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The Predictive Value of Gains Made in the Areas Covered by the Course of Reading Improvement

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THE PREDICTIVE VALUE OF GAINS MADE IN THE AREAS COVERED BY THE COURSE OF READING IMPROVEMENT

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By

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CHAPTER I

HISTORY AND BACKGROUND

The ability to read English prose with ease and understanding is one mark of an educated American. The desire to follow the thoughts of men through the rich and varied forms of English expression is a further distinquishing evidence of cultivation. Indeed, a reading mastery of English prose is probably the most important single outcome of America schooling.

Recognizing this fact, the student of educational achievement is chagrined to find how little genuine mastery is attained by the average college student. Ignorance of the meaning of words, unfamiliarity with English idiom, incapacity to penetrate the meaning of complex sentences or to grasp the thought of the paragraph, lays upon the college freshman a handicap in study that in many cases is well-nigh insurmountable. To be sure, some students read well, but the distressing thing is the range of competence, which brings the average much below a desirable college standard.

For one hundred years psychologists have investigated problems touching upon reading abilities. Many factors have been suspected of bearing a casual relationship to success or failure in reading. No one single cause has, however, been discovered which will account

for all cases of special ability. At the close of a very thorough study entitled "Children Who Cannot Read" (12) Monroe says that each factor which she investigated showed an overlap between good and poor readers, and that no one factor was present in all cases. In this respect Gates (6) says, "In extreme degree certain ones (defects) alone may quite inhibit learning under ordinary conditions and methods. Several defects, even if each exists in mild form, in the same pupil may likewise produce a reading failure."

Among the factors which have been thought by some writers to be associated with success or failure in reading is the emotional life or personality of the pupil. In 1917 Cyril Burt published his article "The Unstable Child" (1) which has been and still is widely quoted. Burt advances the idea of a "general emotionality," and discusses the characteristics of the unstable, who, he says, have an excess of this emotionality. In speaking of their intellectual characteristics, he describes them as changeable, inconsistent, unsystematic, imaginative, inattentive, unobservant, quick in comprehension, with a good recent memory but poor retention. Moreover, he says, "Many, if not most unstables are backward at school;" they are "readily tired and easily distracted to a fresh subject," and "they fail through lack of perseverance and method."

W. S. Gray, in his Summary of Investigations Relating to Reading, 1925 (7) divides the subject into the following periods: 1850-1905--The Germans and French studied problems related to reading as by-products of their laboratory experiments. They were interested in problems of perception and eye movements. 1906-1915--During this period there was an increasing interest in reading in England and America. Investigators acquired the invaluable idea of studying reading in the classroom, and reading tests were developed. 1916-1924--The early part of this time Gray characterizes as a transition period, culminating in an unprecedented interest in the psychology of reading, in this country. A wide variety of problems was studied, and in looking over the different articles that were published one sees mention of almost everything except comparison of gains. During those years many of the most important facts which are now known about reading were established. Among the less technical points are the scientific verification of the importance of reading for achievement in other studies and for participation in modern social life in general; the greater use and efficiency of silent reading as compared with oral reading; the fact that speed of silent reading may be increased by training even in maturity, without impairing comprehension; the correlation between reading and intelligence, which is positive, although the extent of the

relationship varies with the tests used; and perhaps most important of all, the nature of individual differences in reading ability, wide differences being found within a single grade and overlapping between grades.

Psychologically the situation in reading is not basically different from listening to a speech. The stimuli come in through the eye instead of through the ear, and there is the same possibility, within the limits accepted by common sense, of a fair degree of uniformity in covering the lines. However, in reading there is no outside pressure to determine the rate at which one receives perceptual stimulation. The reader sets his own standards. As a result some persons, when reading, keep their minds active and, by concentrating on the material on hand, proceed fairly regularly line after line. Others show an extreme variability, reading rapidly for a time, then letting their minds wander as they slow down. In still other cases regularity is necessarily impossible because perceptual habits are so poorly developed that frequent re-examination by means of regression movements is necessary before the material is recognized. These regressive movements of the eyes become the best objective index of the degree of regularity in moving ahead while reading.

It has been shown that remedial work can prove very effective in the conquering of the difficulties in

reading. Tests have been developed which point out deficient areas in the reading situation of an individual, and Reading Improvement courses have been set up to correct these irregularities. What further analysis can be made of the results shown when the individual has attempted to improve this reading situation? Is the ability to improve in the remedial reading clinic indicative of ability to do college work? An attempt will be made to partially answer this question in the context of this investigation.

Thompson (15) in his classic, "An Experiment in Remedial Reading," showed that college freshmen as a group do not improve in reading ability after a semester of college work and that poor reading is a potential factor in the failure of freshmen to succeed in the first year of college work. He also showed that eighteen per cent of the Teachers College freshmen class measured had less reading ability than the average child in the 10th grade.

CHAPTER II

STATEMENT OF THE PROBLEM

While employed in the Reading Clinic of the University of Omaha as a student assistant, the author of this report became aware of the fact that certain gains made by students in the course seemed to be in agreement with gains made by the same students in other areas. For example, the Minnesota Speed of Reading Examination, Form B, is given to the students upon the completion of the course; Form A is given to the student as one of the entering examinations for college freshmen. The same procedure is followed in the administering of the Minnesota Comprehension Examination. The Ophthalm-O-Graph is used for the benefit of catching irregularities in eye movements and is a measurement of the speed of reading on those students entering the class of Reading Improvement and is utilized again after approximately 18 one-hour meetings of the class or a three month session. Gains made in these areas showed promise of possibly having a degree of correlation.

This investigation was undertaken to determine if there was any relationship between the gains brought out by the tests after taking the course of Reading Improvement; and if so, to what degree such a relationship existed.

The problem as set up was to correlate the gains made

as measured by the two forms of the Minnesota Speed of Reading and Minnesota Comprehension Examinations. The gains made on the Ophthalm-O-Graph were also used along with the overall point-hour-average. The point-hour-average of each student was computed on a per credit hour basis, regardless of how long the student was enrolled at the University. However, the student must have completed at least one semester's work.

The literature showed that while other studies had been made, there had not been a comparison made between these particular tests, the Ophthalm-O-Graph and point-hour-average at the time this problem was undertaken.

The author felt that though a number of studies have been made concerning the various tests, this particular aspect of the measures had been overlooked, and that possibly the results may be an added asset to the counsellor in education.

Relatively little work has been done in the relationship between gains up to this time. While a great deal of work has been done in the comparison between test scores of the various reading examinations, especially the Minnesota Speed of Reading and the Minnesota Comprehension Examinations, no comparison, to the knowledge of the author of this report, has been made regarding the gains as measured by the two forms of these tests. Nor, has the use of point-hour-average and

Ophthalm-O-Graph gain been employed in reference to the above mentioned tests.

Imus (9) conducted an experiment utilizing the Iowa Test of Silent Reading, to measure gains in comprehension and speed of reading. His findings, when compared to that of the relative percentile rank held by the student, indicated that greater gains in comprehension are to be made by students in the lower initial levels of scholastic aptitude; while the gains in speed of reading more closely adhered to the greater the gain-the higher the percentile rank held by the individual.

Eurich (4) in his research on the differences existing between a control group, i.e. one not receiving training in reading rate, and an experimental group, i.e. one receiving training, the group that received training did not exceed the control group in average gains made on the Minnesota Speed of Reading Examination. To this he states, "This indicates that in spite of a gain on the part of the experimental group of almost 20 percent of its initial score, the improvement cannot be ascribed to the training it received, for the group without training did as well in increasing its reading rate." It seems that some factors must be operative in the ordinary affairs of a freshman at the university that provide a drive for accelerating the speed of reading.

Reed (13) states in "The Influence of Training on

Changes in Variability in Achievement," that

> "Practice nearly always decreases the variability in the achievement of a group of individuals."

CHAPTER III

DESCRIPTION OF THE EXPERIMENT

A. The Instruments

THE MINNESOTA READING EXAMINATION FOR COLLEGE STUDENTS*

The construction of the Minnesota Reading Examination had a very practical inception, for it is an outgrowth of the freshman testing program at the University of Minnesota. For a number of years a general college ability test had been administered to entering students. To supplement this measuring instrument it was thought desirable to devise several tests of more specific and special abilities.

Reading comprehension was considered of sufficient importance in relation to success in college to justify the construction of a special test of this ability. The Minnesota Reading Examination for College Students, Forms A and B, was arranged for this purpose.

The examination consists of two sections. The first is a vocabulary test derived in part from Haggerty's Reading Examination, Sigma X, Forms A and B. (8) An effort was made to determine the difficulty of each item in order from the easiest to the most difficult. The degree of difficulty was determined on the basis of the

*For purposes of simplification this test will be known throughout this report as the Minnesota Comprehension Examination. See Appendix B for further information.

percentage of correct responses made by university freshmen.

Part II consists of ten paragraphs to be read. Following each paragraph is a series of exercises based upon an interpretation of the paragraph. These paragraphs have also been arranged in order of difficulty as determined by the percentage of correct responses to the exercises.

RELIABILITY OF THE TEST

The reliability coefficients that were obtained with the use of the Spearman-Brown correction formula are given in Table I. For Part I, or the vocabulary section of the test, the reliability as found by this method is expressed by a coefficient of .928 ± .006. For Part II, or the paragraph reading section, the coefficient was somewhat lower, .693 ± .025.

TABLE I

Reliability Coefficients for the Minnesota Reading Examination, Form A.

Group	Part I	Part II	Total
High School Seniors.....	.928±.006	.693±.025	.....
College Juniors and Seniors...	.912±.007	.780±.018	.865±.012

Interpreted in the light of generally accepted standards, these values indicate that the reliability for Part I is high, for Part II it is low, but is satisfactory for group measurements, whereas for the total score it is fairly high and fairly adequate for individual measurement.

VALIDITY OF THE TEST

One of the most important aspects of any test is its validity, and yet measuring instruments for which an adequate description of their validity is available are rare. This is true largely because independent criteria of the validity of most tests are extremely difficult to obtain. For this reason authors of tests have found it necessary to rest their case for validity upon the intrinsic nature of the instrument. To some extent this is what has been done in the case of the Minnesota Reading Examination. The second part of this test is so constructed that the examinees first read a passage and then answer questions concerning it, basing their answers upon their interpretations of the reading material. Surely such a process is an unequivocal duplicate of most reading situations in which one desires to glean information. The similarity in the two situations is brought out if one makes a list of those inextricable factors of the test that justify its label as a reading comprehensive exercise.

These may be stated as follows:

1. The test requires a knowledge of how to read.
2. The test requires a knowledge of vocabulary.
3. The test requires an understanding of the author's organization of thought.
4. The same mechanics of reading, such as eye movements, are involved in the test as in the usual reading situation.

5. The test requires of the reader a background of experience to enable him to understand the content of the passage.

6. The test requires the ability to analyze the passage.

It is true that certain factors are present in the test that are somewhat unlike those found in the usual reading situation. Among these are:

1. The lack of motivation found in reading.

2. The establishment of an artificial situation.

3. The brevity of the reading passages and their divorce from the proper setting.

In regard to the first of these factors, it can be stated that even though the motivation is not the same in the test as in the usual situation where one is reading a book, the motivation that is present demands more intense effort, as is true of most tests.

Form B of the Minnesota Reading Examination was constructed several years later than Form A. The extent to which the two forms are comparable is apparent when consulting Eurich (4). The 50th percentile on Form A is 91, whereas for Form B, is 94. Likewise, at other points on the scale the differences are slight.

SCORING

To illustrate the method of scoring one of the questions, one of the test questions is quoted below:

4. Check the true statements:

a. All books which one reads are to be read through carefully.

b. There are some books of which one should read only certain portions.

c. Among the books produced in the world, there are only a few which should be read completely.

d. Unless one reads every word in a book, he cannot grasp its significance or meaning.

This question contains four statements, two of which (b and c) correctly interpret the paragraph preceding them. Using the unit method of scoring, the procedure is to give one point for the entire unit. This means that the checking of the unit must agree exactly with the key. If checked in any other way, the entire unit is regarded as wrong and credit is withheld. This short method restricts the number of points to 71.

THE MINNESOTA SPEED OF READING EXAMINATION*

The measurement of rate of reading is no less intricate than the measurement of comprehension. It is probable that it is inextricably bound up with comprehension. The expression of this fact has been well phrased by Foran. (5)

> "It is evident that the rate at which a pupil reads is conditioned in part by the purpose of his reading, the nature of the subject matter, and his difficulty in understanding it. The last named is due in part to the first two, but also exists independently, since the same type of subject matter may have widely separated degrees of difficulty even though it is read for a constant purpose."

