

THE UNIVERSITY OF MINNESOTA

GRADUATE SCHOOL

Report

of

Committee on Examination

This is to certify that we the undersigned, as a committee of the Graduate School, have given Mr. Glenn Farrand Varner final oral examination for the degree of Master of Arts . We recommend that the degree of Master of Arts be conferred upon the candidate.

Minneapolis, Minnesota

March 31 1921

W. E. Haggerty
Chairman

J. M. [unclear]

[unclear]

W. S. Miller

William S. Foster

Teachers' Estimates of Pupils' Intelligence

A Study of the Ability of Teachers
to Estimate the Intelligence of their Pupils,
The Causes of Their Misjudgments, and
A Set of Directions to Aid Teachers in
Estimating more Accurately

A Thesis

Submitted to the Faculty of the

Graduate School

of the

University of Minnesota

In Partial Fulfillment of the Requirements

for the

Master of Arts

degree

Glenn Varner

June

1922

MOM
8V43

TEACHERS' ESTIMATES OF PUPILS' INTELLIGENCE.

A STUDY

OF

THE ABILITY OF TEACHERS

TO ESTIMATE THE INTELLIGENCE OF THEIR PUPILS,

THE CAUSES OF THEIR MISJUDGMENTS,

AND

A SET OF DIRECTIONS TO AID TEACHERS

IN ESTIMATING MORE ACCURATELY.

UNIVERSITY OF
MINNESOTA
LIBRARY

316032

JUL 3 '24 B.d. u. of m.

CONTENTS

Chapter	Page
I. STATEMENT OF PROBLEM.	1
II. REVIEW OF THE LITERATURE.	3
A. Methods of rating teachers.	3
B. Method used in the United States Army to rate officers.	7
C. General methods for the rating of school children.	9
D. Methods of rating the intelligence of school children and their results.	11
E. Miscellaneous literature.	14
F. Summary of findings in the field of literature.	16
III. PRELIMINARY STUDY.	20
A. Purpose	20
B. Materials.	20
C. Method of procedure.	21
D. Teachers' estimates of intelligence.	22
E. Misplacements in ranking by teachers.	24
F. Summary of chapter III.	25
IV. A DETAILED OUTLINE OF THE PROBLEMS TO BE INVESTIGATED.	27
V. THE ABILITY OF TEACHERS TO ESTIMATE INTELLIGENCE.	29
A. Materials.	29
B. Method of procedure.	30
C. Correlation tables.	33
D. Answers to questions.	34
E. Causes of teachers' misjudgments.	39

F. Summary.	42
VI. SELECTION OF BRIGHT AND DULL PUPILS.	43
A. Materials.	43
B. Methods of procedure.	44
C. Explanation of the tables.	45
D. Tables.	48
E. Conclusions.	54
F. Summary.	56
VII. A SET OF DIRECTIONS FOR THE RATING OF INTELLIGENCE.	57
A. The formulation of the directions.	57
B. Method of testing the directions.	61
C. Summary.	64
Appendix I. BIBLIOGRAPHY.	67
Appendix II. DATA USED IN CHAPTER V.	69
Appendix III. DATA USED IN CHAPTER VI.	80
Appendix IV. DATA USED IN CHAPTER VII.	89
Appendix V. COPIES OF TESTS USED.	

CHAPTER I.

STATEMENT OF THE PROBLEM.

The judgment of human qualities plays a large part in the practical life of people. Employers judge their employees; teachers judge their pupils; supervisors judge their teachers; vocational directors judge pupils and help determine their life work thereby; so-called experts of human analysis reap fortunes making a pretense of judging human qualities at sight; and in a general way we spend a part of each day in judging the qualities of those with whom we come in contact.

Many elaborate schemes for the judging of human qualities have been formulated and put into operation. Human qualities have been divided, sub-divided and ^{thoroughly} analyzed and judgments made as a result.¹ Nearly all of the authors of these schemes claim that accurate results can be obtained from the use of their particular scheme. There has been little scientific attempt to check the judging done and to ascertain whether the results obtained have been accurate. The reason that these judgments have not been checked is evident; there have been no exact measures of the different qualities judged. With the advent of intelligence tests, it has become possible to check up the the judgments of the trait of general intelligence. This has been done in a few cases and the results indicate that teachers are not able to make accurate

1. An example of this type of rating scheme is the publication of E. R. Smith: Teachers Manual of the Park School System of Pupil Analysis. C. W. Bardeen, Syracuse, N. Y. 1920.

judgments of general intelligence.²

Many teachers firmly believe that they are excellent judges of the characteristics of their pupils and hold that intelligence tests are unnecessary.³ This should be investigated for if it is true, intelligence tests are unnecessary and if it is not true, it would be clearly shown that intelligence tests have their place in the school program.

No study has been made to show how far teachers misjudge their pupils or why such misjudgments are made. There has been no attempt to formulate a set of directions which will aid teachers in judging their pupils.

From a study of the ability of teachers to estimate intelligence, inferences may be drawn as to their ability to estimate other traits.

My problem is to investigate the ability of teachers to estimate general intelligence as found in their pupils, to discover the causes of misjudgments, and to formulate a set of directions which will enable teachers to make better judgments of intelligence.

2. L. M. Terman gives some figures on the correlation between teachers' estimates of intelligence and intelligence tests. Chicago, Ill.: Houghton Mifflin Co. 1916. p. 75.

3. Ibid. Chapter II. pp. 22-35.

-3-

CHAPTER II.

REVIEW OF THE LITERATURE.

The field of literature concerning the rating of human qualities is large and varied. Much of this literature has no bearing upon the questions to be investigated and naturally cannot be included in this review. There are certain phases of the subject which are more or less closely allied with the rating of school children and from which many valuable suggestions can be obtained for the formulation of a rating scale. The phases of the field of literature which seem worth investigation are: the methods of rating teachers, the method of rating officers in the United States Army, the general methods of rating school children, and the methods of rating the intelligence of school children and their results. There is also some miscellaneous literature not included under these heads which is important enough to be included here. These phases of the literature will be treated under separate heads in this chapter.

A. METHODS OF RATING TEACHERS.

There are probably hundreds of scales used in the rating of teachers, each school system of any size having its own scale. Very few of these scales have been formulated as a result of experimentation and most of them represent ^{only} the opinion of the school superintendent or some other supervising officer. Several important studies have been made of the rating of teachers and several good scales have been devised and can be found in print. Among these studies can be listed those of Coffman¹, Elliott², Boyce³, Ruediger⁴, Connor⁵, Kent⁶ and Courtis⁷.

Most of these scales have a large number of qualities to rate, although there is little agreement as to the values assigned to the different qualities. There has been little scientific investigation as to the reliability of the results of the ratings. Boyce⁸ has done something along this line. He has had different judges rate the same teacher and from the results draws these conclusions:

1. With slight variations, principals are able to get the same results at two different times without reference to the first record made.
2. Different judges of the same teacher are able to obtain results varying from each other less than three spaces of the scale.
3. Comparability of ratings from different schools is lessened by differing standards of excellence from school to school and by differing abilities to discriminate on the part of the school officers.

1. Coffman, L. D. "The Rating of Teachers in Service," School Review Monograph, No.5, p. 14 ff., 1914.
2. Elliott, E. C. "How Shall the Merit of Teachers be Tested and Recorded," Educational Administration and Supervision, 1:291-99, May, 1915.
3. Boyce, A. C. "Methods for Measuring Teachers' Efficiency," Fourteenth Yearbook of the National Society for the Study of Education, Part II, p. 10, 1915.
4. Ruediger, W. E., and Strayer, G. D. "The Qualities of Merit in Teachers" Journal of Educational Psychology, 1:272-78, May, 1915.
5. Connor, W. L. "A New Method of Rating Teachers" Journal of Educational Research, 1:338-358, May, 1920.
6. Kent, R. A. "What Should Teacher-Rating Schemes Seek to Measure", Journal of Educational Research, II:802-807, Dec., 1920.
7. Curtis, S. A. "Manual of Directions for Making Efficiency Card Ratings" Board of Education, Detroit, Mich., May, 1920.
8. Ibid.

4. If results from the different schools are to be made thoroughly comparable the judges of teachers must be trained to a common standard of excellence and be given a common fund of knowledge as to what constitutes excellence in teaching.

What Boyce has found to be true about his scale will without doubt be true of other scales.

The rating scale devised by Courtis⁹ appears to be an improvement over previous rating scales. According to his scale the teachers are to be rated by three methods by the same judges. First, the teachers are ranked in order of their general merit; second, they are assigned a grade according to general merit; and third, they are rated on these qualities: vitality, personality, general intelligence, social intelligence, professional spirit, professional ability, professional leadership, executive ability, and adaptability.

In devising his scale for the rating of human qualities, Courtis has used the method employed in the United States Army rating scale for officers which he calls the "Human Scale Method".¹⁰ He has gone one step farther than the Army scale in working out his definition of a human quality. He has defined what he means by each degree of the quality. His direction for the rating of general intelligence is as follows:

3. GENERAL INTELLIGENCE.

Mental Acumen.

1. Excellent in general intelligence means unusual power to
-

9. Ibid.

10. The scale used for the rating of Army officers was planned by Walter Dill Scott. "The Personnel System of the United States Army"; The Personnel Manual, Vol. II, p. 252 ff. 1919.

comprehend situations, to see problems, to formulate practical solutions. To be rated excellent a person must be able to grasp details, to follow directions correctly, to make fine discriminations, to analyze situations into their elements, to make correct generalizations, to use good judgment in crises, to base behavior on reason.

