D progresses to lower levels until grade VI is reached. From that point on, irregularly it reassumes its original level held with

Figure VIII. Graph Lines of Type D Correlated with Test Composite and Criteria.



Legend:

- r 's (Type Scores - Composite Test Scores) _____
- r 's (Type Scores - Teachers' Marks)
- r 's (Type Scores - Student Intelligence Quotients) - .. - .. - .. - .. -
- R 's (Type Scores - Criteria Combined) - - - - -

grade IV. It is noticeably low in grade VI when compared with student intelligence quotients, and again in grades IX-X when compared with teachers' marks.

3. In the middle grades, Type D attains a median level of about .620, when compared with the combined criteria.

4. Type D cannot be considered an even measure of reading comprehension, as shown by the findings in the October Test. However, the amount of correspondence it shows with the test composite would warrant its being retained in the proposed general test of paragraph reading as a factor in the measurement of reading comprehension.

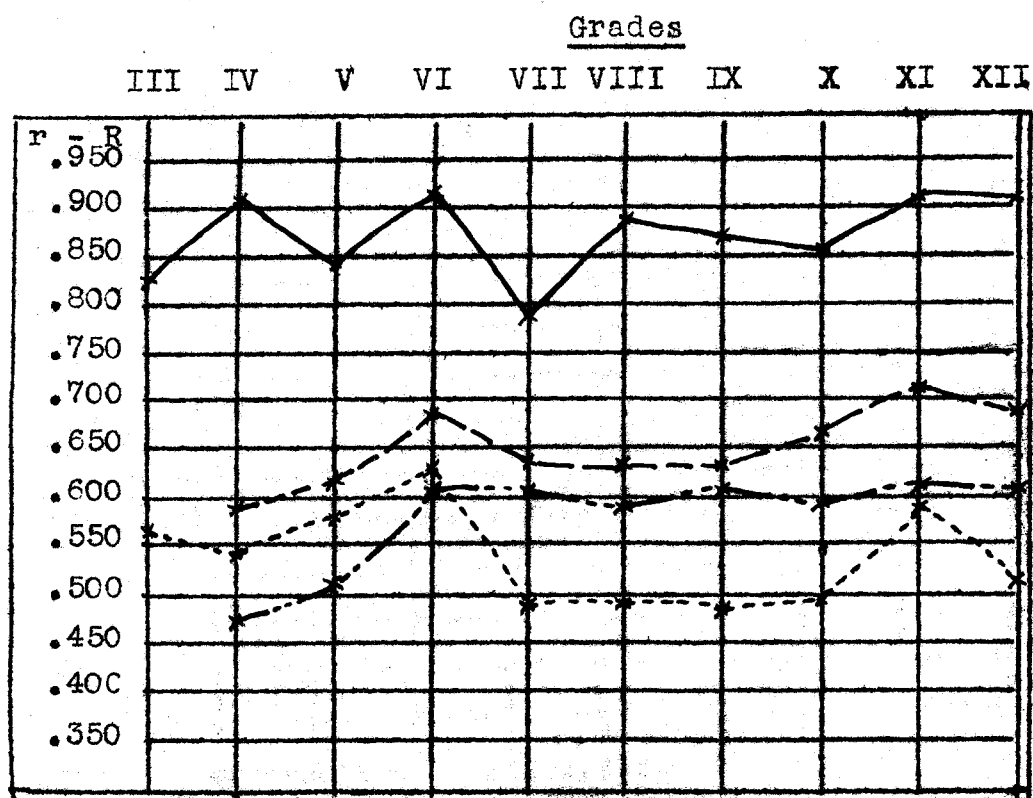
Figure IX. Type E.

1. The graph line of Type E, when compared with the composite scores, shows sharp changes from grade to grade. However, it rises above and falls below a median level of about .875.

2. In correspondence with the two criteria combined, the graph line lies on either side of a median level of about .650.

3. The correspondence Type E shows with student intelligence quotients is noticeably even from grades VI

Figure IX. Graph Lines of Type E Correlated with Test Composite and Criteria.



Legend:

- r 's (Type Scores - Composite Test Scores) _____
- r 's (Type Scores - Teachers' Marks)
- r 's (Type Scores - Student Intelligence Quotients) - .. - .. - .. - ..
- R 's (Type Scores - Criteria Combined) - - - - -

to XII inclusive. This is the closest to a straight line graph of any of the types. Prior to grade VI, the line rises sharply.

4. Fluctuations in correspondence with teachers marks show two high points in grades VI and XI.

5. Type E should be retained as a factor of measuring reading comprehension in the proposed reading test.

Figure X. Type F

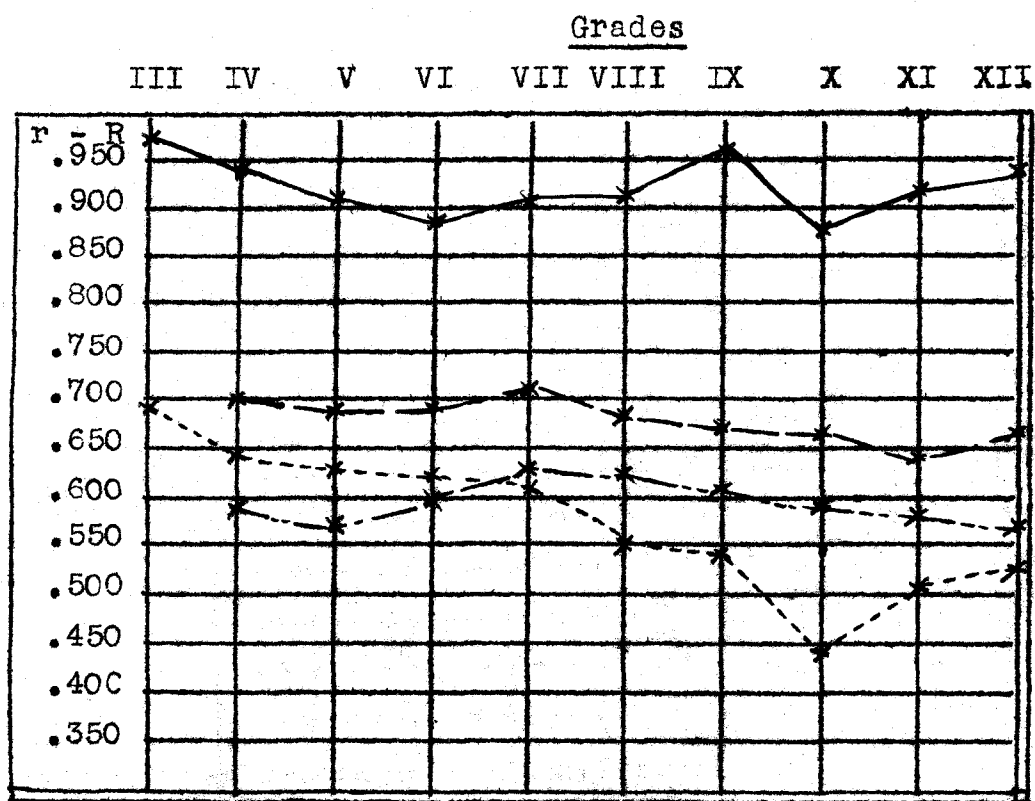
1. Type F, determining whether statements are true or false, remains consistently high in correspondence with the test composite score throughout the ten grades of this experiment. Its graph line fluctuates some, above and below a median level of about .925.

2. When compared with the criteria combined, Type F remains near a mean level of .625.

3. There is less fluctuation when this type is correlated with the criteria than when correlated with the composite score.

4. As a general observation, it may be said that Type F declines slightly in measurement of reading comprehension, from the elementary to the high school grades. This decline is more noticeable when considering the correspondence with teachers' marks.

Figure X. Graph Lines of Type F Correlated with Test Composite and Criteria.



Legend:

- r 's (Type Scores - Composite Test Scores) _____
- r 's (Type Scores - Teachers' Marks)
- r 's (Type Scores - Student Intelligence Quotients) -
- R 's (Type Scores - Criteria Combined) - - - - -

5. Type F is one of the most consistent measures of reading comprehension and is the highest single measure of the seven student response activities.

6. In the proposed general test of paragraph reading, Type F should be retained as an effective agency for determining reading comprehension.

Figure XI. Type G.

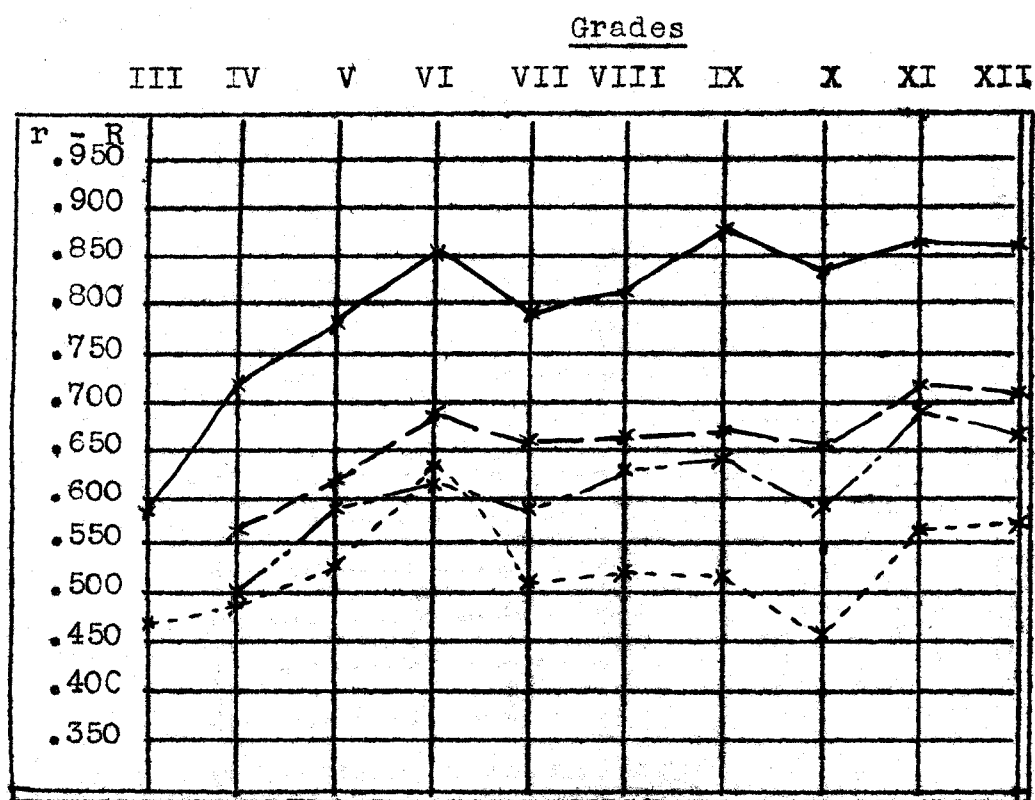
1. Type G, selecting words from the content of similar or synonymous meanings to given words, shows more variation in its measurement of reading comprehension than any other type. However, this variation is not so spasmodic as with Types D and E.

2. Type G is consistently very low in measurement value through the elementary grades. This statement is born out by an inspection of Figure XI which shows low levels for all graph lines.

3. Fluctuations in one graph line are accompanied by fluctuations in the other three lines, indicating that the influence causing one shift caused also similar shifts in the other correlations.

4. Type G cannot be called a consistent measure of reading comprehension throughout the grades III to XII. Its use and availability should be governed by its efficiency

Figure XI. Graph Lines of Type G Correlated with Test Composite and Criteria.



Legend:

- r 's (Type Scores - Composite Test Scores) _____
- r 's (Type Scores - Teachers' Marks)
- r 's (Type Scores - Student Intelligence Quotients) - - - - -
- R 's (Type Scores - Criteria Combined) - - - - -

in measuring comprehension. So far as the findings of this Test are concerned, the conclusion is:

5. In the proposed general test of paragraph reading, Type G should be omitted from Test I and included in Tests II and III as an agency for measuring reading comprehension.

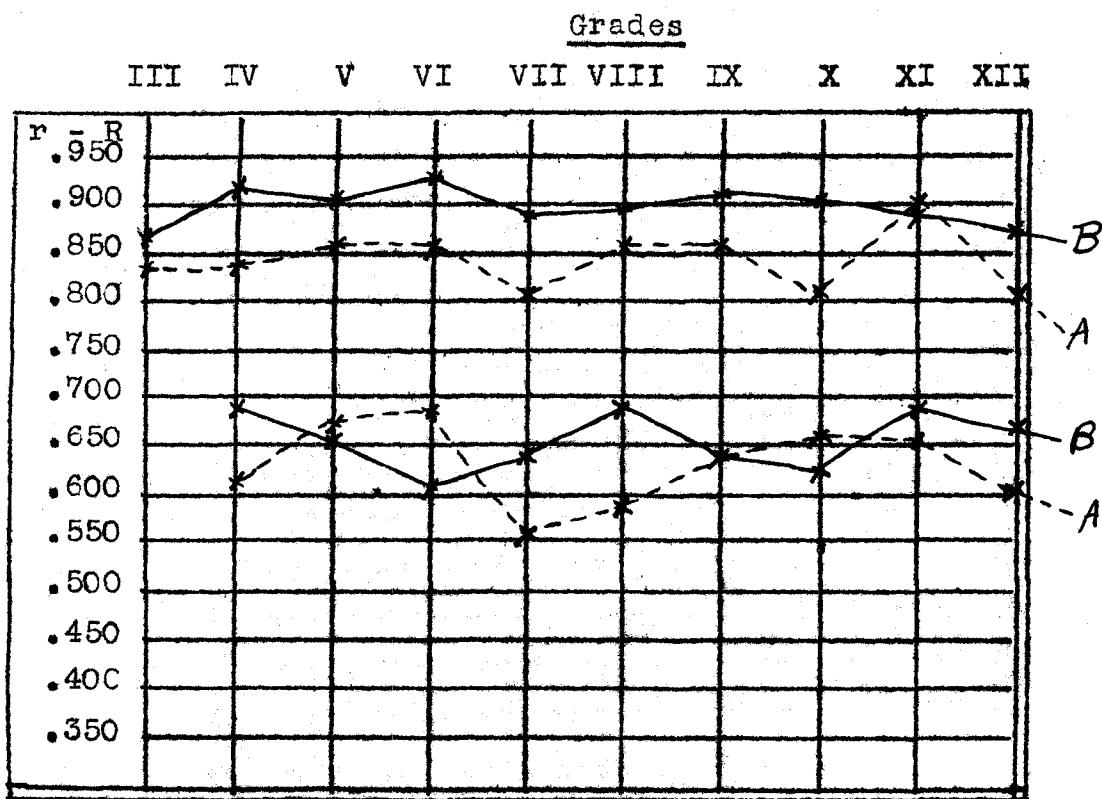
Figure XII. Types A, B

It may be interesting to picture two types together before presenting the graphs of all types.

Types A and B are similar in that both are questions on the content details. They differ in that A asks a direct question on the details while B asks an implied question. Figure XII pictures this difference. The difference is all but constant when the types are correlated with composite score, Type B having the higher r 's. The difference is irregular when the types are correlated with the criteria. However, Type B correlates higher in five grades, pairs with A in one grade, and is lower in r in three grades. These findings bear out Thorndike's assumption that these two types would probably be different in their measurement of reading comprehension. ¹

¹ Letter to writer under date of April 25, 1928. See p. xv, Appendix.

Figure XII. Graph Lines of Types A and B Correlated Separately with Test Composite and Criteria.



Legend:

Upper lines: Types A and B correlated with Test Composite Score.

Lower lines: Types A and B correlated with Combined Criteria.

Figure XIII. Types B, C.

Types B and C are both based upon implied meanings of the content. They differ in that B is based upon implied details while C is based upon content meaning as a whole. Figure XIII shows that when the types are correlated with the composite score, Type C is equal to or higher in r than Type B in nine of the ten grades, leaving Type B equal to or higher than Type C in r in only two of the grades.

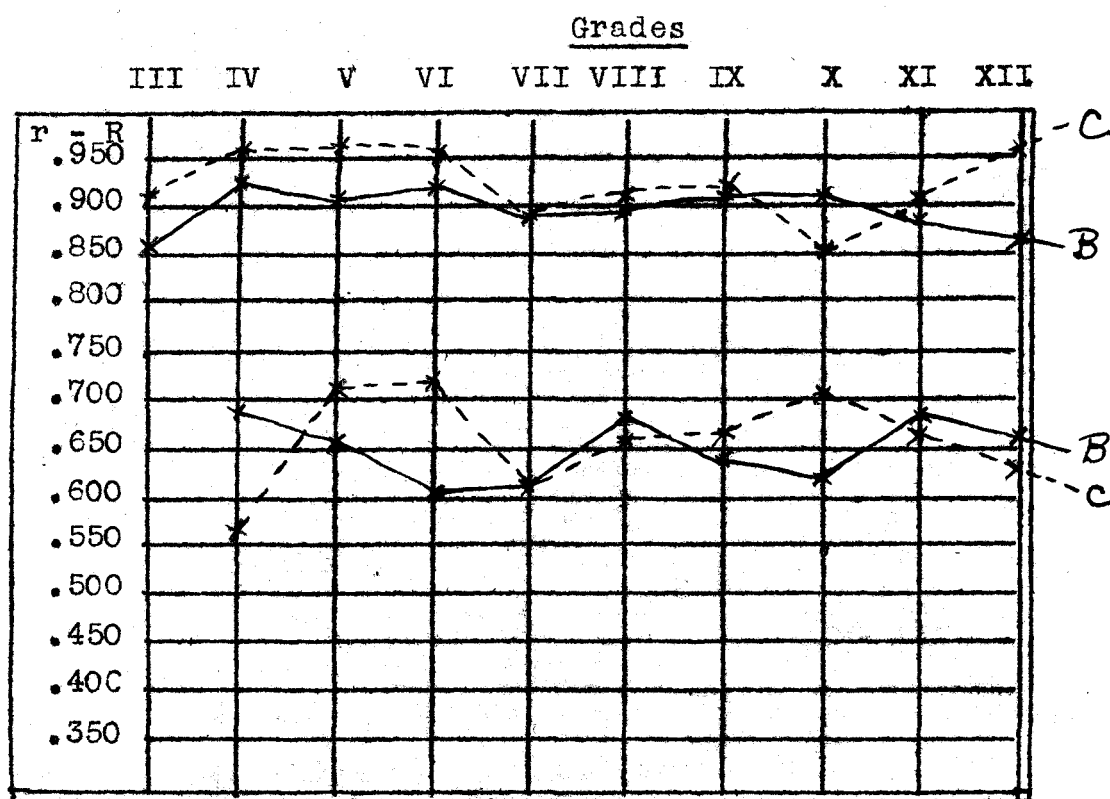
When correlated with the criteria, the proportion is 50-50 for the advance of one type over the other. However, Type C maintains fairly high difference over Type B when it ascends Type B. Excepting in grade IV, Type B is only slightly above Type C in r .

The general conclusion would be that Type C (implied meaning as a whole) is a slightly better measure of reading comprehension than Type B (implied details).

Since Type B was higher in correspondence with the composite and criteria than Type A (direct details), the extended analogy leads to the conclusion that Type C is better than either Types A or B. This analogy is backed by previous proofs in Chapter V and the assembled r 's in Tables XXI, XXXVI, XXXVII, and XXXVIII of this Chapter. ¹

¹ See p. 245, 246, 247, 248, this thesis.

Figure XIII. Graph Lines of Types B and C Correlated Separately with Test Composite and Criteria.



Legend:

Upper lines: Types B and C correlated with Test Composite Score

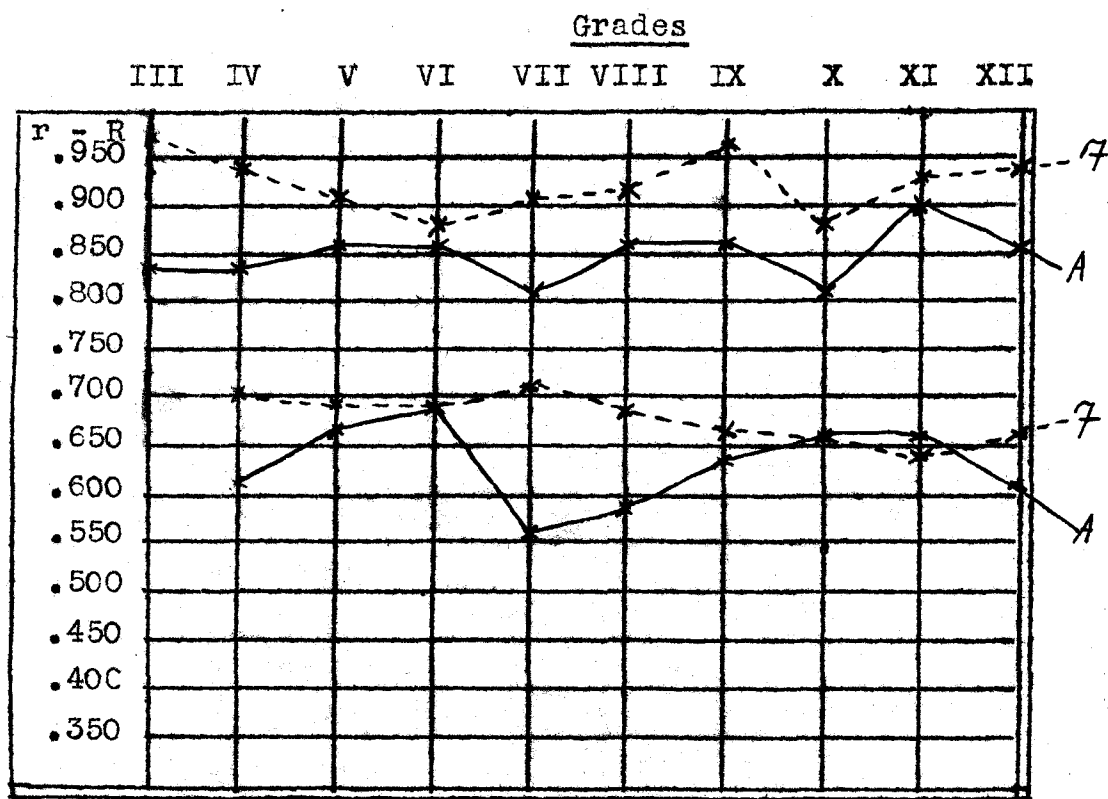
Lower lines: Types B and C correlated with Combined Criteria.

Figure XIV. Types A, F

Types A and F were graphed together because both¹ were known to be high in the measurement of comprehension. When correlated with the test composite score, Type F is consistently higher than Type A. This also is true in each grade but two, when these types are correlated with the criteria. Only one conclusion may be stated and that is that so far as the October Test is concerned, Type F (true-false statements), is a higher measure of reading comprehension than Type A (direct details).

¹ See p. 253, 255, 264.

Figure XIV. Graph Lines of Types A and F Correlated Separately with Test Composite and Criteria.



Legend:

Upper lines: Types A and F correlated with Test Composite Score.

Lower lines: Types A and F correlated with Combined Criteria.

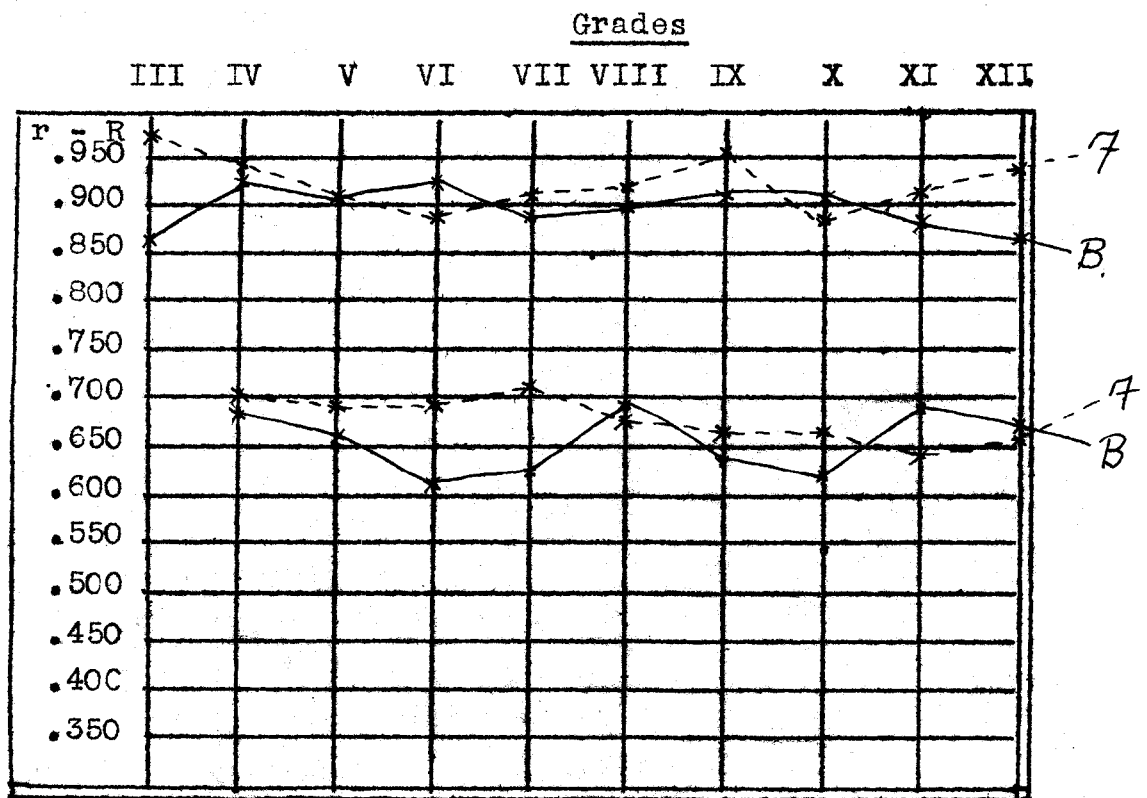
Figure XV. Types B, F.