The several attempts to isolate the factor of speed in reading have centered primarily upon elementary school children, largely because of the effort that has been made to control the degree of comprehension by using the simplest type of reading material in the construction of speed of reading tests. When such tests are used on the college level, they are unquestionably fairly valid measures of the rate at which college students read simple material, but certainly they are not measures of the rate at which these students read the type of material ordinarily required of them. In an attempt to provide such a measuring instrument the Minnesota Speed of Reading Test was constructed.

This test consists of a series of paragraphs. Within each paragraph there has been introduced an absurd phrase

*See Appendix C for further information.

that the student is required to cross out.

Two forms of the test are available. Each form contains thirty-eight paragraphs, for which the student is given six minutes of working time. His score on the test is the number of absurdities he has crossed out correctly during the time allowed.

RELIABILITY OF THE TEST

Since two forms of the Minnesota Speed of Reading Test for College Students were constructed, the technique involved in securing an estimate of its reliability was that of calculating the coefficient of correlation between the two forms. This technique, which Kelley (11) claims gives the lower limit of the reliability coefficient, was applied to the scores made by groups ranging from the seventh grade in the University Junior High School to graduate students at the University of Minnesota. The average reliability coefficient for all grades is .85. If the two forms of the test were combined into one, i.e., one form of twelve minutes, the average reliability could be predicted as being .92. (3)

TABLE II

Reliability of the Minnesota Speed of Reading Test

GROUP	r BETWEEN FORMS A AND B
College graduate students	.87±.03
College Juniors and Seniors	.85±.02
Twelfth grade	.84±.03
Eleventh grade	.86±.02
Tenth grade	.81±.03
Ninth grade	.86±.02
Eighth grade	.86±.03
Seventh grade	.85±.04

VALIDITY OF THE TEST

Several criteria for establishing the validity of this speed of reading test were applied. The first involved a classroom situation in which the students were instructed to read silently from their textbooks for a period of fifteen minutes and mark their progress each time a signal was sounded, at regular intervals of thirty seconds. To insure regard for comprehension as well as rate, the students were further instructed that an objective examination would be given them as soon as they finished reading.

Another criterion that was used for estimating the validity of the test under consideration was the Chapman-Cook Speed of Reading Test. In spite of the fact that it was principally designed to measure the rate at which elementary school pupils read, high school and college students have often been measured with it. In the present comparison

TABLE III

Validity of the Minnesota Speed of Reading Test

CRITERION	FORM A	FORM B
Chapman-Cook Speed of Reading Test, Form A.....	.63±.04	.67±.04
Chapman-Cook Speed of Reading Test, Form B.....	.76±.03	.66±.04
Informal reading exercise.....	.39±.07	.63±.05

college juniors are involved. The intercorrelations between the two forms of this test and those of the Minnesota Speed of Reading Test range from .63±.04 to .76±.03. They, too, are given in Table III. Manifestly they indicate that the psychological functions observed with the aid of these two speed tests are fairly similar in nature. An interpretation of these values as supplementary to those obtained with the informal exercises leads one to the conclusion that the Minnesota Speed Test has validity as an instrument to measure the rate at which college students read.

THE OPHTHALM-O-GRAPH (2)

The Ophthalm-O-Graph is a portable, binocular eye-movement camera. The binocular reading-graph, or eye-movement photograph secured in the act of reading, gives objective information concerning eye co-ordination and the maturity of the reading habit. The data so obtained are the symptoms of the reader's efficiency. Generally, a reader is unaware of the way in which his eyes function as they follow the line of print. The fact that he has little voluntary control over this activity increases the validity of the reading-graph as a diagnostic and prognostic test. No other test furnishes objective information concerning the way in which the pupil attacks the printed page.

The Ophthalm-O-Graph, the first portable binocular eye-movement camera, is the culmination of a long period of research in eye-movement photography, which started in 1899 when Dr. Raymond Dodge invented and used the first eye-movement camera at Wesleyan University, Middletown, Connecticut. This experimental work was continued by many research workers in university laboratories, in the United States and elsewhere. The laboratory equipment was so complex, however, that trained technicians were essential in operating it, and the fact that the instruments were not portable made them impractical for universal use.

This binocular camera has a movable film on which is recorded, by means of light reflected from the corneas of the eyes, the coordinated movements of the eyes which occur during the act of reading. From the film records it is possible to obtain, by counting, the number of fixations or pauses in reading a line of print, the number of regressions or backward glances; and, since the film is moved by means of a constant speed motor, it is also possible to determine the rate of reading, which is usually reported in terms of words per minute. The subject is first required to read a practice card of the same size and approximately the same length as the test card.* He is next required to read the test card, which contains exactly 50 words, and to answer a comprehension test** composed of 10 true-false questions.

It is generally assumed that the photographic record of eye movements produces a true picture in an objective manner. It is claimed that the records provide a means for diagnosing difficulty in reading and that groups may be selected for remedial treatment on the basis of such records. It is also claimed that remedial treatment will eradicate the difficulties discovered in this manner and hence improve academic performance.

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* See Appendix D

RELIABILITY AND VALIDITY

The findings of Imus (10) on the reliability and validity of the Ophthalm-O-Graph are to be used entirely in this section of the report.

Reliability

> He states that, "Retesting co-efficients vary from 0.592 to 0.720 on first, second and third trials in fixations, regressions and speed of reading."

Validity

> "When eye movement camera speed, fixation and regression scores are combined in the best possible manner with Iowa speed score, scholastic aptitude test score and academic point score to predict ability in reading as measured by the Iowa comprehension test, the multiple R is obtained as 0.731."

POINT-HOUR RATIO

The academic points earned by the subjects are an aggregate of the total points earned by the student while in attendance at the University of Omaha, divided by the hours of credit. The method of computing these points at the University of Omaha is as follows:

> A student passing a course with grade A will receive four points for each hour credit to which the course entitles him; with grade B, three points for each hour; with grade C, two points; and with grade D, one point.*

---

*Quoted from University of Omaha Handbook.

B. PROCEDURE

The data for this study was taken from case files in the Reading Clinic at the University of Omaha. The data was taken from the first semester 1946 students whose records were complete enough to furnish the necessary information.

Each case was identified only by number, in order to avoid any possibility of identifying a particular person with the study. Two hundred cases were selected in this manner.

The raw scores of these 200 cases were then tabulated and statistical procedures necessary for the investigation carried out. These procedures will be described in the section devoted to results of the experiment.

Most of the cases were of those students who proved deficient in either comprehension or speed in the tests administered by the Bureau of Adult Testing and Counseling at the University of Omaha; hence, directed to take the course by their respective counsellors. However, some of the subjects were those who volunteered because of an interest in the field.

C. THE SAMPLE

As previously stated two hundred subjects were used in this investigation. This group was composed of 144 males and 56 females. The following extracts are from a circular circulated at the beginning of the first semester 1946:

To Faculty Counselors

From Reading Laboratory

Owing to the increased enrollment this semester, it has been necessary to modify the standards for required and recommended reading improvement.

REQUIRED:

All students with scores below 35%ile in both Speed and Comprehension.

All students with comprehension score below 35%ile even though speed score is higher.

All students with speed score below 25%ile when the comprehension score is 35%ile or above.

RECOMMENDED:

All students with scores very close (i.e. 5%iles above 35) to the standards for required.

All students with a high comprehension score and speed score 30 or more %iles below comprehension.

ex. Speed 10%ile Compre. 56%ile
Speed 30%ile Compre. 90%ile

For 1 credit in Applied Arts College only with permission of Instructor. %ile scores must be at or above 50.

CHAPTER IV

RESULTS AND DISCUSSION

A. Correlations

The technique used in computing the correlations used in this report was the correlation coefficient for Large Samples as defined by Snedecor. (14)

This correlation is defined as

$$r = \frac{Sxy}{\sqrt{(Sx^2)(Sy^2)}}$$

in which x and y represent deviation measures from the respective means of the two variables, the S indicated the sum, the s's in the denominator are the standard deviations of the two distributions, and the 2 for the squared number. The numerator term Sxy, implies that the product of each individual's x and y is determined and that all such products are summed algebraically.

In the actual determination of r, a scatter diagram was first prepared for each pair of variables in which the values of raw scores for the gain made, or point-hour-average, were laid out along the X axis in appropriate intervals, and the values for the gain, or point-hour-average, to be correlated on the Y axis. The computations necessary for the arriving at the appropriate r value were then carried out.

TABLE IV

Table IV, which gives us the correlation between the amount of gain as registered after taking the two forms of the Minnesota Comprehension Examination, and the amount of gain as measured by the two photos taken by the Ophthalm-O-Graph machine, has an r value of .0033.* The Ophthalm-O-Graph results were used in this particular report as a basis for computing speed of reading, however, it is questionable whether the apparatus is a reliable measuring device for speed of reading which would account for the low correlation, especially in Table V. The use of this machine in remedial work, such as in the catching of fixations and regressions, and in giving the student some insight to his difficulties, is unquestionably of assistance to the instructor in the Reading Clinic. The r value of .0033 is of course too low to be of significance. Therefore, one might say that a student making a low amount of gain on the two forms of the Minnesota Comprehension Examination, will not necessarily make the same relatively low amount of gain on the Ophthalm-O-Graph machine, or vice-versa. Neither, can it be said that students making high gains on either of the tests will make the same relatively high gains when administered the two forms or photos of the other test.

TABLE IV

MINNESOTA COMPREHENSION GAIN

OPHTHALM-O-GRAPH GAIN

		-15-11	-10 -6	-5 -1	0 +4	+5 +9	+10+14	+15+19	+20+24	+25+29	+30+34	+35+39	+40+44	+45+49	+50+54	+55+59	+60+64	+65+69	fy
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
+470+499	20							1											1
+440+469	19																		0
+410+439	18																		0
+380+409	17																		0
+350+379	16																		0
+320+349	15																		0
+290+319	14																		0
+260+289	13					1	1												2
+230+259	12												1						1
+200+229	11			1															1
+170+199	10				1	1		3	2		1								8
+140+169	9		1	1	2	1	1	3	2	3	2	1	2						19
+110+139	8			1	1	1	2	2	2		3	2	2	1					17
+80+109	7		1	2		5	4	2	5	4	4					1	1		29
+50 +79	6		1	1	5	2	3	2	6	9	2	2	2				1		36
+20 +49	5		3	4	1	3	4	1	2	4	5		1	1					29
-10 +19	4	1		2	2		2	3	4	4	3	2	2					1	26
-40 -11	3		1		1	4		2	1			2	2		1				14
-70 -41	2			1	1	1	2	1	1			1			1				9
-100 -71	1				1		1	1	1	1	1								6
-130-101	0						1				1								2
fx		1	7	13	15	19	21	21	26	25	22	10	12	2	2	1	2	1	N=200

r=.0033

TABLE V

Table V concerns the correlation of gains in speed of reading, as computed on the two forms of the Minnesota Speed of Reading Examination, compared to gains made on the examinations conducted with the use of the Ophthalm-O-Graph. The r value of .0321 was too low to be of statistical significance. One would expect to find, however, in tests supposedly measuring the same trait, a high degree of correlation in as much as both of these tests were used in this report as representatives of speed of reading measurements. The two tests do attack the problem in decidedly different approaches and leaves one with some doubt as to the merits of the Ophthalm-O-Graph as a speed of reading device. Is it not possible to control the output of the student when attempting to test the subject's speed of reading solely by the motivational tone used by the examiner? Only through further research will the substantuating or rejecting of this question be supported or rejected.

TABLE V

MINNESOTA SPEED GAIN

OPHTHALM-O-GRAPH GAIN

		-30-26	-25-21	-20-16	-15-11	-10 -6	-5 -1	0 +4	+5 +9	+10+14	+15+19	+20+24	+25+29	+30+34	+35+39	+40+44	+45+49	+50+54	+55+59	+60+64	+65+69	+70+74	+75+79	fy
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
+470+499	20															1								1
+440+469	19																							0
+410+439	18																							0
+380+409	17																							0
+350+379	16																							0
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+290+319	14																							0
+260+289	13						1						1											2
+230+259	12						1																	1
+200+229	11									1														1
+170+199	10						2	3			1					1			1					8
+140+169	9						1	5	3	1	1	1		4	1			1					1	19
+110+139	8						2	7	2	1	1	2					2							17
+80+109	7			1	1	3	4	3	3	3	2	2		3	1		2		1					29
+50 +79	6	1			1	1	1	5	4	4	2	6		3	4		2		1	1	1			36
+20 +49	5			1	2		4	3	5	4	4	3		1		1		1						29
-10 +19	4			1	1		2	4	5	4		4	2	1					1			1		26
-40 -11	3			1		1	1	3	2		2			1		2				1				14
-70 -41	2							1	3	1	1			1	1								1	9
-100 -71	1						3	1		1					1									6
-130-101	0										1				1									2
fx		1	0	4	4	5	2	2	3	5	2	7	2	0	1	5	1	8	3	1	4	9	5	N=200

fx		1	0	4	4	5	2	2	3	5	2	7	2	0	1	5	1	8	3	1	4	9	5	N=200

r= .0321

TABLE VI

Table VI includes the Point-Hour-Average of the student as opposed to gains made on the Ophthalm-O-Graph, after administering the second test. The correlation of .0248 was too low for significance. On the basis of this research, high gains made on the Ophthalm-O-Graph does not permit one to conclude that the student will make corresponding high marks in academic achievement, nor will the student's standing, relative to the class, in Ophthalm-O-Graph gain, be an indication of what his Point-Hour-Average will be.