2. Good means intermediate between excellent and medium.

3. Medium means the degree of general intelligence exhibited by the average person.

4. Poor represents a degree of merit intermediate between medium and very poor.

5. Very poor in general intelligence means inability to comprehend situations or to take directions, lack of power to meet crises with proper judgment, inadequate planning, imperfect organization, unstable convictions, lack of persistence and achievement, tendency to impulsive, unreasoning behavior.

3. GENERAL INTELLIGENCE SCALE.

- 1. Excellent-----
- 2. Good-----
- 3. Medium-----
- 4. Poor-----
- 5. Very poor-----

In the blank spaces are to be written names of persons who typify that degree of general intelligence. The teachers are then rated by a comparison with those whose names appear on the scale.

This scale is much more definite than any hitherto devised and should show good results when used by different supervisors in rating the same teachers. There are several good points in this scale that might be used in the formulation of a scale to be used in

499

rating human qualities of pupils.

B. METHOD USED IN THE UNITED STATES ARMY TO RATE OFFICERS.

Probably the most carefully constructed and accurate scale for the rating of human qualities that has been made to date is the one used in the United States army for the rating of officers for promotion. The officers were rated for five essential qualities of an officer and each quality was rated ^{upon} under a five point ^{scale} scheme. The unique thing about this scale is the way in which the officers were assigned to the proper place on the scale. Each officer who was to rate was requested to make a separate rating scale for each of the five qualities. The description of the method of making these rating scales can best be understood from the words of the manual, "Disregarding all other characteristics, select from the list the officer who in Physical Qualities alone (as described) is more strongly impressive than any other man on the list. Write the name of this man on the line marked 'Highest'. On the line marked 'Lowest' put the name of the man who in the way he impresses men by his physical qualities is most deficient. Put on the 'Middle' line the man who in respect to his physical qualities is average, i, e., about an equal distance between the two extremes. This completes three points on the scale for Physical Qualities. Place on the 'High' and 'Low' lines those two men who in physical qualities alone rank half way between the middle man and the extremes.-----The names for the 'Highest' and the 'Lowest' places of the scale should represent extreme cases: the best and the worst officer of the rank the rater has ever known. Be sure that the 'Middle', 'High' and 'Low' men are evenly distributed. The scale is a measuring-rod for human capacity and the

11. Ibid.

points by which it measures must be at equal distances from one another."

A separate scale is made by the rater for each of the five essential qualities following the directions given above. When the scales are all complete the rater can proceed to rate the officers under his command.

THE RATING SCALE.

1. PHYSICAL QUALITIES.	Highest-----15
	High-----12
Physique, bearing, neatness, voice, energy, endurance. Consider how he impresses his command in these respects.	Middle-----9
	Low-----6
	Lowest-----3
11. INTELLIGENCE.	
Accuracy, ease in learning; ability to grasp quickly the point of view of the commanding officer, to issue clear and intelligent orders, to estimate a new situation, and to arrive at a sensible decision in a crisis.	Highest-----15
	High-----12
	Middle-----9
	Low-----6
	Lowest-----3
111. LEADERSHIP.	
Initiative, force, self-reliance, decisiveness, tact, ability to inspire men and to command their obedience, loyalty and co-operation.	Highest-----15
	High-----12
	Middle-----9
	Low-----6
	Lowest-----3
IV. PERSONAL QUALITIES.	
Industry, dependability, loyalty, readiness to shoulder responsibility for his own acts; freedom from conceit and selfishness; readiness and ability to co-operate.	Highest-----15
	High-----12
	Middle-----9
	Low-----6
	Lowest-----3
V. GENERAL VALUE TO THE SERVICE.	
Professional knowledge, skill and experience; success as administrator and instructor; ability to get results.	Highest-----40
	High-----32
	Middle-----24
	Low-----16
	Lowest-----8

The man-to-man comparison thus obtained showed very good results. The averages from four scattered camps varied only a fraction of a point. The manual says this about the accuracy: "The results of using the rating scale during the past year have established the fact that it is reasonably uniform and accurate in operation when intelligently constructed and applied. When two raters equally competent to rate a subordinate officer make independent ratings and compare them, it is found that the average variation is not over five points. Instances of variation of only one or two points, and of no variation, have been reported with surprising frequency. Officers generally agree that the rating scale gives a more accurate and dependable index of efficiency than any other system they have examined or used."

From the results here stated it appears that the scheme obtains more uniform results than any of the schemes for the rating of teachers that have thus far been formulated.

C. GENERAL METHODS FOR THE RATING OF SCHOOL CHILDREN.

As in the rating of teachers, there are a large number of scales in operation for the rating of pupils. The most numerous kind is that which lists a number of qualities and asks the teacher to rate the pupils on the qualities listed. The teachers are usually left to their own interpretation of what is actually meant by the different qualities. A typical scale of this sort is the one used by Doctor Miller.¹² His scale lists twenty-four qualities as follows: accuracy, candor, capacity to attend, cheerfulness, co-operation, courage, courtesy, endurance, honesty, improvement, industry, leadership, loyalty, originality, persistence, poise, punctuality, pride

12. Miller, W. S. The scale described here is in use in the University High School of which Dr. Miller is the Principal.

in work, self-confidence, sincerity, sympathy, system, tact and general intelligence.

In scales of this kind there has been practically no endeavor to ascertain to what degree different teachers' ratings of the same quality in a group of pupils will correspond. It has been taken for granted that a teacher knows what is meant by the terms used to designate the different qualities and that she can judge these qualities where they exist.

Another type of scale is one which attempts to define what is meant by each of the qualities and even what is meant by degrees of the quality in the different steps. A good example of this type of scale is the one formulated and published by E. R. Smith. The general idea of his scale is a card which carries headings for all sides of a pupil's development through a course of five years. The teachers' judgments are made on a five-point scale, each classification being fully defined in a manual. An example of his description of a character trait is as follows:

APPLICATION AND INDUSTRY.

1. Indicates that the pupils tries to get as much as possible from the course, showing enough interest and initiative to investigate beyond the teacher's requirement.
2. Indicates that the pupil conscientiously meets all requirements, both in giving attention and in doing assigned tasks.
3. Indicates that the pupil has general intention of conscientiously applying himself to his studies, but fails often enough in carrying out this intention to force the teacher to take too much responsibility for the work the pupils should do.

13. Ibid.

4. Indicates that the pupil is decidedly irregular in his attention and application, so that the teacher must continually apply pressure to obtain results.

5. Indicates that pupil will not, or can not, hold his attention to his work. This may be shown in class, in project work, or in study, or in all.

Mr. Smith describes the results obtained from his scale in these words: "We find great similarity in the judgments of different teachers on the same pupils, although there is some variation due to the personal equation, the response of the child to the teacher and subject, and probably other factors."

D. METHODS OF RATING THE INTELLIGENCE OF SCHOOL CHILDREN AND THEIR RESULTS.

The field of literature for this section is not very large but what there is has direct bearing upon the topic under investigation. Binet¹⁴ was the first psychologist to investigate the ability of teachers to estimate intelligence. He sent out questionnaires to teachers asking them to explain how they judged intelligence. He also had three teachers come to his laboratory and examine five children using their own methods. The methods which he found the teachers using were unscientific and totally unreliable.

Terman¹⁵ is of the opinion that teachers do not select the very bright as being superior and that the dull pupils are often given credit for having more intelligence than they actually have. He found that the correlation between intelligence quotients and teachers' rankings was .43 and he states that others have found about the same. He draws the following conclusions concerning the

14. This is discussed in Terman, Ibid. p. 28 ff.

15. Ibid. p. 24 ff.

the ability of teachers to judge intelligence:

1. Teachers do not have a very definite idea of what constitutes intelligence. They tend to confuse it with capacity for memorizing, facility in reading, ability to master arithmetic etc.
2. In judging intelligence teachers are too readily deceived by a sprightly attitude, a sympathetic expression, a glance of the eye, or a chance "bump" on the head.
3. Although a few teachers seem to realize the many possibilities of error, the majority show rather undue confidence in the accuracy of their judgment.

Whipple in the organization of a class for bright children in Urbana, had the pupils selected by means of the teacher's judgment of intelligence combined with the judgment of the principal, school marks and certain character traits.¹⁶ Thirty children were selected and it was subsequently found that eleven of these had intelligence quotients less than 110, and that of a control group of twenty pupils, there were six with intelligence quotients greater than the median of the bright group. The teacher of this special group was asked to rank the children in intelligence in November, December and June. The correlations range in the two divisions of the group from .56 to .84. The results showed that the teacher estimated more closely to the mental ages than to the intelligence quotients.

Kelly found very poor results from teachers' ratings of intelligence correlated with intelligence scores.¹⁷ He says that "When first-class teachers can estimate intellectual ability with a reliability of only .29 it lessens the confidence that can be placed

16. Whipple, G. M. "Classes for Gifted Children." Bloomington, Ill: Public School Publishing Company. 1919.

17. Kelly, T. L. "Educational Guidance" New York: Teachers College. 1914.

in such estimates of ability and conclusions drawn from studies depending upon them. Teachers' estimates have the unique value of indicating, more or less accurately, single mental traits instead of a complex of traits such as are involved in the securing of a grade of a subject, but it is highly desirable that these estimates be made by several competent individuals, otherwise the measures are very unreliable.