Types B and F were graphed together for the same reason that was given for Types A and F. Both were known to be high measures of reading comprehension. When these types are correlated with the test composite score, Type F is equal to or exceeds Type B in r in eight of the ten grades. When correlated with the combined criteria, Type F exceeds Type B in six out of the nine grades.

The difference between the types is much less than that between Types A and F. This would be expected since it is known that Type B is a higher measure of comprehension than Type A.

Type F (true-false statements) would seem to be a better measure of reading comprehension than Type B (implied details).

Figure XV. Graph Lines of Types B and F Correlated Separately with Test Composite and Criteria.



Legend:

Upper lines: Types B and F correlated with Test Composite Score.

Lower lines: Types B and F correlated with Combined Criteria.

Figure XVI. Types A, G.

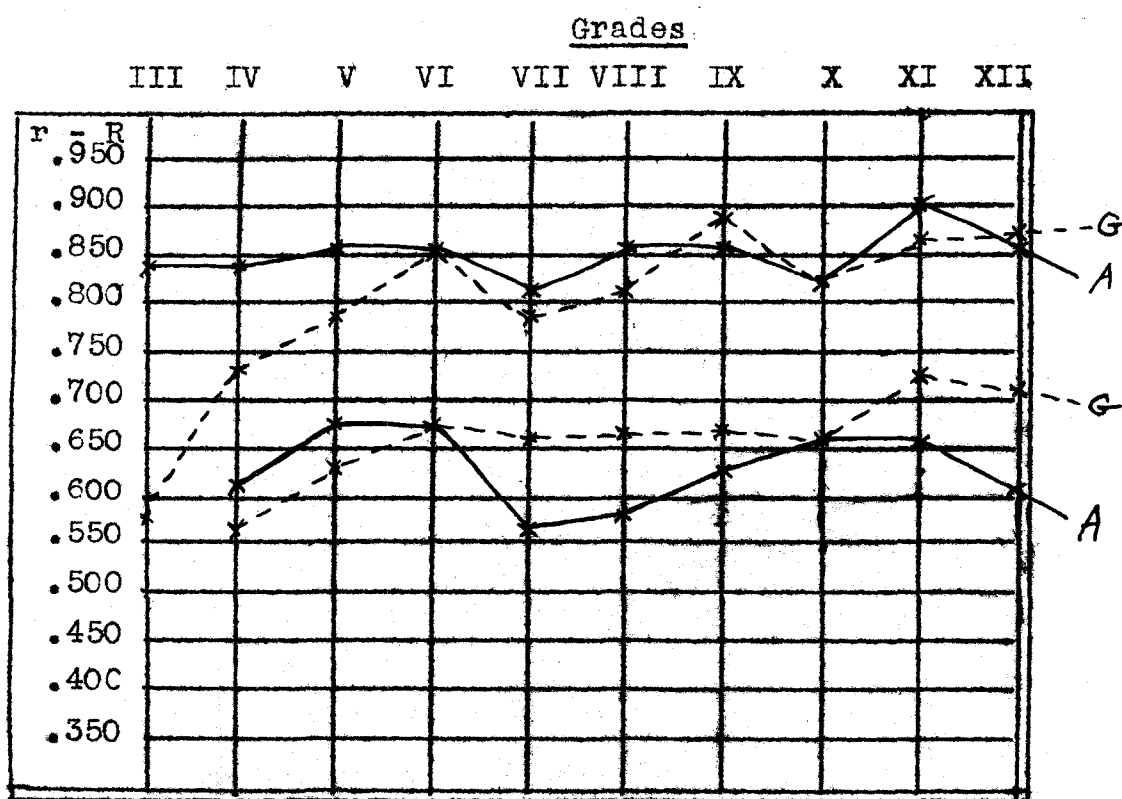
Types A and G are alike in form, but not in content. They require the student to write a word taken from the content. In this, they resemble the "recall" type of exercise discussed by Ruch¹. Being alike in form, the Difference between the two graph lines must be explained by other means. It also may be assumed that Type A is much the easier.² It also is known that selecting a synonym for a given word is different from answering a direct question on content details. Figure XVI would indicate the greatest difference in measurement value of reading comprehension in the elementary grades, a substantial difference in the middle grades, and a slighter difference in the high school grades.

It is interesting to note that when correlated with the test composite these two types maintain close relationship in the middle and high school grades, but show greater difference when correlated with the combined criteria, Type G (synonyms) having the greater R.

¹ See p. 139, 140.

² Shown in Chapter III, p. 138-141, this thesis.

Figure XVI. Graph Lines of Types A and G Correlated Separately with Test Composite and Criteria.



Legend:

Upper lines: Types A and G correlated with Test Composite Score.

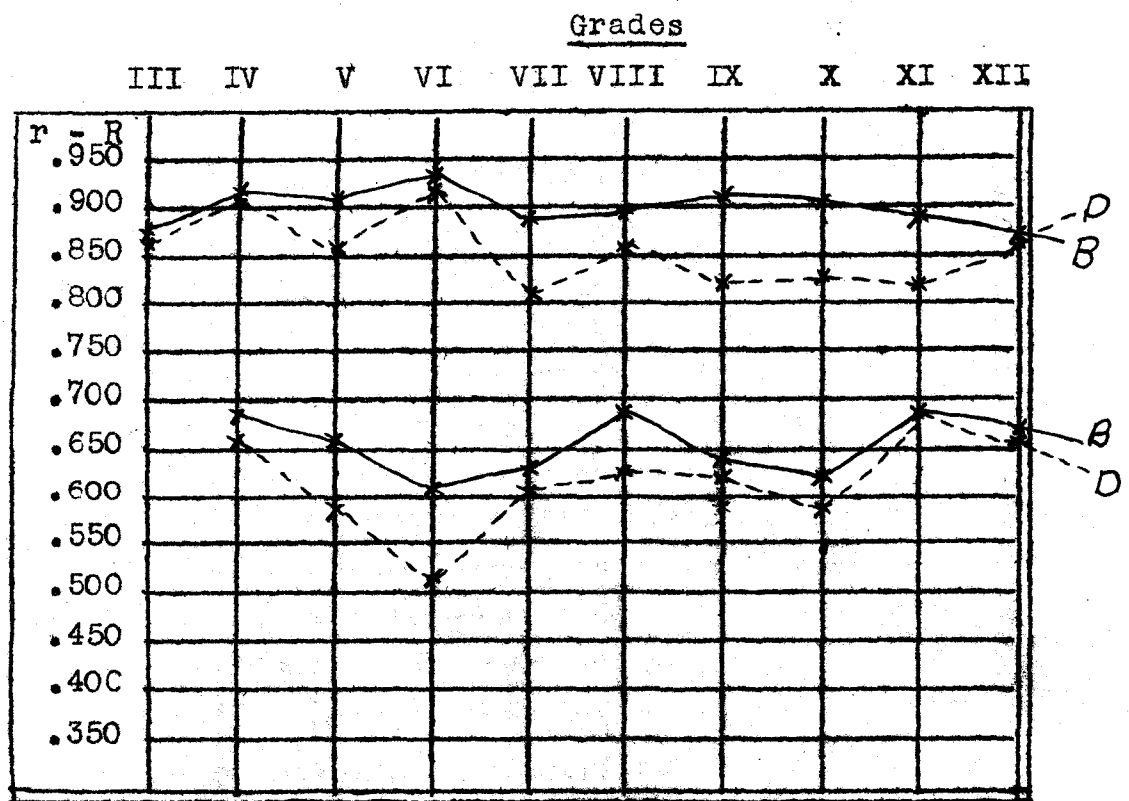
Lower lines: Types A and G correlated with Combined Criteria.

Figure XVII. Types B, D.

Types B and D are graphed together, not because of any possible similarity between the two, but because of their difference. Type B is built upon implied content details, Type D involves determining whether or not the content stated a definite given idea. There also is a difference in that Type B is a multiple of four-choice response while Type D is a multiple of three-choice response.

Type B is consistently higher in amount of correspondence with both the test composite and the combined criteria. The increments and decrements from grade to grade, as represented by the rise and fall of the graph lines, are not unlike. There would seem to be a real difference between these two types in their effectiveness in measuring reading comprehension.

Figure XVII. Graph Lines of Types B and D Correlated Separately with Test Composite and Criteria.



Legend:

Upper lines: Types B and D correlated with the Test Composite Score

Lower lines: Types B and D correlated with the Combined Criteria.

Figure XVIII. Types B, E.

Types B and E are graphed together, primarily because both are multiple choice responses, but are different in nature (Type B, implied details; Type E, references). Type B is consistently higher when compared with the test composite, until the eleventh and twelfth grades are reached.

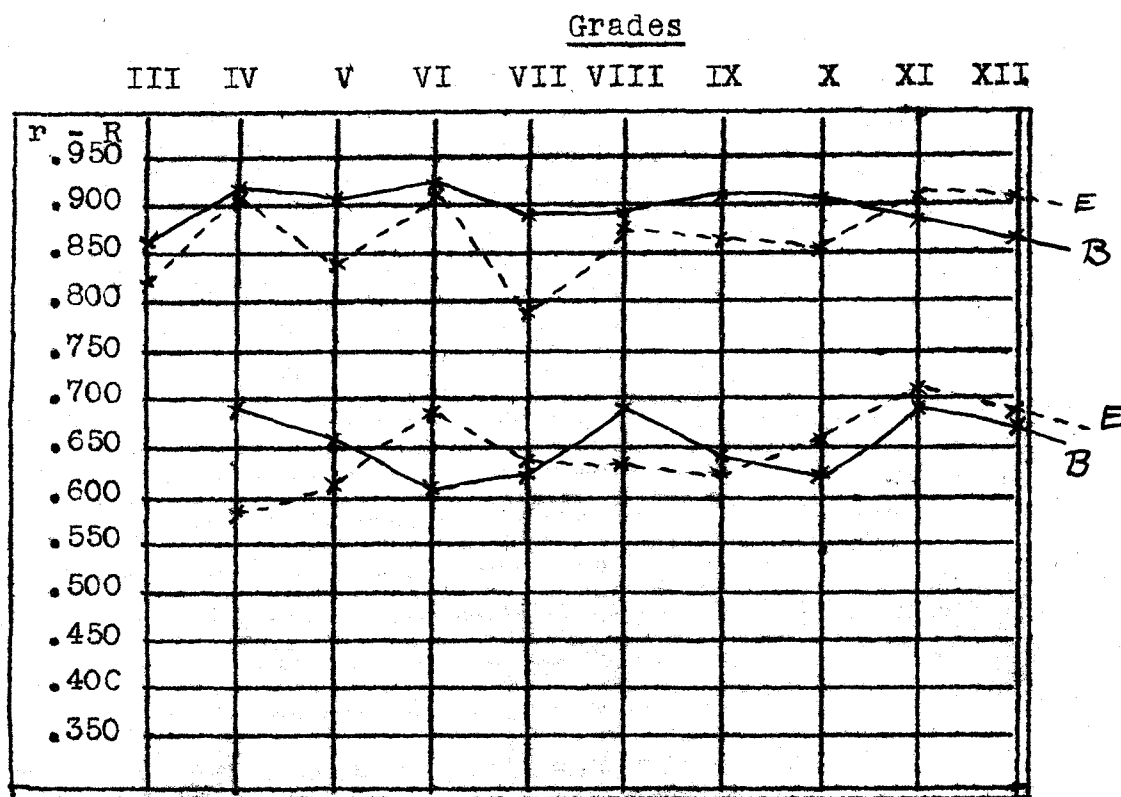
When compared with the combined criteria, the graph lines cross three times, showing fluctuations in both types. The rise of Type E in the latter grades appears at grade X for the lower graph lines, and at grade XI for the upper lines. This would seem to show a real difference for Type E over Type B in the senior high school grades.

It may be interesting to note also that Type E is much more difficult than Type B. ¹

¹

See Chapter V, p. 155.

Figure XVIII. Graph Lines of Types B and E Correlated Separately with Test Composite and Criteria.



Legend:

Upper lines: Types B and E correlated with the Test Composite Score.

Lower lines: Types B and E correlated with the Combined Criteria.

Figure XIX. All Types.

1. Figure XIX presents in composite form the graph lines representing the measurement value of each of the seven types as correlated with the test composite score and with the combined criteria. This figure is interesting because it shows several features not easily comprehended otherwise.

2. The measurement value of the seven types varies most in the elementary grades. There is wide scatter between types until past grade VI. This is true with the upper set of lines (Types - Composite Score) as well as the lower set (Types - Combined Criteria).

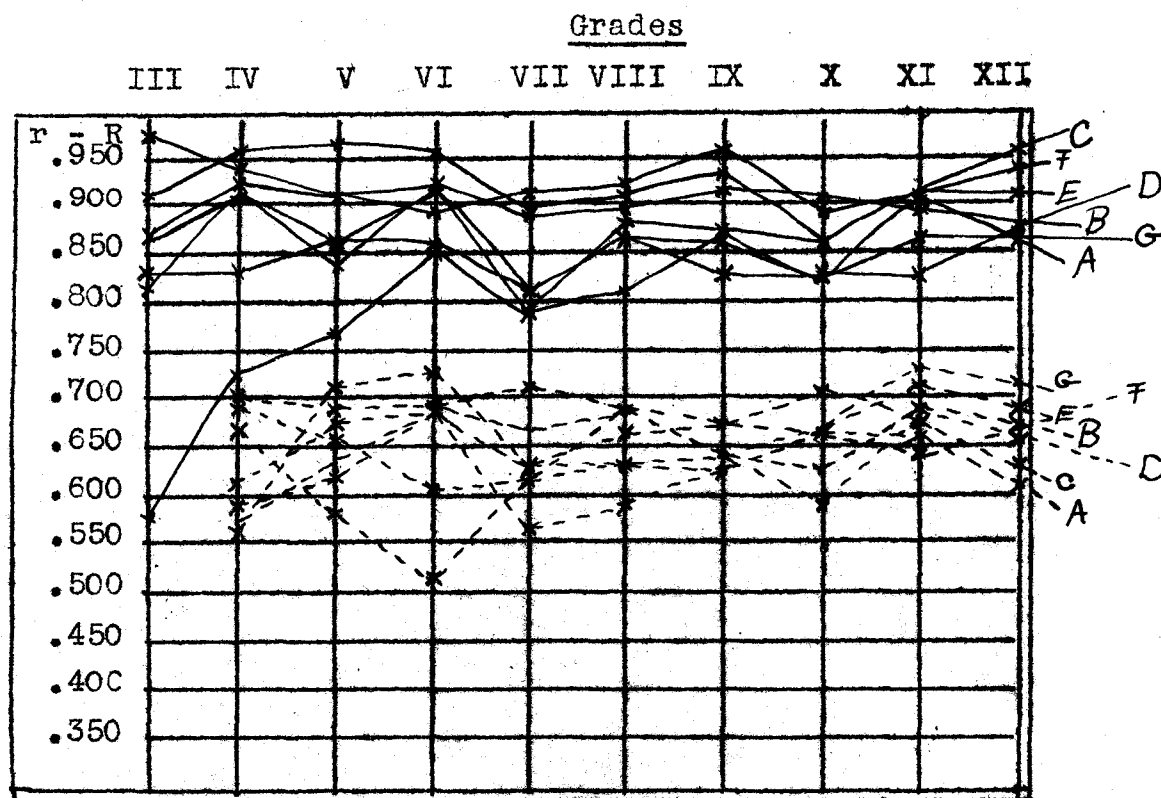
3. The middle grades present a much closer relationship in measurement value between types. This is true for both groups of lines. This same tendency is noticed also for the upper senior high school grades.

4. The composite of the lower group of lines is shown in Figure XIX, wherein the Test as a whole is correlated with the criteria combined.

5. The composite of the upper group of lines is a straight line representing an r of 1.00 for every grade III to XII. It would coincide with the top line of the Figure.

6. Figure XIX shows that with the advance of grade there is an increase of consistency between types and a

Figure XIX. Graph Lines of All Types Correlated Separately with Test Composite and Criteria.



Legend:

Upper lines: All types correlated separately with Test Composite Score.

Lower lines: All types correlated separately with the Combined Criteria.

(Note: Figure XIX is intended to show only one feature: The scatter of the several types in the effectiveness with which each measures reading comprehension. In no sense is the reader expected to trace the individual graph lines through the figure).

very slight progressive increase in measurement efficiency of the October Test.

Figure XX. The Composite Score

1. The October Test as a whole is a comparatively consistent measure of reading comprehension as judged by its comparison with the two criteria. The graph line passes fairly near a median level line of about .750.

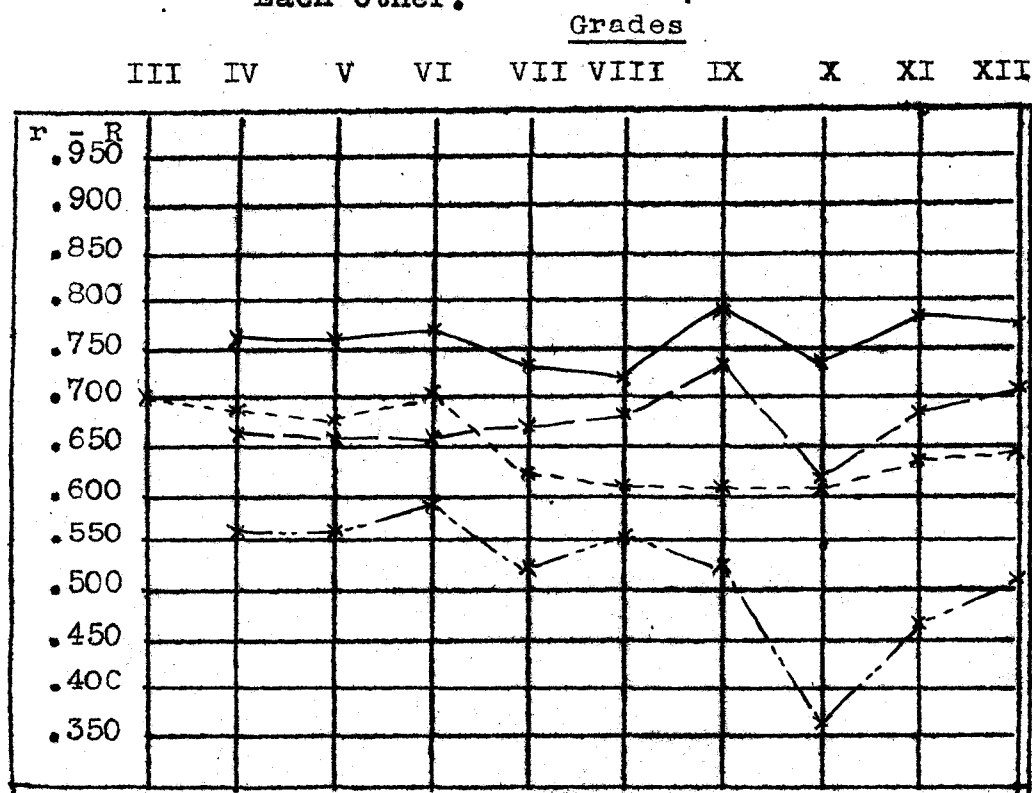
2. The deepest fluctuation occurs between grades VIII and IX, within Test II. This cannot be influenced by a change of test. However, it may be influenced by those students who were members of four-year high schools.

3. The greatest changes will be noticed when the test is correlated with student intelligence quotients. Between grades IX and X there is a marked depression in the graph line.

4. The line showing the correlation with teachers' marks is fairly consistent, allowing for the change between grades VI and VII.

5. The lower line of the graph pictures the relationship between teachers' marks and intelligence quotients. This line merely presents, graphically, the irregularity of the findings previously discussed. The influence of this line upon the behavior of the top line easily may be seen. For instance, the decided depression of the intelligence

Figure XX. Graph Lines of All Types as a Composite, Correlated with Criteria; Graph Line of the Two Criteria when Correlated with Each Other.



Legend:

r 's (Composite Score - Criteria Combined) _____
 r 's (Composite Score - Teachers' Marks)
 r 's (Composite Score - Student Intelligence Quotients) - - - - -
 r 's (Teachers' Marks - Student Intelligence Quotients) - .. - .. - .. - ..

quotient line is tempered in the composite line by the very marked depression in the lowest line (Teachers' Marks - Intelligence Quotients).

Final Summary and Conclusions

Since Chapter VI itself is primarily a summary and review of the statistical findings of this problem, it is necessary in conclusion only to re-present the purposes of this investigation and state the answer to the chief inquiries set forth in the introduction and at numerous points throughout the thesis.

A. The First Proposal of the Thesis

This thesis proposed first to ascertain, if possible, what means were used by existing available reading tests for the purpose of measuring reading comprehension, with regard to paragraph units. Those means were found to lie in the situations, which each test presented, involving student response activities. The theory back of each set of such activity situations is that a student's comprehension might be determined from the amount and accuracy of his performance, if that performance were related to the meaning of the reading content. Each test, therefore, presented one or

more student response activity situations which were to be satisfied by the student.

Available reading tests were carefully analyzed for such activities. The analyses clearly demonstrated that there were three groups of response activities.

The first group included those not deemed applicable to the content of general paragraph reading. They were:

1. Answering questions based upon student's previous experience.
2. Answering questions based upon student's previous information.
3. Building a new theme within content so constructed as to provide blanks.
4. Identifying content meanings in accompanying illustrations.

The second group included those activities applicable to content especially written for the particular activity involved. Those activities were:

- 1. Following directions.
- 2. Predicting outcomes.
3. Arranging thoughts into a regular order.
4. Indicating incongruous or irrelevant words.

The third group included those activities applicable to the content of general paragraph reading. They were:

1. Activities based upon giving thoughts expressed directly in the content details.
2. Activities based upon giving thoughts implied in the content details.

3. Activities based upon giving thoughts implied in the content meaning as a whole.
4. Activities based upon determining whether or not the content stated a definite idea.
5. Activities based upon giving the thought or object to which a given word refers.
6. Activities based upon determining whether given statements are true or false.
7. Activities based upon giving a word from the content synonymous to a given word.

The first proposition of this thesis problem has been answered. The above listed student response activities, together with those on the foregoing page, are the so-called agencies by which reading tests have attempted to measure reading comprehension.

B. The Second Proposal of the Thesis

This thesis proposed in the second place to determine, if possible, whether or not there was any difference between the so-called "means" in their measurement of reading comprehension. In other words, has one type of student response activity measured comprehension more effectively than others?

The answer to this proposition was sought in the results of a constructed experimental test, - the October Test - which presented to the student a number of paragraphs

each one of which was followed by the seven types of student response activity situations evolved in the analyses of available tests. The results, by types, were checked against three groups of independent data: (1) Test Composite Score; (2) Teachers' Marks; (3) Student Intelligence Quotients. They were also checked against one set of derived data, viz., the teachers' marks and student intelligence quotients combined.

All of these comparisons showed that:

1. Each of the seven types of student response activity measured reading comprehension in an amount not just equalled by any other type, for any one of the ten grades employed (grades III to XII, inclusive).
2. Any one type of student response activity, alone, measured reading comprehension in an amount not exactly the same in any two grades.
3. The differences between types was of great spread for the elementary grades and of less and less spread for the middle and high school grades.
4. The amount of variation in comprehension measurement varied markedly for some types from grade to grade, and was fairly constant for other types, from grade to grade.
5. Types which were high in measurement of reading

comprehension in the elementary grades may have been median or low in other grades.

Thus, the second proposition of this problem has been answered: There are differences in the measurement value of the several types of student response activity applicable to general paragraph reading.

C. The Third Proposal of the Thesis

In the third place, this thesis proposed to determine which of the means (student response activities) best measured reading comprehension. This proposal is the most difficult to answer, since all the series of data could not be combined into one, and a final set of multiple R's computed. The best answer to this proposition can be stated, taking the student response activities by groups of

1. Highest in the measurement of reading comprehension.
2. Second in the measurement of reading comprehension.
3. Lowest in the measurement of reading comprehension.

All the data offered in this and previous chapters indicate the following:

Group I

Type B, (implied details), Type C (implied meaning as a whole), and Type F (true-false statements) are first in their measurement of reading comprehension. Type F is probably the highest, Types B and C next.

Group II

Type A (direct details), Type D (determining whether or not content contained a given idea), and Type E (references) are second in the measurement of reading comprehension. Type D is the lowest of this group of three.

Group III

Type G (synonyms) is last in the measurement of comprehension in the elementary grades. It rises to a level of the second group in the middle and high school grades.

Thus, the third and last proposition of this thesis is answered.

The final and general statement of the conclusions provided by the results of this problem is: Of the seven types of student response activity (applicable to general paragraph reading) employed in available reading tests, all but one make effective contributions to the measurement of reading comprehension in the elementary grades, and all make effective contributions to the measurement of reading comprehension in the middle and high school grades.