TABLE VI

OPHTHALM-O-GRAPH

GAIN

POINT-HOUR-AVERAGE

		-130-101	-100 -71	-70 -41	-40 -11	-10 +19	+20 +49	+50 +79	+80+109	+110+139	+140+169	+170+199	+200+229	+230+259	+260+289	+290+319	+320+349	+350+379	+380+409	+410+439	+440+469	+470+499	fy
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
375-389	21					1			1														2
360-374	20					1																	1
345-359	19							1				1											2
330-314	18				1			1															2
315-329	17							1	2	1		1											5
300-314	16			1	1	3			1	1	1												8
285-299	15			1			3	1		1	2												8
270-284	14			1	1	1	3	2	3	2													13
255-269	13		1	1			3	2	4		1											1	13
240-254	12				3	3	4	4	2			1											17
225-239	11	1				2	1	3	1	3	3				2								16
210-224	10		1				7	7	3	1	3	1											23
195-209	9	1	1		1	1	1	2	4	2	2	1											16
180-194	8				1	3	2		1	1	1												9
165-179	7		1	1	1	4		2		1	2	1											13
150-164	6			1		2		4		2													9
135-149	5		2		2	3		1	3		1												12
120-134	4			1		1	1	2	1														6
105-119	3			1			1	2		1	2												7
090-104	2			1	1		2	1		1	1	2	1										10
075-089	1				1	1	1		2														5
060-074	0				1				1					1									3
fx		2	6	9	14	26	29	36	29	17	19	8	1	1	2	0	0	0	0	0	0	1	N=200

r= .0248

TABLE VII

Table VII concerns the correlation of gains made on the Minnesota Comprehension Examination, as compared to Point-Hour-Average. Although the figure of .1063 approaches significance, it is nevertheless, below the .05 level of confidence. This insignificant finding, however, would appear to lend support to the statement of Imus, which is restated in the chapter of this report devoted to History and Background. Gains made in the area of comprehension, as measured by the two forms of the Minnesota Comprehension Examination, when compared to Point-Hour-Average appear to be an invalid criterion to predict the relative standing of a student in either group.

TABLE VII

MINNESOTA COMPREHENSION GAIN

POINT-HOUR-AVERAGE		-15-11	-10- 6	-5- -1	0 +4	+5 +9	+10+14	+15+19	+20+24	+25+29	+30+34	+35+39	+40+44	+45+49	+50+54	+55+59	+60+64	+65+69	fy
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
375-389	21					1					1								2
360-374	20										1								1
345-359	19							1									1		2
330-344	18					1						1							2
315-329	17					1			2	1					1				5
300-314	16					1	1	3	1		1							1	8
285-299	15		1	1	1			1		1		2	1						8
270-284	14		1		1	2			4	1	3		1						13
255-269	13		1	1			2	1	1	2	1		1		1	1	1		13
240-254	12	1	1	2			1	2	4	2		1	3						17
225-239	11			1	2	1	3	1	1	2	2	1	2						16
210-224	10		2	3	3	2	1	1	2	4	4		1						23
195-209	9				2	3	3	1	2	1	3	1							16
180-194	8		1		1		2	1	3					1					9
165-179	7			2	1	2	1	2	2			2	1						13
150-164	6				1		1		2	2	2			1					9
135-159	5			1		2	3	2	1	1		1	1						12
120-134	4				1		1		1	1	2								6
105-119	3			1		2	1	1		2									7
090-104	2			1	1		1	2		2	2	1							10
075-089	1				1			1		3									5
060-074	0					1		1					1						3
fx		1	7	13	15	19	21	21	26	25	22	10	12	2	2	1	2	1	N-200

r= .1063

TABLE VIII

The highest correlation coefficient obtained was that computed on Table VIII. Gains made in the area of speed of reading as tabulated by the two forms of the Minnesota Speed of Reading Examination correlated with Point-Hour-Average to the .01 level of confidence. This correlation would also appear to lend support to the findings of Imus as stated in Chapter I. The same interpretations might be applied to this table as in Table IX, with perhaps a little more positiveness. One could say that the ability to gain in the area of speed of reading is indicative of academic performance, as measured by the Minnesota Speed of Reading Examination, however, the correlation is too low for use in individual prediction.

TABLE VIII

MINNESOTA SPEED GAIN

POINT-HOUR-AVERAGE

		-30-26	-25-21	-20-16	-15-11	-10 -6	-5 -1	0 +4	+5 +9	+10+14	+15+19	+20+24	+25+29	+30+34	+35+39	+40+44	+45+49	+50+54	+55+59	+60+64	+65+69	+70+74	+75+79	fy
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
375-389	21											1		1										2
360-374	20																		1					1
345-359	19						1												1					2
330-344	18								1					1										2
315-329	17					1					1							1	1	1				5
300-314	16						1		2	1		1				1		1				1		8
285-299	15									4	1	1		1									1	8
270-284	14			1		1	1	2	1	2	1	1	1				2							13
255-269	13				1		2	1	1			2		1	2	1	1		1					13
240-254	12	1				1		2	5		3	3		1		1								17
225-239	11				1		1	3	2	2	2	1	1	2			1							16
210-224	10						3	8	3	3		2			2	1	1							23
195-209	9				1		4	3	2		2	1		1	1						1			16
180-194	8					1	1	1		3	1	1		1										23
165-179	7			1			1	3	2		1	1	1	2						1				16
150-164	6								4	2		2			1									9
135-149	5			1		1	2	3	2					1	1	1								13
120-134	4						1			1	2				2									6
105-119	3						2	2	1								1						1	7
.090-104	2			1	1		1	5		1		1												10
.075-089	1							1	1	1				2										5
.060-074	0						1	1			1													3
fx		1	0	4	4	5	22	35	27	20	15	18	3	14	9	5	6	2	4	2	1	1	2	N=200

r= .2354

Significant to the 01 level of confidence

TABLE IX

Table IX, although the coefficient of .1603 is significant to the .05 level of confidence when reviewing the gains made on the Minnesota Comprehension Examination as compared to the gains made on the Minnesota Speed of Reading Examination, the value is of such a small degree above chance that its value to this research leaves one only with the conclusion that the two gains do correlate to some degree, however the correlation coefficient of .1603 does not give the necessary value for good individual prediction and is certainly to be used in the most guarded manner.

TABLE IX

MINNESOTA COMPREHENSION GAIN

MINNESOTA SPEED GAIN

		-15-11	-10 -6	-5 -1	0 +4	+5 +9	+10+14	+15+19	+20+24	+25+29	+30+34	+35+39	+40+44	+45+49	+50+54	+55+59	+60+64	+65+69	fy
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
+75+79	21					1						1							2
+70+74	20																	1	1
+65+69	19								1										1
+60+64	18					1		1											2
+55+59	17						1		1		1						1		4
+50+54	16				1				1										2
+45+49	15				1			1	1	1	1	1							6
+40+44	14					2		1	1		1								5
+35+39	13		1		2		1		2	1	1				1				9
+30+34	12					2		1	2	3		2	4						14
+25+29	11					1			1			1							3
+20+24	10	1		2	1	1		2	3	1	3	1	1	1		1			18
+15+19	9				1	2	3	2	3	1	1	2							15
+10+14	8		1	4	2	1	1	2	1	2	4		1	1					20
+5 +9	7		1	3	2	3	6		3	5	3		1						27
0 +4	6		1		4	3	3	6	2	6	6		3		1				35
-5 -1	5		1	3	1	2	3	4	1	2	1	2	1				1		22
-10- 6	4						1		2	2									5
-15-11	3		1				2						1						4
-20-16	2			1				1	1	1									4
-25-21	1																		0
-30-26	0		1																1
fx		1	7	13	15	19	21	21	26	25	22	10	12	2		2		1	N=200

r= .1603

Significant to the 05 level of confidence

CHAPTER V

SUMMARY AND CONCLUSIONS

Two hundred samples were selected from the case files of the Reading Clinic at the University of Omaha, using no requirements other than the completion of the course of Reading Improvement. The class selected was that of the first semester 1946. Of the 200 students 144 were men and 56 were women.

Correlations were run between the gains made after the two forms of the Minnesota Reading Comprehension Examination were administered to the students. One form administered to the student upon entering the University, the other form administered upon completion of the course of Reading Improvement. The same procedure was used in tabulating the gains made on the Minnesota Speed of Reading Examination as well as the Ophthalm-O-Graph gains. The Point-Hour-Averages of the students were then obtained, regardless of the number of credit hours carried and completed at the University of Omaha; however, the student must have completed one semester's work.

Using the Large Sample Method as described in G. W. Snedecor's "Statistical Methods," the r value was obtained and then interpreted for .05 and .01 levels of confidence.

Gains made on the Minnesota Speed of Reading Examination correlated with the gains made on the Minnesota

Comprehension Examination to the value of .1603, which is significant to the .05 level of confidence. The interpretation of this would be to say that barring a 1 in 20 chance of this being a mis-sample, a correlation does exist between the gains made on the Minnesota Speed of Reading Examination and the Minnesota Comprehension Examination.

The other significant finding concerned the Point-Hour-Average of the student when compared to the amount of gain exhibited on the two forms of the Minnesota Speed of Reading Examination. The r value appeared as .2354 and was significant to the .01 level of confidence. This interpretation might be applied to this sample.

Barring a 1 in 100 chance of this not being a true sample, a correlation does exist between the academic standing or Point-Hour-Average of the student and the amount of gain made on the Minnesota Speed of Reading Examination, after the student has taken Reading Improvement. This positive correlation would appear to lend support to the findings of Imus, as mentioned in the chapter devoted to History and Background.

Gains made on the Ophthalm-O-Graph, when compared to gains as presented on the Minnesota Comprehension Examination, had an r value of .0033, which did not approach the .05 level of confidence. It would appear

on the basis of this finding that the high or low gains made on one of these tests are no indication that corresponding high or low gains are to be made on the Ophthalm-O-Graph or Minnesota Comprehension Examination, as the case might be.

The other correlations that might be interpreted in this same manner are the Ophthalm-O-Graph gains vs. the Minnesota Speed of Reading Examination gains, Ophthalm-O-Graph gains vs. Point-Hour-Average, and Point-Hour-Average vs. Minnesota Comprehension Examination gains. This latter correlation did approach significance.

Even though positive correlations were found in this research, however, the correlations are too low for use in individual prediction.

CONCLUSIONS

From a study of the correlation coefficients obtained in this experiment, the following conclusions appear to have at least a minimal degree of justification.

1. Although significant findings were reported in this investigation, the correlations were too low for individual forecasting.
2. Gains made in speed of reading as measured by the Ophthalm-O-Graph appear to be of little value in predicting academic standing, the gain the student will make on the Minnesota Speed of Reading Examinations or the Minnesota Comprehension forms.

3. After the students used in this sample, had taken the course of Reading Improvement, the gains they registered on the Minnesota Speed of Reading Examinations correlated significantly with the academic standing of the groups measured.

4. The Oph.thalm-O-Graph speed of reading gains do not correlate significantly with the gains made on the Minnesota Speed of Reading Examination.

5. A significant correlation exists when comparing gains made on the Minnesota Speed of Reading Examination, as to what gains may be expected in the area of comprehension, after the student has taken the course of Reading Improvement.

6. To the author's knowledge, gains in general have not been shown to be a criterion capable of individual prediction, as per the standards of clinical use. The gains registered in this report fall into this category also.

CHAPTER VI

SUGGESTIONS FOR FUTURE RESEARCH

A similiar investigation conducted with a group of entering students, who do not enter the course of Reading Improvement, may bring out significant points of knowledge when compared to the findings of this report.

The lengthening of the course of Reading Improvement could possibly have a bearing on the results obtained. Along with attendance, age, final grade received in the course of Reading Improvement and possibly high school attended.