Pressey has devised a scale for the rating of the intelligence of school children in which he instructs the teachers to make a scale after the method used in the Army scale.¹⁸ His directions are: "First under the head of general ability below, write on the first line (45 value) the name of the pupil, of all you have ever known in the grade you are rating, whom you consider the most intelligent, most capable. Then write on the last line (9 value) the name of the dullest pupils you have ever known in that grade. Then choose a middle case for the middle line. Finally fill in the cases halfway between the middle and each extreme."-----"Now rate your class as to the standing in these three groups, using foregoing scales and reference cases."

THE SCALE.

1. GENERAL ABILITY. (Intelligence; ease of learning; capacity for reasoning; mental grasp.)

-----45
 -----36
 -----27
 -----18
 -----9

This scale was tried out and the results compared with the results of his intelligence test. The correlation between these two measures was found to be .63.

18. Pressey, S. L. "An Attempt to Measure the Comparative Importance of General Intelligence and Certain Character Traits in Contributing to Success in School." Elementary School Journal Nov. 1920.

E. MISCELLANEOUS LITERATURE.

Quite recently the attention of psychologists has been directed to the attempts that are being made to measure human traits objectively. The objective measurement of human traits, if successful, will make rating schemes for the purpose of rating school children unnecessary. While there is a possibility that such schemes will be worked out, none of the schemes so far advanced can be called successful. A scheme of this kind which is at present creating much interest is the scheme of June E. Downey.¹⁹ She calls her scheme the "Will-Profile". The test attempts to measure the following qualities: coordination of impulse, accuracy, tenacity, resistance, assurance, motor-impulsion, speed of decision, flexibility, freedom from inertia, speed of movement, perseverance, and revision.

The test measures these traits through the motor reactions of the subject in "speeded, retarded, disguised, and automatic writing". The reason she gives for using handwriting is: "It may be taken for granted that will-functions must be tested largely through some form of motor reaction.-----The motor reaction required for the present purpose should be a common one and one which leaves behind it a permanent record. The one I have chosen for exploitation is handwriting."

Her test for the "freedom from inertia" is a good sample of the kind of tests she includes in her scheme. In this test the following directions are given to the subject: "Please write your name in your usual style and at your usual rate. Wait for the signal, 'Ready---Go'." (Two trials) "Write your name just as rapidly as

19. Downey, June E. "The Will-Profile" Bulliten No. 3, The University of Wyoming, 1919.

you possibly can. Wait for the signal." The score for this test is obtained by dividing the normal by the speeded time of writing.

R. O. Filter criticises the test of Miss Downey as being very unreliable. He has tested human qualities with a number of different motor reactions and has found very little correlation between them.²⁰ He has formulated a set of directions for the rating of the trait of self-assurance with which he was able to get some very similar results with different people rating the same person. His scale is built upon a six point basis and describes quite fully what is meant by each degree of the quality. He reviews his description of the different degrees of the trait as follows:

- A. has the trait of assurance and aggressiveness to an extreme degree. He is over-self-confident in a great many situations. Not bothered by lack of preparation.
- B. is equally solid in attitude, thoroughly sure and ready in most situations. Better adjusted to his state of preparation.
- C. shows the trait markedly in certain situations. Not marked in other fields of activity.
- D. is a neutral character with regard to these traits. We fail to remember that he ever showed a high degree or a lack of them.
- E. sometimes shows a distinct lack, it may be occasionally in any field or consistently in certain fields.
- F. is nearly always hesitant and incompletely engaged.

In using this scale, the average deviation of several persons' ratings on one person was about .5 of one step. In some cases the correspondence of the ratings was very close.

Another attempt to measure human traits objectively was the

20. Filter, R. O. "A Scale for Rating the Trait of Aggressiveness or Self-assurance", Unpublished Thesis.

attempt made by Roecker.²¹ This experiment was on a small scale being carried on in his science classes. The pupils were given a question when they entered the class room. Before they left they were to hand in to the teacher a written answer to the question. The answer could usually be found by following the daily discussion. From the papers collected in this manner, an attempt was made to derive grades of the qualities of initiative, industry, attention, attitude and improvement. Initiative was graded from the number of questions answered (right or wrong), industry and attention were graded from the number of questions answered correctly, attitude from the number of reports handed in and improvement was the gain over previous grades in these traits.

This study is of course very unscientific and probably unreliable but is illustrative of the attempts being made to measure directly human traits.

E, SUMMARY OF FINDINGS IN THE FIELD OF LITERATURE.

This summary will attempt to point out some of the phases of the rating of human qualities which have not been fully investigated. Especial reference will be given to the fields not yet thoroughly explored concerning the rating of human traits of school children and to the needs of investigation of certain phases of the rating of pupils' intelligence.

1. Many of the scales are too detailed and comprehensive to be used where the raters can not be trained in their use.

Scales which are open to this criticism are the ones by Smith²² and Courtis.²³ These scales were devised to be used in certain

21. Roecker, W. F. "An Objective Study of the Rating of Traits in School Achievement", School Review 23, 1915, p. 406-410.

22. Ibid.

23. Ibid.

school systems and in this case the users can be trained in the use of the scale but if a scale is to be used at large by people in different part of the country, it would need to be simple enough to be understood quickly by people of average intelligence.

2. Boyce²⁴ makes the statement that to get good results from a rating scheme, the raters must be trained to rate according to a common standard.

Many of the rating schemes recently devised attempt to meet this need for a common standard by defining very carefully what is meant by each degree of the thing to be rated. Some of the scales go so far as to enumerate acts that will indicate the possession or the lack of possession of the trait in question. It may be that by this close definition of traits it has become unnecessary to train the raters as to a common standard.

3. There has been no adequate study of the variation among the users of the various rating scales.

Several of the authors of scales have made some study of this point. Boyce in his rating scale for teachers;²⁴ Filter in his rating scale for self-assurance,²⁵ and the author of the Army rating scale²⁶ found that the amount of variation was not large in most cases. A comprehensive study of this question would be desirable before rating scales can be intelligently used.

4. There seems to be an opinion that teachers are very unreliable in their judging of intelligence.

Terman²⁷ does not give teachers much credit in their ability to rate intelligence. He claims that teachers' ratings correlate only .48 with the scores made on intelligence tests. His low correlations may be due to the fact that teachers were not rating

24. Ibid. 25. Ibid. 26. Ibid. 27. Ibid.

for the same index of intelligence that the test score indicated or it may be due to the fact that the directions given to the teachers were not definite enough. At least an attempt should be made to ascertain whether teachers may not be helped to make better ratings.

5. There has been no study made to determine whether teachers rate for intelligence quotients or for mental ages.

Whipple²⁸ states that in the study made at Urbana the teacher's ratings correlated more closely with the mental ages. Terman²⁹ correlated his teachers' ratings with intelligence quotients. This is a very important point because a ranking of the children of any grade according to mental ages will be quite different from a ranking according to intelligence quotients and the correlation between teachers' ratings and intelligence will be quite different according to the standard used. It may well be that some of the low correlations found are due to the using of the wrong index of intelligence and not to the inability of teachers to judge intelligence.

6. There has been no study which attempted to discover whether the ages of the children to be rated have anything to do with the difficulty of rating intelligence.

This point should be investigated for it might prove to be a fact that children of a certain age are more easily judged than those of another age. If this is found to be true, it will be an important fact to be considered in using the results of any rating scale.

7. There has been ^{no} study made to determine whether the dull and the bright children can be selected by the teachers.

28. Ibid.

29. Ibid.

Terman³⁰ is of the opinion that the bright children are rated too low and the dull children are rated too high by their teachers.

8. There has been no rating scale thoroughly tried out in comparison with the results of mental tests.

Since mental tests make it possible to test out the methods used in rating intelligence, no rating scale which includes the rating of intelligence as one of its traits should be published until it has been standardized and checked up against mental test results. Objective measures of intelligence also make it possible to experiment with and formulate a set of directions with which to rate intelligence.

The above summary shows that there are a number of questions to be solved in the use of rating scales for human qualities and especially in the use of rating scales for intelligence.

The study that follows is an attempt to solve some of the questions still unanswered in this field.

30. Ibid.

CHAPTER III.

PRELIMINARY STUDY.

A. PURPOSE.

In order to get a clear idea of what problems would be encountered in a study of the ability of teachers to estimate the intelligence of their pupils, a preliminary study was made. The preliminary study is a study of the estimates for intelligence of three teachers on twenty-three pupils. While the number of cases is too small to give any weight to the results, the study will undoubtedly point out the problems which will be met in a more complete study of this kind. It will also help to determine the methods of attack to be used. As has been pointed out in the summary of the literature, there are several problems in connection with the estimates of teachers that need investigation. This study will help to determine which of these problems are worth investigating with the material available.

B. MATERIALS.

There were twenty-three high school pupils in the group studied. These pupils were mostly of the ninth and tenth grades with a few from the eleventh and twelfth grades. Three teachers were asked to rank these pupils according to their intelligence. Each teacher assigned the number one to the pupil ^{upon} ~~which~~ she considered the most intelligent, number two to the next intelligent etc. One of the teachers had taught about half of the pupils for ten months and the rest for six weeks, another teacher had taught all of the pupils

for six weeks, and the third teacher had taught half of the pupils for six weeks and was obliged to rate the other half from his acquaintance with them about the school and in the opening exercises.

The pupils were tested on the Stanford Revision of the Binet scale and their mental ages and intelligence quotients obtained.

C. METHOD OF PROCEDURE.

Since it is unknown whether teachers rate for intelligence quotients or for mental ages, the ratings obtained here are correlated with both of the standards of intelligence. The formula used was:

$$r = 1 - \frac{6 (\text{sum } D^2)}{n (n^2 - 1)}$$

The correlation found by means of this formula are given on table I.