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APPENDIX

APPENDIX

Data Concerning the Forty-Six Silent Reading Tests Analyzed for Student Response Activities

1. The Adams Silent Reading Tests

Author: Mr. William C. T. Adams
Publisher: E.H. Babb & Company, Plymouth, N. H.
Date when first published: 1920

2. Burgess Scale for Measuring Ability in Silent Reading

Author: May Ayres Burgess
Publisher: Russell Sage Foundation, #150 E. 22nd
Street, New York City
Date when first published: 1920

3. Chapman-Cook Speed of Reading Test

Authors: J. C. Chapman, Sidney A. Cook
Publisher: J. B. Lippincott Company, #227 S. Sixth
Street, Philadelphia, Pa.

4. Chapman Unspeeded Reading Comprehension Test

Author: J. C. Chapman
Publisher: J. B. Lippincott Company, #227 S. Sixth
Street, Philadelphia, Pa.
Date when first published: 1925

5. Courtis Standard Research Tests in Silent Reading

Author: S. A. Courtis
Publisher: S. A. Courtis, #1807 E. Grand Boulevard,
Detroit, Michigan
Date when first published: 1917

6. Dearborn-Westbrook Reading Test

Authors: W. F. Dearborn, C. H. Westbrook
 Publisher: W. F. Dearborn, Graduate School of Education, Harvard University, Cambridge, Mass.
 Date when first published: 1920

7. The Denver Diagnostic Reading Tests

Authors: Charles E. Greene, Frances M. Near
 Publisher: Board of Education, Denver, Colorado
 Date When first Published: 1927

8. The Detroit Examination in Reading

Authors: Unnamed members, Department of Instructional Research, Detroit Public Schools
 Publisher: Department of Instructional Research, Detroit Public Schools, Detroit, Michigan
 Date when first published: 1922

9. Detroit Reading Tests

Authors: Claudia M. Parker, E. A. Waterbury
 Publisher: World Book Company, Yonkers-on-Hudson, New York
 Date when first published: 1927

10. Fordyce Scale for Measuring Achievements in Reading

Author: Charles Fordyce
 Publisher: Bureau of Measurements and Research, Lincoln, Nebraska

Date when first published: 1916

11. Fordyce Test for Measuring Ability in Reading

Author: Charles Fordyce
 Publisher: Extension Division, University of Nebraska, Lincoln, Nebraska
 Date when first published: 1923

12. Gates Silent Reading Test

Author: Arthur I. Gates
 Publisher: Bureau of Publications, Teachers College, Columbia University, New York City
 Date when first published: 1926

13. The Gray Silent Reading Tests

Author: W. S. Gray
 Publisher: Public School Publishing Company,
 Bloomington, Illinois
 Date when first published: 1915

14. Haggerty Reading Examination

Author: H. E. Haggerty
 Publisher: World Book Company, Yonkers-on-Hudson,
 New York
 Date when first published: 1919

15. The Holmes Reading Test

Author: H. W. Holmes
 Publisher: H. W. Holmes, Graduate School of Educa-
 tion, Harvard University, Cambridge, Mass.
 Date when first published: 1915

16. The Indiana Composite Achievement Test

Author: W. W. Wright
 Publisher: Bureau of Cooperative Research,
 Indiana University, Bloomington, Indiana
 Date when first published: 1927

17. Iowa High School Silent Reading Test

Author: H. A. Green, and A. N. Jorgensen
 Publisher: Bureau of Educational Research and Service,
 University of Iowa, Iowa City, Iowa
 Date when first published: 1927

18. Kansas Silent Reading Tests

Author: F. J. Kelly
 Publisher: Kansas State Normal School,
 Emporia, Kansas
 Date when first published: 1915

19. Lippincott-Chapman Classroom Products Survey Test

Author: J. C. Chapman
 Publisher: J. B. Lippincott Company, #227 S. Sixth
 Street, Philadelphia, Pa.
 Date when first published: 1920

20. Lien and Mouse Reading Test

Author: L. J. Brueckner
 Publisher: Board of Education, Educational Test
 Bureau, Minneapolis, Minnesota
 Date when first published: 1923

21. Los Angeles Elementary Reading Test

Author: Jessie E. Ingram
 Publisher: Research Service Company, #4259 S.
 Van Buren Place, Los Angeles, Calif.
 Date when first published: 1926

22. Los Angeles Primary Reading Test

Author: Jessie E. Ingram
 Publisher: Research Service Company, #4259 S.
 Van Buren Place, Los Angeles, Calif.
 Date when first published: 1925

23. Lowry Reading Tests

Author: Ellsworth Lowry
 Publisher: Extension Department, State Normal
 School, Indiana, Pa.
 Date when first published: 1926

24. Monroe Standardized Silent Reading Test

Author: Walter S. Monroe
 Publisher: Public School Publishing Company,
 Bloomington, Illinois
 Date when first published: 1920

25. Natural Group Reading Tests

Authors: R. G. Jones, J. G. Foss
 Publisher: Dobson-Evans Company, Columbus, Ohio
 Date when first published: 1922

26. North Carolina High School Senior Examination

Author: M. R. Trabue
 Publisher: Bureau of Educational Research, Uni-
 versity of North Carolina, Chapel Hill,
 North Carolina
 Date when first published: 1927

27. Poley Precis Test

Author: Irvin C. Poley
Publisher: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1927

28. Pressey Diagnostic Reading Test

Authors: L. C. Pressey, S. H. Wang, H. S. Chen
Publishers: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1925

29. Pressey Narrative Reading Tests

"Robinson Crusoe", "The Little Cliff Dweller"

Author: Luella C. Pressey
Publisher: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1922

30. Pressey Speed of Silent Reading

Author: L. W. Pressey
Publisher: Department of Psychology, Indiana Uni-
versity, Bloomington, Indiana
Date when first published: 1921

31. Pressey Third Grade Attainment Scale

Author: L. W. Pressey
Publisher: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1921

32. Public School Achievement Test

Author: Jacob S. Orleans
Publisher: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1923

33. Regents Preliminary Silent Reading Test

Author: W. W. Cox
Publisher: University of the State of New York,
Albany, New York
Date when first published: 1922

34. Sangren-Woody Reading Test

Author: Paul V. Sangren
Publisher: World Book Company, Yonkers-on-Hudson,
New York
Date when first published: 1927

35. Stanford Achievement Test

Author: Truman L. Kelley, G.M. Ruch, L.M. Terman
Publisher: World Book Company, Yonkers-on-Hudson,
New York
Date when first published: 1922

36. Starch Reading Test

Author: Daniel Starch
Publisher: University Cooperative Company, #504
State Street, Madison, Wisconsin
Date when first published: 1914

37. Stone Series of Narrative Reading Tests

Authors: C. R. Stone, et al.
Publisher: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1922

38. Thorndike-McCall Reading Scale

Authors: E.L. Thorndike, Wm. A. McCall
Publisher: Bureau of Publications, Teachers College,
Columbia University, New York City
Date when first published: 1920

39. Thorndike Reading Scale Alpha II

Author: E. L. Thorndike
Publisher: Bureau of Publications, Teachers College,
Columbia University, New York City
Date when first published: 1920

40. Van Wageningen Reading Scales

Author: H. J. Van Wageningen
Publisher: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1922

41. Virginia, Minnesota, Silent Reading Test
Authors: Unnamed members, Department of Research,
Virginia, Minnesota Schools
Publisher: Department of Research, Public Schools,
Virginia, Minnesota
Date when first published: 1923
42. Whipple's High School and College Reading Test
Author: Guy M. Whipple
Publisher: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1926
43. Williams Primary Reading Test
Author: Allan J. Williams
Publisher: Public School Publishing Company,
Bloomington, Illinois
Date when first published: 1926
44. Wisconsin Supervisory Tests in Reading
Author: H. W. Kircher
Publisher: Eau Claire Book and Stationery Company,
Eau Claire, Wisconsin
Date when first published: 1922
45. Witham Silent Reading Test
Author: E. C. Witham
Publisher: J. L. Hammett Company, Cambridge, Mass.
Date when first published: 1921
46. Wyoming Uniform State Examination in Reading
Author: Members of State Department of Educa-
tion, Cheyenne, Wyoming
Publisher: State Department of Education,
Cheyenne, Wyoming
Date when first published: 1925

Letters to Writer from Test Authors

(A)

Teachers College
Columbia University
New York
March Fourth, 1929

Mr. Spencer Shank
University of Cincinnati
Cincinnati, Ohio

My dear Mr. Shank:

There have been several studies which have been more or less closely related to the problem you mention, although perhaps none exactly meet it.

In the development of what are known as the Gates Reading Tests, I, myself, tried out a variety of comprehension exercises. A very brief report on some of the studies made here appears in the Teachers College Record of November, 1927, pages 148 to 159.

Another study that might interest you is a doctor's dissertation by Dr. Irion, entitled, "Comprehension Difficulties in the Study of Literature." This is Contribution No. 189 of Teachers College Contributions to Education.

You may find further notes in Carter Good's book, "The Supplementary Reading Assignment", published by Warwick and York, and in Yeakam's, "Reading and Study," published by the Macmillan Company.

Cordially yours,

(signed) A. I. Gates

AIG-MCK

(B)

The Ohio State University
Columbus, Ohio
April 18, 1928

Mr. Spencer Shank
University of Cincinnati
Cincinnati, Ohio

My dear Mr. Shank:

Your suspicions with regard to the relation of direct and implied answers in the diagnostic reading test is quite correct. We tried to go from the more obvious to the less, and as the test progresses to get away from merely fact questions.

We have never done anything to find out whether the questions whose answer is obvious or the question whose answer must be implied is the better measure of reading ability. It would be my guess that the implied answer type of question was the better. I remember some incidental research with the Thorndike-McCall Scale which suggested that the students who did not read the passage but read the answers and then hunted for the phrase that would answer them made higher scores than those who read the passage first. Since the questions for at least the early items of this scale are largely fact questions this evidence so far as it goes would indicate that the fact questions do not necessarily mean understanding of the reading matter.

The paragraphs selected have no particular basis of selection except that each paragraph furnished a complete instance in itself. We were trying to get away from piecemeal sort of reading shown in the Monroe Scale so we tried to use as complete stories as possible.

I am sorry I cannot give you any more definite information but perhaps these facts will answer your question sufficiently.

Yours very truly,

(signed) L. C. Pressey

LCP-as

(c)

University of Illinois
College of Education
Urbana

Bureau of Educational Research
Office of Director

April 18, 1928

Mr. Spencer Shank
College of Education
University of Cincinnati
Cincinnati, Ohio

Dear Sir:

The question that you raised in your letter of April 11, is answered, so far as I have information, on page 12 of the bulletin giving the account of the derivation of the Illinois Examination. I am sending you a copy of this bulletin under separate cover.

Very truly yours,

(signed) Walter S. Monroe
Director

HP:592

(D)

University of Minnesota
College of Education
Minneapolis, Minn.

Office of the Dean

April 16, 1928

Mr. Spencer Shank
College of Education
University of Cincinnati
Cincinnati, Ohio

My dear Mr. Shank:

I regret that I have no statistical data bearing on the question raised in your letter of April eleventh. Such experience as I have had would indicate that the questions of the first type, namely, those in which the questions may be answered directly in the reading of a paragraph is considerably easier than questions of the implied type.

We have done a little work upon questions designed to require in answering that the student comprehend the paragraph as a whole, but we have not gone far enough with it to know anything other than that this is a difficult type of question.

Cordially yours,

(signed) M. E. Haggerty

MEH:S

(E)

Detroit Public Schools
Detroit, Michigan
April 12, 1928

Mr. Spencer Shank
College of Education
University of Cincinnati
Cincinnati, Ohio

Dear Mr. Shank:

I am very glad to have any questions asked on the Detroit Reading tests which show interest and desire to know and am only too happy to try to answer yours.

In constructing the tests we felt it desirable to measure as much as possible in as simple a manner as possible. It seemed that two of the phases most commonly needed in the reading situation were ability to infer and ability to select one fact from many. Therefore, we built our tests on those two phases. Not that it would not be well to measure other phases but those seemed the two that could be most readily brought out from the same paragraph, keeping the test non-complicated. We do not find the two types measure comprehension equally.

We have data on this but have not yet completed it in form to make definite statements but can say we get on the whole more correct responses to the factual question than to the interpretive question; although we find some children fall down on one type while others fail in the other type. The responses can, therefore, be used to determine or diagnose the individual's response to the differing types. Of course, many will be equally good or equally poor in both.

Yours truly,

(signed) C. M. Parker
Ass't. Supervisor of Reading

CMP:P

(F)

The National Society for the
Study of Education
Office of the Secretary

April 19, 1928

Mr. Spencer Shank
College of Education
University of Cincinnati
Cincinnati, Ohio

My dear Mr. Shank:

Replying to your inquiry of the 10th, my object in preparing the High-School and College Reading Test was primarily to combine so far as possible the reading of the sort of material that would be typical of the serious reading for purposes of information done by the students it was proposed to test with the testing of the efficiency (both comprehension and rate) of the reading.

The first test sheet printed (The League Assembly) was selected from among a considerable number of topics that were tested in mimeographed form because it seemed to afford the right amount of difficulty and to represent, as I said, the sort of material that college students might be assigned for reading. Certain other preliminary sheets under trial proved either too easy or too naive or too technical.

The arrangement of the test elements (scattering them in the body of the reading material) was deliberately chosen because the common device of putting the questions at the end proved too obvious to sophisticated students; they simply looked forward to the questions and searched for the answers without really reading the material. Furthermore, it was intended to test the rate of reading by the group method, and this necessitated supplying enough material to keep all readers busy for the ten minutes allowed.

The introduction of differing types of response was likewise deliberately done in order, again, to avoid the

(continued on the next page)

tendency which otherwise appeared for the students to become quickly habituated to one type of response and hunt for that in the material to come as they read. Furthermore, the different types of response do represent characteristic types of questions that might properly be asked in an effort to quiz the students upon their comprehension of what they read.

The second form (Japanese) was arranged only after similar extended trial of numerous materials. It was a difficult task to find something akin to form one and something that would yield directly comparable scores. The material selected turned out to meet the conditions after it had been revised several times.

In general, the sanction for my tests is found in the simple fact that they do work, despite their somewhat novel arrangement.

Perhaps I may add that my original intent had been to prepare a test for temporary purposes in connection with some work I was undertaking, and I did not at first intend to print it for general use. Later, I had so many inquiries about it and the results obtained had been so generally useful that I concocted the second form and put them both on the market.

Naturally, I am grateful for your interest and would appreciate your criticisms and particularly any statistical results you obtain with them. I have had the usual difficulty in getting reports from users and this has made the published standards much less reliable than I would wish. I am just now trying, for instance, to get data from Professor Beek on his extended use of the tests at Indiana.

Sincerely yours,

(signed) Guy M. Whipple
Danvers, Mass.

(G)

Teachers College
Columbia University
New York

April 25, 1928

Mr. Spencer Shank
College of Education
University of Cincinnati
Cincinnati, Ohio

Dear Mr. Shank:

So far as I know, neither Dr. McCall nor anyone else has treated separately answers obtained by writing an answer which uses a word or phrase given directly in the paragraph, and answers requiring a word or phrase that is only implied by the paragraph. Other things being equal, we would expect the latter to be a little more influenced by intelligence and rational aspects of reading ability while the other would perhaps be more influenced by the mechanical side of reading ability.

Yours truly,

(signed) E. L. Thorndike

ELT
LB

(H)

Western State Teachers College
Kalamazoo, Michigan
April 26, 1928

Bureau of Educational
Measurement and Research
Paul V. Sangren, Director

Mr. Spencer Shank
College of Education
University of Cincinnati
Cincinnati, Ohio

Dear Mr. Shank:

I have your letter of April 23 relative to the Sangren-Woody Reading Test. I think that the best answer I could give to your questions are contained in the monograph which I shall send you on the Measurement of Achievement in Silent Reading. A study of the statistical data found in chapter 3 will probably give you the best information I could provide in connection with these questions.

Yours very truly,

(signed) Paul V. Sangren

S:W

(I)

Stanford University
Stanford University, Calif.
May 2, 1928

Department of Education

Mr. Spencer Shank
College of Education
University of Cincinnati
Cincinnati, Ohio

My dear Mr. Shank:

No such study as you mention has been made, but the point has been considered at some length by the authors of the test and they felt that both types of paragraphs should be represented in a paragraph meaning test. It seems to me that it would be interesting and valuable to score pupils' performances on the two types separately and calculate the correlation corrected for attenuation between these two types. If this correlation is appreciably less than 1.0, certainly if less than .9, there is good evidence that the two functions involved are different. Should this correlation be .7 or less the difference would be so great that the two functions probably should be measured separately.

If you do make a study of this matter I should be very much interested in your results.

Very truly yours,

(signed) Truman L. Kelley

TLK:sm

Directions for Administering the October Test

Giving the Test:

Each student should take both divisions of the test which you are using. Give the divisions on separate days of the same school week, and if possible, at the same hour of day. The following specific directions apply to either division of Tests : I, II and III.

1. Allow your class one forty-five minute period for each division. Probably grades 3 and 4 will not need so much time, since the difficulty increment soon may place them at their maximum achievement.

2. When all students are supplied with the tests, ask them to write their names, name of school, grade, age, date, etc.

3. (A) Read with the students the paragraph of explanations. (In Test I, this is the paragraph about the unhappy king.) Pass immediately to the questions which follow the trial paragraph and discuss with the students the answers asked for. One question is answered by writing a word from the paragraph itself. The others are answered by writing only the number of the answer which is chosen as the right one.

(B) The group of true and untrue statements will need careful explanation since only the true statements are to be marked with the cross (X). The sample paragraph with its solutions which follows on the next sheet will show clearly what is asked for by this test.

4. When necessary, use the blackboard to illustrate the detail of the tests. Answer any questions which may be asked about the trial exercises; but once the test itself is begun, answer no questions. Our experience has been that students respond exceptionally well to the mechanics of the test.

5. After the trial exercises are completed, caution the students on these points:

(A) If students find a question whose answer they do not know, they should not waste time but go on to the next.

(B) After each paragraph occur two questions which are answered by writing a word used directly in the content; all other questions are answered by writing the number of the answer which is chosen as the right one.

(C) In the groups of true and untrue statements, only the true statements are to be marked.

(D) When all of the work following one paragraph is done, students are to go right on to the next until the test is completed or until time is called.

Appendix Table I. S.D.'s¹ of Raw Total Scores and Type Scores, Test I, Grades III to VI.

	Grades			
	III	IV	V	VI
Total Score	28.33	48.60	48.15	37.20
Type A	5.08	5.86	5.32	4.38
Type B	5.02	5.94	5.84	4.56
Type C	4.70	6.10	6.30	4.58
Type D	4.82	5.40	5.62	4.01
Type E	4.08	5.14	5.44	5.08
Type F	20.48	20.16	18.96	16.56
Type G	3.18	5.06	6.30	6.10

Appendix Table II. S.D.'s of Raw Total Scores and Type Scores, Test II, Grades VII to IX

	Grades		
	VII	VIII	IX
Total Score	46.05	39.75	42.90
Type A	4.96	4.50	4.50
Type B	6.18	4.76	4.66
Type C	6.22	5.22	5.38
Type D	5.66	3.92	4.12
Type E	5.78	4.96	4.72
Type F	17.92	16.64	16.64
Type G	5.60	6.02	6.60

¹ $S.D. = \sqrt{\frac{\sum FD^2}{N} - \frac{c^2}{N}} \times \frac{SL}{1}$ in which $\sum$ means the sum of all deviations (from the guessed mean) squared; c^2 means the correction squared; and N means the number of cases. All data (except N) under the radical are in terms of step lengths. S.L. means the length of one step. Garrett, H.E. Statistics in Psychology and Education, Chapter I, p. 35, Longmans, Green & Company, 1926.

Appendix Table III. S.D.'s of Raw Total Scores and Type Scores, Test III, Grades X to XII

	Grades		
	X	XI	XII
Total Score	40.80	44.40	37.95
Type A	4.52	4.50	4.06
Type B	4.66	5.04	4.16
Type C	4.82	5.00	4.26
Type D	4.30	5.06	4.54
Type E	4.54	4.86	3.94
Type F	15.76	17.52	14.47
Type G	6.04	6.54	6.10

Appendix Table IV. P.E.'s r 's (Types with Composite Scores), Test I. ^a

	Grades			
	III	IV	V	VI
Type A	.011	.001	.010	.010
Type B	.009	.005	.007	.005
Type C	.006	.003	.002	.003
Type D	.010	.007	.011	.006
Type E	.011	.007	.011	.006
Type F	.002	.003	.006	.009
Type G	.025	.017	.015	.011

Appendix Table V. P.E.'s r 's (Types with Composite Scores), Test II

	Grades		
	VII	VIII	IX
Type A	.013	.011	.011
Type B	.008	.007	.006
Type C	.008	.006	.005
Type D	.013	.009	.012
Type E	.014	.009	.009
Type F	.007	.006	.003
Type G	.015	.013	.008

^a The formula for P.E._r is
$$\frac{.6745 \times (1 - r^2)}{\sqrt{N}}$$
 in which r represents the product moment correlation existing between the two series of data concerned: Type and Composite Score, Type and one of the criteria, or Composite Score and one of the criteria. N means number of cases.

Garrett, H.E. op. cit., Chapter IV, p. 170.

Appendix Table VI. P.E.'s r 's (Types with Composite Scores), Test III

	Grades		
	X	XI	XII
Type A	.012	.007	.011
Type B	.007	.008	.009
Type C	.010	.006	.003
Type D	.012	.012	.009
Type E	.011	.007	.007
Type F	.009	.006	.004
Type G	.015	.010	.011

Appendix Table VII. P.E.'s r 's (Total Scores, Type Scores - Teachers' Marks in Reading), Test I

	Grades			
	III	IV	V	VI
Total Score	.032	.044	.048	.044
Type A	.056	.054	.054	.051
Type B	.051	.052	.057	.057
Type C	.053	.060	.047	.048
Type D	.053	.055	.061	.065
Type E	.054	.059	.059	.051
Type F	.044	.049	.049	.052
Type G	.063	.065	.063	.051

Appendix Table VIII. P.E.'s r's (Total Scores,
Type Scores - Student I.Q.'s)
Test I.

	Grades		
	IV	V	VI
Total Score	.046	.048	.051
Type A	.059	.056	.058
Type B	.056	.057	.057
Type C	.059	.058	.052
Type D	.056	.064	.073
Type E	.064	.062	.054
Type F	.054	.057	.056
Type G	.062	.055	.053

Appendix Table IX. P.E.'s R's (Total Scores,
Type Scores - Combined Criteria)
Test I. a

	Grades		
	IV	V	VI
Total Score	.035	.037	.037
Type A	.051	.046	.046
Type B	.044	.049	.055
Type C	.058	.041	.041
Type D	.047	.055	.064
Type E	.054	.052	.047
Type F	.042	.044	.046
Type G	.056	.048	.046

a The formula for P.E. of Coefficient Multiple Correlation is: $P.E. (R_{C.12}) = .6745 \frac{1 - R^2_{C.12}}{\sqrt{1 - R^2_{C.12}}}$ in which R would represent the correlation existing between the scores and the two criteria combined.
Otis, A.S. Statistical Method in Educational Measurement. Chapter XX, p. 262, The World Book Company, 1925.

Appendix Table X. P.E.'s r's (Total Scores,
Type Scores - Academic Achieve-
ment Marks) Test II

	VII	Grades VIII	IX
Total Score	.049	.050	.050
Type A	.068	.063	.058
Type B	.057	.057	.060
Type C	.058	.057	.057
Type D	.060	.060	.066
Type E	.062	.061	.063
Type F	.052	.056	.058
Type G	.061	.058	.060

Appendix Table XI. P.E.'s r's (Total Scores,
Type Scores - Student I.Q.'s)
Test II.

	VII	Grades VIII	IX
Total Score	.046	.044	.038
Type A	.060	.054	.054
Type B	.058	.047	.052
Type C	.058	.050	.051
Type D	.063	.050	.049
Type E	.051	.052	.052
Type F	.049	.049	.050
Type G	.053	.048	.048

Appendix Table XII. P.E.'s R's (Total Scores,
Type Scores - Criteria Combined)
Test II

	Grades		
	VII	VIII	IX
Total Score	.038	.037	.032
Type A	.057	.053	.051
Type B	.050	.043	.050
Type C	.051	.045	.045
Type D	.050	.047	.050
Type E	.050	.049	.051
Type F	.041	.044	.045
Type G	.045	.045	.044

Appendix Table XIII. P.E.'s r's (Total Scores,
Type Scores - Academic Achievement Marks), Test III

	Grades		
	X	XI	XII
Total Score	.050	.048	.048
Type A	.056	.057	.062
Type B	.058	.059	.057
Type C	.052	.056	.056
Type D	.064	.056	.056
Type E	.059	.053	.062
Type F	.063	.060	.060
Type G	.061	.056	.055

Appendix Table XIV. P.E.'s r's (Total Scores,
Type Scores - Student I.Q.'s),
Test III

	Grades		
	X	XI	XII
Total Score	.048	.043	.044
Type A	.053	.055	.058
Type B	.055	.048	.053
Type C	.050	.053	.056
Type D	.055	.050	.053
Type E	.050	.051	.053
Type F	.050	.058	.058
Type G	.049	.044	.046

Appendix Table XV. P.E.'s R's (Total Scores,
Type Scores - Criteria Combined)
Test III

	Grades		
	X	XI	XII
Total Score	.036	.031	.035
Type A	.043	.046	.052
Type B	.047	.042	.045
Type C	.039	.045	.050
Type D	.051	.042	.046
Type E	.043	.042	.048
Type F	.043	.048	.045
Type G	.044	.043	.039

Appendix Table XVI. Grade V r 's (Total Score-Reading Marks, Student I.Q.'s). Three separate School Systems and Composite of Six Systems.