The use of Ohio State University Psychological Test results as a basis for computing the percentile rank of each student and then comparing the findings to the relative gains made by each student may or may not bring out significant findings.

Visual handicaps and their relationship to gains made, as compared to that of a person with normal vision may prove enlightening.

The comparing of gains made by students to certain interest patterns brought out by Interest Inventories, or the comparing of gains to major studies selected by the student may bring forth a relationship.

The differences existing between the sexes. Do the boys or girls have a more likelihood of showing a larger gain on either of the tests used in this report?

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APPENDIX A

The following data should be interpreted as follows:

EXAMPLE

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
5	45C	64C	12 21	20 52	214 316	Yes	3.08

O.C.A. Ohio State University Psychological Test. This test is administered to entering college freshmen. Although this information has not been used in this report, it has been included for the benefit of future research.

Minn. Minnesota Speed and Comprehension Examination. The first figure given is the score made by the student upon entering the University. The second figure, or 21 and 52, are the scores received by the student on another form of the same test after completion of the course in the Reading Clinic.

Ophthal. Ophthalm-O-Graph, the eye-movement camera used in the Reading Clinic, which measures the speed of reading. The first figure is the score achieved by the student when first entering the course of Reading Improvement, the second figure, or 316, is the speed attained upon completion of the course as measured by the camera. The figures are to be interpreted in words per minute.

Grad. Graduation, a simple Yes or No answer is given to state whether the student completed his college work at the University of Omaha by the date of July 1951.

P.H.Average Point-Hour-Average, the average grade maintained by the student while in the process of doing College work.

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
1	37C	20D	5	5	207	No	2.33
			1	18	480		
2	15D	20D	12	28	570	No	2.42
			45	68	545		
3	53C	56C	7	40	353	No	2.46
			12	66	428		
4	58C	61C	40	25	257	No	1.95
			36	44	445		
5	45C	64C	12	20	214	Yes	3.08
			21	52	316		
6	52C	53C	9	33	292	Yes	2.12
			23	32	214		
7	17D	34C	6	20	200	Yes	2.12
			41	12	353		
8	58C	59C	35	23	257	Yes	2.17
			33	19	286		
9	34C	53C	3	15	316	Yes	2.27
			14	28	340		
10	21D	31C	9	22	273	No	0.90
			4	58	234		
11	2F	2F	5	2	261	No	1.18
			6	9	375		
12	57C	56C	6	60	300	Yes	2.75
			54	64	428		
13	32C	61C	6	38	292	No	0.73
			9	56	375		
14	65C	72C	21	70	324	No	2.09
			90	90	400		
15	10D	25D	15	12	353	No	1.73
			45	39	428		
16	32C	25D	9	25	292	Yes	2.12
			12	41	414		
17	30C	31C	12	45	324	No	2.00
			15	57	461		
18	28C	44C	7	23	364	No	3.12
			77	90	375		

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
19	24D	23D	12	27	257	No	0.91
			36	52	364		
20	42C	59C	15	32	308	No	1.17
			60	48	375		
21	85B	92B	2	41	300	Yes	3.61
			60	73	300		
22	27C	31C	15	11	286	No	2.68
			12	71	375		
23	50C	89B	7	35	308	Yes	2.24
			9	61	218		
24	15D	25D	6	23	273	Yes	2.84
			4	28	308		
25	44C	53C	12	28	231	No	2.80
			40	52	234		
26	26C	25D	6	20	273	No	1.61
			11	46	273		
27	3F	5F	5	9	250	No	2.12
			6	35	273		
28	87B	92B	12	72	316	Yes	2.76
			23	68	273		
29	20D	31C	12	36	286	Yes	2.24
			60	67	387		
30	29C	6D	12	21	292	No	0.93
			14	51	444		
31	21D	36C	35	13	273	No	1.52
			45	43	324		
32	28C	44C	15	9	332	No	3.16
			30	31	428		
33	13D	12D	7	10	245	Yes	2.70
			15	40	279		
34	52C	59C	7	36	231	No	2.45
			23	37	364		
35	9D	10D	1	4	333	No	0.88
			1	54	317		
36	24D	44C	12	39	300	No	2.71
			35	73	428		

No.	O.C.A. Gen.	O.C.A. Road	Minn. Spood	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
37	57C	66C	21 44	40 49	332 400	No	2.30
38	11D	25D	2 9	4 26	353 300	No	1.70
39	14D	8D	5 5	14 27	375 375	No	1.69
40	19D	10D	7 23	34 63	300 353	No	2.44
41	77B	66C	12 36	47 63	240 300	Yes	2.86
42	33C	50C	7 4	27 61	316 340	Yes	2.23
43	59C	55C	12 36	40 71	279 292	Yes	3.80
44	79B	61C	15 65	52 53	545 666	Yes	3.16
45	12D	28C	5 21	4 34	300 387	Yes	2.03
46	30C	41C	7 30	42 76	332 400	No	2.13
47	35C	47C	21 65	25 56	480 522	Yes	2.15
48	44C	61C	3 36	13 21	203 286	No	0.82
49	36C	34C	12 11	19 26	324 428	Yes	2.24
50	21D	23D	5 4	14 27	240 332	Yes	2.00
51	21D	25D	54 65	8 38	273 273	No	1.20
52	59C	72C	15 64	37 63	267 375	Yes	2.61
53	32C	34C	12 45	26 53	273 428	Yes	2.00
54	60C	64C	12 16	24 65	250 375	No	2.82

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
55	79B	97A	35	39	222	No	2.33
			45	68	300		
56	21D	28C	5	28	273	No	2.43
			13	51	273		
57	35C	28C	45	26	273	No	2.41
			87	49	545		
58	49C	47C	6	26	300	No	2.72
			23	47	332		
59	77B	81B	12	26	188	Yes	3.33
			45	65	267		
60	62C	66C	9	34	207	No	2.67
			11	59	375		
61	33C	25D	15	20	300	Yes	2.85
			28	14	332		
62	14D	20D	5	9	176	Yes	2.31
			5	41	300		
63	8D	10D	12	16	245	No	1.16
			13	46	279		
64	97A	95B	9	78	316	No	3.34
			16	84	286		
65	15D	25D	4	30	267	No	1.98
			9	35	300		
66	77B	85B	7	42	324	No	2.92
			23	60	353		
67	75C	72C	15	56	353	No	0.84
			45	85	400		
68	28C	23D	12	8	300	No	1.43
			44	51	316		
69	57C	72C	12	53	286	No	3.03
			64	73	444		
70	47C	44C	12	35	279	No	1.62
			36	58	332		
71	24D	38C	5	32	286	No	1.81
			8	51	300		
72	3F	10D	5	28	324	Yes	2.48
			12	24	428		

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
73	40C	28C	12	37	273	No	2.22
			16	41	444		
74	47C	56C	21	17	286	Yes	2.51
			23	42	353		
75	32C	59C	35	19	461	Yes	2.56
			71	72	400		
76	62C	77B	15	59	300	No	1.93
			30	72	332		
77	17D	20D	9	27	218	No	1.15
			5	55	279		
78	36C	31C	15	35	231	No	1.53
			23	67	286		
79	13D	31C	21	10	286	Yes	2.13
			35	33	353		
80	26C	31C	9	13	300	No	2.10
			14	7	324		
81	51C	50C	12	46	188	Yes	2.30
			21	46	332		
82	75C	79B	15	85	273	Yes	2.30
			17	85	292		
83	41C	64C	71	29	226	Yes	2.54
			45	23	292		
84	50C	66C	7	40	400	No	2.05
			45	74	273		
85	65C	74C	15	53	332	No	3.01
			23	66	267		
86	34C	47C	21	9	279	No	2.03
			6	22	364		
87	19D	12D	15	30	261	No	2.11
			22	55	324		
88	24D	38C	15	30	250	No	1.67
			23	27	250		
89	54C	56C	3	44	353	Yes	2.64
			17	76	267		
90	55C	81B	4	38	332	Yes	2.14
			14	46	428		

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
91	25D	56C	7	37	250	Yes	2.65
			44	37	316		
92	14D	6D	9	24	600	No	1.93
			30	46	600		
93	20D	10D	2	19	332	No	2.75
			12	53	414		
94	74C	72C	12	41	387	No	3.00
			54	46	375		
95	16D	34C	5	10	240	No	1.85
			36	32	387		
96	30C	31C	1	27	200	Yes	2.69
			35	51	300		
97	19D	28C	9	13	364	No	1.57
			16	17	314		
98	36C	50C	21	16	234	No	2.36
			55	56	375		
99	51C	69C	21	44	461	Yes	2.36
			36	57	340		
100	34C	41C	40	31	444	No	1.42
			23	47	416		
101	31C	41C	9	22	375	No	1.60
			21	51	375		
102	60C	89B	9	24	279	No	2.00
			9	54			
103	46C	47C	6	39	207	Yes	2.56
			64	53	300		
104	35C	41C	6	45	316	No	1.96
			11	54	300		
105	44C	47C	40	23	276	No	0.93
			23	49	316		
106	9D	31C	6	26	324	No	1.44
			12	22	414		
107	17D	17D	6	42	387	No	1.48
			45	62	308		
108	26C	41C	29	25	292	Yes	2.49
			23	47	375		

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
108	26C	41C	29	25	292	Yes	2.49
			23	47	375		
109	51C	53C	12	19	353	No	1.92
			23	67	375		
110	72C	74C	12	67	188	Yes	2.62
			54	86	666		
111	5F	15D	3	21	461	No	1.35
			2	31	375		
112	8D	3F	4	7	292	No	0.96
			7	38	428		
113	56C	50C	21	26	194	Yes	3.56
			80	86	273		
114	63B	83B	6	37	353	No	2.84
			9	28	324		
115	26C	41C	6	16	273	No	2.36
			40	59	332		
116	36C	38C	6	39	261	No	1.80
			16	40	273		
117	41C	50C	45	29	250	No	2.53
			65	51	273		
118	20D	23D	3	23	279	No	1.70
			5	46	400		
119	29C	34C	6	46	218	Yes	2.11
			28	43	240		
120	16D	20D	7	12	250	Yes	2.00
			5	36	257		
121	14D	15D	2	5	146	No	0.62
			1	47	387		
122	7D	20D	12	9	257	No	1.47
			2	20	353		
123	10D	15D	15	12	234	No	0.97
			2	26	279		
124	68C	20D	7	55	308	Yes	3.24
			65	76	500		
125	41C	56C	15	28	286	No	1.29
			12	54	324		

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
126	42C	34C	15	35	292	No	2.32
			60	70	428		
127	43C	59C	28	53	300	No	1.53
			64	67	364		
128	26C	41C	35	28	300	No	1.36
			31	64	300		
129	46C	44C	24	44	332	No	3.45
			23	59	522		
130	41C	44C	9	39	300	Yes	2.45
			30	35	324		
131	16D	20D	5	4	200	Yes	2.49
			7	47	188		
132	46C	61C	35	18	250	No	3.06
			30	35	364		
133	46C	81B	12	56	428	Yes	3.11
			23	74	428		
134	22D	34C	7	30	286	Yes	2.27
			36	36	571		
135	33C	44C	5	19	214	No	0.85
			11	44	231		
136	23D	25D	1	16	340	No	1.71
			28	54	332		
137	64C	72C	28	21	261	Yes	2.68
			36	31	300		
138	54C	69C	15	48	226	Yes	2.84
			60	72	286		
139	31C	31C	21	31	375	No	2.93
			54	68	324		
140	90B	83B	15	59	332	No	2.88
			90	96	500		
141	12D	8D	5	15	231	No	2.31
			3	11	353		
142	41C	44C	5	25	316	No	1.44
			45	34	292		
143	39C	47C	15	32	308	No	1.26
			54	61	400		

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
144	6D	8D	7	15	240	Yes	2.00
			30	18	316		
145	30C	25D	7	22	250	No	2.47
			14	36	250		
146	35C	25D	15	21	387	No	2.50
			30	56	375		
147	31C	34C	9	23	250	No	0.84
			23	41	353		
148	22D	34C	4	10	316	No	1.03
			8	27	261		
149	44C	50C	15	34	300	No	2.75
			8	61	353		
150	23D	10D	21	32	316	No	1.92
			11	56	279		
151	96A	97A	21	70	387	No	3.08
			45	87	400		
152	44C	34C	5	30	279	No	1.58
			28	77	414		
153	49C	64C	4	32	257	Yes	2.00
			21	68	375		
154	25D	59C	12	11	324	No	2.59
			36	66	414		
155	29C	50C	12	32	300	No	2.19
			13	60	375		
156	24D	38C	1	11	316	No	1.38
			5	38	316		
157	62C	72C	12	65	292	No	1.17
			90	71	250		
158	35C	66C	6	18	166	No	2.33
			23	35	316		
159	23C	41C	6	11	240	No	1.22
			21	24	188		
160	37C	47C	1	27	176	No	1.19
			8	40	332		
161	87B	83B	15	64	292	No	1.26
			34	85	364		