TABLE I.

THE RANKINGS OF THE TEACHERS CORRELATED WITH THE INTELLIGENCE QUOTIENTS AND THE MENTAL AGES.

Ranking by V. Ranking by E. Ranking by T. Ranking by the average of the three teachers' rankings.

Mental ages.	.679	.517	.583	.688
I. Q.s	.723	.501	.602	.692

The differences between the correlations for the mental ages and the intelligence quotients are not great. Since two of the teachers ranked the pupils according to intelligence quotients and the other teacher did not come much closer to a ranking by mental ages than to a ranking by intelligence quotients, the intelligence

quotients can be taken as the proper measure of intelligence in this study. The deviations between the teachers' ranks and the intelligence quotient rank are shown on table II page 23 in columns 7, 8 and 9. Any teacher's rank which differs more than four places from the rank of the intelligence quotients is called a misplacement. The plus and minus misplacements are shown at the bottom of table II. These misplacements and the reasons for them will be discussed in section E. of this chapter.

Table II on page 23 shows the rankings of the pupils according to the mental ages, the intelligence quotients, the individual teachers, and the average of the teachers' rankings as well as the deviations between the rank of the intelligence quotients and each teacher's rank.

D. TEACHERS' ESTIMATES OF INTELLIGENCE.

The directions which were given to the teachers did not state whether the teachers were to rate for the mental ages or for the intelligence quotients. For this reason the results should show which of these two measures the teachers naturally considered when they rated the pupils. From the correlations shown on table I it appears that two of the teachers were thinking of the intelligence quotients of the pupils or of how bright they were according to their ages. The other teacher was thinking about the mental level of the pupils regardless of their ages. This was confirmed by the teachers when they were questioned as to which of the two standards of intelligence they had used in rating the pupils. From this it appears that a set of directions to use in rating pupils' intelligence should specifically state which of the two standards of intelligence is meant. If the results shown here were found to be

TABLE II.

THIS TABLE SHOWS THE RANKINGS OF THE THREE TEACHERS, THE RANKING ACCORDING TO THE MENTAL AGES AND THE INTELLIGENCE QUOTIENTS, THE RANKING BY THE AVERAGE OF THE TEACHERS' RANKINGS, AND THE DEVIATIONS BETWEEN THE RANKING BY THE SEPARATE TEACHERS AND THE RANKING BY THE INTELLIGENCE QUOTIENTS.

Column A. is mental age rank.

" B. is intelligence quotient rank.

" C. is the ranking of teacher V.

" D. is the ranking of teacher E.

" E. is the ranking of teacher T.

" F. is the deviation between the I. Q. rank and rank of V.

" G. is the deviation between the I. Q. rank and rank of E.

" H. is the deviation between the I. Q. rank and rank of T.

" I. is the ranking by the average of the three teachers' rankings.

	A.	B.	C.	D.	E.	F.	G.	H.	I.
J. H.	1	2	9	7	6	-7	-5	-4	6
R. S.	2	6	8	12	13	-2	-6	-7	11
M. T.	3	10	4	9	5	6	1	5	4
E. M.	4	11	7	4	3	4	7	8	3
L. B.	5	12	12	18	8	0	-6	4	13.5
B. S.	6	1	13	2	12	-12	-1	-11	7
A. F.	7	7	5	16	15	2	-9	-8	12
S. H.	8	13	1	1	2	12	12	11	1
A. S.	9	3	6	13	9	-3	-10	-6	8
W. D.	10	9	15	10	22	-6	-1	-13	18
E. M.	11	14	11	5	4	3	9	10	5
D. M.	12	15	16	8	16	-1	7	-1	15.5
W. G.	13	8	10	6	14	-2	2	-6	9
K. L.	14	4	2	23	7	2	-19	-3	10
R. M.	15	5	3	3	1	2	2	4	2
R. S.	16	16	20	21	21	-4	-5	-5	22
A. S.	17	17	14	14	10	3	3	7	13.5
M. R.	18	19	22	19	19	-3	0	0	21
M. K.	19	18	21	15	17	-3	3	-1	19
E. B.	20	20	18	11	11	2	9	9	15.5
A. B.	21	22	19	22	18	3	0	4	20
E. B.	22	21	17	17	20	4	4	1	17
J. P.	23	23	23	20	23	0	3	0	23
						Minus misplacements	3	7	7
						Plus misplacements	2	5	6
						Total misplacements	5	12	13

TABLE II.

THIS TABLE SHOWS THE RANKINGS OF THE THREE TEACHERS, THE RANKING ACCORDING TO THE MENTAL AGES AND THE INTELLIGENCE QUOTIENTS, THE RANKING BY THE AVERAGE OF THE TEACHERS' RANKINGS, AND THE DEVIATIONS BETWEEN THE RANKING BY THE SEPARATE TEACHERS AND THE RANKING BY THE INTELLIGENCE QUOTIENTS.

Column A. is mental age rank.

" B. is intelligence quotient rank.

" C. is the ranking of teacher V.

" D. is the ranking of teacher E.

" E. is the ranking of teacher T.

" F. is the deviation between the I. Q. rank and rank of V.

" G. is the deviation between the I. Q. rank and rank of E.

" H. is the deviation between the I. Q. rank and rank of T.

" I. is the ranking by the average of the three teachers' rankings.

	A.	B.	C.	D.	E.	F.	G.	H.	I.
J. H.	1	2	9	7	6	-7	-5	-4	6
R. S.	2	6	8	12	13	-2	-6	-7	11
M. T.	3	10	4	9	5	6	1	5	4
F. M.	4	11	7	4	3	4	7	8	3
L. B.	5	12	12	18	8	0	-6	4	13.5
B. S.	6	1	13	2	12	-12	-1	-11	7
A. F.	7	7	5	16	15	2	-9	-8	12
S. H.	8	13	1	1	2	12	12	11	1
A. S.	9	3	6	13	9	-3	-10	-6	8
W. D.	10	9	15	10	22	-6	-1	-13	18
E. M.	11	14	11	5	4	3	9	10	5
D. M.	12	15	16	8	16	-1	7	-1	15.5
W. G.	13	8	10	6	14	-2	2	-6	9
K. L.	14	4	2	23	7	2	-19	-3	10
R. M.	15	5	3	3	1	2	2	4	2
R. S.	16	16	20	21	21	-4	-5	-5	22
A. S.	17	17	14	14	10	3	3	7	13.5
M. R.	18	19	22	19	19	-3	0	0	21
M. K.	19	18	21	15	17	-3	3	-1	19
E. B.	20	20	18	11	11	2	9	9	15.5
A. B.	21	22	19	22	18	3	0	4	20
E. B.	22	21	17	17	20	4	4	1	17
J. P.	23	23	23	20	23	0	3	0	23
						Minus misplacements	3	7	7
						Plus misplacements	2	5	6
						Total misplacements	5	12	13

true in general, some of the ideas about the ability of teachers to rate intelligence might have to be changed. It might be shown for example that teachers' ratings are a much better measure of intelligence than has previously been thought, if the ratings are correlated with intelligence quotients. The correlations between the ratings of teachers and intelligence as given by previous experimenters might be found to be larger if the ratings were to be correlated with intelligence quotients.

E. MISPLACEMENTS IN RANKING BY TEACHERS.

What is here meant by misplacements in the ranking of the teachers is described on page 22. There were seventeen minus and thirteen plus misplacements. From this it appears that when a teacher is mistaken about the intelligence of a pupil she is apt to rate the pupils too low rather than too high. In other words, it is easier for a pupil to give a teacher the impression that he has less intelligence than he really has than it is to give the teacher the impression that he has more intelligence than he has.

Of the thirty misplacements, eighteen were made in rating pupils who stood above the median of the group and eleven were made in rating those who stood below the median. This seems to indicate that the bright pupils are more apt to be misjudged than are the dull ones.

After the teachers had had a year in which to get better acquainted with these pupils, they were asked to state why they had made the misjudgments. The reasons which were given are listed below:

REASONS FOR MINUS MISPLACEMENTS.

Careless work	1
Lack of poise	1
Poor expression	1
Poor appearance	1
Lack of industry	1
Attitude of indifference	1
Physical defect plus poor expression.	2
Not good in special subject	4
Unaccounted for	4

REASONS FOR PLUS MISPLACEMENTS.

Exceptional initiative	1
Good in special subject	2
Exceptional industry	3
Industry plus personality	4
Personality plus bright appearance	4

From this list of reasons it appears that industry and personality are mistaken for intelligence. There is a larger number of causes which tend to make teacher rate pupils lower in intelligence than they actually are.

F. SUMMARY OF CHAPTER III.

1. Two of the three teachers of this study rated the pupils according to their brightness or intelligence quotients rather than their mental levels or mental ages.
2. Three teachers' rankings of intelligence correlate with intelligence quotients ranking about .6 and with mental age ranking a little lower.
3. These teachers misjudged the brighter pupils more often than they did the duller pupils.
4. Exceptional industry and strong personality were taken for intelligence several times by these teachers.
5. A poor school attitude, lack of industry, poor expression

and inability in a special subject were mistaken for low intelligence by these teachers.

CHAPTER IV.

A DETAILED OUTLINE OF THE PROBLEMS TO BE INVESTIGATED.