Schools	r (TS-RM)	r (TS-IQ)	r (RM-IQ)	R (TS-RM,IQ)
System A ^a	.650	.632	.561	.726
System B ^a	.708	.671	.580	.774
System C ^b	.724	.663	.626	.768
Six Systems ^c	.667	.658	.550	.754

Legend:

TS - Total Score on October Test

RM - Teachers' Marks in Reading

IQ - Student Intelligence Quotient

^aLarge City System

^bSmall Centralized System

^cTotal Composite Group used in Chapter V. Data from previous Tables XXVI, XXVII, and XXXIX.

Samples of the October Test

Test I (Divisions I-II) for grades III-VI inclusive.

Test II (Divisions I-II) for grades VII-IX inclusive.

Test III (Divisions I-II) for grades X-XII inclusive.

A COMPREHENSION TEST IN PARAGRAPH READING.

Student's Name _____ Grade _____

School _____ Date _____ Age: Years _____ Months _____

The examiner and pupils should read the trial paragraph and complete the exercises which follow. All detail should be made clear.

"There was once a king who ruled over a great country. But the king was unhappy. For a long time he had wanted to rule over a small country which was near by. So he gathered together all of his soldiers and set out on a march for the small country. The march was long and hard. The soldiers became very tired, and sometimes they were hungry. This made the king very sad, so he turned around and led his soldiers back home."

Place your answers here.

I. Who became very tired while they marched? _____
Write the number of the answer which is correct at the right.

II. Was the king happy?
(1) yes (2) no (3) does not say _____

III. On what kind of march did the king and his soldiers go?
(1) pleasant (2) easy (3) difficult (4) comfortable _____

Some of these statements are true; some of them are not true.

Place a cross (X), at the right, opposite all of the true statements. Do not mark those which are not true.

- (1) The king gathered together all of his soldiers. _____ (1)
- (2) The soldiers never became hungry. _____ (2)
- (3) The king did not want to rule over the small country. _____ (3)
- (4) The soldiers became very tired. _____ (4)

The questions on this test are just like these you have answered. Do not spend too much time on one question. If you do not know the answer, go on to the next.

I-A

Once upon a time, there was a country that suddenly found itself without a king. The people did not feel very comfortable. They were so restless and disturbed that they could not sleep well at night. They were in the habit of having a king and felt very nervous without one, so they went to their wise men to find out how to get a new king.

- f I. Place a cross (X) opposite all true statements:
 - (1) The country was accustomed to a king. _____ (1)
 - (2) The people slept well at night. _____ (2)
 - (3) The people talked to their wise men. _____ (3)
 - (4) The people wanted a new king. _____ (4)
- a II. What was it the people did not have? _____
- g III. What word in the story has the same meaning as the word "nation"? _____
- b IV. What did the people do when they found themselves without a king?
 - (1) played (2) sought advice
 - (3) slept well (4) fought. _____
- d V. Did they find a new king?
 - (1) yes (2) no (3) does not say. _____
- c VI. How did the people feel without a king?
 - (1) happy (2) angry (3) uneasy
 - (4) joyful. _____
- e VII. In the words "suddenly found itself", what is meant?
 - (1) time (2) country (3) night
 - (4) sleep. _____

I-B

There was once a mother who had two little daughters. The father was dead and the mother was very poor, so she had to work hard every day because she wanted her daughters to be well clothed and well fed. Each day while she was away working her two little girls kept the house as neat and as bright as a new pin.

- g I. What word in the story means the same as the word "small"? _____ } III
- e II. The story says "she was away". Who is meant by "she"?
 - (1) daughter (2) grandmother
 - (3) neighbor (4) mother. _____ } VI
- a III. How many daughters had this mother? _____ } II
- d IV. Did the mother want to take good care of her daughters?
 - (1) yes (2) no (3) does not say. _____ } I
- c V. What is this story about?
 - (1) two girls at play (2) a visit
 - (3) two boys (4) a family at work. _____ } IV
- f VI. Place a cross (X) opposite all true statements:
 - (1) The little girls cleaned the house each day. _____ (1)
 - (2) The girls' father was dead. _____ (2)
 - (3) The mother and her daughters went visiting a great deal. _____ (3)
 - (4) The mother did very little work. _____ (4)
- b VII. What kind of girls were the two daughters?
 - (1) bad (2) cross (3) helpful (4) lazy. _____ } V

I-C

There are several moving days each year for people who live in the desert. The hot sun soon dries up the water in their wells and the goats and camels soon eat up all the grass. Then the people must move on to fresh springs and more grass. For this reason they live in tents which can easily be taken down and packed upon the camels' backs. A few cooking dishes, some rugs to sit on and bags made of goatskin for storing food are all the furniture that camels can carry.

- a I. What does the sun soon dry up?
- e II. In the words, "they live in tents", who is meant?
(1) camels (2) goats (3) springs
(4) people
- g III. What word in the story has the same meaning as the word "quickly"?
- f IV. Place a cross (X) opposite all true statements:
(1) People of the desert keep goats (1)
(2) When the grass is all gone the camp has to move (2)
(3) Tents are hard to move from place to place (3)
(4) Camels can carry a lot of big heavy furniture (4)
- c V. What is this paragraph about?
(1) desert people (2) desert storms
(3) life on the desert (4) digging a desert well
- d VI. Do people on the desert move only once a year?
(1) yes (2) no (3) does not say.
- b VII. For what do these people use camels?
(1) pets (2) food and clothing
(3) moving the camp (4) carrying water

I-D

Long ago the great lords of England were fighting among themselves for the throne which the death of the king had left vacant. This quarrel was a source of great distress, especially to an old man named Merlin who was so wise that the people thought him a magician. At Merlin's advice, the Archbishop of Canterbury invited all the lords and knights to come to London on Christmas Eve to choose a king.

- d I. Had the old king died?
(1) yes (2) no (3) does not say.
- g II. What word in the story has the same meaning as the word "counsel"?
- a III. To what city were the lords and knights to go?
- f IV. Place a cross (X) opposite all true statements:
(1) Merlin was the king (1)
(2) The Archbishop invited the lords to come to London (2)
(3) The quarrel worried the old wise man (3)
(4) Long ago, England had great knights and lords (4)
- b V. How did Merlin feel?
(1) worried (2) joyful (3) angry
(4) pleased
- e VI. In the words "fighting among themselves", who are meant?
(1) kings (2) people (3) great lords
(4) old men
- c VII. What was the condition of the country at this time?
(1) happy (2) troubled (3) peaceful
(4) quiet

I-E

One time two young brothers lived in a small brown house on the edge of a forest. They cut wood and carried bundles of it on their backs into the town. There they sold the wood and bought meal and corn. The older brother, who was called Henry, was tall and handsome but he was lazy. He was cruel to all the creatures of the forest, and was unkind to his brother James. James was the younger and was kind to all the little living things of the forest, and loved all of them.

- b I. What kind of boy was the older brother?
 (1) kind (2) generous (3) harsh
 (4) diligent.....
- II. Place a cross (X) opposite all true statements:
 (1) The brothers carried the wood in baskets.....(1)
 (2) James liked the animals in the forest.....(2)
 (3) Henry was very kind to James.....(3)
 (4) The boys bought food in town.....(4)
- e III. In the words "he was cruel", who is meant?
 (1) Henry (2) hunter (3) James
 (4) brother.....
- a IV. What was the name of the brother who was tall and handsome?....
- d V. Was James older than Henry?
 (1) yes (2) no (3) does not say.....
- g VI. What word in the story has the same meaning as the word "dwelled"?.....
- c VII. What is this story about?
 (1) two boys (2) two hunters
 (3) merchants (4) winter.....

I-F

Every Saturday Ralph goes to the store to buy groceries for his mother. He likes to have enough money with him to pay for his order. This week he has two dollars on Saturday and orders: 1 small sack of flour worth 40c; 2 dozen oranges worth 30c a dozen; 1 can of pineapple worth 45c and a small bag of salad nuts worth 25c. He hands the grocery man two dollars. Does he receive any change?

- e I. Who is meant by the words "he handed"?
 (1) grocery man (2) Ralph's father
 (3) clerk (4) Ralph.....
- c II. What would you call the work he did on this Saturday?
 (1) marketing (2) sweeping (3) gardening (4) hauling.....
- b III. What was Ralph buying?
 (1) clothes (2) tools (3) furniture
 (4) food.....
- g IV. What word above has the same meaning as the word "twelve"?.....
- d V. Did Ralph eat any of the oranges?
 (1) yes (2) no (3) does not say.....
- a VI. On what day of the week does Ralph buy groceries?.....
- f VII. Place a cross (X) opposite all true statements:
 (1) Ralph likes to have money to pay for the groceries.....(1)
 (2) Ralph ordered the groceries over the telephone.....(2)
 (3) Ralph bought some fruit.....(3)
 (4) A can of pineapple cost less than a dozen oranges.....(4)

I-G

A boy was helping Aunt Hannah prepare her flower beds. They were both down on their knees planting seeds and crumbling up the clods with their hands to cover the seeds with fine soil. Aunt Hannah got hold of a clod that was soft but would not crumble as she rolled it in her hand. "What a funny clod," she said. "Oh, it's a toad!" and she let it drop in a hurry. Of course the boy laughed, and Aunt Hannah, after making a wry face and saying "Ugh!" laughed too.

- g I. What word in the story above has the same meaning as the word "aiding"?
- b II. What were Aunt Hannah and the boy doing?
(1) playing (2) walking (3) working (4) riding
- e III. In the words, "let it drop," what is meant?
(1) seed (2) toad (3) clod (4) flower
- c IV. What kind of happening does this paragraph tell about?
(1) funny (2) sad (3) serious (4) vexing
- a V. What were Aunt Hannah and the boy crumbling in their hands?
- d VI. Were Aunt Hannah and the boy planting anything?
(1) yes (2) no (3) does not say
- f VII. Place a cross (X) opposite all true statements:
(1) At first, Aunt Hannah did not like the toad. (1)
(2) The boy was working in the flower beds. (2)
(3) Aunt Hannah saw no fun in picking up a toad. (3)
(4) They covered the seeds with clods. (4)

I-H

Men are coming to know dogs as they never knew them before. Dogs have always been the faithful companions of mankind, but it remained for war to teach us how useful our dumb friends can be. A dog is able to go where a man cannot go. In all the great armies, therefore, dogs have been trained to look for the wounded. When a dog finds a helpless soldier, he comes back behind the lines and in some way conveys his information. A relief party, led by the dog, then brings in the wounded man.

- f I. Place a cross (X) opposite all true statements:
(1) Dogs were trained by all the great armies. (1)
(2) Dogs have not always been faithful to mankind. (2)
(3) The dogs, somehow, could tell the men back of the lines that they had found a helpless soldier. (3)
(4) Men of old knew dogs as well as we do today. (4)

- g II. What word in the story has the same meaning as the word "watch"?
- e III. In the words, "they never knew", who is meant?
(1) men (2) armies (3) dogs (4) soldiers
- d IV. Can a dog go where a man cannot?
(1) yes (2) no (3) does not say
- c V. What is the chief thing of which this story tells?
(1) dogs as playmates (2) helping a dog (3) value of dogs (4) dogs as enemies.
- b VI. What does a dog do for a helpless soldier?
(1) leaves him alone (2) brings help to him (3) barks at him (4) gives him food.
- a VII. What has taught us how valuable dogs really are?

I-I

Throughout New England there are maple trees in the woodlands. Each spring these trees are tapped for the sweet juice, or sap, which then begins to come up into the trees from their roots. The tapping is done by boring a small hole a little way into the tree and putting in a spout, from which the sap drops into a bucket. The sap is usually gathered twice a day, and it is boiled until most of the water in it is evaporated. As it boils it grows thicker and sweeter and finally becomes syrup.

- c I. What does this paragraph tell about?
(1) a game (2) a ranch (3) an industry (4) a dairy
- g II. What word in the paragraph has the same meaning as the word "forest"?
- f III. Place a cross (X) opposite all true statements:
(1) The holes are bored deep into the trees. (1)
(2) A hole is bored in the tree to allow the sap to run out. (2)
(3) The sap is usually not gathered every day. (3)
(4) The sap is boiled until it becomes syrup. (4)
- e IV. The word "it" in line 7 refers to what?
(1) spout (2) spring (3) sap (4) hole
- a V. What kind of trees grow throughout New England?
- b VI. Where is maple syrup made?
(1) in the city (2) in the woods (3) in a store (4) on a boat.
- d VII. Do men go around in wagons to collect the sap?
(1) yes (2) no (3) does not say.

I-J

As inland travel was still difficult and dangerous, few of the luxuries of civilization were carried into the backwoods settlements. In the backwoods, settlers depended for much of their food upon hunting. The men wore deerskin trousers, hunting shirts and moccasins, all made more or less in Indian fashion. Within the palisaded walls of their settlements, the backwoodsmen and their families lived in rough cabins. The furniture was home-made and simple. Fields were cleared outside the settlement wall; and here crops of grain and vegetables were raised, not so much for sale as for the needs of the settlers themselves.

- f I. Place a cross (X) opposite all true statements:
- (1) The backwoodsmen enjoyed the same things in their homes as did the people in the cities. (1)
 - (2) The settlers cleared the fields inside the settlement walls... (2)
 - (3) Travel between settlements was dangerous. (3)
 - (4) The backwoodsmen had fine homes. (4)
- d II. Did the people need to buy their food?
- (1) yes (2) no (3) does not say.
- b III. What kind of homes did the people have?
- (1) fine (2) rich (3) plain (4) large.
- g IV. What word in the story has the same meaning as the word "custom"?
- e V. In the words "their foods", whose food is meant?
- (1) backwoodsmen's (2) settlers' (3) Indians' (4) families' (1)
- a VI. What were the men's trousers made of? (2)
- c VII. What kind of life is this paragraph describing?
- (1) city (2) pioneer (3) country (4) Indian. (3)

I-K

Probably the earliest men had only such protection from the rain and wild animals as the trees gave them; after a time they began to live in dens and caves. Still later they built huts by bending young trees together, weaving branches between them and covering the whole structure with leaves and bark. When the hut was built of poles and covered with the skins of animals, it became a tent. Many of the people who wandered from place to place with their flocks and herds dwelt in tents.

- I. To what does the word "it" in line 7 refer?
- (1) rain (2) tent (3) hut (4) skin.
- II. What are you told about in this paragraph?
- (1) work (2) wars (3) weather (4) shelter.
- III. What do we call a home built with poles and covered with animal skins?

- g IV. What word in the story has the same meaning as the word "constructed"?
- d V. When young trees were bent together and covered with leaves and bark were they called houses?
- (1) yes (2) no (3) does not say.
- b VI. For what did the earliest people use trees, dens, and caves?
- (1) farms (2) homes (3) herds (4) beds.
- f VII. Place a cross (X) opposite true statements:
- (1) The earliest men probably lived in the open country without much protection. (1)
 - (2) Men did not always have fine houses. (2)
 - (3) Men always have had tents. ... (3)
 - (4) The use of dens and caves for shelter is older than the use of tents. (4)

I-L

There are Indians living in Mexico who never have seen a white man. Parts of the country have never been explored by the whites. The great majority of the Indians are peaceful and even timid. Although it is about one-fourth as large as the United States, Mexico has only one-seventh as many people, and more than half of these are Indians. The Indian of the Mexican plateau is a farmer, not a hunter. He is quiet, very solemn and so peaceful as to be almost servile. He dreads responsibility and really likes to be a half slave to his employer to whom he brings his problems and his troubles. He seems to be unable to decide things for himself, preferring to have someone else tell him what to do.

- d I. Does the Indian in the Mexican mountain hunt?
- (1) yes (2) no (3) does not say.
- a II. What inhabitants of Mexico have never seen a white man?
- g III. What word in this story has the same meaning as the word "dwelling"?
- f IV. Place a cross (X) opposite all true statements:
- (1) The Indian who farms likes to be a leader. (1)
 - (2) All Mexican Indians know the white men. (2)
 - (3) Most of the Mexican Indians are peaceful. (3)
 - (4) Mexico is smaller than the United States. (4)
- e V. In the words "parts of the country", what country is meant?
- (1) United States (2) India (3) Mexico (4) New Mexico.
- c VI. What is this story about?
- (1) people (2) mountains (3) labor (4) army.
- b VII. What kind of man is the Indian of the plateau?
- (1) quick (2) meek (3) bright (4) festive.

I-M

The latter part of Dickens' life was very different from his early years. Everywhere he went, people were eager to know him. Twice he visited America to give lectures and to read from his books. His beautiful home just outside of London was a merry place, where his children and their young friends had many a good time. Dickens loved people, especially children. He never forgot the hardships of his childhood. By his own life, and by his books, he made life happier for hosts of people, far and near.

- e I. To whom does the word "their" in line 6 refer?
(1) people (2) Americans (3) children (4) friends.....
- c II. When Dickens had a home of his own, what kind of life did he live?
(1) quiet (2) happy (3) lonesome (4) sad
- g III. What word in the paragraph means the same as "addresses"?.....
- f IV. Place a cross (X) opposite only true statements:
(1) Dickens wrote books (1)
(2) Dickens kept his home very quiet (2)
(3) We are told that people admired Dickens (3)
(4) Dickens read from his books while in America (4)
- b V. What kind of boyhood life did Dickens have?
(1) severe (2) easy (3) pleasant (4) selfish
- d VI. Did Dickens' family live in London?
(1) yes (2) no (3) does not say.....
- a VII. How often did Dickens visit America?

I-N

After his graduation from college, Hawthorne went home to Salem full of ambitions to become an author. He shut himself up in the old house and day after day read, wrote and studied. For twelve years he lived in this manner, scarcely ever going out among people. He wrote many stories. Some he sent to magazines, but only a few were published. They brought him little money and no fame. It was very discouraging, but Hawthorne kept steadily at his task.

- a I. What did Hawthorne do besides read and study?
- g II. What word in the story has the same meaning as the word "writer"?
- b III. What did Hawthorne do when discouraged?
(1) continued to write (2) quit working (3) became angry (4) went away.....
- d IV. Did he send all his stories to the magazines?
(1) yes (2) no (3) does not say.....

- c V. What kind of life did Hawthorne live in Salem?

(1) solitary (2) playful (3) public (4) easy.....

- f VI. Place a cross (X) opposite all true statements:

(1) Hawthorne worked very hard after he left college..... (1)
(2) Hawthorne then visited people a great deal (2)
(3) The magazines always used his stories..... (3)
(4) Hawthorne was anxious to succeed..... (4)

- e VII. The word "they" in line 7 refers to what?

(1) stories (2) magazines (3) ambitions (4) friends

I-O

King Midas was fonder of gold than of anything else in the world. He valued his royal crown chiefly because it was composed of that precious metal. If he loved anything better, or half so well, it was the one little maiden who played so merrily around her father's footstool. But the more Midas loved his daughter, the more did he desire and seek for wealth. He thought, foolish man, that the best thing he could possibly do for his dear child would be to bequeath her the immensest pile of yellow glistening coin that had ever been heaped together since the world was made.

- g I. What word in the paragraph has the same meaning as the word "shining"?

- d II. Did King Midas love his daughter?
(1) yes (2) no (3) does not say.....

- a III. How did the King's daughter play?

- f IV. Place a cross (X) opposite all true statements:

(1) The king valued his crown chiefly because it was royal... (1)
(2) Several maidens played merrily around the king's footstool... (2)
(3) The king was foolish in thinking that gold made the best gift..... (3)
(4) The more Midas loved his daughter, the more gold he wanted for her..... (4)

- e V. To what does the word "it" in line 2 refer?

(1) world (2) gold (3) crown (4) metal

- c VI. What is this story about?

(1) honesty (2) jealousy (3) kindness (4) greed

- b VII. What did King Midas wish to bequeath his daughter?

(1) wealth (2) health (3) happiness (4) fame.....

Students' Name _____ Grade _____

School _____ Date _____ Age: Years _____ Months _____

The examiner and pupils should read the trial paragraph and complete the exercises which follow. All detail should be made clear.

"There was once a king who ruled over a great country. But the king was unhappy. For a long time he had wanted to rule over a small country which was near by. So he gathered together all of his soldiers and set out on a march for the small country. The march was long and hard. The soldiers became very tired, and sometimes they were hungry. This made the king very sad, so he turned around and led his soldiers back home."

Place your answers here.

I. Who became very tired while they marched? _____

Write the number of the answer which is correct at the right.

II. Was the king happy?

(1) yes (2) no (3) does not say _____

III. On what kind of march did the king and his soldiers go?

(1) pleasant (2) easy (3) difficult (4) comfortable _____

Some of these statements are true; some of them are not true.

Place a cross (X), at the right, opposite all of the true statements. Do not mark those which are not true.

(1) The king gathered together all of his soldiers _____ (1)

(2) The soldiers never became hungry _____ (2)

(3) The king did not want to rule over the small country _____ (3)

(4) The soldiers became very tired _____ (4)

The questions on this test are just like these you have answered. Do not spend too much time on one question. If you do not know the answer, go on to the next.

II-A

There are four children in our home. They all eat breakfast before they go to school. They have bread and butter for their breakfast. Coffee is not good for children so they drink cocoa or milk. Each one also gets an egg. After breakfast the children wash their fingers and dry them on a towel. Then they take their books and are ready for school.

- e I. In the words "they have bread and butter," who are meant?
(1) children (2) father and mother
(3) friends (4) teachers _____
- d II. Do the children always drink milk for breakfast?
(1) yes (2) no (3) does not say _____
- f III. Place a cross (X) opposite all true statements:
(1) Cocoa is good for children to drink _____ (1)
(2) The children in this home eat eggs _____ (2)
(3) These children drink coffee... _____ (3)
(4) The children wash their fingers after they eat _____ (4)
- a IV. What do the children take with them to school? _____
- g V. What word in the story has the same meaning as the word "house"? _____
- c VI. What time of day is this story telling about?
(1) evening (2) noon (3) morning
(4) night _____
- b VII. How many of the children eat breakfast before they go to school?
(1) one (2) two (3) three (4) four _____

II-B

Once an old, old man and an old, old woman lived in a little village in Russia, where the snow lay deep in the winter. Their hut stood not far from a great forest. Eight or nine huts just like their own stood near by. It was a merry little village and the old man and his wife never needed to be lonely. But the two old people were not happy; all the other huts had babies and children in them, but the old man and his wife had none.

- b I. What did the old man and old woman want?
(1) snow (2) hut (3) children
(4) neighbors _____
- f II. Place a cross (X) opposite all true statements:
(1) The old man and old woman lived in a big city _____ (1)
(2) The old man and old woman had no children _____ (2)
(3) The village was far, far away from the forest _____ (3)
(4) Nearly all of the people of the village were happy _____ (4)
- d III. Did most of the village people have children?
(1) yes (2) no (3) does not say _____
- a IV. What was it that lay deep in the winter? _____
- c V. What kind of old people are described in this paragraph?
(1) happy (2) joyful (3) satisfied
(4) unhappy _____
- g VI. What word in the story means the same as the word "big"? _____
- e VII. The story speaks of "their hut". Whose hut was this?
(1) neighbors' (2) children's (3) farmers' (4) old man's and old woman's _____

II-C

Sinbad the Porter, after kissing the ground, stood with bowed head before the master of the house. The master told him to draw near. The master then set before him rich food. The porter ate his fill. He then washed his hands, as is the custom of the country, and thanked the master.

- a I. Whom did Sinbad thank for his meal?.....
- d II. Did Sinbad stand before the master?
(1) yes (2) no (3) does not say.
- g III. What word in the story means the same as the word "bent"?.....
- e IV. The story says "he then washed his hands." Who is meant by "he"?
(1) master (2) Sinbad (3) friend
(4) neighbor.....
- b V. How did the porter feel towards the master of the house?
(1) grateful (2) angry (3) hurt
(4) unkindly.....
- f VI. Place a cross (X) opposite all true statements:
(1) The porter kissed the ground.(1)
(2) The people in this country seldom washed their hands after they ate(2)
(3) Sinbad did not get enough to eat.....(3)
(4) The master was very unkind to the porter.....(4)
- c VII. Who is the chief person in this story?
(1) a soldier (2) a merchant (3) a cook (4) a servant.....

II-D

Once an old horse and a young horse were going down a hill. Each horse was drawing a cart piled high with dishes. The old horse went down so slowly and carefully that the young horse laughed at him. "How slowly you walk," he said. Then the young horse started to walk very quickly down the hill. The heavy cart rolled after him, and pushed him so hard that he had to go faster and faster.