No.	O.C.A. Cen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
162	22D	23D	7 4	33 32	286 428	No	1.15
163	36C	47C	21 5	34 31	226 240	No	1.74
164	61C	59C	57 61	61 72	364 428	No	2.12
165	14D	12D	1 4	13 21	207 316	No	1.42
166	11D	17D	5 9	18 20	332 400	No	1.04
167	35C	47C	7 17	46 45	286 308	Yes	2.91
168	27C	38C	6 23	48 56	267 461	No	1.71
169	15D	17D	5 14	4 14	245 308	No	1.46
170	45C	44C	12 35	60 45	444 444	No	2.45
171	35C	56C	21 25	58 74	273 375	No	2.27
172	39C	41C	12 35	26 62	308 375	No	1.65
173	72C	64C	28 60	65 72	324 428	No	3.85
174	63C	50C	21 84	51 70	414 400	No	1.71
175	69C	79B	21 31	39 82	308 428	No	2.97
176	31C	41C	15 23	38 59	332 461	No	1.50
177	26C	44C	4 14	14 13	168 387	No	0.97
178	39C	56C	1 3	23 42	273 461	No	0.92
179	47C	31C	15 54	34 57	273 332	No	2.13

No.	O.C.A. Gen.	O.C.A. Head	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
180	64C	72C	6	36	200	No	1.83
			4	30	300		
181	20D	28C	4	18	316	No	1.79
			8	58	480		
182	62C	66C	9	53	353	Yes	2.95
			23	54	500		
183	23D	25D	28	33	308	No	2.24
			36	59	461		
184	86B	97A	5	71	267	No	3.16
			65	80	332		
185	25D	47C	5	5	300	No	1.43
			6	23	461		
186	25D	41C	21	36	190	Yes	2.58
			5	30	214		
187	16D	17D	2	21	300	No	0.69
			21	30	286		
188	1F	1F	1	6	210	Yes	2.03
			5	13	353		
189	4F	12D	5	14	273	No	1.78
			3	31	176		
190	39C	34C	21	49	257	No	1.32
			60	51	308		
191	28C	50C	1	21	267	Yes	2.20
			5	51	300		
192	72C	83B	35	50	332	Yes	2.72
			16	70	428		
193	15C	23D	5	16	375	Yes	2.00
			1	19	292		
194	99A	100A	7	71	261	No	1.91
			16	81	387		
195	46C	64C	64	33	234	No	2.51
			71	73	273		
196	61C	95B	15	25	292	Yes	2.25
			4	66	300		
197	59C	53C	6	46	300	No	1.66
			36	63	461		

No.	O.C.A. Gen.	O.C.A. Read	Minn. Speed	Minn. Comp.	Ophthal. Speed	Ophthal. Grad.	Grade P.H.Average
198	31C	61C	71 91	28 62	231 286	Yes	2.56
199	31C	34C	64 53	35 61	234 332	Yes	3.23
200	67C	69C	9 13	55 50	352 400	No	2.15

APPENDIX B

MINNESOTA READING EXAMINATIONS

for

COLLEGE STUDENTS

FORM A

MELVIN E. HAGGERTY, Ph.D.
Professor of Educational Psychology and Dean of the College of Education, University of Minnesota

ALVIN C. EURICH, Ph.D.
Professor of Education, Stanford University

Name ..... Sex .....

Present address ..... Age .....

High School ..... City ..... State .....

School or College ..... Classification ..... Date .....
Fr., So., Jr., Sr., Gr.

Test	Right	Score
I		
II		
Total		

Directions for Test I

1. On the following pages are some words—each word is written like the word *armor* in the next line, with some other words and phrases in parentheses.
   armor (1. metal, 2. protective covering, 3. soldiers, 4. knights) ..... ( )

2. One of the words in the parentheses is a definition of the first word. You are to draw a line under that word or phrase which is the best definition and then place the number of that word in the parentheses at the right of the page. Below is an example of what you are to do:
   armor (1. metal, 2. protective covering, 3. soldiers, 4. knights) ..... ( )

3. Here are some words for practice. Look at the first word and then look at the words and phrases in the parentheses. Draw a line under the word or phrase which is the best definition of the first word. Place the number of that word in the parentheses at the right. The first two are marked as they should be. Mark the others.
   a. author (1. name, 2. originator, 3. one who writes, 4. scholar) ..... (2)
   b. uncouth (1. cruel, 2. bold, 3. uncultured, 4. robust) ..... (3)
   c. apathy (1. pathetic, 2. cold, 3. indifferent to, 4. dislike) ..... ( )
   d. dispel (1. expend, 2. distrust, 3. to scatter, 4. to relieve) ..... ( )
   e. credulity (1. doubt, 2. criticism, 3. impudence, 4. belief) ..... ( )

4. When the signal "go" is given, turn to page two. Begin with the first word and underline the definitions in order. Be sure to put the number of each definition you underline in the parentheses. Do not skip about on the page. Work rapidly. When the signal "stop" is given, do not make any more marks on the paper.

TEST I

Vocabulary

1. surplus (1. an excess, 2. coins, 3. salaries, 4. surplice) ( ) 1
2. affirm (1. to depict, 2. to declare, 3. to fix, 4. to refuse) ( ) 2
3. eternal (1. beginning, 2. end, 3. space, 4. without end) ( ) 3
4. restrain (1. to exhaust, 2. to check, 3. to exert, 4. to reverse) ( ) 4
5. silhouette (1. a cloth, 2. a garment, 3. a shadow, 4. a streak) ( ) 5
6. habitual (1. unusual, 2. customary, 3. irregular, 4. to practice) ( ) 6
7. immaculate (1. faulty, 2. defiled, 3. spotless, 4. irrelevant) ( ) 7
8. intimate (1. frightened, 2. timid, 3. familiar, 4. to imitate) ( ) 8
9. commemorate (1. certify, 2. celebrate, 3. noted, 4. famous) ( ) 9
10. retort (1. a charge, 2. to speak back, 3. civility, 4. to control) ( ) 10
11. sagacious (1. thoughtless, 2. wise, 3. old, 4. sarcastic) ( ) 11
12. casual (1. incidental, 2. frequently, 3. deathlike, 4. costly) ( ) 12
13. anonymous (1. synonymous, 2. unacquainted, 3. poisonous, 4. nameless) ( ) 13
14. mortal (1. a fragment, 2. subject to death, 3. dangerous, 4. confounded) ( ) 14
15. incredible (1. cruel, 2. improbable, 3. very small, 4. unkind) ( ) 15
16. legacy (1. a gift by will, 2. to delegate, 3. a loan, 4. a legal procedure) ( ) 16
17. ingenuity (1. cleverness, 2. artifice, 3. haste, 4. novelty) ( ) 17
18. stupor (1. stubborn, 2. unyielding, 3. lethargy, 4. robust) ( ) 18
19. indolent (1. weary, 2. busy, 3. lazy, 4. thoughtless) ( ) 19
20. mediocre (1. between, 2. commonplace, 3. extraordinary, 4. meantime) ( ) 20
21. feign (1. weak, 2. to assume, 3. to flinch, 4. invent) ( ) 21
22. hypothesis (1. a supposition, 2. relation, 3. provision, 4. proof) ( ) 22
23. statute (1. a law, 2. a piece of sculpture, 3. a judgment, 4. a book) ( ) 23
24. cudgel (1. a club, 2. to hide, 3. to sneak, 4. injury) ( ) 24
25. morass (1. ocean, 2. a moose, 3. a swamp, 4. a desert) ( ) 25
26. luscious (1. bright, 2. lucid, 3. delicious, 4. sour) ( ) 26
27. gambol (1. frolic, 2. to gamble, 3. to quarrel, 4. noisy) ( ) 27
28. credulous (1. to doubt, 2. credible, 3. positive, 4. easily deceived) ( ) 28
29. concise (1. sharp, 2. to contract, 3. brief, 4. protracted) ( ) 29
30. demote (1. to move away, 2. remote, 3. to reduce, 4. to weaken) ( ) 30
31. morose (1. pale, 2. dark, 3. ill-humored, 4. furious) ( ) 31
32. odious (1. detestable, 2. ill-smelling, 3. pleasant, 4. peculiar) ( ) 32
33. omniscient (1. universal, 2. all-knowing, 3. infinite, 4. ominous) ( ) 33
34. cadence (1. sound, 2. rhythm in music, 3. slow, 4. singing) ( ) 34
35. subtle (1. wicked, 2. stupid, 3. crafty, 4. beneath) ( ) 35
36. unremitting (1. failure to pay, 2. incessant, 3. exacting, 4. unpleasant) ( ) 36
37. ruddy (1. robust, 2. brawny, 3. rough, 4. reddish) ( ) 37
38. nocturnal (1. poisonous, 2. nightly, 3. sentimental, 4. underground) ( ) 38
39. joust (1. to joke, 2. an encounter, 3. to get rid of, 4. to jump) ( ) 39

(Continued on the next page)

40. precocious (1. dangerous, 2. careful, 3. bold, 4. bright) ( ) 40
41. reciprocate (1. to overcome, 2. to avenge, 3. to interchange, 4. to mix) ( ) 41
42. lore (1. song, 2. learning, 3. short stories, 4. poetry) ( ) 42
43. rancor (1. forbearance, 2. a disease, 3. malice, 4. an animal) ( ) 43
44. derisive (1. silly, 2. scornful, 3. troublesome, 4. miserable) ( ) 44
45. asunder (1. pulling, 2. to tear, 3. wide, 4. apart) ( ) 45
46. harbinger (1. a forerunner, 2. a message, 3. a port, 4. a bird) ( ) 46
47. flaunt (1. to ignore, 2. to discard, 3. to display, 4. to hide) ( ) 47
48. querulous (1. inquisitive, 2. complaining, 3. noisy, 4. agreeable) ( ) 48
49. amenable (1. mean, 2. docile, 3. affectionate, 4. related) ( ) 49
50. interim (1. eternity, 2. a period of time, 3. time intervening, 4. beginning) ( ) 50
51. finesse (1. the end, 2. a veneer, 3. delicate skill, 4. fine) ( ) 51
52. coercion (1. conspiracy, 2. strategy, 3. compulsion, 4. attraction) ( ) 52
53. furor (1. rage, 2. noise, 3. a quarrel, 4. a flurry) ( ) 53
54. comely (1. ugly, 2. delicate, 3. beautiful, 4. weak) ( ) 54
55. prolific (1. scarce, 2. fruitful, 3. reckless, 4. profane) ( ) 55
56. trite (1. pointed, 2. new, 3. hackneyed, 4. tried) ( ) 56
57. collusion (1. combination, 2. connivance, 3. conflict, 4. decision) ( ) 57
58. implacable (1. to subdue, 2. relieved, 3. uncertain, 4. unrelenting) ( ) 58
59. delectable (1. eatable, 2. expensive, 3. delicious, 4. fancy) ( ) 59
60. facetious (1. friendly, 2. morose, 3. witty, 4. stupid) ( ) 60
61. fealty (1. fidelity, 2. treason, 3. humility, 4. a tenant) ( ) 61
62. unmitigated (1. unabated, 2. undisturbed, 3. relieved, 4. unfinished) ( ) 62
63. counterpart (1. opposite, 2. duplicate, 3. part of a machine, 4. a coverlet) ( ) 63
64. cavalcade (1. procession on horseback, 2. a ceremony, 3. a caravan, 4. a sliding mass) ( ) 64
65. austere (1. proud, 2. stern, 3. vain, 4. cold) ( ) 65
66. chalice (1. cup, 2. dew, 3. a flower, 4. vase) ( ) 66
67. sumptuous (1. costly, 2. abundant, 3. credulous, 4. cheap) ( ) 67
68. addled (1. confused, 2. added, 3. poisoned, 4. disgusted) ( ) 68
69. gyration (1. gypsy, 2. gymnastics, 3. rotation, 4. vibration) ( ) 69
70. enigma (1. riddle, 2. contrivance, 3. taint, 4. brand) ( ) 70
71. tacit (1. tactful, 2. loud, 3. implied, 4. clever) ( ) 71
72. salience (1. saline, 2. projection, 3. triviality, 4. contempt) ( ) 72
73. paradox (1. seemingly absurd, 2. perfect, 3. old-fashioned, 4. a metaphor) ( ) 73
74. surcease (1. consolation, 2. sorrow, 3. cessation, 4. relief) ( ) 74
75. phlegmatic (1. nervous, 2. sluggish, 3. happy, 4. spasmodic) ( ) 75
76. condiment (1. a relish, 2. a dessert, 3. vegetables, 4. food) ( ) 76
77. bizarre (1. a market place, 2. peculiar, 3. grotesque, 4. imaginative) ( ) 77
78. opulent (1. influential, 2. wealthy, 3. fleshy, 4. lazy) ( ) 78
79. premonitory (1. cliff, 2. giving warning, 3. of money value, 4. hideous) ( ) 79
80. bauble (1. bubble, 2. a showy plaything, 3. idle talk, 4. babble) ( ) 80
81. cryptic (1. uncanny, 2. elusive, 3. hidden, 4. pretentious) ( ) 81