As a result of the preliminary study, certain phases of investigation were suggested as being worthy of study. The first phase of the question that will be investigated is the ability of teachers to estimate general intelligence. This investigation will serve as a check upon other studies of the same kind and will give a basis upon which to proceed with the remainder of the study. In some school systems the teachers' estimates are used as part of the criterion by which children are selected to be put into special classes for the bright or the dull. This phase of the question will be studied in order to determine how much weight can be given to such selections of the bright and the dull children. The next section of the study will be an attempt to formulate a set of directions by which teachers' estimates may be improved and made more reliable. From these investigations, an attempt will be made to answer the following questions:

1. What ability have teachers to estimate the general intelligence of children?
2. Are teachers' estimates as good as intelligence tests for determining the general intelligence of children?
3. What per cent of children are correctly rated by teachers?
4. Do teachers rate too high or too low?
5. Does it become more or less difficult to rate children as they become older?
6. How far are children mis-rated by teachers?
7. Can the bright and the dull children be selected by teachers?

8. Is it more difficult to select bright children than it is to select dull children?
9. Do teachers rate their pupils according to mental ages or intelligence quotients?
10. Can a set of directions be formulated that will enable teachers to rate general intelligence successfully?

CHAPTER V.

THE ABILITY OF TEACHERS TO ESTIMATE INTELLIGENCE.

The first important step in this study is to determine how well teachers estimate the intelligence of their pupils under ordinary conditions. This chapter is a discription of an investigation of the rating done by twenty teachers in Richmond and Henrico County, Virginia.¹ In making this investigation, answers were sought for some of the questions suggested in chapter IV. The questions which this chapter attempts to answer are lised below as follows:

1. What ability have teachers to estimate the general intelligence of children?
2. Are teachers' estimates as good as intelligence tests for determining the general intelligence of children?
3. What per cent of children are correctly rated by teachers?
4. Do teachers rate too high or too low?
5. Does it become more or less difficult to rate children as they become older?
6. How far are children mis-rated by teachers?
9. Do teachers rate their pupils according to mental ages or intelligence quotients?

A. MATERIALS.

Complete records of achievement and intelligence tests of a large number of pupils in Virginia were made available for this study. These records include: teachers' ratings of intelligence and scholarship, number of years in school, age of pupil, scores in

1. The ratings and test results used here were made available by Dr. M. E. Haggerty who was in charge of the Division of Tests of the Survey Staff of the Virginia Education Commission. A full report of this survey can be found in "Virginia Public Schools Education Commission Survey and Report" Richmond, Va: Everett Waddey Co. 1919.

Verbal A and B intelligence tests, Delta 2 intelligence test, Thorndike reading test Alpha 2 parts I and II, scores in achievement tests in spelling, writing, multiplication, division, addition and subtraction.

As this study has to do with intelligence, only those measures which indicate intelligence were used. The measures from the above list which are used in this study are: the teachers' ratings of intelligence, Verbal A and B, Delta 2 and Alpha 2. Copies of these tests and the set of directions used in obtaining the teachers' ratings can be found in the appendix.

In order to determine whether it becomes more or less difficult to rate children as they become older, it was necessary to select as wide a range of grades as possible. For this reason the grades selected to be studied were the third, fifth and seventh. Grade seven is the highest grade in the Virginia elementary schools, grade three is the lowest grade for which the intelligence test scores were available and grade five was selected because it was half way between the other two grades. There are seven third grades used which include 171 children, eight fifth grades including 148 children and five seventh grades including 89 children. The total number of teachers is twenty and the total number of children is 408.

B. METHOD OF PROCEDURE.

A combined score of the Verbal A, the Verbal B, the Delta 2 and the Alpha 2 was desired. To get this score it was necessary to weight the test scores before combining them. It was decided to give the tests the same weight except the Verbal B. which was weighted only $2/3$ as much as the others since it is a much shorter test.

The median score for each test for each grade was found and it was then determined by what number these medians should be multiplied to give each test the weight desired in the total score. Table III shows the method of weighting. In the first column is given the median for each test for the different grades; the second column gives the weight desired; the third column contains the number by which the score is to be multiplied; and the last column shows the proportion of the final score that each test received.

TABLE III.

SHOWING THE METHOD OF WEIGHTING THE TEST SCORES.

	Median score.	Weight desired.	Score multiplied by.	Proportion of total score.
Third grades.				
Verbal A.	26	1	$3/2$	39
Verbal B.	40	$2/3$	$2/3$	27
Delta 2.	39	1	1	39
Alpha 2.	4.3	1	10	43
Fifth grades.				
Verbal A.	57	1	1	57
Verbal B.	62	$2/3$	$2/3$	41
Delta 2.	80	1	$3/4$	60
Alpha 2.	6	1	10	60
Seventh grades.				
Verbal A.	73	1	1	78
Verbal B.	74	$2/3$	$2/3$	49
Delta 2.	100	1	$3/4$	75
Alpha 2.	7.4	1	10	74

To apply this weighting, the score of each third grade pupil in the Verbal A was multiplied by $3/2$, his score in the Verbal B by $2/3$, the Delta 2 score was taken without change and the Alpha 2 score was multiplied by 10. The weighted scores were then added to give a total score for the four tests. For convenience this score

will be called the weighted score in the remainder of this study.

The teachers' ratings for each grade were correlated with the weighted scores. The teachers' ratings were also correlated with the Delta 2 scores and with the intelligence quotients computed from the Delta 2 scores, so that a comparison might be made between the teachers' ratings for mental ages and for intelligence quotients.

The formula used was Pearson's formula for rank correlation.

$$\text{FORMULA: } p = 1 - \frac{6 (\text{sum } D^2)}{n (n^2 - 1)}$$

The correlations found are given in table IV. page 33.

The teachers' ratings of all the pupils of the third, fifth and seventh grades were correlated with the weighted score, the Delta 2 score and the intelligence quotients scores. The formula used here was:

$$r = \frac{\text{sum } S \cdot R - \frac{\text{sum } S \cdot \text{sum } R}{N}}{\text{sq. root of } \left(\text{sum } S^2 - \frac{(\text{sum } S)^2}{N} \right) \left(\text{sum } R^2 - \frac{(\text{sum } R)^2}{N} \right)}$$

These results are given in table V. page 34.

C. CORRELATION TABLES.

TABLE IV.

CORRELATIONS FOR EACH GRADE BETWEEN THE RATING OF THE TEACHER AND THE WEIGHTED SCORES, THE DELTA 2 SCORES AND THE INTELLIGENCE QUOTIENT SCORES.

Rating & weighted score Rating & I. Q. Rating & Delta 2

Third grades.

Grade 1.	31 Pupils	r = .601	r = .791	r = .660
" 2.	34 "	r = .592	r = .742	r = .574
" 3.	28 "	r = .583	r = .433	r = .317
" 4.	20 "	r = .395	r = .351	r = .473
" 5.	16 "	r = -.094	r = .022	r = .030
" 6.	16 "	r = .647	r = .559	r = .157
" 7.	26 "	r = .183	r = .209	r = .103
<hr/>				
	171 "			
	Median	r = .583	r = .433	r = .317

Fifth grades.

Grade 1.	25 Pupils	r = .462	r = .534	r = .402
" 2.	14 "	r = .695	r = .698	r = .571
" 3.	18 "	r = .277	r = .368	r = .138
" 4.	21 "	r = .273	r = .238	r = .413
" 5.	14 "	r = .138	r = .303	r = -.161
" 6.	11 "	r = .519	r = .318	r = .357
" 7.	28 "	r = .527	r = .494	r = .480
" 8.	17 "	r = .840	r = .845	r = .865
<hr/>				
	148 "			
	Median	r = .491	r = .431	r = .408

Seventh grades.

Grade 1.	16 Pupils	r = .469	r = .712	r = .569
" 2.	15 "	r = .690	r = .414	r = .433
" 3.	16 "	r = .671	r = .723	r = .639
" 4.	15 "	r = .587	r = .678	r = .577
" 5.	27 "	r = .302	r = .505	r = .160
<hr/>				
	89 "			
	Median	r = .587	r = .678	r = .569

MEDIAN, HIGHEST AND LOWEST OF ALL THE CORRELATIONS.

Median. Highest. Lowest.

Rating and weighted score	r = .523	r = .840	r = -.094
Rating and Delta 2 score	r = .423	r = .865	r = -.161
Rating and I. Q. score	r = .500	r = .945	r = .022

TABLE V.

CORRELATIONS OF THE TEACHERS' RATINGS OF ALL THE PUPILS OF THE THIRD, FIFTH AND SEVENTH GRADES WITH THE WEIGHTED SCORES, THE DELTA 2 SCORES AND THE INTELLIGENCE QUOTIENTS SCORES.

		Rating & weighted score	Rating & I. Q.	Rating & Delta 2.
Third grades	171 Pupils	$r = .266$	$r = .426$	$r = .184$
Fifth grades	148 Pupils	$r = .477$	$r = .718$	$r = .644$
Sev'th grades	89 Pupils	$r = .458$	$r = .671$	$r = .577$

D. ANSWERS TO QUESTIONS.

From the results given in the correlation tables, it is possible to answer some of the questions which are given in the introduction to this chapter.

QUESTION 1. What ability have teachers to estimate the general intelligence of children?

The answer for this question is found in table V. The teachers' ratings when correlated with the weighted score gave the results .266 for the third grades, .477 for the fifth grades and .458 for the seventh grades. The ratings correlated with the intelligence quotients as found from the Delta 2 test gave results about .2 better. When correlated with the Delta 2 scores, the ratings are found to give slightly higher correlations on an average than they do with the weighted scores. The median of the correlations between the ratings and the different standards is about .47. This median would vary slightly depending upon what score the rating was correlated with.