- g I. What word in the story has the same meaning as the word "pulling"?.....
- a II. What was it that each horse was drawing?.....
- d III. Did the young horse go slowly down the hill?
(1) yes (2) no (3) does not say.
- f IV. Place a cross (X) opposite all true statements:
(1) The horses were walking down a hill(1)
(2) The carts were filled with hay.(2)
(3) The young horse laughed at the old horse.....(3)
(4) The young horse was drawing a heavy cart.....(4)
- e V. The young horse said, "How slowly you walk." Who is meant by "you"?
(1) young horse (2) a farmer (3) old horse (4) both horses.....
- b VI. What kind of horse was the old horse?
(1) careless (2) cautious (3) foolish
(4) lazy.....
- c VII. What were these horses doing?
(1) playing (2) resting (3) racing
(4) working.....

II-E

Four boys were playing marbles. John had two large ones and seven small ones; Henry had seven large ones and four small ones; David had one large one and nine small ones, and Don had three large ones and five small ones. How many did they own all together? Who had the most?

- f* I. Place a cross (X) opposite all true statements:
- (1) David did not play with the other boys. (1)
 - (2) The paragraph asks only one question. (2)
 - (3) John had more marbles than Henry. (3)
 - (4) The boys were not working. (4)
- e* II. To whom does the word "they" in line 5 refer?
- (1) Henry and John (2) David and Don (3) the marbles (4) the four boys.
- d* III. Did Henry win the game?
- (1) yes (2) no (3) does not say.
- a* IV. What is the boy's name who had one large marble and nine small ones?
- g* V. What word above has the same meaning as the word "possess"?
- b* VI. How many different kinds of marbles did the boys have?
- (1) one (2) many (3) four (4) two
- a* VII. What is this paragraph?
- (1) a problem (2) a fairy tale (3) a story (4) a fable.

II-F

When Mary started to school last September, she had to buy several new books. She wanted also a new bookbag but she found that it would cost \$1.00. A book of stories was 90c, an English book was \$1.35, a book of maps was 30c, an arithmetic pad was 24c. Would \$3.50 have bought the books and the bookbag?

- b* I. When did Mary start to school?
- (1) autumn (2) summer (3) spring (4) winter.
- g* II. What word in the paragraph has the same meaning as the words "wished for"?
- e* III. To what does the word "it" in line 3 refer?
- (1) arithmetic pad (2) English book (3) bookbag (4) school.
- a* IV. In what was Mary planning to carry her books?
- f* V. Place a cross (X) opposite all true statements:
- (1) We know that Mary bought the bookbag. (1)
 - (2) The book of stories cost more than any other book. (2)
 - (3) Mary needed more than one dollar. (3)
 - (4) Mary needed only one new book. (4)
- d* VI. Did a history cost more than an arithmetic?
- (1) yes (2) no (3) does not say.
- c* VII. What was Mary doing?
- (1) playing after school (2) keeping house (3) getting school supplies (4) traveling.

II-G

In a London fire station there lives a faithful and daring dog named Bob. He never leaves the station except to help at a fire. The instant the fire alarm sounds, Bob bounds to his seat on the huge engine, where he sits beside the driver. Whenever the firemen think that lives are in danger in a burning building, they place a ladder to a window and look toward Bob. They never need to urge him. Before they can speak, Bob is on the ladder. If he finds anyone asleep, he barks to tell of the danger. If he finds anyone who is helpless, he goes to a window and barks for assistance.

- a I. What is the name of this dog?.....
- f II. Place a cross (X) opposite all true statements:
- (1) Bob is a brave dog. (1)
- (2) The dog has to run beside the engine when he goes to a fire. . (2)
- (3) The dog helps the people in the burning building. (3)
- (4) The dog knows what the fire alarm means. (4)
- d III. Do the men ever urge Bob to climb the ladder?
- (1) yes (2) no (3) does not say.
- b IV. When does the dog leave the fire station?
- (1) when he is tired (2) when he wants to run away (3) when there is a fire (4) when he is forced to go
- g V. What word in the story has the same meaning as the word "dwells"?
- e VI. In the words "where he sits", who is meant?
- (1) the driver (2) the fireman (3) Bob (4) anyone
- c VII. What is this story about?
- (1) a faithful animal (2) a bad fire (3) a modern fire engine (4) a group of firemen.

II-H

The colonial church was not only a place for worship; it was a meeting place where the people could gather as neighbors to talk over their troubles and their joys. In New England for a long time the Puritan ministers had considerable influence in holding the settlers united for their common good and against common enemies. Many of them, however, were impatient of any but members of their own faith.

- e I. To what does the word "it" in the second line refer?
- (1) meeting place (2) New England (3) neighborhood (4) colonial church.
- c II. How did the colonist consider their church?
- (1) as a place of amusement (2) as a church only (3) as a general gathering place (4) as a place to eat.
- a III. What kind of church does this paragraph tell about?.....

- g IV. What word in the paragraph has the same meaning as the word "belief"?
- f V. Place a cross (X) opposite all true statements:
- (1) Puritan ministers lived in Colonial New England. (1)
- (2) Colonial ministers had great influence. (2)
- (3) The Puritan ministers held the colonists together for many purposes. (3)
- (4) The churches were used only for worship. (4)
- d VI. Were some of the colonial ministers impatient of some of the colonists?
- (1) yes (2) no (3) does not say.
- b VII. What did the colonists do at church besides worship?
- (1) trade (2) celebrate (3) feast (4) visit.

II-I

As a rule, things which the colonists wore were made of woolen cloth and linen. Farmers raised sheep for wool and flax for linen. Women spun woolen or flaxen thread on a spinning wheel, an invention which only recently had come into use in Europe. In many homes, the women also wove the thread into cloth and made the finished garment as well. Some farmers prepared leather for aprons, shoes or breeches. In a few towns men set up shops in which they made hats from beaver skins.

- f I. Place a cross (X) opposite all true statements:
- (1) Colonists usually wore clothes made of silk. (1)
- (2) The women wove the thread. . (2)
- (3) Shoes were made by hand. (3)
- (4) Spinning wheels were not known. (4)
- d II. Did the farmers raise sheep and also prepare leather for various articles?
- (1) yes (2) no (3) does not say.
- b III. What kind of lives did the colonial women live?
- (1) busy (2) sad (3) easy (4) disappointing
- g IV. What word in the paragraph has the same meaning as the word "discovery"?
- e V. To whom or what in the paragraph does the word "they" in the last line refer?
- (1) sheep (2) homes (3) men (4) hats
- c VI. How were most of the garments of the colonists secured?
- (1) bought at a store (2) given by neighbors (3) made at home (4) brought from Europe.
- a VII. What did the colonists make from flax?.....

II-J

The soil which is often called dirt, is so common that we usually do not think of it as being valuable. From it, however, nearly all plants get a part of their food. This plant food is dissolved in the water of the soil and it is taken up into the plant through its roots. Many different plants are eaten by men. Animals also eat plants and the flesh of many animals is used as food for men. The soil thus supplies necessary food for plants and through them for animals and all men.

- g I. What word in the paragraph has the same meaning as the word "meat"?
- f II. Place a cross (X) opposite all true statements:
- (1) Soil really is not very valuable to anyone but farmers. (1)
- (2) Men eat many plants raised on the soil (2)
- (3) Soil is very uncommon. (3)
- (4) Soil contains materials besides plant food. (4)
- a III. What is sometimes considered just dirt?
- b IV. Who eat plants as food?
- (1) only men (2) only animals (3) men and animals (4) no one.
- c V. What does this paragraph tell you about soil?
- (1) color (2) importance (3) kind (4) amount.
- d VI. Do nearly all plants take some of their food from the soil?
- (1) yes (2) no (3) does not say.
- e VII. To what do the words "through them" refer?
- (1) plants (2) soils (3) animals (4) men.

II-K

When I first saw the city of San Louis Potosi in Mexico, it seemed rather poor and miserable. Perhaps that was partly because rain fell nearly all of the time I spent there, and because I still had in mind American cities. The dull skies made it seem very gloomy, and the only way to keep warm was to walk or to stay in bed. I could not help laughing at the idea most Americans have of the climate of Mexico. It should be as warm as Florida, they think, because it is as far south. They forget that most of it is table-land and high above the tropic sea level.

- f I. Place a cross (X) opposite all true statements:
- (1) Thinking of the Americans back home angered the traveller. (1)
- (2) The skies of San Louis Potosi were gray and cold. (2)
- (3) The city seemed very unattractive. (3)
- (4) The table-land of Mexico is high. (4)

- g II. What word in the story has the same meaning as the word "almost"?
- e III. What people are meant in the words "they think"?
- (1) Mexicans (2) people of Florida (3) Americans (4) seamen.
- c IV. What is described in this paragraph?
- (1) Mexican town (2) tropic seas (3) Florida skies (4) American city.
- d V. Was it easy to keep warm?
- (1) yes (2) no (3) does not say.
- b VI. How did I feel when I first visited San Louis Potosi?
- (1) cheerful (2) angry (3) uncomfortable (4) comfortable.
- a VII. Americans think the climate of Mexico is like the climate of what place?

II-L

All the people in the city of San Louis Potosi are not poor, by any means. In the daytime most of the homes looked poor, because one could see only their bare outer walls. But when they were lighted, I got many a peep into richly furnished rooms and flowery patios. In the great churches and in the best shops there were men and women, and children too, dressed fully as well as any I had seen in my own land.

- a I. How did the homes look in the daytime?
- g II. What word in the paragraph has the same meaning as the word "markets"?
- c III. What is described in this paragraph?
- (1) country (2) city (3) factory (4) farm.
- f IV. Place a cross (X) opposite all true statements:
- (1) Not all of the homes in San Louis Potosi are rich. (1)
- (2) Well-dressed people could be found in the best shops. (2)
- (3) The traveller saw into only poor homes. (3)
- (4) All of the churches were small. (4)
- b V. When did I see into some of the homes?
- (1) daytime (2) morning (3) evening (4) noon.
- d VI. Are there some rich people in San Louis Potosi?
- (1) yes (2) no (3) does not say.
- e VII. The paragraph says "they were lighted". This refers to what?
- (1) walls (2) churches (3) homes (4) streets.

II-M

I like the time of day when the lights begin to come in the streets, and the stars one by one in the sky. This is when hurrying footsteps go along the sidewalks, and people carry packages and enter happy doorways open wide for them. When a step comes to our door, one of us leaps to a greeting, and one of us lights the lamps, and in the house the loving time comes out like a star.

- c I. What is this paragraph telling about?
 (1) shopping (2) home-coming
 (3) sunshine (4) strolling.....
- f II. Place a cross (X) opposite all true statements:
 (1) The people in this home like the loving time (1)
 (2) People hurry home at this time of day (2)
 (3) The people in this home are happy when a step comes to their door (3)
 (4) The street lights and stars do not show at the same time.... (4)
- a III. Along what do the footsteps go?...
- g IV. What word in the story has the same meaning as the word "welcome"?
- b V. According to the paragraph, how do we feel when a step comes to our door?
 (1) sorry (2) angry (3) happy
 (4) afraid.....
- d VI. Do all the stars come out at once?
 (1) yes (2) no (3) does not say.
- e VII. To whom does the word "them" refer?
 (1) stars (2) lights (3) people
 (4) packages

II-N

It proved to be a gypsy encampment consisting of three or four little cabins, or tents, made of blankets and sailcloths. A tea kettle was hanging on a crooked piece of iron over a fire made from dry sticks and leaves, and two old gypsies in red cloaks sat crouched on the grass, gossiping over their evening cup of tea. There were two or three children sleeping on the straw with which the tents were littered. A couple of donkeys were grazing in the lane, and a thievish-looking dog was lying before the fire. Some of the younger gypsies were dancing to the music of a fiddle, played by a stripling in an old frock coat.

- g I. What word in the paragraph above has the same meaning as the word "covered"?
- a II. What was hanging on a piece of iron?
- e III. The first sentence says "it proved to be." To what does this refer?
 (1) tent (2) cabin (3) blanket
 (4) encampment
- d IV. Were the old gypsies drinking?
 (1) yes (2) no (3) does not say.

- c V. What is this paragraph about?
 (1) a small town (2) a camp at evening (3) a morning tour (4) a settlement in the woods.
- f VI. Place a cross (X) opposite all true statements:
 (1) The donkeys and the dog were doing the same thing (1)
 (2) Some of the children were sleeping and some were dancing (2)
 (3) The gypsies covered the tent floor with rugs (3)
 (4) There was no fire under the kettle..... (4)
- b VII. What were the two old gypsies doing?
 (1) arguing (2) dreaming (3) chatting (4) dancing

II-O

It was strange that no streams fell into the valley itself. They all descended on the other side of the mountains and wound away through broad plains and large cities. But the clouds were drawn so constantly to the mountains that in the time of drought and heat when all the country round was burnt up, there was still rain in the little valley. Its crops were so heavy, its hay so high, and its apples so red and its grapes so blue, and its wine so rich, and its honey so sweet, that it was a marvel to every one who beheld it and was commonly called the Treasure Valley.

- a I. What color were the apples that grew in the valley?
- f II. Place a cross (X) opposite all true statements:
 (1) There always was plenty of rain in the little valley (1)
 (2) Sometimes the heat would burn up the crops which grew in the valley (2)
 (3) People who visited the valley thought it was marvelous (3)
 (4) The crops in the valley were very heavy..... (4)
- b III. What was the size of the valley?
 (1) very large (2) large (3) small
 (4) tiny
- e IV. The word "they" in the second line refers to what?
 (1) mountains (2) plains (3) cities
 (4) streams
- g V. What word in the paragraph has the same meaning as the word "wonder"?
- c VI. What does this paragraph describe?
 (1) a big mountain (2) a rich farming valley (3) a large farming country (4) a farm house
- d VII. Did any of the mountain streams flow through the valley?
 (1) yes (2) no (3) does not say.

A COMPREHENSION TEST IN PARAGRAPH READING.

Student's Name _____ Grade _____

School _____ Date _____ Age: Years _____ Months _____

Explanation to Students: This is a test to find out how well you can read. In this test you will find several paragraphs. After you read each paragraph, you will have several different things to do. In order to do these easily and accurately, you will have to read the paragraphs very carefully, but not slowly. Here are some examples of the things you will have to do:

- I. How are you to read the paragraphs that follow?
(1) carelessly (2) slowly (3) carefully (4) hurriedly - - - - -
Which one of the four words above best answers question number "I"? Place the number which goes with it in the blank at the right.
 - II. Besides doing these things accurately, how else are you to do them? - - - - -
There are no answers suggested for this question. In the blank at the right, write the one word from the paragraph itself which answers question number "II".
 - III. Mark with an "X," in the blanks at the right, those statements which are true according to the paragraph above. Make no marks after the statements which are false.
 1. The paragraph of explanations above states that this test contains only one paragraph (1)
 2. After you read each paragraph of the test, you are to do no more than one thing - (2)
 3. This test is to find out how well students can read - - - - - (3)
- All questions and all statements are answered by writing a figure or a word in the blanks at the right. Wait until you are given the signal to begin.

I-A

Sometime before, there had been rumors of wolves infesting the hills and displaying in their forays an all but human boldness and cunning. Then tales of other things began to be whispered. The peasantry huddled early about their turf fires and the shepherds of the Abbey sought counsel from their superior. They got small comfort from the Abbot who brusquely ordered them to attend to their duties and avoid neighborhood stories.

- g I. What word in the paragraph has the same meaning as the word "commanded"?
- a II. Around what kind of fires did the peasants huddle in the evening?
- f III. Place a cross (X) opposite all true statements:
 - (1) the peasants thought that wild animals lived in the hills. (1)
 - (2) Tales about the wolves were the only tales they heard. (2)
 - (3) The peasants worked in the fields until late at night. (3)
 - (4) The Abbot did not listen to the rumors. (4)
- b IV. What word best described the Abbot?
 - (1) fearful (2) sympathetic
 - (3) gentle (4) curt.
- e V. To whom does the word "they" in line 6 refer?
 - (1) peasantry (2) wolves (3) animals (4) shepherds.
- c VI. What was the feeling of the peasants and shepherds described in this paragraph?
 - (1) fear (2) peace (3) joy (4) calmness.
- d VII. Were the tales true?
 - (1) yes (2) no (3) does not say.

I-B

South of the house stood a log barn which, together with a piece of ground five or six acres in extent, was enclosed by a palisade fence eight or ten feet high, made by driving poles in the ground close together. In this enclosure the farmer always kept his stock, consisting of a few sheep and cattle, and here also the chickens, geese and ducks were driven at nightfall to save them from "varmints," as all prowling animals were called by these early settlers.

- d I. Was the barn inside the palisade fence?
 - (1) yes (2) no (3) does not say.
- g II. What word in the paragraph means the same as the word "wandering"?
- e III. To what does the word "them" in line 7 refer?
 - (1) sheep and cattle (2) chickens, geese and ducks (3) prowling animals (4) varmints.
- f IV. Place a cross (X) opposite all true statements:
 - (1) The stock was allowed to roam at large. (1)
 - (2) The house was south of the barn. (2)
 - (3) The plot of ground was enclosed by a wire fence. (3)
 - (4) The "varmints" roamed at night. (4)
- a V. What were prowling animals called by the early settlers?
- b VI. How did the settlers regard their chickens, geese and ducks?
 - (1) as unimportant (2) as disagreeable (3) as worth protecting (4) as food for varmints.
- c VII. What kind of home does this paragraph describe?
 - (1) pioneer (2) modern (3) village (4) city.

I-C

Wheat has a very interesting history. Ages ago it was a wild grass but it has been cultivated by man for many centuries and now depends upon him for existence. It would be choked out by weeds if he did not protect it. Today, farmers raise this grain with greatest care so that they may have it for their own use and for sale on the market.

- a I. What kind of grass was wheat originally?
- f II. Place a cross (X) to mark only true statements:
- (1) Farmers sell all their wheat .. (1)
- (2) Weeds are enemies of wheat .. (2)
- (3) Man has not always cultivated wheat .. (3)
- (4) Wheat does not need the farmers' protection .. (4)
- c III. What is the chief subject of this paragraph?
- (1) wild grass (2) ancient men
- (3) wheatfarmers (4) development of wheat
- g IV. What word in the paragraph has the same meaning as the word "killed"?
- d V. Is wheat a grain?
- (1) yes (2) no (3) does not say
- e VI. To what word in the paragraph does the word "it" in line 4 refer?
- (1) history (2) grass (3) wheat
- (4) existence
- b VII. How does man regard wheat today?
- (1) as a common grass (2) as an important crop (3) as something to neglect (4) as something to kill

I-D

Take a ketchup bottle with a screw cap and a cork that fits tightly. Fill the bottle to the top with water; put a long pin beside the cork while you insert it, so that the water can be crowded out as the cork goes down; then when you have pushed the cork in tightly, pull out the pin. Screw the cap on the bottle so as to hold the cork fast. Put the bottle in a pail or box, and pack ice and salt around it. Within an hour you should be able to see what the water, as it freezes, does to the bottle.

- a I. What, besides the pin, is to be inserted in the neck of the bottle?
- c II. What is the chief thing discussed in this paragraph?
- (1) an experiment (2) making ketchup (3) freezing cream (4) mixing salt and ice
- e III. To what does the word "it" in the last line refer?
- (1) water (2) bottle (3) box (4) ice

- g IV. What word in the paragraph above means the same as the word "firmly"?
- f V. Place a cross (X) opposite all true statements:
- (1) The freezing water is in the bottle .. (1)
- (2) Ice is necessary to follow out the instructions given in the paragraph .. (2)
- (3) The pin is left in the bottle .. (3)
- (4) The bottle cap is used to hold the cork in place .. (4)
- d VI. Is the pin of any use?
- (1) yes (2) no (3) does not say
- b VII. How is the bottle neck to be left?
- (1) merely closed (2) half open
- (3) open (4) closed securely

I-E

One of our great secretaries of state, John Hay, has expressed the true American feeling in regard to warfare among nations in these stern but wholly truthful words: "War is the most ferocious and futile of human follies." It was also this same great statesman who in his instructions to the American delegates to the First Hague Conference said: "Next to the great fact of a nation's independence is the great fact of its interdependence."

- e I. To whom or what does the first word in the paragraph refer?
- (1) American feeling (2) warfare
- (3) John Hay (4) delegate
- g II. What word in the paragraph above has the same meaning as the word "sentiment"?
- c III. What is the chief subject discussed in this paragraph?
- (1) a nation's defense (2) a nation's history (3) a nation's future
- (4) a statesman's attitude
- d IV. Did Secretary Hay call war a folly?
- (1) yes (2) no (3) does not say
- a V. What is considered ferocious and futile?
- f VI. Place a cross (X) opposite all true statements:
- (1) Secretary Hay said that war was useful .. (1)
- (2) Nations are both independent and interdependent .. (2)
- (3) The American delegates to the First Hague Conference went uninstructed .. (3)
- (4) Americans feel that war is ferocious .. (4)
- b VII. What kind of official was Secretary Hay?
- (1) unknown (2) troublesome
- (3) eminent (4) weak

I-F

In America we have a very important way of calling the attention of the people to some of the great events of our history. We seek to do this through our national and state holidays. Too often people think of these days merely as opportunities for pleasure, to go somewhere, or to do something different. Patriotic societies in all parts of the country are making efforts to help us celebrate these occasions in a way that will recall the events themselves and impress upon our minds important truths associated with them. Our schools also provide interesting programs that have a large share in helping us keep in mind significant events in our history.

- g I. What word in the paragraph above has the same meaning as the word "frequently"?
- b II. How are holidays too often used?
(1) for worship (2) for remembrance
(3) for reverence (4) for amusement
- a III. What kind of societies are making efforts to help us celebrate important events of our history?
- e IV. To what does the word "them" in line 10 refer?
(1) truths (2) occasions (3) minds
(4) events
- i V. Do patriotic societies in all sections of the United States observe national holidays?
(1) yes (2) no (3) does not say.
- : VI. In this paragraph what is the chief subject discussed?
(1) American patriots (2) holiday observance (3) early history
(4) American schools
- VII. Place a cross (X) opposite all true statements:
(1) Holidays call our attention to important events of the past.(1)
(2) We have organizations which help us to observe patriotic holidays(2)
(3) Schools do very little towards remembering important events of our history.(3)
(4) Holidays are not used as much as they should be for travel and picnicking.(4)

-G

It was dark and rainy. Long ago the sun had set. The ill-lighted North-End street was so dim that men peered uncertainly into each other's faces. One side of the street would have been called residential had it been in some parts of the city, but here people did not reside, they huddled. Whole families huddled in one or two rooms in these tall narrow tenements. On the other side of the street were stores and shops. In the basement of one block was a long, low mission room, so dark that it was little better than the street outside. But it was warm and dry; men and women drifted in to rest and to shake off some of the cold and the rain.

- I. To what word in the paragraph does the word "it" in line 10 refer?
(1) room (2) block (3) basement
(4) street
- II. What word in the paragraph above has the same meaning as the word "looked"?
- III. How did the men and women regard the mission room?
(1) uninviting (2) cold (3) comfortable (4) entertaining

f IV. Place a cross (X) opposite all true statements:

- (1) The people on the street easily recognized each other.(1)
(2) The fine houses on one side of the street provided homes for a few families.(2)
(3) The mission room offered comfort and protection.(3)
(4) The room was almost as dark as the street.(4)

c V. What does this paragraph describe?

- (1) a rainy morning (2) a dismal afternoon (3) a dreary night
(4) a long, tiresome day.

a VI. Besides tall, what kind of tenements were these?

d VII. Was the mission room crowded?

- (1) yes (2) no (3) does not say.

I-H

We usually think of honey-bees as the inhabitants of beehives, but bees existed long before there were hives. The "bee-tree" is familiar to many of us. The bees in nature make their home in the hollow of some dead or decaying tree trunk, in which they carry on all the industries which characterize the work of a busy community. This community is made up of three kinds of individuals; a queen, numerous males, or drones, and many workers. These three kinds of individuals differ in appearance enough to be readily recognizable. The workers, who are all females, are smaller than the queens and drones, while the last two differ in the shape of the abdomen, or hind body. The abdomen of the queen is longer and more slender than that of the male, or drone. In a single community there is one queen, a few hundred drones and from ten thousand to thirty thousand workers. The number of drones and workers varies at different times, but is smallest in the winter.

c I. What is the chief idea in this paragraph?

- (1) honey (2) an insect household
(3) a bee queen (4) a bee-hive.

d II. Does the number of queens vary from time to time?

- (1) yes (2) no (3) does not say.

e III. To what does the word "two" in line 12 refer?

- (1) males and drones (2) individuals (3) females and workers
(4) queens and drones

f IV. Place a cross (X) opposite only true statements:

- (1) There are thousands of drones in each bee community.(1)
(2) Bees always live in hives.(2)
(3) The workers are larger than the males.(3)
(4) One may easily distinguish between the different individuals in a bee community.(4)

g V. What word in the paragraph above has the same meaning as the word "rotting"?

a VI. The drones are called by what other name?

b VII. How do the workers compare in size with the other bees?

- (1) larger (2) smaller (3) longer than drones (4) same size as drones.