(Turn to the next page)

82. termagant (1. quarrelsome, 2. an arctic bird, 3. a geometric term, 4. disorderly) ( ) 82
83. panegyric (1. an assembly, 2. denunciation, 3. an event, 4. an oration) ( ) 83
84. omnivorous (1. almighty, 2. a carriage, 3. all-devouring, 4. carnivorous) ( ) 84
85. obsequious (1. obscure, 2. yielding, 3. secluded, 4. aloof) ( ) 85
86. nonchalance (1. a noise, 2. echo, 3. indifference, 4. perfunctory) ( ) 86
87. cutlass (1. an ax, 2. a knife, 3. a sword, 4. a spear) ( ) 87
88. hiatus (1. an animal, 2. a calamity, 3. dread, 4. a gap) ( ) 88
89. perfunctory (1. fundamental, 2. formal, 3. mechanical, 4. careful) ( ) 89
90. harpy (1. a musical instrument, 2. a fish, 3. a shrew, 4. a monster) ( ) 90
91. gargoyle (1. oil, 2. a medicine, 3. projecting spout, 4. a vulture) ( ) 91
92. germane (1. German, 2. contagious, 3. relevant, 4. different) ( ) 92
93. specious (1. kind, 2. roomy, 3. plausible, 4. special) ( ) 93
94. animus (1. an animal, 2. hatred, 3. love, 4. nameless) ( ) 94
95. descried (1. described, 2. scolded, 3. discerned, 4. denounced) ( ) 95
96. orison (1. a bird, 2. the East, 3. prayer, 4. a song) ( ) 96
97. limpid (1. sea-animal, 2. transparent, 3. lame, 4. flimsy) ( ) 97
98. anachronism (1. a wrong, 2. form of government, 3. an incongruity, 4. a creed) ( ) 98
99. benison (1. kindness, 2. flesh, 3. blessing, 4. a prayer) ( ) 99
100. genuflection (1. inflection, 2. a reflection, 3. a bending of the knee, 4. a review of the past) ( ) 100

(Do not turn the next page until told to do so)

Directions for Test II

Read these directions in order and do what they say to do.

1. The following pages contain a series of paragraphs with directions. You are to read the paragraphs and do what the directions tell you to do.

2. There are two kinds of directions. The first direction is to *"underline."* Where this direction occurs, you are to draw a line under the correct word or phrase, as in this sample:

   In the center of the road stood an enormous tulip tree, which towered like a giant above all the other trees of the neighborhood, and formed a kind of landmark.

   1. Underline the correct word to complete this sentence:

      The tulip tree was standing in the forest / valley / road / orchard

   "Road" is the correct word, and you should draw a line under the word "road." Do it before you read the next line.

3. The second direction is to *"check."* Where this direction occurs you are to put a check like this √ in front of the correct statement, as in this sample:

   2. Check the true sentence:

      a.—The tulip tree was the only tree in the neighborhood.

      b.—The tulip tree could hardly be seen.

      c.—The tulip tree was taller than the other trees.

4. The first and second statements are clearly false. The third is true. So a check mark should be put in front of the third sentence. Put it in the line between the letter *c* and the first word of the sentence. Do it.

5. On the following pages read each paragraph as you come to it. Then read directions which follow the paragraph and do what the directions tell you.The correct answers to all questions are to be found by reading the paragraphs. Read the paragraphs as often as you need to.

6. When the signal "go" is given turn over the page. Begin with the first paragraph. Go on to the remaining paragraphs in the order given. Do not skip about. Work rapidly, but carefully. When the signal "stop" is given do not make any more marks.

TEST II

Paragraph Reading

I

But the West is not interested in France or in international affairs. They do not seem to know that we have reduced our Army, that Briand has shaken hands with Stresemann, that France is working for peace. In fact, many people think she is still working for war. Your country does not know what France has done and is still doing for peace. If there is a statement of international importance by Briand or Poincaré it appears on the front page of New York and other Eastern newspapers. If it appears at all in Western papers it is hidden away on the last page. That is not the way for nations to understand each other, and it is toward a better understanding that all nations are now working. In France, on the contrary, all classes and all parts of the country are interested in what Mr. Coolidge and Mr. Mellon do and say. Their names are known to all Frenchmen and all Frenchmen are eager to read any and all statements they make.

Underscore the correct word or statement in the parentheses which best completes the following sentences:

1. Many people think (Stresemann, New York, France, Mellon) is still working for war.
2. All nations are now (reducing their tariff, building many airplanes, working toward a better understanding, favoring prohibition).
3. All Frenchmen are eager (to read western newspapers, to shake hands with Stresemann, to read statements by Coolidge, to see Poincaré on the front page).
4. Eastern newspapers are (opposed to war, giving much space to international news, favoring Stresemann's government, campaigning for Mellon).

II

Distance alone lends enchantment to the view that masses of human beings ever co-operate in any complex affair without a central machine. "No one," says Bryce, "can have had some years' experience of the conduct of affairs in a legislature or administration without observing how extremely small is the number of persons by whom the world is governed." He is referring, of course, to affairs of state. To be sure, if you consider all the affairs of mankind the number of people who govern is considerable, but if you take any particular institution, be it a legislature, a party, a trade union, a nationalist government, a factory, or a club, the number of those who govern is a very small percentage of those who are theoretically supposed to govern.

1. Underline the phrase which best completes the following sentence:

   The activities of social groups are controlled by:
   men like Lord Bryce.
   trade unions.
   small groups of members.
   masses of human beings.

2. Underline the phrase which best completes the following sentence:

   The affairs of all mankind:
   require the participation of a particular institution.
   involve a considerable number of persons in governing.
   involve a small percentage of those theoretically supposed to govern.
   are summarized by a legislature.

3. Underline the correct phrase:

   This paragraph displays:
   bitter enmity.
   passionate defense.
   dispassionate description.
   vindictive personalities.

4. Underline the correct phrase required to complete the sentence:

   The author, in the above paragraph, is:
   attacking party bosses.
   attacking Lord Bryce.
   supporting nationalism.
   describing social processes.

III

Crafty men contemn studies, simple men admire them, and wise men use them. For they teach not their own use; but that is a wisdom without them, and above them, won by observation. Read not to contradict and confute; nor to believe and take for granted; nor to find talk and discourse; but to weigh and consider. Some books are to be tasted, others to be swallowed, and some few to be chewed and digested—that is, some books are to be read only in parts, others to be read but not curiously, and some few to be read wholly, and with diligence and attention. Some books also may be read by deputy, and extracts made of them by others; but that would be only in the less important arguments and the meaner sort of books; else distilled books are like common distilled waters, flashy things. Reading maketh a full man, conference a ready man, and writing an exact man.

1. Check the true statements:

   a.—All men read in the same manner and for the same purpose.

   b.—Those men who read simply because they admire books are not of the same calibre as those who read to use them.

   c.—Men who are skilled in particular trades tend to enjoy books.

2. Underline all phrases which correctly complete this sentence:

   A man should read:
   to accept.
   to supply himself with materials for conversation.
   to evaluate ideas.
   to oppose the author's views.

(Continued on the next page)

3. Check the true statements:

a.—All books which one reads are to be read through carefully.

b.—There are some books of which one should only read certain portions.

c.—Among the books produced in the world there are only a few which should be read completely.

d.—Unless one reads every word in a book he cannot grasp its significance or meaning.

4. Underline the phrase which correctly completes this sentence:

Those books which may be read by a substitute and abstracted are those:
which consist of refutations,
which are of an inferior quality.
which present descriptions.

IV

A very interesting character whom I met during the first winter and often conversed with, was Prince Henkel-Donnersmarck. Prince Donnersmarck, who died December, 1916, at the age of eighty-six, was the richest male subject in Germany, the richest subject being Frau von Krupp-Böhlen, the heiress of the Krupp cannon foundry. He was the first governor of Lorraine during the war of 1870 and had had a finger in all of the political and commercial activities of Germany for more than half a century. He told me, on one occasion, that he had advocated exacting a war indemnity of thirty milliards from France after the war of 1870, and said that France could easily pay it—and that that sum or much more should be exacted as an indemnity at the conclusion of the World War in 1914. He said that he had always advocated a protective tariff for agricultural products in Germany as well as encouragement of the German manufacturing interests; that agriculture was necessary to the country in order to provide strong soldiers for war, and manufacturing industries to provide money to pay for the army and navy and their equipment. He made me promise to take his second son to America in order that he might see American life, and the great iron and coal districts of Pennsylvania.

1. Check the true statements:

a.—Prince Donnersmarck was the richest person in Germany.

b.—He was an heir of the Krupp cannon foundry.

c.—He had a son other than the one he wished taken to America.

d.—He believed in a tariff on agricultural products.

2. Underline the fields in which the Prince was active:

politics
engineering
commerce
literature
theology

3. Underline the word which best completes this sentence:

In 1870, the first governor of Lorraine during the war was (thirty-two, forty, forty-six, fifty-four) years old.

4. Check the false statements:

a.—The Prince helped to collect 30 milliards from France.

b.—At the close of the World War he helped to collect an indemnity from France.

c.—He thought that agriculture would provide strong soldiers for war.

V

The lumber industry must continue its recent rapid development because the whole United States is increasingly dependent upon the Pacific Coast as its source of supply. Lumber, lumber, lumber—the great visible resource, the great pride and boast of Oregon and Washington. When I see their forests going up toward heaven in pillars of smoke, as every summer traveler sees them; when I see the land for a thousand miles shrouded in a pall of smoke with every distant view shut out; when I am told by the Seattle Chamber of Commerce that Washington's lumber output doubled between 1908 and 1922, and 65% of it is already gone, I can think only of the pirates in Stevenson's Treasure Island, who ate their breakfast and threw the remaining bacon into the fire, although they were without a ship on an uninhabited island. A leading Oregon banker seemed to regard forest fires only as things which make the air hazy. He blandly remarked: "Burning helps it. The timber is as good at the end of three years burned as unburned, and easier to log. Dead cedar stands indefinitely. If fire follows lumbering immediately, the seed makes a good start after the fire, but if it waits two or three years, seeds start and the fire makes a clean kill."

1. Underscore the correct word or phrase to answer the following questions:

a.—How has the lumber production changed in recent years? Increased, decreased, remained stationary.

b.—How did the banker feel in regard to the present situation of forest fires? Satisfied, dissatisfied, uncertain.

c.—At what season of the year are forest fires most prevalent? Winter, spring, summer, fall.

d.—What percentage of Washington's timber still remains? 35%, 40%, 50%, 75%.

2. Underline the correct phrase required to complete the following sentence most effectively:

The Oregon banker seemed to regard forest fires as:

a.—a distinct detriment to the areas of occurrence.

b.—of no consequence.

c.—distinctly beneficial.

d.—a temporary inconvenience, but without serious consequences.

3. Check the true statements:

a.—The banker underestimated the importance of forest fires.

b.—Dead cedar stands indefinitely, according to the Oregon banker.

c.—The great visible resource of Washington and Oregon is lumber.

d.—Of Washington's lumber, 75% is already gone.

(Turn to the next page)

4. Check the true statements:

a.—The lumber output of Washington doubled between 1908 and 1918.

b.—The lumbermen are compared to pirates.

c.—If fire, following lumbering, waits three years it makes a clean kill of all seedlings.

d.—A pall of smoke from burning forests is common every winter in Washington.