While it can be said that in general teachers' ratings will correlate with some standard intelligence test about .5, this will

not hold true for any particular teacher since the range is very large with some teachers making estimates which will correlate with mental tests much higher than .5 and some making estimates which have practically no correlation with intelligence test scores.

QUESTION 2. Are teachers' estimates as good as intelligence tests for determining the general intelligence of children?

In view of the result of the correlation in this chapter, this question must be answered in the negative. While a few teachers can rate as well as an intelligence test can measure, the majority can not and some teachers seem to have almost no ability to rate intelligence. As there is such a wide variation in the ability of teachers to estimate intelligence in their pupils, it is dangerous to give much weight to a teacher's rating unless it is known that the particular teacher has good ability to estimate intelligence.

QUESTION 5. Does it become more or less difficult to rate children as they become older?

The evidence found in table V is that it is more difficult to estimate the intelligence of the younger children. According to any one of the three measures shown in table V, there is a large improvement in the rating in the fifth and seventh grades over the third grades. There is very little difference between the ratings obtained in the fifth and seventh grades.

QUESTION 9. Do teachers rate their pupils according to mental ages or intelligence quotients.

Before this question is discussed it is important that it be fully understood what is meant by the terms "mental age" and "intelligence quotient". Mental age means the stage of mental development of an individual. The mental age is determined by comparing the score made by an individual with the norm scores. For example, if an

individual should score 100 on the Delta 2 test, it would be seen by turning to the norm scores that his mental age was 14 years. The intelligence quotient of an individual is found by dividing the actual score which he made on a test with the norm score for his age. The actual score made on an intelligence test can be taken as the mental age score but the intelligence quotient scores must be computed for each test from the norms scores of that test. When teachers' ratings are correlated with the actual test scores, it is taken for granted that the teachers' is rating for mental age. This does not appear to be the actual case as can be seen by turning to tables IV and V. At the bottom of table IV it is shown that the median of twenty correlations for mental ages is .423 compared with a correlation of .500 for intelligence quotients. On table V the difference is still greater in favor of the intelligence quotient standard. From these results it appears that the proper standard to use in correlating mental test results with ratings for intelligence is the intelligence quotient standard as teachers evidently have that standard in mind when they rate for intelligence.

Before the rest of the questions can be answered, it is necessary to classify the scores made on the intelligence tests into classes to compare with the classes used by the teachers in their rating. The method used was to find the semi-interquartile-range or Q. The middle class or class three was taken as the scores within one-half Q from the median score in either direction. Class two was taken as the next Q distance above class three and class one was taken as all above class two. Classes four and five correspond to classes one and two except that they are below the median. The teachers' ratings were then compared with the Q classes. This comparison is shown in table VI page 37. The results for all three

grades are combined into the one table. This table reads; that of the 22 put in class one by the teacher, 24 are also classed in class one by the Q distance method, 20 are placed in class two, 12 are placed in class three etc. The per cent of those placed in each class by the teacher as well as by the Q distance method is also shown. This comparison is made with the weighted score only as the results from this score will serve as an example as well as either of the other two scores used in the previous portion of this chapter. The number of cases here is 410 as there were two cases for which weighted scores were available but for which intelligence quotient scores could not be computed because the age of the pupil was missing from the record card.

TABLE VI.

A COMPARISON OF THE CLASSIFICATION OF THE PUPILS BY THE TEACHERS' RATINGS AND BY THE Q. DISTANCE METHOD. THE FIGURES GIVEN HERE ARE THE COMBINED RESULTS OF THE THIRD, FIFTH AND SEVENTH GRADES.

		Classified according to Q distances.				
		Class 1.	Class 2.	Class 3.	Class 4.	Class 5.
Ratings of teachers by classes.	Rated in class 1.	24 38.7%	20	12	5	1
	Rated in class 2	15	22 23.6%	38	13	5
	Rated in c class 3	15	35	60 31.9%	56	22
	Rated in class 4.	3	11	20	19 31.1%	8
	Rated in Class 5.	2	0	2	1	1 16.7%

The comparison of the teachers' ratings with the Q distance classification in table VI. makes it possible to answer the other questions stated in the introduction.

QUESTION 3. What per cent of children are correctly rated by teachers?

By summarizing the data in table VI, it is shown that 126 pupils or 30.73% were rated by the teachers as being in the same class as they were put by the Q distance classification. It is assumed here that the Q distance classification is the correct classification and that the teachers have made a wrong classification when they do not agree with it. 193 pupils or 47.07% were mis-rated one class by the teachers, 75 or 18.29% were two classes mis-rated, 13 pupils or 3.17% were three classes mis-rated and 3 pupils or .73% were four classes mis-rated.

In answer to the question, it can be said that 30.73% of the pupils were correctly rated by the teachers. If we add those who were mis-rated by only one class to those who were correctly rated, it is seen that 77.8% were correctly rated or but one class mis-rated. This leaves 22.19% who were seriously mis-rated.

QUESTION 4. Do teachers rate too high or too low?

126 pupils were correctly rated by the teachers, 180 were rated too high and 104 were rated too low. This seems to indicate that teachers rate their pupils too high. They hesitate to put any pupils in the lowest class but are quite free in putting pupils in the best class. This can be seen by comparing the number put in class five with the number put in class one. In class one or the best class, the teachers put 62 pupils as compared with 6 put in class five or the lowest class. In class two the teachers placed 93 pupils as compared with 61 placed in class four.

QUESTION 6. How far are children mis-rated by teachers?

This question can best be answered by summarizing table VI into a table which shows the mis-rating of the teachers.

TABLE VII.

A SUMMARY OF THE MIS-RATINGS OF THE TEACHERS.

Rated four Q distances too high	1
Rated three Q distances too high	10
Rated two Q distances too high	47
Rated one Q distance too high	122
Rated correctly	126
Rated one Q distance too low	71
Rated two Q distances too low	28
Rated three Q distances too low	3
Rated four Q distances too low	2

total	410

This summary shows that 91 pupils or 22.19% were more than one class mis-rated by the teachers. 16 pupils or 4.9% were more than two classes mis-rated by the teachers and 3 pupils or .73% were four classes mis-rated by the teachers.

This shows that while teachers will come rather close in rating the intelligence of most of their pupils, some of the pupils will be entirely mis-rated. Some of the pupil who belong to the top end of the scale in intelligence will be rated in the bottom end.

E. CAUSES OF TEACHERS' MISJUDGMENTS.

In working with the data of this chapter, some of the causes of teachers' misjudgments have been evident. One factor in the

in the situation is the variability of the range of intelligence with which the teachers have to deal. This point can best be illustrated by tabulating the ranges of intelligence for the fifth grade classes studied.

TABLE VIII.

THE RANGE OF INTELLIGENCE WITHIN THE SEPARATE FIFTH GRADES.

CLASSIFIED BY THE Q DISTANCES USING THE WEIGHTED SCORES.

	Class 1 highest.	Class 2	Class 3 average.	class 4	Class 5 lowest.
Grade 1.	2	13	9	1	0
Grade 2.	0	0	5	8	2
Grade 3.	0	3	8	6	1
Grade 4.	0	0	9	9	3
Grade 5.	0	0	4	9	1
Grade 6.	0	3	3	5	0
Grade 7.	3	12	10	1	2
Grade 8.	4	7	6		

Three teachers have no pupils above average and one teacher has no pupils below average. Just how this works to make teachers misjudge their pupils can be seen when we take a particular grade. In grade 4 the pupils are all bunched around average and one class below average except three. The teacher of this grade rated ten pupils in class two and eleven pupils in class three. She knew that her pupils were of about the same intelligence and she divided them in about the correct manner but where she made her mistake was in determining into what class the pupils belonged after she had them divided. She knew that within her grade some were better than others but it was impossible for her to decide how the better pupils ranked when compared with fifth grade pupils in general. Because she had

no means of determining this she guessed that her better pupils were above the average when in reality they were just average. Where a teacher has a wider range of intelligence to deal with, it is much easier to make good judgments. When we correlate the rating of the teacher of the grade 8 with the results of the tests, we find a correlation of .845. This teacher may not be any better at judging intelligence than the other teachers but she was able to rate much better than they because she had a wide distribution to work with.

Another factor which leads to error is the lack of uniformity in the standard of intelligence. Some teachers select the pupils according to mental ages and some according to intelligence quotients. This can be shown by means of concrete examples. The norm score for the fifth grade in the Delta 2 test is 78. Two fifth grade pupils who scored 78 and 80 were rated in class three by their teachers. According to the mental age standard, these pupils were rated correctly. If we apply the other standard and take into account their ages they are then totally misjudged. The pupils who scored 80 was nine years and eight months old. His I. Q. would be 157, putting him in the highest class. The other pupil who scored 78 was fourteen years and six months old, giving him an I. Q. of 72 which would place him in the lowest class. Another case can be shown where the other standard was used. Two pupils with intelligence quotients of 100 were rated in class three. Their scores on the Delta 2 were 67 and 55 which would make them below the average of the fifth grades as far as mental age is concerned. In one case the teachers considered the age and in the other they did not. Much confusion and error probable arises because the teacher is not instructed to use one of the two standards.