I-I

Although ants are very little creatures, they get around difficulties in remarkable ways. For example: A man whose word is not to be questioned had a habit of putting sugar in his window, in order to observe a column of ants come and bear it off. Finally he placed the sugar in a plate and suspended the plate from the top of the window. The ants climbed the window casing, came down the string and continued to bear off the sugar. One morning the observer found that the old order had been reestablished and that a procession of ants was bearing off the sugar. He looked into the plate. Half a dozen ants were dumping it off to those below! They were taking advantage of the force of gravitation to make it do part of their work for them. Another example: There are a number of cases in which ants working in trees, and cut off by a ring of tar while they are busy at their work, seem consciously to have built bridges of bark across the sticky places. Certainly the bridges of bark were there, and the ants were all ascending and descending the trees by means of them.

- d* I. Did the ants succeed in getting the sugar?
 (1) yes (2) no (3) does not say.
- f* II. Place a cross (X) opposite all true statements:
 (1) A ring of tar always prevents ants from climbing trees (1)
 (2) Ants will form a procession to carry away food (2)
 (3) The man did not want the ants to have the sugar (3)
 (4) Ants may be easily discouraged (4)
- a* III. From what part of the window was the plate suspended?
- c* IV. In this account of the habits of ants, what is the chief idea set forth?
 (1) eating sugar (2) meeting defeat
 (3) overcoming obstacles
 (4) climbing a window
- g* V. What word in the paragraph above has the same meaning as the word "watch"?
- e* VI. To what does the word "those" in line 12 refer?
 (1) creatures (2) ants (3) windows
 (4) observers
- b* VII. What kind of observer was the man who watched the ants?
 (1) reliable (2) dishonest (3) careless
 (4) untruthful

I-J

President Harding in his address at the Tomb of the Unknown Soldier said: "This American soldier went forth to battle with no hatred for any people in the world, but hating war and hating the purpose of every war for conquest. He cherished our National rights, and hated the threat of armed domination; and in the fearful storm of destruction and suffering and death he fired his shot for liberation of the captive conscience of the world. While advancing towards his objective, he thought of the world awakened; and we are here to testify undying gratitude and reverence for that thought of a wider freedom. On such an occasion as this, amid such a scene our thoughts alternate between defenders living and defenders dead. A grateful Republic will be worthy of them both. Our part is to atone for the losses of those heroic dead by making a better Republic and a greater nation for the living."

- a* I. What is spoken of as awakened?
- d* II. Do we think only of our soldiers who are dead?
 (1) yes (2) no (3) does not say.
- g* III. What word in the paragraph above has the same meaning as the word "respect"?
- e* IV. The word "them" in line 15 refers to whom?
 (1) soldiers (2) gratitude and reverence
 (3) defenders living and dead (4) thoughts.....
- c* V. What is the chief idea expressed by this paragraph?
 (1) an appreciation (2) a disappointment
 (3) a pleasure (4) a sorrow.....
- b* VI. How does our Republic feel towards its heroes?
 (1) scornful (2) envious (3) thankful
 (4) indifferent.....
- f* VII. Place a cross (X) opposite all true statements:
 (1) This American soldier had defended our national rights....
 (2) This soldier hated those people he was fighting
 (3) He felt that the world would remain unchanged.....
 (4) We do not need to atone for the lives of our dead soldiers..

I-K

Mrs. Conner was interested in developing a vacant lot in her neighborhood. She proposed that the residents of the vicinity raise enough money to have the lot cleared of stone, brush and rubbish, and have it plowed and planted in shrubs and flowers. Thirty families would benefit by this improvement but only half of them were willing to give towards the necessary one hundred and forty dollars. After some persuasion, however, five of those families that first objected were willing to assume their share of the costs. What was the share of each family contributing to this neighborhood undertaking?

- f I. Place a cross (X) opposite all true statements:
- (1) All of the neighborhood gave willingly at Mrs. Conner's suggestion (1)
 - (2) Ten families contributed nothing towards the project (2)
 - (3) Only Mrs. Conner benefitted by this improvement (3)
 - (4) Some people who objected at first, later changed their attitude (4)
- d II. Did most of the families finally contribute?
- (1) yes (2) no (3) does not say.
- g III. What word in the paragraph above has the same meaning as the word "inducement"?
- e IV. To whom does the word "their" in line 10 refer?
- (1) one-half of them (2) thirty families (3) neighbors (4) five families (1)
- b V. What was the condition of the lot at first?
- (1) clean (2) beautiful (3) unsightly (4) orderly (1)
- c VI. What was the purpose of this movement?
- (1) better farming (2) cleaner streets (3) community improvement (4) food production (1)
- a VII. What was to be planted in the lot besides flowers?

I-L

I wish to borrow \$1500. I can get it from a national bank at 8% interest; but I will have to give the bank a mortgage on my house as a guarantee. All of this will delay me. I may also borrow the money from a private loan company at 9% interest; but I will give only my note, guaranteed by two reliable friends or family members. If I decide to borrow on the sole basis of cheapness, shall I go to the bank or the loan company? Are there any other things to consider besides the lower rate of interest?

- e I. To what in the paragraph does the word "it" in the first line refer?
- (1) interest (2) money (3) mortgage (4) \$1500. (1)
- f II. Place a cross (X) opposite all true statements:
- (1) The loan company requires a mortgage when making a loan (1)
 - (2) The bank lends money without security (2)
 - (3) The man must provide a guarantee whether he borrows from the bank or from the loan company (3)
 - (4) He must pay for the use of the loan (4)
- a III. If I borrow the money from the bank, on what will I have to place a mortgage?
- b IV. What method does a national bank use in making loans?
- (1) loan without guarantee (2) loan only to wealthy men (3) loan with sure guarantee (4) loan to anyone (1)
- g V. What word in the paragraph above has the same meaning as the word "trustworthy"?
- d VI. Did the man borrow from the loan company?
- (1) yes (2) no (3) does not say. (1)
- c VII. What is the chief subject discussed in this problem?
- (1) making a living (2) earning wages (3) transacting business (4) selling real estate (1)

I-M

Indeed, all navigation in those East India seas is dangerous to sailing vessels, and requires the greatest care. Often the crew was obliged at a minute's notice to let go the anchor, although out of sight of land, some rapid current being found carrying us swiftly towards a shoal or race, where we might come to grief. Yet there was no fuss or hurry, the same leisurely old system was continued, and worked as well as ever. It was not apparent why we were threading the tortuous and difficult waters of the Indian Archipelago. No whales of any kind were seen for at least a month, but from our mode of sailing it was evident we were looking for some.

- g I. What word in the paragraph above means the same as the word "apparent"?
- a II. What were we obliged to let go at a minute's notice?
- e III. To what does the last word in the paragraph refer?
(1) waters (2) seas (3) whales (4) vessels
- d IV. Had the crew captured any whales during the last month?
(1) yes (2) no (3) does not say.
- c V. What words best described what the crew was doing?
(1) calmly searching (2) winning a close race (3) making a good catch (4) sailing an easy voyage
- b VI. What kind of sailing did the ship have to do in the East India seas?
(1) moderately careful (2) careless (3) very careful (4) reckless.
- f VII. Place a cross (X) opposite all true statements:
(1) The crew was afraid to get near the shoals. (1)
(2) All the sailors knew why they were in these dangerous seas. (2)
(3) The crew had changed their method of sailing when in the East India seas. (3)
(4) The ship was always safe when out of sight of land. (4)

I-N

We are apt to speak of the sorrows of childhood as trifles in comparison with those of grown-up people; we may depend upon it, the young folk don't agree with us. Our griefs, modified and restrained by reason, experience and self-respect, keep the proprieties and if possible avoid a scene; but the sorrow of childhood, unreasoning and all absorbing, is a complete abandonment to the passion. The doll's nose is broken, and the world breaks with it; the marble rolls out of sight, and the solid globe rolls off with the marble.

- d I. Do young folks think the sorrows of grown-up people are trifles?
(1) yes (2) no (3) does not say.
- a II. What do grown-up people modify and restrain by reason?
- g III. What word in the paragraph above has the same meaning as the word "likely"?
- e IV. To what does the word "it" in line 9 refer?
(1) world (2) passion (3) doll (4) nose.

- c V. What is the chief idea discussed in this paragraph?
(1) broken dolls (2) childhood griefs (3) reason and experience (4) grown-up people
- f VI. Place a cross (X) opposite all true statements:
(1) When grieved, childhood gives itself completely to sorrow. (1)
(2) Children think very little of losing a marble. (2)
(3) Reason and experience teach grown-up people to make a scene of their sorrow. (3)
(4) Grown-up people regard the sorrows of childhood just as children do. (4)
- b VII. How does the child feel when the doll's nose is broken?
(1) thankful (2) angry (3) sorrowful (4) agreeable.

I-O

This is the chosen season of revelry of the bobolink. He comes amid the pomp and fragrance of the season; his life seems all sensibility and enjoyment, all song and sunshine. He is to be found in the soft bosoms of the freshest and sweetest meadows and is most in song when the clover is in blossom. He perches on the topmost twig of a tree, or on some long flaunting weed and as he rises and sinks with the breeze, pours forth a succession of rich tinkling notes, crowding one upon another, like the outpouring melody of the skylark, and possessing the same rapturous character.

- f I. Place a cross (X) opposite all true statements:
(1) The song of the bobolink possesses a different character from that of the skylark. (1)
(2) The bobolink's chosen season is the late fall. (2)
(3) When the skylark sings he crowds one note upon another. (3)
(4) The bobolink's life seems to be free of care and worry. (4)
- g II. What word in the paragraph above has the same meaning as the word "alights"?
- e III. The word "this" in the first line refers to what?
(1) bobolink (2) revelry (3) season (4) fragrance
- d IV. Does the bobolink sing in the corn-field?
(1) yes (2) no (3) does not say.
- c V. What is the chief subject of this paragraph?
(1) the bobolink in winter (2) song of the skylark (3) haunts of birds (4) the festivity of the bobolink.
- a VI. What is described as having pomp and fragrance?
- b VII. What kind of life does the bobolink live?
(1) quiet (2) joyous (3) disagreeable (4) gloomy.

A COMPREHENSION TEST IN PARAGRAPH READING.

Students' Name _____ Grade _____

School _____ Date _____ Age: Years _____ Months _____

Explanation to Students: This is a test to find out how well you can read. In this test you will find several paragraphs. After you read each paragraph, you will have several different things to do. In order to do these easily and accurately, you will have to read the paragraphs very carefully, but not slowly. Here are some examples of the things you will have to do:

- I. How are you to read the paragraphs that follow?
(1) carelessly (2) slowly (3) carefully (4) hurriedly - - - - -
Which one of the four words above best answers question number "I"? Place the number which goes with it in the blank at the right.
- II. Besides doing these things accurately, how else are you to do them? - - - - -
There are no answers suggested for this question. In the blank at the right, write the one word from the paragraph itself which answers question number "II."
- III. Mark with an "X," in the blanks at the right, those statements which are true according to the paragraph above. Make no marks after the statements which are false.
 1. The paragraph of explanations above states that this test contains only one paragraph _____ (1)
 2. After you read each paragraph of the test, you are to do no more than one thing - - - - - (2)
 3. This test is to find out how well students can read - - - - - (3)

All questions and all statements are answered by writing a figure or a word in the blanks at the right.
Wait until you are given the signal to begin.

II-A

It was a great day in Count Theodore's castle. Everyone knew that, down to the newest, smallest scullery maid. The Count had come home from England with Lady Phillipa, his daughter. There would be feasting and song and laughter for days.

- d I. Had Count Theodore remained long in England?
(1) yes (2) no (3) does not say. _____
- f II. Place a cross (X) opposite all true statements:
 - (1) Count Theodore returned home alone. _____ (1)
 - (2) Lady Phillipa had been in England. _____ (2)
 - (3) The Count's household was happy. _____ (3)
 - (4) Only a few people knew of Lady Phillipa's return. _____ (4)
- a III. In what did Count Theodore live? _____
- g IV. What word in the paragraph above has the same meaning as the word "grand"? _____
- b V. What was planned ahead?
(1) hard work (2) a long trip (3) a celebration (4) a combat. _____
- e VI. To whom does the word "everyone" in line 1 refer?
(1) servants (2) guests (3) Englishmen (4) whole household. _____
- c VII. What word best describes the idea of this paragraph?
(1) homecoming (2) sorrow (3) farewell (4) worry. _____

II-B

The tiny alligators that are commonly sold to tourists, to be brought north perhaps and allowed to freeze or starve to death, may either be caught by a wire noose at the end of a fishing rod, or they may be hatched from eggs that are taken from the nest. Such eggs may readily be hatched by keeping them moist at a fairly constant temperature.

- f I. Place a cross (X) opposite all true statements:
 - (1) Alligator eggs must be kept dry in order to hatch. _____ (1)
 - (2) Fishing rods sometimes are used in catching alligators. _____ (2)
 - (3) Alligators lay their eggs in nests. _____ (3)
 - (4) Small alligators are always obtained by using wire nooses. _____ (4)
- g II. What word in the paragraph has the same meaning as the word "ensnared"? _____
- e III. To what does the word "they" in line 4 refer?
(1) tourists (2) eggs (3) alligators (4) nests. _____
- d IV. Do tourists sometimes allow alligators to freeze?
(1) yes (2) no (3) does not say. _____
- c V. In this paragraph about alligators what is the chief subject discussed?
(1) feeding them (2) procuring them (3) protecting them (4) using them. _____
- b VI. What kind of alligators are commonly sold?
(1) full grown (2) heavy (3) old (4) small. _____
- a VII. To whom are these alligators sold? _____

II-C

Far up in the highlands of Peru near the equator is the place where the potato first grew. More than a thousand years before Columbus discovered America, Indians in Peru were raising potatoes. At that time the rest of the world never had tasted a potato. It is less than five hundred years ago that potatoes were carried to Ireland. Now they are such an important crop in that country that we call them "Irish potatoes." If we named the potato after its homeland, we should say "Peruvian potatoes."

- g* I. What word in the paragraph has the same meaning as the word "cultivating"?
- a* II. In what country did the potato originate?
- f* III. Place a cross (X) opposite all true statements:
- (1) Irish potatoes originally came from Ireland. (1)
- (2) The Indians learned the use of the potato from the white man. (2)
- (3) Peru is near the equator. (3)
- (4) Potatoes constitute one of the chief crops in Ireland. (4)
- b* IV. How does Ireland now consider the potato?
- (1) very important (2) of ordinary worth (3) of no food value (4) an unimportant crop.
- c* V. What is the chief subject of this paragraph?
- (1) a grain (2) a food (3) a luxury (4) a harvest.
- e* VI. To what word in the paragraph does the word "its" in the last line refer?
- (1) homeland (2) potatoes (3) country (4) potato.
- d* VII. Did the white man have the potato before the Indian?
- (1) yes (2) no (3) does not say.

II-D

Two boys were out hiking and they were very thirsty. They came to a farm and found a deep well. The surface of the water was forty feet below them. They had no pump, but they had a piece of hose about fifty feet long. One boy suggested that they drop one end of the hose down to the water and suck the water up, but the other said that that would not work. The only way would be to lower the hose into the water, close the upper end, pull the hose out and let the water pour out of the lower end of the hose into their mouths. A stranger came past while the boys were arguing, and said that neither way would work; that although the hose was long enough, the water was too far down to be raised in either way. He advised the boys to find a bucket and to use the hose as a rope for lowering it. Which of the three suggestions was right?

- f* I. Place a cross (X) to mark only the true statements:
- (1) Both boys made suggestions for getting the water. (1)
- (2) The stranger thought that the boys' suggestions might work. (2)
- (3) All the suggestions depended upon the use of the hose. (3)
- (4) The hose was not long enough to reach the water. (4)

- d* II. Did the boys follow the stranger's advice?
- (1) yes (2) no (3) does not say.
- b* III. What were the boys doing before the stranger came?
- (1) fighting (2) discussing (3) playing (4) resting.
- g* IV. What word in the paragraph above means the same as "counseled"?
- e* V. To what or whom does the word "other" in line 7 refer?
- (1) end (2) hose (3) boy (4) well.
- a* VI. How many feet long was the hose?
- c* VII. What is the chief thing discussed in this paragraph?
- (1) a farm (2) water (3) a vacation (4) a problem.

II-E

A woman, baffled in her attempts to open a glass-stoppered bottle of smelling salts, asked me to open it. The stopper was in so tightly that I could not pull it out. I might have done any of the following things: Tried to pull the stopper out with a pair of pliers; plunged the bottle up to the neck in hot water; plunged it in ice-cold water; or tried to loosen the stopper by tapping it all around. Which would have been the best way to open the bottle?

- d* I. Did I plunge the bottle in ice water?
- (1) yes (2) no (3) does not say.
- e* II. To what word in the paragraph does the word "it" in line 7 refer?
- (1) bottle (2) neck (3) water (4) stopper.
- a* III. What was held in very tightly?
- g* IV. What word in the paragraph above means the same as the word "attempted"?
- b* V. How did the woman feel when she brought the bottle to me?
- (1) elated (2) angry (3) puzzled (4) sorrowful.
- c* VI. What is the chief subject discussed in this paragraph?
- (1) a problem (2) an accident (3) a wish (4) a success.
- f* VII. Place a cross (X) opposite all true statements:
- (1) Four suggestions were made for opening the bottle. (1)
- (2) One suggestion was to plunge the bottle neck in hot water. (2)
- (3) The woman had failed to open the bottle. (3)
- (4) The bottle could have been plunged into ice-cold water. (4)

II-F

The successful inauguration of popular self-government—government of the people, by the people and for the people—forms one of the proudest pages of our country's history. Emigrant and native alike are enrolled in the ranks of a common citizenship; they go together to the polls, where heads are counted and not broken as they are on the battlefield, and where the people decide for themselves who shall make and execute the laws, and usually indeed what laws they shall make.

- b I. How do our citizens view the beginning of our government?
(1) with doubt (2) with regret
(3) with apologies (4) with great pride.....
- g II. What word in the paragraph above has the same meaning as the word "ordinarily"?.....
- f III. Place a cross (X) opposite all true statements:
(1) Our government belongs to the people.....(1)
(2) Emigrants cannot become citizens in our country.....(2)
(3) Both native and emigrant may vote.....(3)
(4) The people decide who shall enforce their laws.....(4)
- a IV. Who besides the native American has the privilege of our common citizenship?.....
- d V. Was the beginning of our government successful?
(1) yes (2) no (3) does not say.....
- c VI. What kind of government is described in this paragraph?
(1) dictatorial (2) autocratic
(3) abusive (4) democratic ..
- e VII. To what word in the paragraph does the word "they" in line 6 refer?
(1) people (2) laws (3) heads
(4) polls

II-G

My attention again was fixed upon the window by a faint streak of pink. The square was no longer black, the star had gone, and the limbs of a distant pine had taken its place. The breeze brought with it the clank of cans, and the heavy step of the milkman. In the distance an early car hummed and bumped along the rails. A factory whistle shrieked, and as if in answer to its summons, a squad of laborers walked heavily past the house. A moment later a single sunbeam danced through the curtains, and then I knew my rest was over.

- f I. Place a cross (X) opposite all true statements:
(1) There was a stillness in the air.....(1)
(2) The workmen passed the house before the whistle blew.....(2)
(3) The air was not astir at all... ..(3)
(4) The car was some distance from the house.....(4)

- a II. What had gone?
- g III. What word in the paragraph above has the same meaning as the word "call"?
- e IV. The word "its" in line 4 refers to what word in the sentence?
(1) streak (2) star (3) square
(4) window.....
- b V. How many laborers passed the window?
(1) one (2) two (3) hundreds (4) a group.....
- c VI. What is described in this paragraph?
(1) noontime (2) evening (3) midnight (4) morning
- d VII. Did the milkman make any noise?
(1) yes (2) no (3) does not say.....

II-H

The storm, though still roaring fiercely, had abated, and in the east behind the masts of the grounded steamer the cold morning was breaking. On the beach the little crowd of rescuers was huddled in the lee of a fire that was whipped in the wind. Nothing more could be done for the boat; they could only sit and wait until the waves brought the dead ashore. Suddenly, the breakers swept up on the sand a body—a woman's. The little band crowded around her, somebody held up a lantern. There was a moment of hushed silence, broken at length by a wondering voice, saying, "Isn't she beautiful!"

- f I. Place a cross (X) opposite all true statements:
(1) The rescuers were huddled on the wharf.....(1)
(2) Everything possible had been done for the boat.....(2)
(3) The storm had continued as strong as ever.....(3)
(4) They did not expect the dead to be washed ashore.....(4)
- c II. What is this story about?
(1) sailors' life (2) a life boat (3) a shipwreck (4) a winter's night..
- a III. What was whipped in the wind?...
- g IV. What word in the paragraph above has the same meaning as the word "abruptly"?.....
- b V. How must the rescuers have felt?
(1) cheerful (2) very happy (3) anxious (4) comfortable.....
- e VI. To whom or what does the word "they" in line 6 refer?
(1) crew (2) the dead (3) the rescuers (4) masts.....
- d VII. Did the rescuers find more than one dead body?
(1) yes (2) no (3) does not say.....

II-I

Ants, like men, are engineers. They build roads leading to their settlements. In some cases at least, these roads are not accidental, but are laid out straight like streets, and are carved through forests of grass. In order to cut down the blades of grass, two or three ants climb to the top while another saws at the base. The weight of the helpers above topples the obstacle over, thereby saving the labor of sawing all the way through the base. Besides roads, these insects also construct tunnels like our subways. In one instance they so injured the garden of an army post in Texas that they had to be driven out and methods taken to prevent their return. On one side of the garden ran a creek. To make use of the water of this creek, a moat four feet wide was constructed on the other three sides of the garden. Nevertheless, the ants reappeared in the garden! Thereupon the moat was drained and underneath the mud, a tunnel was found with ants passing to and fro.

- a I. What was it the ants built under the moat?
 b II. How did the men of the army post regard the ants?
 (1) as necessary (2) as undesirable
 (3) as an aid (4) as something to protect
 c III. What is the chief idea in this paragraph?
 (1) ants as engineers (2) cutting grass
 (3) destroying insects (4) supplying food
 d IV. Are the straight roads the ants build always accidental?
 (1) yes (2) no (3) does not say.
 e V. To what word in the paragraph does the word "they" in line 10 refer?
 (1) ants (2) engineers (3) insects
 (4) tunnels.
 f VI. Place a cross (X) opposite all true statements:
 (1) The ants tried to avoid the water in the moat. (1)
 (2) When necessary, ants perform feats of engineering to get what they want. (2)
 (3) Ants are not economical in the use of labor. (3)
 (4) The moat completely surrounded the garden. (4)
 g VII. What word in the paragraph above has the same meaning as the word "emptied"?

II-J

As a people, we are indeed fortunate beyond measure in the characters of the two greatest of our public men—Washington and Lincoln. Widely though they differ in externals, the Virginia landed gentleman and the Kentucky backwoodsman, they were alike in the great qualities which made each able to do service to this nation and to all mankind such as no other man of his generation could or did render. Each had lofty ideals, and each in striving to attain those lofty ideals was guided by the soundest common sense. Each possessed inflexible courage in adversity, and a soul wholly unspoiled by prosperity. Each possessed all the gentler virtues commonly possessed by good men who lack rugged strength of character. Each possessed also all the strong qualities commonly exhibited by those towering masters of mankind who have too often shown themselves devoid of so much as the understanding of the words by which we signify the qualities of duty, of mercy, and of devotion to the right.

- c I. What is the chief idea presented in this paragraph?
 (1) difference between two lives
 (2) character of Washington
 (3) life of Lincoln (4) likeness of two characters.
 g II. What word in the paragraph above has the same meaning as the word "endeavoring"?
 a III. By what was the soul of each man wholly unspoiled?
 e IV. To what word in the paragraph does the word "who" in the fourth line from the end refer?
 (1) each (2) mankind (3) men
 (4) masters.
 b V. What kind of influence have these two characters on the American people?
 (1) detrimental (2) average (3) constructive
 (4) uncertain
 d VI. Did Washington lose courage when facing unfavorable events?
 (1) yes (2) no (3) does not say.
 f VII. Place a cross (X) opposite only true statements:
 (1) Washington and Lincoln were reared in widely different surroundings. (1)
 (2) Both men were guided by common sense. (2)
 (3) Lincoln was a Virginian. (3)
 (4) Towering masters of men sometimes do not know the meaning of mercy. (4)

II-K

We meet to celebrate Flag Day because this flag which we honor and under which we serve is the emblem of our unity, our power and our purpose as a nation. It has no other character than that which we give it from generation to generation. The choice is ours. It floats in majestic silence above the hosts that execute those choices, whether in peace or in war. And yet, though silent, it speaks to us—speaks to us of the past, of the men and women who went before us and of the records they wrote upon it. We celebrate the day of its birth; and from its birth until now it has witnessed a great history, has floated on high the symbol of great events, of a great plan of life worked out by a great people.

- g* I. What word in the paragraph above has the same meaning as the word "commemorate"?
- f* II. Place a cross (X) opposite all true statements:
- (1) The nation uses the flag as a symbol only in war. (1)
- (2) Each generation helps to determine the character of the flag. (2)
- (3) The flag reminds us of our country's past. (3)
- (4) The people represented by the flag have failed to make a great nation. (4)
- e* III. The word "they" in line 9 refers to whom?
- (1) people (2) generations (3) nations (4) men and women
- d* IV. Has the flag been a symbol of great events?
- (1) yes (2) no (3) does not say.
- c* V. What are the people (referred to in this paragraph) doing?
- (1) achieving victory (2) creating trouble (3) paying honor (4) praising a hero.
- b* VI. What does our flag mean to us?
- (1) our ideal (2) majestic silence (3) symbol of our union (4) emblem of defeat.
- a* VII. Who execute the choices mentioned in the paragraph?