VI

The scholar is denounced as a coward. Humanity falls among thieves, we are told, and the college Levite, the educated Pharisee, pass by on the other side. Slavery undermines the Republic, but the clergy in America are the educated class, and the Church makes itself the bulwark of slavery. Strong drink slays its tens of thousands, but the educated class leaves the gospel of temperance to be preached by the ignorant and the enthusiast, as the English Establishment left the preaching of regeneration to Methodist itinerants in fields and barns. Vast questions cast their shadows upon the future; the just relations of capital and labor; the distribution of land; the towering power of corporate wealth; reform in administrative methods; but the educated class, says the critic, instead of advancing to deal with them promptly, wisely, and courageously, and settling them as morning dissipates the night, without a shock, leaves them to be kindled to fury by demagogues, lifts a panic cry of communism, and sinks paralyzed with terror. It is the old accusation. Erasmus was the great pioneer of modern scholarship. But in the fierce contest of the Reformation Luther denounced him as a time-server and a coward. With the same feeling, Theodore Parker, the spiritual child of Luther, asks of Goethe, "Tell me, what did he ever do for the cause of man?" and when nothing remained for his country but the dread alternative of slavery or civil war, Parker exclaimed sadly of the class to which he belonged, "If our educated men had done their duty, we should not now be in the ghastly condition we bewail."

1. Check the false statements:

a.—Erasmus was a pioneer demagogue.

b.—The educated class deals with problems promptly, wisely, and courageously.

c.—The paragraph is complimentary to the scholar.

d.—The imputation of the above paragraph is not new.

2. Check the true statements:

a.—The Methodist itinerants were to the preaching of regeneration as the educated class is to the preaching of temperance.

b.—All reforms that have been worth while did not come from the educated class.

c.—The preaching of temperance is left to the unsophisticated.

3. Check the false statements:

a.—The demagogue lifts a panic cry of communism.

b.—Luther denounced Goethe as a time-server and a coward.

c.—The church is a defendent of servitude.

VII

Every real pleasure is in one sense disinterested. It is not sought with ulterior motives, and what fills the mind is no calculation, but the image of an object or event, suffused with emotion. A sophisticated consciousness may often take the idea of self as the touchstone of its inclinations; but this self, for the gratification and aggrandizement of which a man may live, is itself only a complex of aims and memories, which once had their direct objects, in which he had taken a spontaneous and ingenuous interest. The substance of selfishness is a mass of unselfishness. There is no reference to the nominal essence called oneself either in one's appetites or in one's natural affections; yet a man absorbed in his meat and drink, in his houses and lands, in his children and dogs, is called selfish because these interests, although natural and instinctive in him, are not shared by others. Even our vanities and follies are disinterested in their way. When a man orders his tomb according to his taste, it is not in the hope of enjoying his residence in it. When moralists deprecate passion and contrast it with reason, they do so, if they are themselves rational, only because passion is so often "guilty" because it works havoc so often in the surrounding world and leaves, among other ruins, "a heart high-sorrowful and cloyed." Were there no danger of such after-effects within and without the sufferer, no passion would be reprehensible. Nature is innocent, and so are all her impulses and moods when taken in isolation; it is only on meeting that they blush.

1. Underline the phrase which completes the statement so that it will conform to the author's views:

The self is considered as:

a.—The composite of an individual's insatiable inclinations.

b.—The sum total of an individual's spontaneous and innate interests.

c.—The intricate array of an individual's aspirations and retained experiences.

d.—The summation of an individual's appetite or natural affections.

2. Check the true statements:

a.—Innate desires are not in and of themselves culpable.

b.—Impulses and moods usually terminate in unselfish activities.

c.—Moralists by their deprecation of passion become emancipated from it.

d.—Much of the self seeking is in essence unselfish.

3. Check the true statements:

a.—Images are always somewhat colored by emotional reactions.

b.—Ulterior motives determine the nature of the suffused emotions.

c.—The implication is that true pleasure is spontaneous.

d.—Pleasure is an indeterminable and uncertain accompaniment of ingenuous interests.

VIII

The story of educational immunities is a long one presenting the sinister side of education, to which we seldom give much attention. Beginning with the

(Continued on the next page)

exemption of the clergy from trial by the civil courts, it developed into the absurd privilege of the so-called "Benefit of Clergy" culminating in the grotesque enactment extending this privilege to steal, or commit murder with impunity, to all who were able to read; persisting in some states in this country, even into recent years; and surviving everywhere in the privileges granted to those who have certain artificial badges of conventional education. It represents in its refined and standardized modern form the prevailing aim and incentive to education. To be more concrete, as regards the more respectable manifestations of this tendency, even those who prize education for its own sake will tell you they are forced to claim the rights and credits in order to gain opportunity to study and to teach. Today, for example, as in the Middle Ages, a higher education grants certain privileges. In many cases, especially in the teaching profession, these have a definite money value. In many cities, for example, a public school teacher who has an academic degree receives on that account a higher salary. In many colleges one is seldom appointed upon the faculty who does not have the Ph.D. degree; and the candidates for these higher degrees esteem them for their money value.

1. Underline all phrases which might satisfactorily complete the sentence:

   The story of immunities in education:
   - begins with the clergy.
   - is associated with law trials.
   - originated with Adam and Eve.
   - is a story of crime.
   - is a delightful lyric.

2. Check the true statements:
   - *a.*—The sinister side of education has received ample publicity.
   - *b.*—A Ph.D. degree has a monetary value.
   - *c.*—Public school teachers are usually artificially educated.
   - *d.*—Immunity is an incentive to education.

3. Underline all terms associated with the privileges of a higher education:
   - money value
   - great wealth
   - benefit of clergy
   - exemption from obedience to law
   - exemption from civil trial

IX

It has lately been said in excuse for his action by one of the European dictators that freedom has failed and force is the only remedy. Making a wider survey of history I should say rather that force has failed and freedom is the only remedy. Nothing has ever been really settled till the consent of all concerned has been obtained. Bismarck's "blood and iron," as a means of settlement of the interior affairs of Germany, has already proved itself not a settlement. It could and did bring about a temporary cessation of conflict, but that is hardly a settlement in the long view of history which lasts scarcely half a century. A settlement, if this is a true historic law, requires a genuine acquiescence, however reluctant, in the arrangements being made. The peace of 1871 was evidently vitiated from the beginning by the German seizure, against French protest, of Alsace-Lorraine. When the German representative and one of the most enlightened representatives of the Allies affixed their signatures to the treaty of 1919 under a similar protest, they were simply giving notice of what soon became evident, that consent to the Treaty of Versailles had not been obtained. The poor wreckage of peace that now encumbers Europe gives sad testimony to the working of the law in this case. The law of free consent has doubtless been disregarded more than it has been obeyed, but it is none the less a law, violation of which has been followed by failure to obtain the advantages that conformity to it would have entailed. If a peace had been drawn up at Versailles to which the consent of Germany had been asked and obtained, the world might now be relatively prosperous and free from dread of the future. The effects of force in history have been temporary and partial and illusory; voluntary acceptance alone has been permanent and adequate and substantial.

1. Check the true statements:
   - *a.*—Force has been somewhat effective in the settlement of political grievances.
   - *b.*—Force is being used less and less in the amelioration of international affairs.
   - *c.*—A broad survey of history shows that all Europeans have considered force as the only remedy for strained diplomatic relations.
   - *d.*—The law of free consent has been obeyed in certain instances.

2. Check the true statements:
   - *a.*—The peace of 1871 was similar in its implications to the Treaty of Versailles.
   - *b.*—The halo about a treaty to which all parties involved consent is not justified by the facts of history.
   - *c.*—The present European situation is proof of the fact that the law of free consent does work.
   - *d.*—A treaty which is voluntarily accepted is a partial illusion.

3. Check the true statements:
   - *a.*—Had the Allies obtained German consent to the Treaty of Versailles, all the international grievances since 1919 could have been averted.
   - *b.*—The League of Nations is in a position to put into effect the law of free consent.
   - *c.*—Considering the attitude of Germany during the war it would have been practically impossible to draw up a treaty to which its representatives would have consented without protest.
   - *d.*—Under the excitement of drawing up the Treaty of Versailles, there were some individuals who recognized the meaning of disregarding the law of free consent.

X

The final issue to which the Faustian wisdom tends—though it is only in its highest moments that it has seen it—is the dissolution of all knowledge into a vast system of morphological relationships.

(Turn to the next page)

Dynamics and Analysis are in respect of meaning, form, language, and substance, identical with Romanesque ornament, Gothic cathedrals, Christian-German dogma and the dynastic state, one and the same world-feeling speaks in all of them. They were born with, and they aged with the Faustian culture, and they present that culture in the world of day and space as a historical drama. The uniting of the several scientific aspects into one will bear all the marks of the great art of counterpoint. An infinitesimal music of the boundless world space—that is the deep unresting longing of this soul, as the orderly statuesque and Euclidean Cosmos was the satisfaction of the classical. That—formulated by a logical necessity of Faustian reason as a dynamic-imperative causality, then developed into a dictatorial, hard-working, world transforming science—is the grand legacy of the Faustian soul to the souls of culture yet to be, a bequest of immensely transcendent forms that the heirs will possibly ignore. And then, weary after its striving, the western science returns to its spiritual home.

1. Check the true statements:
   - *a.*—Classical philosophy postulated a well-regulated and systematic universe.
   - *b.*—The classical emphasis upon the harmony of the sciences introduced the dictatorial aspects.
   - *c.*—Romanesque ornaments are free from any of the distinguishing features of Faustian culture.
2. Check the true statements:
   - *a.*—Faustian wisdom is a vestige of Gothic cathedrals.
   - *b.*—Faustian wisdom, at its best, seeks to dissimulate all knowledge.
   - *c.*—One of the most noble aspects of the Faustian philosophy is its categorical tendencies.
   - *d.*—The dissolution of all knowledge is a function of Dynamics.
3. Check the true statements:
   - *a.*—Dynamics and Analysis are identical with Faustian culture.
   - *b.*—The presentation of Faustian culture is the common bond of Dynamics and Analysis and Christian-German dogma.
   - *c.*—Romanesque ornaments and the dynastic state possess similar functions toward Faustian culture.
   - *d.*—Faustian culture is presented to the modern world as a dynamic substance.

APPENDIX C

MINNESOTA SPEED OF READING TEST
FOR
COLLEGE STUDENTS

FORM A

ALVIN C. EURICH, Ph.D.
Professor of Education, Stanford University

Name_____ Sex_____

Present Address_____ Age_____

High School_____ City_____ State_____

College Classification_____ Date_____

DIRECTIONS

Read the directions and do what they say.

1. A number of selected paragraphs are printed within this folder. Each paragraph is printed as the example below:

   The Chinese appear to have manufactured paper from a very remote period—possibly as early as the second century B.C. Sometime during the eighth century A.D. the Arabs who inhabited Chicago, Illinois, became acquainted with the process through Chinese war prisoners.

2. You are to read the paragraph. In so doing you will note that an absurd statement has been inserted which has no relation to the meaning of the rest of the paragraph.

3. You are to draw a line through the absurd statement or phrase. In the paragraph above, the absurd statement is: "who inhabited Chicago, Illinois." Draw a line through this entire phrase. Do it! The paragraph now reads as it should.

4. On the following pages read each paragraph as you come to it. As soon as you have found the absurd phrase or statement, cross it out and go on to the next paragraph.

5. When the signal "go" is given *and not before* turn over the page. Begin with the first paragraph. Go on to the remaining paragraphs in the order given. Do not skip about. This is a test of your rate of reading, therefore work rapidly but carefully. When the signal "stop" is given do not make any more marks on the paper.

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1. The older the school pupil becomes, the stronger is the force of those economic and social influences which ultimately will remove him from the school. Up to the age of fourteen the public schools hold the pupils well aided by the compulsory attendance laws under the guidance of the grocery clerk.

2. The principles underlying modern education may be said to have had their beginning in the eighteenth century reforms of Rousseau, Pestalozzi, Froebel, and Herbart. At this time the schools were controlled by the church, which also to a very large extent dominated the state under the control of the professional baseball league.

3. The term "executive" is used to designate those officers of the government whose business it is to carry out the law of the land. In the narrower sense it often signifies merely the supreme head of the administration who always serves as a janitor, or the same person together with his chief subordinates.

4. The man who succeeds must think, and the man who thinks must get his thought clear in his own mind. To define his thought clearly to himself, he must put it accurately into words—language. To use language accurately, he must learn what words, which are turned out in a sawmill, mean.

5. Recent studies have shown that feeble-mindedness is one of the important causes of permanent delinquency. Goddard has shown that mental defect is hereditary in perhaps sixty-five to seventy-five per cent of the cases. If his estimate is correct, feeble-mindedness which results from indigestion is largely an hereditary factor.

6. The life of a dry cell battery is not fixed but depends on the circuit in which it is used. Oftentimes dry cells which are merely standing on a shelf for a year without being used at all will dry up because the flowers have not been watered and become practically useless.

7. The life ambition of Emma Hart Willard was to organize a system of education for women which should possess the same permanency, uniformity, and respectability as educational institutions for men, and yet should so differ as to be adapted under the able leadership of Julius Caesar to the needs of women.