F. SUMMARY.

The results of this chapter will be briefly summarized as follows:

1. Teachers can estimate the general intelligence on the average with a correlation of .5. They vary extensively from the average in their ability to rate.
2. Teachers estimates of intelligence are not as good as intelligence tests for determining the general intelligence of children.
3. The younger children are more difficult to rate.
4. When rating for intelligence, some teachers have in mind the mental age of the children and some the intelligence quotients. The majority of the teachers in this study used the intelligence quotient standard.
5. About thirty per cent of the pupils were correctly rated by the teachers.
6. Teachers rate their pupils too high.
7. Some pupils are mis-rated the entire length of the rating scale.
8. The range of intelligence varies widely within the different grades and this leads teachers to make errors in rating the pupils.
9. The lack of uniformity in using standards of what is meant by intelligence leads to errors in the teachers' ratings.

CHAPTER VI.

SELECTION OF BRIGHT AND DULL PUPILS.

The previous chapter has shown that teachers are not able to estimate the general intelligence of children in an accurate manner. In this chapter an attempt will be made to see whether they are able to select the bright and the dull pupils with any more accuracy. These questions will be answered in this chapter:

7. Can the bright and the dull children be selected by teachers?
8. Is it more difficult to select bright children than it is to select dull children?
9. Do teachers rate their pupils according to mental ages or intelligence quotients?
5. Does it become more or less difficult to rate children as they become older?

A. MATERIALS.

The data used in this chapter was obtained from six eighth grades of the St. Paul schools containing 206 pupils and three second grades containing 80 pupils.¹ The teachers were asked to select the highest and the lowest twenty per cent of pupils in intelligence in their grades. This direction was given to the

1. The author is indebted for this material to O. J. Johnson who has charge of the organization of special classes for bright and dull pupils in the St. Paul Public Schools. The teachers' ratings here used were obtained by Mr. Johnson to be used as a check against the intelligence test results in selecting pupils for special classes.

teachers: "In grading pupils in intelligence, do not think of their scholarship and industry only, but rather of their ability to meet new situations, both in and out of school. Some pupils with industry are able to earn high marks although they are not very intelligent. Other pupils may be intelligent but fall down in school marks because of physical defects or other reasons."

To check the teachers' ratings, the eighth grades were given the Intelligence Examination Delta 2 and the second grades were given the Delta 1 and the Pressey Intelligence Examination. One second grade was not tested by the Delta 1 so in this case the results are for the Pressey test only.

B. METHODS OF PROCEDURE.

In giving an intelligence test to children, there are two measures of intelligence which may be found; the mental age or the level of intellectual development (the actual score) and the intelligence quotient or the index of brightness (the relation of the intellectual development to the age). Before the teachers' ratings can be compared to the test results, it is necessary to know for which measure the teachers are rating. The directions used in getting the teachers' ratings used in this chapter do not indicate for which measure the teachers were to rate. This makes it necessary to compare the ratings of the teachers to both of the measures. Since the teachers were directed to select the highest and the lowest pupils of their grade regardless of the general intellectual level of their grade, the comparisons must be made for each grade separately.

The pupils were divided into five classes of twenty per cent each according to their scores on the intelligence tests. The upper and lower twenty per cents as selected by the teachers could then

be compared to the upper and lower twenty per cents as selected by the tests. The scores were then translated into intelligence quotients and divided into five twenty per cent classes. A comparison was made between the upper and lower twenty per cents of the teachers' selection and the upper and lower twenty per cents of the intelligence quotients.

The results of these comparisons are found in tables XX, XXI, XX-A, XXI-A on pages 48, 50, 49, 51. The results of these tables were combined into tables XXII and XXII-A, page 52, which show the ability of the teachers to rate as compared with both the mental ages and the intelligence quotients. The ability of the teachers to select bright children as compared with their ability to select dull children is found in tables XXIII, XXIII-A, XXIV, and XXIV-A. on page 53.

C. EXPLANATION OF THE TABLES.

The results found in this chapter are shown in tables in section D. and are discussed in section E. where the questions given in the introduction are answered.

The tables XX, XXI, XXII, XXIII, and XXIV. are tables of the results from the eighth grades. Tables XX-A, XXI-A etc. correspond to the other tables of the same number except that they show the results from the second grades.

TABLE XX.

This table is a comparison of the pupils selected by the teachers as being in the upper or lower twenty per cent in intelligence, with their scores in the Delta 2 test (mental age). The test scores of the pupils of each grade are divided into five classes of twenty per cent each. The test score of each pupil selected by the teachers is then located in its proper class. The table reads, that

of the eight pupils selected by the teacher of the Hendricks school as being in the upper twenty per cent in intelligence, five belong to that class according to the score made in the intelligence test, one belongs in the next lowest class, one belongs in the third class and one belongs in class five or the lowest class of twenty per cent. Of the seven selected as being in the lowest twenty per cent by the teacher, three belong in that class according to the test score, three belong in the next highest class and one belongs in the middle class. At the foot of the table the results are totaled and translated into per cents.

TABLE XXI.

This table is the same as the preceeding one except that the teachers' ratings are compared with the intelligence quotients of the children as computed from the test scores.

TABLE XXII.

This table is a summary of the teachers' ratings compared with the actual score or the mental age and with the intelligence quotient. This table reads, that of the eighty-six pupils selected by the teachers as being in the upper and lower twenty per cents, forty were correctly selected according to the test scores, twenty-two were one class removed, thirteen were two classes removed, eight were three classes removed and three were four classes removed. The bottom row of figures is the same sort of comparison of the teachers' ratings with the intelligence quotients.

TABLE XXIII.

This table is a comparison of the teachers' ability to select the bright children with their ability to select the dull children. The teacher selections are compared with the intelligence quotients. The table reads, that of those selected by the teachers to be in

the upper twenty per cent, 41.66% were correctly selected, 25 % were one class misplaced by the teachers, 18.75 % were two classes misplaced etc. The bottom row of figures shows the same for those selected to be in the lowest twenty per cent.

TABLE XXIV.

This table is the same as the preceding one except that the comparison here is between the mental ages and the teachers' selection.

D. TABLES.

TABLE XX.

A COMPARISON OF THE UPPER AND LOWER TWENTY PER CENTS OF PUPILS AS SELECTED BY THE TEACHERS WITH THE SCORES MADE IN THE DELTA 2 INTELLIGENCE EXAMINATION.

Selected Correct classification by test scores.

School. by teachers. 1st. 20% 2nd. 20% 3rd. 20% 4th. 20% 5th. 20%

Hendricks	upper 20%	5	1	1		1
	lower 20%			1	3	3
Crowley	upper 20%	3	2	1	3	
	lower 20%			1	1	4
Hill	upper 20%	1	2	2	2	
	lower 20%	1		1	2	3
Jackson	upper 20%	3	2	2	1	
	lower 20%	1	1		1	2
Galtier	upper 20%	4	3			
	lower 20%				1	3
Murray	upper 20%	4	2	3		
	lower 20%		1	1	2	5
Total	upper 20%	20	12	9	6	1
	lower 20%	2	2	4	10	20
Per Cents	upper 20%	41.66	25	18.75	12.5	2.07
	lower 20%	5.26	5.26	10.53	26.32	52.63

Total number of pupils-----206

Number rated as highest 20 %-----48

Number rated as lowest 20 %-----38

TABLE XX-A.

A COMPARISON OF THE UPPER AND LOWER TWENTY PER CENTS OF PUPILS AS SELECTED BY THE TEACHERS WITH THE SCORES MADE IN THE DELTA 1 AND PRESSEY INTELLIGENCE TESTS. (SECOND GRADES)

Correct classification by test scores.

Selected by
teachers. 1st. 20% 2nd. 20% 3rd. 20% 4th. 20% 5th. 20%

School.

Scheffer B2.	upper 20%	2	3	3	2	
	lower 20%		2	2		5
Longfellow B2.	upper 20%	2	1	1	1	
	lower 20%				1	4
Neill A2.	upper 20%		1		2	
	lower 20%	1		1		1
Total	upper 20%	4	5	4	5	
	lower 20%	1	2	3	1	10
Per Cents.	upper 20%	22.2%	27.85%	22.2%	27.85%	
	lower 20%	5.882%	11.76%	17.24%	5.882%	58.82%

Total number of pupils-----80

Number rated as highest 20 %-----18

Number rated as lowest 20 %-----17

TABLE XXI.

A COMPARISON OF THE UPPER AND LOWER TWENTY PER CENT OF PUPILS AS SELECTED BY THE TEACHERS WITH THE INTELLIGENCE QUOTIENTS AS FOUND FROM THE DELTA 2 INTELLIGENCE TEST. (EIGHTH GRADES)

Selected by Correct classification by I. Qs.

School.	teachers.	1st.20%	2nd.20%	3rd.20%	4th.20%	5th.20%
Hendricks	upper 20%	4	2		1	1
	lower 20%			1	1	5
Crowley	upper 20%	4	2	2		
	lower 20%				3	3
Hill	upper 20%	1	1	2	3	
	lower 20%				2	5
Jackson	upper 20%	3	2	3		
	lower 20%		1		1	3
Galtier	upper 20%	4	2	1		
	lower 20%				1	3
Murray	upper 20%	4	3	1	1	
	lower 20%			2	2	5
Total	upper 20%	20	12	9	5	2
	lower 20%		1	3	10	24
Per Cents	upper 20%	41.66	25	18.75	10.41	4.14
	lower 20%		2.632	7.896	26.32	63.168

Total number of pupils-----206
 Number rated as highest 20 %-----48
 Number rated as lowest 20 %-----38

TABLE XXI-A

A COMPARISON OF THE UPPER AND LOWER TWENTY PER CENTS OF PUPILS AS SELECTED BY THE TEACHERS WITH THE INTELLIGENCE QUOTIENTS AS FOUND FROM THE DELTA 1 AND PRESSEY INTELLIGENCE TESTS. (SECOND GRADES)

Correct classification by I.Qs.