II-L

Mr. Smith can lend his money to the bank and receive 4% interest on it, or else he can lend it to Mr. Kelley and receive 7% interest on it; but he is not sure that Mr. Kelley is a good manager and can pay him back. Mr. Kelley wants the money very badly because he plans to build a new store. Mr. Smith cannot afford to lose his savings. If you were Mr. Smith, would you lend the money to the bank?

- g* I. What word in the paragraph above has the same meaning as the word "intends"?
- d* II. Did Mr. Smith lend his money to Mr. Kelley?
- (1) yes (2) no (3) does not say.
- a* III. What is it that Mr. Smith cannot afford to lose?

- b* IV. In Mr. Smith's opinion, what kind of business man is Mr. Kelley?
- (1) very successful (2) careful (3) safe (4) uncertain.
- f* V. Place a cross (X) opposite all true statements:
- (1) Mr. Kelley intends to build a new home. (1)
- (2) The bank will borrow Mr. Smith's money. (2)
- (3) Mr. Smith is certain that Mr. Kelley is a poor manager. (3)
- (4) Mr. Smith does not have to lend his money to Mr. Kelley. (4)
- e* VI. Line 3 says "he is not sure." To whom does this refer?
- (1) banker (2) Mr. Kelley (3) Mr. Smith (4) manager.
- c* VII. What kind of deal or transaction is this for Mr. Smith?
- (1) real estate (2) financial (3) insurance (4) stock

II-M

Now came great trouble and dissatisfaction. Many of the buccaneers or pirates loudly declared that Arnold was taking everything of real value for his own, especially the precious jewels, and that they were getting only a very small share of the booty. There seemed to be good reasons for these objections, for about two hundred dollars apiece was all that Arnold's men received after their terrible hardships and dangers in pillaging the rich towns. The murmurings and complaints against Arnold's peculiar methods became louder and more frequent, and at last the wily Welshman began to fear that serious trouble would come to him if he were not careful.

- f* I. Place a cross (X) opposite all true statements:
- (1) Arnold divided the spoils fairly among the men. (1)
- (2) The men were well satisfied with Arnold. (2)
- (3) The Welshman began to fear for his own safety. (3)
- (4) The buccaneers had been robbing rich towns. (4)
- e* II. To what word in the paragraph does the word "they" in line 4 refer?
- (1) men (2) pirates (3) hardships (4) reasons.
- c* III. What does this paragraph describe?
- (1) pleasure (2) discontent (3) misery (4) satisfaction.
- g* IV. What word in the paragraph has the same meaning as the word "grounds"?
- d* V. Did the men rebel?
- (1) yes (2) no (3) does not say.
- b* VI. What were the buccaneers doing?
- (1) celebrating (2) killing (3) complaining (4) praising
- a* VII. According to this paragraph, what kind of Welshman was Arnold?

II-N

After three or four voyages in the West Indies, this venturesome Englishman acquired a reputation for remarkable coolness in emergencies. He showed ability in taking advantage of favorable circumstances, an ability not possessed by many of his comrades. These prominent traits became the foundation of his success. He proved himself also a good business man. When he had saved a considerable amount of money, he joined with some other pirates and bought a ship, of which he took command. This ship soon made itself a scourge in the Spanish seas; no other buccaneering vessel was so widely known and so greatly feared. The English people of these regions were as proud of the young Captain Morgan as if he had been one of their regularly commissioned admirals, cruising against a recognized enemy.

- g* I. What word in the paragraph above has the same meaning as the word "following"?
- a* II. Of what were these prominent traits the foundation?
- f* III. Place a cross (X) opposite all true statements:
- | | |
|--|-----|
| (1) Captain Morgan was an Englishman | (1) |
| (2) Morgan was exactly like his comrades | (2) |
| (3) The captain stole the pirate ship he commanded | (3) |
| (4) Morgan was a success as a sailor | (4) |
- b* IV. What kind of business man was Captain Morgan?
- | | |
|---|--|
| (1) successful (2) ordinary (3) poor (4) careless | |
|---|--|
- e* V. To what word in the paragraph does the word "itself" in line 10 refer?
- | | |
|---|--|
| (1) scourge (2) vessel (3) command (4) ship | |
|---|--|
- d* VI. Was Captain Morgan an admiral in the English navy?
- | | |
|---------------------------------------|--|
| (1) yes (2) no (3) does not say. | |
|---------------------------------------|--|
- c* VII. What does this paragraph describe?
- | | |
|---|--|
| (1) war (2) commerce (3) successful outlawry (4) honorable leadership | |
|---|--|

II-O

The age, the dress and the dignity of deportment of most of these warriors indicated them to be of high rank; but to one in particular was paid a deference and obedience that announced him to be the highest. His dress was plain, but it bore the usual distinction of military command. He was mounted on a noble animal of a deep bay. A group of young men of gayer attire, evidently awaited his pleasure and did his bidding. Many a hat was lifted as its owner addressed this officer; and when he spoke a profound attention, exceeding the respect of mere professional etiquette, was exhibited on every countenance.

- a* I. What besides deference was paid in particular to one of the soldiers?
- b* II. How were the younger soldiers dressed?
- | | |
|---|--|
| (1) carelessly (2) expensively (3) very plainly (4) brilliantly ... | |
|---|--|
- c* III. What is the chief idea discussed in this paragraph?
- | | |
|---|--|
| (1) respect shown a leader (2) military life (3) uniforms of soldiers (4) military camp | |
|---|--|
- d* IV. Were these men the common soldiers of the army?
- | | |
|---------------------------------------|--|
| (1) yes (2) no (3) does not say. | |
|---------------------------------------|--|
- e* V. To what does the word "its" in line 9 refer?
- | | |
|--|--|
| (1) distinction's (2) attire's (3) owner's (4) hat's | |
|--|--|
- f* VI. Place a cross (X) opposite all true statements:
- | | |
|--|-----|
| (1) The soldier of the highest command wore nothing to indicate his rank | (1) |
| (2) The younger men carried out the wishes of the commander. . | (2) |
| (3) The commander was very gaily dressed | (3) |
| (4) The soldiers were very stately in manner | (4) |
- g* VII. What word in the paragraph above has the same meaning as the word "surpassing"?

A COMPREHENSION TEST IN PARAGRAPH READING.

Student's Name _____ Grade _____

School _____ Date _____ Age: Years _____ Months _____

Explanation to Students: This is a test to find out how well you can read. In this test you will find several paragraphs. After you read each paragraph, you will have several different things to do. In order to do these easily and accurately, you will have to read the paragraphs very carefully, but not slowly. Here are some examples of the things you will have to do:

- I. How are you to read the paragraphs that follow?
(1) carelessly (2) slowly (3) carefully (4) hurriedly - - - - -
Which one of the four words above best answers question number "I"? Place the number which goes with it in the blank at the right.
- II. Besides doing these things accurately, how else are you to do them? - - - - -
There are no answers suggested for this question. In the blank at the right, write the one word from the paragraph itself which answers question number "II".
- III. Mark with an "X," in the blanks at the right, those statements which are true according to the paragraph above. Make no marks after the statements which are false.
 1. The paragraph of explanations above states that this test contains only one paragraph _____ (1)
 2. After you read each paragraph of the test, you are to do no more than one thing - _____ (2)
 3. This test is to find out how well students can read - - - - - (3)

All questions and all statements are answered by writing a figure or a word in the blanks at the right. Wait until you are given the signal to begin.

I-A

Every blow of a hammer, every stroke of a plane, leaves its record which cannot be erased. When first I saw the Viking ship dug out in Norway after a thousand years, the thing that caught my eye was the record of a lazy carpenter's axe, left upon the oak timber of the bow of the ship. Every nick in it was there, plain to see. He had been too lazy to grind the axe, and a thousand years later, that fact stood out.

- g I. What word in the paragraph means the same as the word "truth"?
- f II. Place a cross (X) to mark only the true statements:
 - (1) The first thing that caught my eye was how well the ship was preserved. (1)
 - (2) We do not know in what country the ship was found. (2)
 - (3) We are told that a lazy man had worked on the ship. (3)
 - (4) The timbers of the bow were oak. (4)
- e III. The word "he" in line 6 refers to whom?
 - (1) Viking (2) carpenter (3) sailor
 - (4) captain.
- d IV. Was the ship in good condition after a thousand years?
 - (1) yes (2) no (3) does not say.
- c V. What is contained in this paragraph?
 - (1) a life lesson (2) a riddle (3) a joke (4) a fable.
- b VI. What kind of axe do you think the ancient carpenter used?
 - (1) big (2) sharp (3) dull (4) new.
- a VII. What kind of ship had been dug up?

I-B

The expenses of a state, including its counties, cities and towns, are met chiefly by levying taxes on its property. Each year the government officials first determine how much money will be needed to run the government for a year. Then the property in the state is assessed, that is, officials in each community put a value on the property in the community. The tax rate in any city or town is found by dividing the total expenditures to be met by the total assessment in that community.

- d I. Is the tax rate found by dividing expenditures by assessment?
 - (1) yes (2) no (3) does not say.
- g II. What word in the paragraph above means the same as the word "principally"?
- a III. What kind of rate is found by dividing expected expenditures by total assessment?
- f IV. Place a cross (X) to mark only the true statements:
 - (1) States secure most of their income from taxation. (1)
 - (2) Counties and cities do not secure their income by taxation. (2)
 - (3) Property is assessed after the tax rate is determined. (3)
 - (4) Each year officials determine what they will need for the next year's expenses. (4)
- b V. How often do the proper officials determine the amount of tax money needed?
 - (1) semi-annually (2) occasionally
 - (3) annually (4) biannually.
- c VI. What is discussed in the above paragraph?
 - (1) private enterprise (2) personal affairs (3) public business (4) sale of property.
- e VII. The word "its" in the first line refers to what word in the paragraph?
 - (1) state (2) property (3) taxes
 - (4) government.

I-C

Our National Government spends enormous sums of money each year in preparing to protect us and in promoting our welfare. Besides maintaining the army and navy, it pays pensions to the soldiers and sailors who have fought in our past wars; it contributes largely to the support of the Indians whose lands we have taken; it collects and distributes our mail; it coins our money; it encourages agriculture, fisheries and forestry; it makes and executes laws and administers justice.

- g* I. What word in the paragraph means the same as the word "gives"?
- c* II. What is the central idea of this paragraph?
 (1) public education (2) preparation for war (3) providing for our well-being (4) protection of new settlements
- f* III. Place a cross (X) to mark only the true statements:
 (1) Our Government promotes farming.....(1)
 (2) The Government has nothing to do with our protection.....(2)
 (3) The Government does not provide our laws.....(3)
 (4) The Government is responsible for collecting and distributing mail.....(4)
- a* VI. What is it the Government coins?
- b* V. Whom does the National Government pension?
 (1) teachers (2) preachers (3) national defenders (4) Indians.....
- e* VI. The word "it" in line 5 refers to what word in the paragraph?
 (1) money (2) mail (3) government (4) justice
- d* VII. Does the Government ever go into debt?
 (1) yes (2) no (3) does not say.

I-D

Years ago the wearing of purple indicated royal birth for the purple dye was so expensive that none but those "born to the purple" could own it. Today we may consider anything dyed with purple as a symbol of the marvelous development in our chemical industries. The original purple of ancient times was secreted by a small sea-snail, found on the eastern coast of the Mediterranean. Behind the head of this snail is a small sac which contains a single drop of whitish liquid. When exposed to the air and sunlight, it becomes first green, then blue, then purple. To get an ounce of dye, the ancients had to extract the liquid from at least 12,000 snails.

- g* I. What word in the paragraph means the same as the word "sign"?
- e* II. The word "it" in line 3 refers to what?
 (1) purple dye (2) snail (3) liquid (4) sunlight.....
- c* III. What is the chief thought of this paragraph?
 (1) a change in fashion (2) the development of an industry (3) how royalty dressed (4) sea animals.. ..

- a* IV. From what animal was purple dye formerly obtained?
- f* V. Place a cross (X) to mark only true statements:
 (1) In ancient times only royalty wore purple.....(1)
 (2) Today we still get the dye from the sea-snail.....(2)
 (3) When first taken from the snail, the liquid was not purple in color.....(3)
 (4) Each snail gave out large amounts of the liquid.....(4)
- d* VI. Did the ancients find it difficult to secure purple coloring?
 (1) yes (2) no (3) does not say.
- b* VII. How was purple considered in ancient days?
 (1) of little worth (2) very common (3) something to be shunned (4) a symbol of rank

I-E

Silver has been known from the earliest times, since it may be found free in nature. The manner in which silver resists oxidation in the air together with its brilliant luster when polished, has caused it to be used in all ages for articles of ornament and coinage. It is easily acted upon by hydrogen sulphide and many other compounds of sulphur; thus silver spoons become blackened from contact with the white of an egg which contains sulphur. Silver articles in contact with rubber become black for the same reason. Pure silver is soft, and usually is hardened by the addition of a small amount of copper.

- f* I. Place a cross (X) to mark only the true statements:
 (1) Silver has been used for centuries.....(1)
 (2) A silver dollar will not turn black.....(2)
 (3) Silver takes a brilliant luster when polished.....(3)
 (4) Silver, in its pure form, is hard.....(4)
- c* II. What is the chief thing discussed in this paragraph?
 (1) money (2) table ware (3) a metal (4) an industry.....
- g* III. In this paragraph, what word has the same meaning as the word "withstands"?
- a* IV. What metal is added to silver to harden it?
- e* V. In this paragraph, the word "soft" in next to last line refers to what?
 (1) luster (2) pure silver (3) copper (4) sulphur.....
- b* VI. What is the result when silver comes into contact with the white of an egg?
 (1) no change (2) discoloration (3) luster is increased (4) sulphur is produced.....
- d* VII. Will copper turn black when it comes in contact with silver?
 (1) yes (2) no (3) does not say.

I-F

There is no definite age when a child can best learn to swim. No two children are alike, either in strength or physical development. A prominent authority on swimming suggests teaching a child to swim just as soon as he is old enough to profit by the instruction. Even before this, by the time he is able to walk, he should be permitted to play in shallow water and learn not to fear it. The younger a child can be taught to swim, the better. His muscles should be given the chance to develop as he grows. This does not mean that one who takes up swimming as an adult cannot become proficient at it. It does mean that one who has been coached in swimming from childhood is likely to be a better swimmer than one who has taken up the sport later in life. Each year the age of swimming champions grows less, until lately the height of a champion's career seems to be reached at about the age of fifteen or sixteen.—*Aileen Riffin.*

- a I. What kind of authority suggests teaching very young children to swim?
- e II. To whom does the word "he" in line 4 refer?
(1) prominent authority (2) teacher (3) child (4) adult
- g III. What word in the paragraph above means the same as "skillful"?
- b IV. Why should a baby be allowed to play in shallow water?
(1) for pleasure (2) to give confidence (3) to warn against danger (4) to make timid
- c V. What is the chief thought in this paragraph?
(1) best age for learning to swim (2) proficient swimming (3) swimming as a clean sport (4) value of swimming
- f VI. Place a cross (X) to mark only the true statements:
(1) It is better for a person to learn swimming as a child (1)
(2) Those who learn swimming in childhood always are better in this sport than those who learn it later (2)
(3) Swimming is dependent upon muscle development (3)
(4) Many children are equal in strength and physical growth. (4)
- d VII. Do all swimmers learn the sport in childhood?
(1) yes (2) no (3) does not say.

I-G

Modern industry is interested in seeing that its employees have satisfactory recreational opportunities. Recreational facilities as developed by industry serve a number of purposes. They contribute to the happiness and the contentment of the workers. They promote the good health of the worker through the opportunities they offer for wholesome exercise. Moreover, well-founded recreational facilities are productive of a loyalty to the business and may result in a substantial increase in individual efficiency as a result of the stimulation of cooperative effort in work.

- g I. What word in the paragraph above means the same as "encouragement"?
- e II. To what words in the paragraph does the word "they" in line 4 refer?
(1) modern industries (2) recreational opportunities (3) recreational facilities (4) purposes
- f III. Place a cross (X) to mark only the true statements:
(1) Loyalty to the business produces better results in work. (1)
(2) Modern industry need not be concerned with the happiness of its employees. (2)
(3) Exercise has little effect upon health. (3)
(4) Recreational activities have been developed by modern industry. (4)
- a IV. To what do well-founded recreational facilities produce loyalty?
- d V. Is modern industry eager to have its employees keep in good health?
(1) yes (2) no (3) does not say.
- c VI. What is this paragraph discussing?
(1) advantages of recreational conveniences (2) workers and employees (3) recreational habits (4) competitive sports
- b VII. What do recreational facilities do for the worker?
(1) annoy him (2) embarrass him (3) benefit him (4) hinder him.

I-H

An Englishman who is interested in trade writes: "England was the first country in the world to develop the industrial mind. Experience in manufacture and quality gave to our goods a reputation which enabled us for a century to ignore the increasing foreign competition. First Germany, then gradually other neighboring countries developed a special skill in some line of manufacture. They could scarcely hope, without a corps of skilled workmen and without a fixed pride of quality to compete on equal terms with the English. They cut the price by cutting the quality. Then came the new competition which followed the inventiveness of the United States and their development of mass production. The English tradition had been to ignore salesmanship, but time and bitter experience have done much to change that attitude."

- d I. Did the other European countries maintain the same standards as the English?
(1) yes (2) no (3) does not say.
- f II. Place a cross (X) to mark only the true statements:
(1) The English were greatly concerned at first about the production of other countries. (1)
(2) The English had well trained workmen. (2)
(3) The other countries were not much interested in producing quality work. (3)
(4) England continues to follow her old tradition. (4)
- g III. What word in the paragraph means the same as "ability"?
- a IV. What nation was England's first competitor in manufacturing?
- c V. The facts in this paragraph pertain to what?
(1) government (2) education
(3) industry (4) transportation.
- b VI. What was England's original attitude towards salesmanship?
(1) careful consideration (2) training for it (3) inattention (4) partial consideration
- e VII. To whom does the word "they" in line 8 refer in this paragraph?
(1) English (2) other European countries (3) Americans (4) Canadians.

I-I

Unusual weather in Peking means good weather, but no one thinks of apologizing for the consistently bad weather of China's ancient capital. Instead, residents boast of the dust and the heat, and feel distinctly surprised if any other Chinese city pretends to greater unpleasantness of climate than their own. As a matter of fact such pretensions are infrequent, for during the winter in Peking the mercury may drop below the zero mark, and, during the summer it rises so high that most of those who can afford to travel leave the city. Yet Peking is not so uncomfortable as many of her residents would have us believe. The plum and cherry blossoms are luxuriant during the Spring. Purple and white lilacs follow, replaced a few weeks later by wisteria. During the summer, rose bushes bloom in the gardens and parks of the old imperial city. At any season, Peking is a city of many and varied differences, which recent years have tended to multiply rather than diminish.

- f I. Place a cross (X) to mark only the true statements:
(1) The lilacs bloom before the cherry trees. (1)
(2) At one time Peking was the capital city of China. (2)
(3) Peking residents try to persuade one that their climate is good. (3)
(4) Residents of other Chinese cities frequently assert that their climate is worse than that of Peking. (4)
- a II. What may drop below the zero mark?
- e III. The word "own" in line 6, refers to what?
(1) parks (2) city (3) residents
(4) climate.
- c IV. What is the chief thing this paragraph tells about Peking?
(1) its resorts (2) its pride (3) its climate (4) its reputation.
- b V. How often does Peking have good weather?
(1) always (2) infrequently (3) never
(4) half the time.
- d VI. Do hydrangea bushes grow in the parks of Peking?
(1) yes (2) no (3) does not say.
- g VII. What word in the paragraph above means the same as the word "uncommon"?

I-J

Thus the terrors of the night wore on with Balchen at the driving controls, Balchen the impassionate, Balchen the cool one. The fliers will never know just where they wandered, for the sky leaves no tell-tale trail, and no living soul saw them; they saw no stationary objects—just a vast abyss of dripping, soupy gray and black. They may have come within an inch of Eiffel Tower or they may have made a circle over the city or even have gone straight across Paris, but if so, only the gods of the tumbled atmosphere will ever know.

- g* I. The word "person" means the same as what word in the paragraph?
- a* II. Who was driving the airplane mentioned in this paragraph?
- e* III. The word "them" in the fifth line refers to what or whom?
(1) skies (2) planes (3) gods (4) fliers
- c* IV. How must these men have felt?
(1) successful (2) safe (3) confident (4) lost
- b* V. Over what country was this journey made?
(1) England (2) France (3) Russia (4) America
- d* VI. Did the airplane land safely?
(1) yes (2) no (3) does not say.
- f* VII. Place a cross (X) to mark only the true statements:
(1) An airplane leaves a trail in the sky (1)
(2) These fliers knew they were close to Paris. (2)
(3) Many people saw the airplane as it flew near the Eiffel Tower (3)
(4) The wet, black sky had concealed the airplane and the fliers (4)

I-K

The drawbacks of advancing years are so painfully obvious to those who have to shoulder the burden of a long tale of summers, that there is no need to enlarge upon them. The elderly have one compensation, however; they have well-filled storehouses of reminiscences, chests of memories which are the resting place of so many recollections that their owner can, at will, retravel in one second as much of the surface of this globe as it has been his good fortune to visit, and this, too, under the most comfortable conditions imaginable.

- c* I. What is this paragraph discussing?
(1) youth (2) maturity (3) infancy (4) old age
- a* II. With what are the storehouses filled?
- f* III. Place a cross (X) to mark only the true statements:
(1) Old age has many drawbacks. (1)
(2) In memories one can, with ease, travel over many miles (2)
(3) Elderly people have little to think about (3)
(4) Journeys one makes are soon forgotten (4)

- e* IV. The word "them" in line 4 refers to what word in the paragraph?
(1) drawbacks (2) storehouses (3) memories (4) chests
- b* V. What can be remembered under most comfortable conditions?
(1) fortunes (2) burdens (3) travels (4) summers
- d* VI. Do elderly people have some rewards?
(1) yes (2) no (3) does not say.
- g* VII. What word in this paragraph means the same as the word "disadvantage"?

I-L

The Middle Ages saw the introduction of serf labor, a modified form of slavery. Serfs were largely agricultural laborers who worked the manors of the mediaeval lords. They were given many of the rights of freedom but definitely were attached to individual manors, and could move from place to place either temporarily or permanently only under definite restrictions. Liberty could be purchased for a serf or he could be set free by his lord and master. Some serfs gave their lords only one-half of their time, and in general it may be said that serfs did not owe all of their time to their masters but were allowed to work for others. Money so obtained was used for what was known as "cumulation of services."

- c* I. What is the chief thought of this paragraph?
(1) character of serfs (2) type of pioneering (3) abuses of the lords (4) relation between serf and lord.
- f* II. Place a cross (X) to mark only the true statements:
(1) Serf labor was known long before the Middle Ages (1)
(2) Serfs could move about at will. (2)
(3) They could enter the employment of different men (3)
(4) Very few serfs were manufacturers (4)
- g* III. What word in the above paragraph means the same as the word "privilege"?
- a* IV. For whom could freedom be purchased?
- b* V. What kind of life did a serf live?
(1) of limited freedom (2) of absolute slavery (3) of complete freedom (4) of close bondage
- e* VI. The words "their time" in line 11 refer to whose time?
(1) serfs' (2) masters' (3) lords' (4) laborers'
- d* VII. Could a serf become a free man?
(1) yes (2) no (3) does not say.

I-M Thomas R. Marshall, the 28th Vice-President of the United States was born in North Manchester, Indiana, March 14, 1854. He attended Wabash College and was graduated there in 1873. He immediately began to study law and was admitted to the Indiana bar in 1875. He opened a law office in Columbus City and practiced there until 1909 when he gave up law to become governor of Indiana. His administration had been characterized by the enactment of much progressive legislation, with the result that when the National Democratic Convention met in Baltimore in 1912, it nominated Mr. Marshall for Vice-President after having chosen Woodrow Wilson for President. Four years later both he and Mr. Wilson were renominated and reelected. Undoubtedly Mr. Marshall was one of the most popular Vice-Presidents in the history of the office. Upon his retirement from the Vice-Presidency he abandoned politics and took up his residence in Indianapolis. While Mr. Marshall is referred to as a lawyer and public official, the probabilities are that he will be remembered longer as a philosopher with a quaint and delightful turn of humor. He died June 1, 1925, and many insist that his memoirs, published soon after under the title of "A Hoosier Salad," insure him a permanent place in American literature.

- b I. What kind of governor did Mr. Marshall make?
 (1) weak (2) fair (3) ordinary (4) excellent.....
- e II. To what does the word "it" in line 11 refer?
 (1) Baltimore (2) enactment (3) result (4) convention.....
- f III. Place a cross (X) to mark only the true statements:
 (1) Mr. Marshall was twice elected Vice-President..... (1)
 (2) Mr. Marshall's philosophy was of a very serious kind..... (2)
 (3) Mr. Marshall was also an author..... (3)
 (4) Mr. Marshall made a very popular official..... (4)
- c IV. What kind of career did Mr. Marshall follow?
 (1) political (2) business (3) judicial (4) journalistic.....
- a V. In what year did Mr. Marshall graduate from college?.....
- d VI. Did Mr. Marshall ever occupy a federal office?
 (1) yes (2) no (3) does not say.....
- g VII. What word in the paragraph above means the same as the word "instantly"?