8. During the unprecedented scientific development of the past half century, there have frequently arisen certain technical tendencies on the part of men of science which have caused many non-scientific persons to misunderstand the real nature of scientific truth which is found in abundance in the coal mines of the East.

9. One of the most natural ways of thinking is that in which, as soon as one makes an assertion, he recalls individual instances in which it has proved true; in other words, examples of the fact asserted. Therefore, this method of building up thought by using steel beams is common.

10. Prolonged studies of the origin of very gifted children in this country have been confined largely to cities. They have shown repeatedly that the great majority of these children originate in families where the father is a professional man, an African bushman, or an owner or executive in business.

11. Constant pressure is being put upon pupils to continue in school for full time after completing the elementary school curriculum. With a view to facilitating the transition from the elementary to the high school, the junior high school which is adapted to the feeble-minded is being widely established.

12. Perhaps it might seem to be claiming too much to insist upon certain points of similarity between us and the Greeks of old. The points of dissimilarity are only too evident to most of us and yet there is a likeness in our ability to run automobiles as well as an unlikeness.

13. Rome's institutions as she developed them remained those of a city. It was difficult to apply them to the vast territory she attempted to govern with their aid. They were clumsy institutions which functioned irregularly and proved a system for the construction of airplanes that could not and did not last.

14. With the widespread extension of good roads has come a very rapid growth of transportation by motor trucks and motor busses which usually pay only a small license fee for the right to use private lounging rooms, and which derive profit from the carrying of freight and passengers.

15. Among all the sorrows of this war there is one joy for us in it: that it has made us brothers with the French as no two nations have been brothers before. After ages of conflict there has come to us by parcel post a kind of a millennium of friendship.

16. The English colonies on the Atlantic seaboard, occupied with their own problems of developing their agricultural resources, building up their commerce, defending their precious rights of self-government against king and proprietor, were slow to realize the serious meaning of the French power generated by Niagara Falls which was gradually surrounding them.

17. Early types of vocational education were especially strong in the practical aspects of the subject and weak in the more abstract phases. The home, farm, and shop have always provided an abundance of practical tasks and examples whereby to teach boys and girls who

were three months old the simple vocational arts.

18. When commerce advanced, industry did not stand still. To satisfy the demands of a growing number of customers all over the world production must be increased. But that could not be done without changes both in the method of manufacture which depended upon the peanut crop and its organization.

19. Notwithstanding Spanish indifference and monastic opposition, the Filipinos have opened elementary schools in almost every village. They have also founded high schools and university colleges throughout the archipelago, and a university and two large normal schools for janitors and waitresses, and five large schools for women in Manila.

20. The compulsory school age is being extended quite generally throughout our country. In many sections a boy or girl must be in school for full time until fourteen years of age, and part time from fourteen to sixteen unless he is president of the United States, or even eighteen years of age.

21. It is generally held among historians that the first appearance of our cultural ancestors upon the soil of Western Europe occurred about 2000 B.C. At that time a group of tribes, admitting kinship to common origin, came down out of the grassland of central Asia by airplane and overran the peninsula.

22. Of all important countries, France possesses the most highly centralized form of educational control and administration. In that country, the entire system of public education is under the charge of the Minister of Public Instruction and Fine Arts who is always of Mexican descent and of his subordinate officials or bureaus.

23. A simple and convenient starting point may be found in the statement that political science deals with government. The word "government," used in its widest sense, rests on the fundamental idea of control and obedience; it implies authority of the National Cash Register Company, and a submission to that authority.

24. The American democracy depends for its existence and success on the social consciousness and social co-operation of its citizens. Unless the school can make a significant contribution to the development of social consciousness and social co-operation among plants and animals, it must fail in one of its most important purposes.

25. Until the world learns what it means to pull together with other people, we shall never have the realization of the real patriot. And we will never learn to pull together as long as we are taught that one of us who floats in air is worth half a dozen others.

26. The condition of the child's health exercises considerable influence on his efficiency. Like their parents and teachers, children are less apt to be amiable and self-controlled when they are fatigued; and now the best schools and homes take every precaution in spreading scarlet fever germs to avoid unnecessary strain.

27. It is the specific purpose of this article to attempt to estimate what America's fundamental ideas about international co-operation are likely to be, and to consider how far under the direct auspices of the woman's clubs they are likely to be compatible with the views and necessities of Europe.

28. Jefferson was the most finished scholar of Revolutionary times, and he was always interested in education. He spent the later years of his life trying to improve the schools of Virginia which were organized after his death, and helping to establish the University of Virginia.

29. During the past two decades the methods of teaching in our schools have changed rapidly and profoundly. The critics of our schools think that our newer methods give children too much freedom, and especially that they substitute the use of the hand which should be cut off for the exercise of the brain.

30. In Ancient Greece the first lessons taught were the use of the instrument and the simple chants of the religious service. As soon as the pupil knew how to play, the master taught him to render the works of the great lyric poets of Greece who were reared in America.

31. Much of the Old Testament written in a Semitic language is poetry to compare with the Homeric poems, which are in the Indo-European languages. It further contains an account of the Hebrews and their relations with other states, an exact duplicate of the constitution of the United States, and a system of ritual.

32. Whatever the point of view from which we consider the study of composition, we should find its purpose always the same: to discipline us to think. And this purpose is indisputably one of the great purposes, if not the one great purpose, of carrying on warfare of education.

33. The key to any analysis of aims in education is to be found in an analysis of the activities of life in which people should or do engage. The aim of secondary education, therefore, must be interpreted in terms of the activities in which individuals ninety years old participate.

34. Recent attempts to secure a certain amount of standardization in college admission requirements have led to substantial agreement in defining those requirements in terms of "units." A unit represents a year's study in any subject

in a secondary school in which German alone is taught, constituting approximately a quarter of a full year's work.

35. There are two forces at work which determine the form of social organization, one set of forces tending to bind together the various parts of society and to unify it, the other set tending to separate the various parts of society which consists of the sun and the moon and to disrupt it.

36. Switzerland with ten million acres of mountains has cultivated rather efficiently the three and five-tenths per cent that seemed worth cultivating. She has been importing some food, but having little to exchange for food, excessive population increase among microbes and insects on the products of other soils was denied her.

37. It happened in the eighteenth century that there were several remarkably intelligent monarchs—Frederick II of Prussia, Catherine the Great of Russia, Charles III of Spain, Emperor Joseph II and his brother Leopold, Grand Duke of California. These rulers read the works of reformers and planned many reforms for bettering existing conditions.

38. Much of the thinking we do consists in accumulating proof of things we have asserted or believe. Whenever we present a fact for the express purpose of showing the truth of something else—that this something else is so—we use the method of development of kodak films by presenting proof.

Directions for Administering the Minnesota Speed of Reading Test

1. Before the tests are given to the pupils, the examiner says: "The purpose of this test is to measure the rate at which you read. Do not turn any of the pages nor write on the test until further directions are given."
2. Pass the tests to the pupils.
3. After each pupil is supplied with a copy of the test say: "Write your name in the space provided. Be sure to write your last name first, then your first name and then your middle name. Fill in the remaining spaces as indicated." (Allow time for completing this task.) "Now read the directions for this test and do what they tell you. Do not turn the page until you are given the signal."
4. Allow ample time for the reading of the directions.
5. "Are there any questions concerning the directions?"
6. Answer such questions as may be asked.
7. "You will be given six minutes for this test. Work rapidly and carefully until the signal 'stop' is given."
8. "Ready! Go!" (Allow exactly 6 minutes.)
9. "Stop!"
10. Collect all tests immediately.

Directions for Scoring the Minnesota Speed of Reading Test

1. Credit of one point is given for each paragraph that is correct.
2. A paragraph is considered correct if the absurd phrase, as given in the key, is crossed out.
3. A paragraph is considered correct if any part of the phrase which should be crossed out is crossed out by the student, providing the mark does not extend beyond the phrase.
4. A paragraph is considered wrong if more than the phrase is crossed out. If, however, the pencil mark has extended through part of the word which follows the phrase or starts in the word which precedes the phrase, the paragraph is counted correct. In other words this is considered as a slip of the pencil.

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Norms for Minnesota Speed of Reading Test

Form A

The norms given below have been obtained by giving Form A of the Minnesota Speed of Reading Test to a group of college sophomores and juniors at the University of Minnesota. The percentile scores may be defined as the percent below plus one-half of those reaching a given score. For example, the score of 30 has a percentile rank of 94 which indicates that the number of cases falling below the score of 30 plus one-half of those at this score equals approximately 94% of the group tested. The scale values are in terms of tenths of standard deviations with an arbitrary zero point located at five standard deviations below the median and the median point represented by 50.0. Since the score of 14 has a scale value of 40.0, it is exactly one standard deviation below the median. The chief advantage of these scale values lies in the fact that the units are equal at all points of the scale.

Raw Score	Percentiles	Scale Values	Raw Scores	Percentiles	Scale Values
36	99.70	77.5	18	39.88	47.5
35	99.41	75.0	17	34.52	46.0
34	98.81	72.5	16	27.68	44.0
33	97.62	70.0	15	21.43	42.0
32	96.43	68.0	14	15.48	40.0
31	95.24	66.5	13	11.90	38.0
30	94.05	66.0	12	9.23	37.0
29	92.86	64.5	11	6.55	35.0
28	91.67	64.0	10	5.95	34.5

Raw Score	Percentiles	Scale Values	Raw Scores	Percentiles	Scale Values
27	89.09	62.0	9	5.36	34.0
26	86.61	61.0	8	4.76	33.0
25	84.23	60.0	7	4.17	32.5
24	80.66	58.5	6	3.27	31.5
23	76.79	57.5	5	2.08	29.5
22	71.43	55.5	4	1.19	27.5
21	63.69	53.5	3	1.19	27.5
20	53.87	51.0	2	.89	26.0
19	44.94	48.5	1	.30	22.5

Grade Norms for the Minnesota Speed of Reading Test

Form A

Grade	Md.	Q3	Q1
College Graduates	23.5	28.3	18.5
College Juniors	22.6	26.1	19.2
12th Grade	18.4	20.8	14.1

Norms for Minnesota Speed of Reading Test

Form B

The norms for Form B of the Minnesota Speed of Reading Test are interpreted in the same manner as those for Form A.

Raw Scores	Percentiles	Scale Values	Raw Scores	Percentiles	Scale Values
37	99.64	77.0	21	60.07	52.5
36	98.92	73.0	20	53.96	51.0
35	98.56	72.0	19	44.60	48.5
34	98.20	71.0	18	36.33	46.5
33	97.48	69.5	17	30.58	45.0
32	96.40	68.0	16	23.02	42.5
31	95.32	67.0	15	16.55	40.5
30	94.60	66.0	14	13.67	39.0
29	94.24	66.0	13	11.51	38.0
28	93.16	65.0	12	8.63	36.5
27	91.73	64.0	11	5.76	34.0
26	90.65	63.0	10	3.96	32.0
25	89.93	62.5	9	2.52	30.5
24	79.86	58.5	8	1.08	27.0
23	72.30	56.0	7	.72	25.5
22	65.11	54.0	6	.36	23.0

Grade Norms for the Minnesota Speed of Reading Test

Form B

Grade	Md.	Q3	Q1
College Graduates	25.3	30.9	20.4
College Juniors	26.8	30.5	23.9
12th Grade	21.0	23.6	17.6

Scoring key has been omitted.

APPENDIX D

THE OPHTHALM-O-GRAPH

The following is one of the Ophthalm-O-Graph tests used in the Reading Clinic with its appropriate comprehension examination, which the student answers after reading the selection:

D

Jefferson advocated westward expansion and in 1803 the Louisiana territory was purchased from France for fifteen million dollars. A year later Jefferson sent out a party of forty-five men to explore the new land. They covered on foot more than eight thousand miles in two and one-half years. They were the first white men in this area. This land doubled the size of the nation.

(Ring the correct answer. Hand this sheet to the attendant.)

1.	The Louisana territory was purchased in 1803.	Yes	No
2.	This territory was purchased from Spain.	Yes	No
3.	This land cost fifty million dollars.	Yes	No
4.	A part of forty-five men explored the new territory.	Yes	No
5.	The party went on horseback.	Yes	No
6.	Jackson was elected President for a second time.	Yes	No
7.	The new territory doubled the size of the nation.	Yes	No
8.	The first white men to visit the Louisiana territory were sent by Jefferson.	Yes	No
9.	They covered more than eighty thousand miles.	Yes	No
10.	The exploring party sepnt two and one-half years in the Louisiana territory.	Yes	No

	Before	After
Number of fixations per 100 words.		
Number of regressions per 100 words.		
Reading Rate -- words per minute		
Comprehension score.		