I-N Luther Burbank was born in Lancaster, Massachusetts, March 7, 1849. He spent his youth on a farm, securing what formal education he had from the elementary schools and a local academy. But the farm itself gave him chances for self-education for he was a keen observer of all plant life. When he was only twenty-four, he produced the famous Burbank potato by careful selection of seedlings from old varieties. Two years later he moved to Santa Rosa, California, where he established the famous Burbank Experimental Farms and where he lived the rest of his life. Burbank had an original and inventive mind. He was called a plant wizard, but this was not true for there was nothing mysterious about him. His ability grew out of prodigious industry and a sensitive nature which enabled him to detect the very slightest differences between plants. He had no scientific training, in the accepted sense of the term, and frequently discarded thousands of hybrids which he felt held no future utility. He originated no less than sixty new varieties

of plums, ten new commercial berries, and numerous other varieties in almost every plant family. Burbank never made more than a comfortable living from his work, and that was all he cared to make. He died April 11, 1926, America's most famous plant specialist.

- d I. Was Burbank a wealthy man?
 (1) yes (2) no (3) does not say.....
- g II. What word in the above paragraph means the same as the word "crossbreeds"?
- e III. To what does the word "that" in next-to-the-last line refer?
 (1) work (2) new variety (3) comfortable living (4) plant family.....
- f IV. Place a cross (X) to mark only the true statements:
 (1) Burbank was a wizard..... (1)
 (2) He spent the latter part of his life in California..... (2)
 (3) Burbank was a self-made man..... (3)
 (4) He performed his experiments only with fruits..... (4)
- a V. In what year did Luther Burbank die?
- b VI. Where did Burbank spend his boyhood?
 (1) in the city (2) on the sea (3) in the country (4) in a village.....
- c VII. What name would you apply to Mr. Burbank?
 (1) botanist (2) inventor (3) rancher (4) fruit vendor.....
- I-O National Constitution, Amendment to Article II, Section I, Clause 2:
 The electors shall meet in their respective states, and vote by ballot for President and Vice-President, one of whom at least shall not be an inhabitant of the same state with themselves; they shall name in their ballots the person voted for as President, and in distinct ballots the person voted for as Vice-President The person having the greatest number of votes for President shall be President, if such a number be a majority of the whole number of electors appointed.
- f I. Place a cross (X) to mark only the true statements:
 (1) The person receiving the highest number of votes for President always has a majority of the votes..... (1)
 (2) The electors meet in the states where they reside..... (2)
 (3) The ballots for President and Vice-President must be separate..... (3)
 (4) The electors may vote without meeting..... (4)
- b II. How shall the electors vote?
 (1) orally (2) by standing (3) by writing (4) secretly.....
- g III. What word in this paragraph means the same as the word "resident"?
- a IV. Who meets to elect the President and Vice-President?
- e V. The word "their" in line 4 refers to whom?
 (1) Presidents' (2) voters' (3) electors' (4) Vice-Presidents'.....
- d VI. Will the man elected receive the majority of votes?
 (1) yes (2) no (3) does not say.....
- c VII. What kind of instructions are given in this paragraph?
 (1) partial (2) vague (3) precise (4) indifferent.....

A COMPREHENSION TEST IN PARAGRAPH READING.

Students' Name Grade

School Date Age: Years Months

Explanation to Students: This is a test to find out how well you can read. In this test you will find several paragraphs. After you read each paragraph, you will have several different things to do. In order to do these easily and accurately, you will have to read the paragraphs very carefully, but not slowly. Here are some examples of the things you will have to do:

- I. How are you to read the paragraphs that follow?
(1) carelessly (2) slowly (3) carefully (4) hurriedly - - - - -
Which one of the four words above best answers question number "I"? Place the number which goes with it in the blank at the right.
- II. Besides doing these things accurately, how else are you to do them? - - - - -
There are no answers suggested for this question. In the blank at the right, write the one word from the paragraph itself which answers question number "II."
- III. Mark with an "X," in the blanks at the right, those statements which are true according to the paragraph above. Make no marks after the statements which are false.
 1. The paragraph of explanations above states that this test contains only one paragraph (1)
 2. After you read each paragraph of the test, you are to do no more than one thing - - - (2)
 3. This test is to find out how well students can read - - - - - (3)

All questions and all statements are answered by writing a figure or a word in the blanks at the right. Wait until you are given the signal to begin.

II-A

Sometimes it is useful to make a distinction between "metropolitan" and "industrial" England. The former is the southeastern or lowland part, whose center is London. It is the side of England having little coal and little water power and which faces the continent.

- a I. What city is mentioned in this paragraph? (1)
- b II. What does metropolitan England face?
(1) ocean (2) Ireland (3) continent
(4) mountain (2)
- c III. This paragraph is discussing what?
(1) a river (2) a country (3) a climate (4) a city (3)
- d IV. Is a distinction between various parts of England sometimes worthwhile?
(1) yes (2) no (3) does not say.. (4)
- e V. The word "whose" in line 3 refers to what?
(1) western London (2) northern England (3) industrial England
(4) lowland part (1)
- f VI. Place a cross (X) to mark only the true statements:
(1) Southeastern England does not have extensive coal deposits.. (1)
(2) The lowland part of England contains no large cities (2)
(3) The side of England which faces the continent is called "metropolitan" (3)
(4) Little water power is found near London (4)
- g VII. The word "advantageous" has the same meaning as what word in this paragraph?

II-B

Mounted on elephants, we were beating a patch of jungle, when, through the thick undergrowth, I could just see four legs, moving very, very slowly among the reeds, the body above them being invisible. I was so excited that I snatched up the heaviest rifle and fired just above those slow-slouching legs. The big rifle went off with a noise like an air-raid. I was sure I had missed the beast altogether, but when the men came up half an hour later, a huge tiger was lying there stone dead. They at once pronounced him a man-eater, and there was great rejoicing for a man-eating tiger had been taking toll of the villagers in one of the jungle clearings.

- d I. Had the tiger been killing people?
(1) yes (2) no (3) does not say.
- g II. What word in the paragraph means the same as the word "nervous"?
- f III. Place a cross (X) to mark only the true statements:
(1) I was very much excited when I saw the four legs. (1)
(2) The tiger was not a very dangerous one. (2)
(3) There was much rejoicing when the beast was killed. (3)
(4) A small gun was used for the shooting. (4)
- a IV. What was it that made a very loud noise?
- c V. What is this paragraph about?
(1) an attack (2) a capture (3) a hunt (4) a shooting match.
- b VI. How was the tiger moving?
(1) noisily (2) slowly (3) heavily
(4) quickly
- e VII. The word "them" in line 4 refers to what?
(1) days (2) tiger (3) legs (4) reeds

II-C

In planning what you will do when grown, have you ever thought how much your success may depend upon your ability to use arithmetic? No matter what you will do, you will be called upon to make change quickly and accurately, to measure distances, to find the amount of a bill, to keep simple accounts and to plan your expenses so as to keep them within your means. The secret of success in figuring is to form the right habits.

- f I. Place a cross (X) to mark only the true statements:
- (1) Arithmetic has few uses in life. (1)
 - (2) It is important to know how to keep accounts. (2)
 - (3) Forming the right habits is the basis for much success. (3)
 - (4) Studying arithmetic in school is a waste of time. (4)
- g II. The word "correctly" means the same as what word in the paragraph?
- a III. What is it that might depend upon ability to use arithmetic?
- e IV. To what does the word "them" in line 7 refer?
- (1) distances (2) accounts (3) habits
 - (4) expenses.
- b V. What kind of habits must be formed?
- (1) careless (2) lazy (3) good
 - (4) selfish.
- c VI. How much do we use arithmetic?
- (1) a great deal (2) a little (3) some
 - (4) none.
- d VII. Do you use arithmetic in making change?
- (1) yes (2) no (3) does not say.

II-D

Suppose a chemist takes a common clay pipe. In the bowl of the pipe he puts a small lump of soft coal. He seals the top of the bowl with clay and holds it over a lighted gas jet. Presently, if he holds a lighted match near the opening of the pipe stem, he will see a jet of yellow flame. The gases from the coal are burning off. When all of the volatile products have disappeared, he may take the clay off the top of the bowl and he will find inside a piece of ordinary coke. Inside the stem of the pipe will be some black drops of water containing a sticky substance. This substance is coaltar, the marvel of chemistry.

- c I. This paragraph is telling about what?
- (1) a furnace (2) a gas jet (3) an experiment (4) a riddle.
- e II. To what does the word "it" in line 3 refer?
- (1) pipe (2) clay (3) substance
 - (4) coke.
- g III. What word in the paragraph means the same as the word "wonder"?

f IV. Place a cross (X) to mark only the true statements:

- (1) The directions say to close the top of the pipe bowl. (1)
- (2) When the coal is heated gases are given off. (2)
- (3) Coke is the same as coal. (3)
- (4) Coaltar is found in the coke. (4)

a V. What is called the marvel of chemistry?

d VI. Will coal give off gases?

- (1) yes (2) no (3) does not say.

b VII. When the chemist has done what the paragraph suggests, what will he find in the stem of the pipe?

- (1) ashes (2) dust (3) liquid
- (4) flames.

II-E

The proficient player and the mediocre player alike find tennis a fascinating game. It holds the attention of the beginner and of the champion. The reason for this is that both derive the same benefits from the game. Both have fine exercise, both know the thrill and pleasure of play. The less experienced player may get even more exercise than the proficient one because he has to use more muscle and more effort in making a successful stroke. Although the better player experiences pleasure in the regular execution of successful strokes, the less skillful player may experience a greater thrill when one of his balls goes where it should, because it is, to him, a surprise.—*Helen Wills*.

- d I. Does a skilled player get any pleasure out of tennis?
- (1) yes (2) no (3) does not say.
- a II. What kind of player, besides the proficient one, finds tennis a fascinating game?
- g III. What word in the above paragraph means the same as "exertion"?
- b IV. Who receives the most exercise from a tennis game?
- (1) beginner (2) professional (3) veteran (4) champion.
- f V. Place a cross (X) to mark only the true statements:
- (1) Tennis usually is unattractive to beginners. (1)
 - (2) The expert and the amateur receive very different benefits from the game. (2)
 - (3) The mediocre player enjoys his occasional successes. (3)
 - (4) The proficient player is surprised when one of his served balls goes where it should. (4)
- e VI. To what does the word "it" in line 2 refer?
- (1) muscle (2) effort (3) tennis
 - (4) exercise.
- c VII. What kind of activity is this paragraph discussing?
- (1) occupational (2) mental (3) vocational (4) recreational.

II-F

No one who has not sailed in a long ocean race can realize the strain of carrying sail to the limit, of driving night and day, of watching squalls make up to the windward, and wondering if the little ship will go through them without shortening sail. All the time the knowledge that your unseen competitors may be "hanging on" a little longer, or driving a bit harder, persists until it torments you. During the first night the fleet usually scatters, and it is rarely that they see each other again until the boats converge at the finish line. There are, of course, exceptions to this, but it is the rule. Thus each skipper is more or less a law unto himself and must use his best judgment and make his own decisions, irrespective of his competitors.

- f I. Place a cross (X) to mark only the true statements:
- (1) The entrants in an ocean race rarely see one another until the goal line is reached. (1)
 - (2) The skipper must be a man of good judgment. (2)
 - (3) The racing boats always scatter until they cannot see each other. (3)
 - (4) The boats drop anchor at night. (4)
- g II. What word in the paragraph means "come together"?
- d III. Does this ocean race occur annually?
(1) yes (2) no (3) does not say.
- e IV. To what does the word "them" in line 4 refer?
(1) competitors (2) decisions
(3) exceptions (4) squalls
- c V. What feeling is most strongly expressed in this paragraph?
(1) indifference (2) apprehension
(3) jealousy (4) disgust.
- b VI. What kind of boats are spoken of here?
(1) whalers (2) steamships (3) sail boats (4) barges.
- a VII. In this paragraph, who is spoken of as a law unto himself?

II-G

The first problem of the salesman is that of obtaining the interview with the prospective buyer. Securing interviews becomes progressively easier as the salesman establishes contacts, but for initial interviews the problem occasionally becomes very important. Usually he finds that access to buyers can be secured easily, but sometimes the salesman encounters difficult situations. At times trick methods have been used and recommended for securing access to the buyer. Such a method is neither courteous nor effective in the long run. As a general proposition, it may be said that any method of getting access to the buyer which tends to create ill-will and which is not open and above board, is not to be considered good business practice.

- a I. To whom does the salesman want access?
- e II. To whom does the word "he" in line 5 refer?
(1) buyer (2) salesman (3) manufacturer (4) business man.
- b III. How often have trick methods been used to secure interviews?
(1) never (2) always (3) sometimes
(4) frequently.

- c IV. This paragraph is discussing what kind of a problem?
(1) courtesy (2) salesmanship
(3) buying (4) marketing.
- g V. What word in the paragraph above means the same as the word "first"?
- d VI. Generally speaking, are trick methods advisable?
(1) yes (2) no (3) does not say.
- f VII. Place a cross (X) to mark only the true statements:
(1) Trick methods may create ill-will. (1)
(2) The initial interview is the easiest to secure. (2)
(3) The first problem of the salesman is to make a sale. (3)
(4) Some customers are easy to see. (4)

II-H

The streets of Singapore are crowded with a horde of several thousand rickshas, hundreds of snail-like ox carts, a multitude of flivver buses, plenty of thundering trucks, thousands of pedestrians. There are no sidewalks. Add to these the fact that there is no speed limit, and it is small wonder that traffic in hot damp Singapore is becoming so tangled that newspapers are discussing American methods of regulation, such as arterial highways and automatic signal lights. Why, people are asking, should not an arterial highway be made, for example, of Raffles Quay—named, not for the amateur cracksman, but for Sir Stamford Raffles, who began to fortify Britain's crossroads of the sea over a hundred years ago? Perhaps it might be difficult to compel a wild-eyed Chinese bus-driver to come to a full stop before crossing an important street, but might not the diminutive Malay policeman teach him that he who hesitates at a crossing is not lost?

- a I. What is described as thundering?
- g II. What word in the paragraph above means the same as the words "self-regulating"?
- f III. Place a cross (X) to mark only the true statements:
(1) Newspapers are little concerned with the traffic situation in Singapore. (1)
(2) Raffles Quay seems to be a prominent and important street. (2)
(3) American methods of traffic regulation long have been adopted in Singapore. (3)
(4) In Singapore one may travel as fast as he desires. (4)
- e IV. To whom does the word "him" in the last line refer?
(1) Malay policeman (2) traffic officer
(3) Chinese bus-driver (4) Sir Stamford Raffles.
- c V. What does this paragraph present?
(1) a problem (2) a service (3) an achievement (4) a failure.
- d VI. Do they have sidewalks in Singapore?
(1) yes (2) no (3) does not say.
- b VII. What is referred to as hot and damp?
(1) sidewalks (2) streets (3) city
(4) highways.

II-I

Curiosity, it seems, is one of the most important traits of the Chinese character. Many foreigners when they are surrounded by a lot of Chinese all staring at them and following them, at once get alarmed and cry out, "A mob, a mob!" If they are unarmed when this happens, it does not matter, as they can then only keep on walking, and the crowd will gradually break up. The trouble is when they are armed. If an English sailor walking down a Chinese street is followed by a crowd of people pointing at him, he at once thinks, "Ah, I am going to be mobbed." He may do no more than think this, but there have been times when British sailors, not appreciating the fact that the Chinese are merely curious, have hit out with their batons or even threatened to fire. Then the crowd really does get angry, and on all sides the cry "Foreign devil!" is heard. It is not the fault of the sailor any more than of the Chinese; it is purely and simply a case of not knowing what the other is thinking.

- f I. Place a cross (X) to mark only the true statements:
- (1) Some foreigners go unarmed in China. (1)
 - (2) The Chinese are a curious people. (2)
 - (3) The Chinese alone are to blame for such strife in the streets. (3)
 - (4) When surrounded by Chinese, foreigners always are harmed. (4)
- a II. What is a foreigner liable to call a group of Chinese who surround him and stare at him?
- b III. How is a foreigner liable to feel when surrounded by Chinese natives?
- (1) complimented (2) confident
 - (3) afraid (4) secure.
- g IV. What word in the paragraph above means the same as the word "characteristic"?
- c V. What best characterizes the incident related in this paragraph?
- (1) compromise (2) cowardice
 - (3) misunderstanding (4) egotism.
- e VI. To whom does the word "they" in line 5 refer?
- (1) foreigners (2) Chinese (3) mobs
 - (4) English.
- d VII. Do American sailors experience the same trouble as the British when in China?
- (1) yes (2) no (3) does not say.

II-J

Colonel Charles Lindbergh had just completed his Atlantic flight from the United States to Paris, France. Even before Ambassador Herrick had coined his felicitous description of Colonel Lindbergh as a "new American Ambassador to France," it was apparent that his epochal flight had become more than a mere stunt in aviation and had been resolved into an impromptu instrument of promoting better relations with France—a diplomatic "coup" which could not have been more successful if planned years in advance.

- a I. What city was the goal of Colonel Lindbergh's flight?
- e II. The word "which" in line 9 refers to what word in the paragraph?
- (1) flight (2) description (3) stunt
 - (4) coup.

- g III. What word in the paragraph means the same as the word "evident"?
- f IV. Place a cross (X) to mark only the true statements:
- (1) The flight to France was an international event. (1)
 - (2) Mr. Herrick did not accord Colonel Lindbergh any special honor. (2)
 - (3) The story of this flight will go down in history. (3)
 - (4) This flight had been planned for years. (4)
- d V. Was this merely another stunt in aviation?
- (1) yes (2) no (3) does not say.
- c VI. What was expressed by this flight?
- (1) envy (2) good-will (3) ambition
 - (4) aggression.
- b VII. How did Ambassador Herrick receive the flier?
- (1) coldly (2) indifferently (3) cordially (4) dutifully.

II-K

Nothing is stranger to the English newspaper man in New York City than the relationship which exists between politicians and the press. In London it is not generally possible for a journalist to see a politician of the first rank unless on some very exceptional occasion. In America, by contrast, it seems that the newspaper man has access to any politician whatsoever; with them conversation is unrestricted; what is intended for publication is published, what is confidential is withheld. It is taken for granted that a great newspaper, equally with a great politician, is the servant of the public.

- e I. The word "them" in line 7 refers to whom?
- (1) English journalists and politicians
 - (2) American newspapermen and politicians
 - (3) English newspapermen
 - (4) American politicians.
- g II. What word above means the same as the word "unusual"?
- a III. What is considered the servant of the people besides a great politician?
- f IV. Place a cross (X) to mark only the true statements:
- (1) In America, newspapermen publish all that is told to them. (1)
 - (2) Great politicians are considered the servants of the public in America. (2)
 - (3) English politicians and newspapermen do not converse unrestrictedly. (3)
 - (4) London journalists may interview political leaders whenever they wish. (4)
- c V. What is the chief thing this paragraph is discussing?
- (1) politics (2) government (3) newspapers (4) customs.
- b VI. How often does an English journalist see a leading English politician?
- (1) any time (2) frequently (3) never
 - (4) rarely.
- d VII. May an American newspaperman see any American politician?
- (1) yes (2) no (3) does not say.

II-L

Too often America's remarkable economic advance is attributed to things which have very little to do with it. The professional American patriot lays most of it to the glorious excellencies of the federal constitution and our form of government. He assures you that the national prosperity is mainly the outcome of our homage to the doctrine of human equality, which inspires the individual to his highest efforts. But, despite all that has been enshrined to this effect in the literature of patriotism, it is difficult to believe that either the form or scope of American government has had much to do with the economic advance. In all human probability we should have become a rich and prosperous nation under any rational form of government.

- c I. This paragraph contends that the prosperity of our country is attributed to what?
 (1) patriotism (2) form of government (3) federal constitution (4) other causes not named
- a II. What kind of American patriot is mentioned in the paragraph?
- d III. Is America's prosperity always attributed to the right things?
 (1) yes (2) no (3) does not say
- b IV. What does this author think about giving our form of government credit for our prosperity?
 (1) disbelieves it entirely (2) believes it thoroughly (3) does not know (4) finds it hard to believe
- f V. Place a cross (X) to mark only the true statements:
 (1) Patriotic literature honors our form of government (1)
 (2) Certain things have very little to do with our nation's advance (2)
 (3) The author feels America's advance is dependent upon our form of government (3)
 (4) America's economic advance is considered very ordinary (4)
- e VI. To whom does the word "he" in line 5 refer?
 (1) the President (2) the individual (3) professional patriot (4) common citizen
- g VII. What word in the paragraph means the same as "flourishing"?

II-M

General George Washington Goethals was born June 29, 1858, in Brooklyn, New York. His parents were well-to-do immigrants from Holland. While a young man the son George attended the College of the City of New York and later accepted an appointment to West Point, graduating there in 1880. He accepted a position with the Engineering Corps of the Army and at once engaged in engineering work on the Ohio River channel near Cincinnati. Later he worked on the Muscle Shoals canal in the Tennessee River. Throughout the Spanish War period he served with Army Engineers in Porto Rico. Immediately afterwards, he assisted in planning the fortifications around Newport, R. I. In 1907 President Roosevelt called him to take charge of the construction of the Panama Canal. Here he found his greatest work and succeeded not only as an engineer but as an administrator as well. When the Canal was completed in 1914, President Wilson appointed him the first Governor of the Canal Zone. During the period of the World War and until his death, General Goethals remained in engineering service, either with the Army or with civilians. He died January 21, 1928.

- e I. The word "here" in line 15 refers to what words in the paragraph?
 (1) New York (2) Muscle Shoals (3) Panama Canal (4) West Point
- f II. Place a cross (X) to mark only the true statements:
 (1) General Goethals spent his boyhood in Holland (1)
 (2) All of General Goethals' engineering work was done on canals (2)
 (3) General Goethals saw engineering service during two wars (3)
 (4) He achieved his greatest success in constructing the Panama Canal (4)
- b III. What kind of college education did Mr. Goethals receive?
 (1) naval (2) military (3) business (4) law
- g IV. What word in the above paragraph means the same as the word "nominated"?
- c V. What type of man was General Goethals?
 (1) shiftless (2) weak (3) industrious (4) unsuccessful
- a VI. From what country did General Goethals' parents come?
- d VII. Was General Goethals always in the army?
 (1) yes (2) no (3) does not say

II-N

In his Farewell Address, Washington admonished his countrymen to "observe good faith and justice towards all nations; cultivate peace and harmony with all. Religion and morality enjoin this conduct; and can it be that good policy does not equally enjoin it? It will be worthy of a free, enlightened and at no distant period a great nation, to give to mankind the too novel example of a people always guided by an exalted justice and benevolence Can it be that Providence has not connected the permanent happiness of a nation with its virtue? The experiment is recommended by every sentiment which ennobles human nature."

- a I. What is to be observed towards nations besides faith?
- g II. What word in the paragraph means the same as the word "command"?
- d III. Does Washington believe that religion teaches justice?
(1) yes (2) no (3) does not say
- f IV. Place a cross (X) to mark only the true statements:
(1) People always have been guided by justice and benevolence. (1)
(2) Such guidance herein is called an experiment (2)
(3) The permanent happiness of a nation may be connected with its virtue (3)
(4) Washington was not concerned with the future of the people (4)
- b V. How is religion regarded?
(1) with contempt (2) fearfully
(3) with respect (4) indifferently
- c VI. What kind of future policy is suggested for the nation?
(1) just (2) aggressive (3) yielding
(4) belligerent
- e VII. The words "with all" refer to whom?
(1) people (2) citizen (3) nations
(4) mankind

II-O

This is the high enterprise of the new day: To lift everything that concerns our life as a Nation to the light that shines from the hearthfire of every man's conscience and vision of the right. It is inconceivable that we should do this as partisans; it is inconceivable we should do it in ignorance of the facts as they are or in blind haste. We shall restore, not destroy. We shall deal with our economic system as it is and as it may be modified, not as it might be if we had a clean sheet of paper to write upon; and step by step we shall make it what it should be, in the spirit of those who question their own wisdom and seek counsel and knowledge, not shallow self-satisfaction or the excitement of excursions whither they cannot tell. Justice, and only justice, shall always be our motto.—Woodrow Wilson, First Inaugural Address.

- e I. To what does the word "it" in line 8 refer?
(1) conscience (2) ignorance (3) economic system (4) fact
- a II. What is justice always to be?
- c III. What is this paragraph an expression of?
(1) past experiences (2) aims (3) dislikes (4) grievances
- d IV. Did Mr. Wilson propose that the men of the government should seek advice?
(1) yes (2) no (3) does not say
- b V. How is our economic system to be dealt with?
(1) carelessly (2) recklessly (3) cautiously (4) indifferently
- f VI. Mark with a cross (X) only the true statements:
(1) Mr. Wilson was expecting a new life for the Nation (1)
(2) The government was to operate in a partisan manner (2)
(3) The old order of things was to be quickly swept away (3)
(4) Every man has a vision of what is right (4)
- g VII. What word in the paragraph above has the same meaning as the word "project"?