Selected by teachers. 1st,20% 2nd,20% 3rd,20% 4th,20% 5th,20%

School,

School,		1st,20%	2nd,20%	3rd,20%	4th,20%	5th,20%
Scheffer B2.	upper 20%	1	2	2	4	1
	lower 20%		2	2	1	4
Longfellow B2.	upper 20%	2	1	1	1	
	lower 20%			1		4
Neill A2.	upper 20%	1	1		1	
	lower 20%		1	1		1
Total	upper 20%	4	4	3	6	1
	lower 20%		3	4	1	9
Per Cents	upper 20%	22.2%	22.2%	16.65%	33.3%	5.55%
	lower 20%		17.24%	23.53%	5.88%	52.94%

Total number of pupils-----80

Number rated as highest 20 %-----18

Number rated as lowest 20 %-----17

TABLE XXII.

A COMPARISON OF THOSE SELECTED BY THE TEACHERS AS BEING IN THE UPPER AND LOWER TWENTY PER CENTS WITH THEIR CLASSIFICATION BY MENTAL AGES AND INTELLIGENCE QUOTIENTS. (EIGHTH GRADES)

Correctly selected by teachers. 1, 20% class removed. 2, 20% classes removed. 3, 20% classes removed. 4, 20% classes removed.

	Correctly selected by teachers.	1, 20% class removed.	2, 20% classes removed.	3, 20% classes removed.	4, 20% classes removed.
Teachers selection compared with mental age classification.	40	22	13	8	3
Teachers selection compared with intelligence quotient class.	44	22	12	6	2

TABLE XXII-A.

A COMPARISON OF THOSE SELECTED BY THE TEACHERS AS BEING IN THE UPPER AND LOWER TWENTY PER CENTS WITH THEIR CLASSIFICATION BY MENTAL AGES AND INTELLIGENCE QUOTIENTS. (SECOND GRADES)

Correctly selected by teachers. 1, 20% class removed. 2, 20% classes removed. 3, 20% classes removed. 4, 20% classes removed.

	Correctly selected by teachers.	1, 20% class removed.	2, 20% classes removed.	3, 20% classes removed.	4, 20% classes removed.
Teachers selection compared with mental age classification.	14	6	7	7	1
Teachers selection compared with intelligence quotient class.	13	5	7	9	1

TABLE XXIII.

A COMPARISON OF THE ABILITY OF TEACHERS TO SELECT BRIGHT PUPILS WITH THEIR ABILITY TO SELECT DULL PUPILS USING THE INTELLIGENCE QUOTIENTS AS THE STANDARD OF INTELLIGENCE. (EIGHTH GRADES)

	Correctly selected.	1 class removed.	2 classes removed.	3 classes removed.	4 classes removed.
Selected as being in upper 20 %.	41.66%	25%	18.75%	10.41%	4.14%
Selected as being in lower 20 %.	63.168%	26.32%	7.893%	2.632%	

TABLE XXIII-A.

SAME AS ABOVE COMPARISON EXCEPT SHOWING RESULTS FOR SECOND GRADES.

	Correctly selected.	1 class removed.	2 classes removed.	3 classes removed.	4 classes removed.
Selected as being in upper 20%.	22.2%	22.2%	16.65%	33.3%	5.55%
Selected as being in lower 20 %.	52.94%	5.88%	23.53%	17.24%	

TABLE XXIV.

SAME AS TABLE XXIII EXCEPT USING MENTAL AGES AS THE STANDARD.

	Correctly selected.	1 class removed.	2 classes removed.	3 classes removed.	4 classes removed.
Selected as being in upper 20 %.	41.66%	25%	18.75%	12.5%	2.97%
Selected as being in lower 20 %.	53.63%	26.32%	10.53%	5.26%	5.26%

TABLE XXIV-A.

SAME AS TABLE XXIV EXCEPT SHOWING RESULTS FOR SECOND GRADES.

	Correctly selected.	1 class removed.	2 classes removed.	3 classes removed.	4 classes removed.
Selected as being in upper 20 %.	22.2%	27.75%	22.2%	27.75%	
Selected as being in lower 20 %.	58.82%	5.88%	17.24%	11.76%	5.88%

E. CONCLUSIONS.

From the results shown in the preceding tables, answers for the questions raised in the introduction to this chapter can be found.

Question 7. Can the bright and the dull children be selected by teachers?

Question 8. Is it more difficult to select bright children than it is to select dull children?

The answers to these two questions is found on tables XXIII, XXIII-A, XXIV, and XXIV-A. In the eighth grades, 41.66 % of those rated superior by the teachers were superior according to their intelligence quotients, and 63.138 % of those rated inferior by the teachers were found to be inferior by the intelligence quotient scores. According to the standard of mental ages 41.66 % of those rated superior were correctly rated and 53.63 % of those rated inferior were really inferior. In the second grades 22.2 % of those rated superior were found to be superior by the tests according to both of the standards of intelligence. 52.938 % of the inferior ones were correctly rated according to the intelligence quotient standard and 58.82 % according to the mental age standard.

Because 22.2 % of the second grade pupils were found to be correctly rated as superior by both standards of intelligence, it does not hold that the same pupils were found to be superior by both methods. The reverse is true for according to mental age a pupil might be superior to the rest of the pupils in the grade but according to intelligence quotients he might be only average. This depends entirely upon the age of the pupil.

In round numbers we can say that 50 to 60 per cent of the dull pupils can be selected by the teachers and that from 20 to 40

per cent of the bright pupils can be selected by the teachers.

Question 5. Does it become more or less difficult to rate children as they become older?

The answer for this question is found in tables XXIII, XXIII-A, XXIV, and XXIV-A. In the eighth grades about 20 per cent more bright children were correctly selected by the teachers according to either standard than were correctly selected in the second grades. Of the dull pupils, about 10 per cent more were selected according to the intelligence quotients in the eighth grades but according to mental age 5 per cent more were selected correctly in the second grades.

When we consider both the dull and the bright together, it stands out rather clearly that the farther advanced in school the pupils are the easier it is to judge their intelligence. This coincides with the findings on this topic in the preceding section.

Question 19. Do teachers rate their pupils according to mental ages or intelligence quotients?

By a comparison of the summaries in tables XXII, XXII-A, it appears that there is little difference whether the standard of mental age or intelligence quotient is taken to mean intelligence. This slight amount of difference is due to the fact that some teachers used one standard and other teachers used the other standard and the summary shows a combination of the two methods. A sample of the use of the different standards can be seen by turning to tables XX-A and XXI-A. The teacher of the Scheffer school rated her pupils by the standard of mental ages and the teacher of the Neill school rated her pupils by the standard of intelligence quotients.

If the amount of deviation between the teachers' classifications and the test classifications according to mental ages and intelligence quotients is found from tables XX, XX-A, XXI and XXI-A, it is found that five teachers selected their bright and dull pupils in a manner that more nearly corresponds to the intelligence quotient standard and three teachers selected their pupils in a manner that more nearly corresponds to the mental age standard, while one teacher has equal deviation by either standard. In the eighth grades, but one teacher selected her bright and dull pupils according to the mental age standard.

While the evidence found here is not as striking as that found in chapter V on this question, it confirms the opinion stated in chapter V that the teachers naturally are thinking of intelligence quotients when they are rating for intelligence under ordinary conditions.

F. SUMMARY.

The findings of this chapter will be briefly summarized as follows:

1. Fifty to sixty per cent of the dull pupils can be selected by teachers.
2. Twenty to forty per cent of the bright pupils can be selected by teachers.
3. It is more difficult to estimate the intelligence of the younger pupils than it is to estimate the intelligence of the older pupils.
4. Teachers rate pupils in intelligence according to their intelligence quotients rather than their mental level.

CHAPTER VII.

A SET OF DIRECTIONS FOR THE RATING OF INTELLIGENCE.

Some of the teachers' ratings studied in the preceding chapters have been found to correlate well enough with the results of mental tests to suggest that teachers' ratings of intelligence might be made a valuable measure of intelligence if the teachers could be instructed how to rate in an efficient manner. At least an attempt should be made to formulate a set of directions for the rating of intelligence before teachers' ratings are discarded as valueless. This chapter is a description of such an attempt and the results obtained thereby.

A. THE FORMULATION OF THE DIRECTIONS.

Before a set of directions for the rating of intelligence can be constructed, it must be determined whether the rating is to be for mental ages or for intelligence quotients. From the results of the preceding section it appears that the teachers naturally rate for intelligence quotients.¹ Since that is the natural tendency, it would be better not to try to make them change but rather to formulate a set of directions which will make use of the tendency as it exists. It will be necessary, therefore, to have the teachers take age into consideration and to make sure that they do not neglect to do so, the teachers will need to be instructed to have the age of each pupil before her as she rates.

Since the term "brightness" is a common term applied to intelligence by teachers, the teachers will probably do better

1. A discussion of this point will be found on pages 35 and 55.

with their rating if that term is used in the set of directions to mean intelligence and the term "dullness" to mean lack of or low intelligence.

In determining the number of steps on a scale, it must be kept in mind that the rating is a rough measure; therefore it will be useless to attempt to have too many steps with fine discriminations between each step. With very few exceptions the five step basis has been used on all previous scales. The five steps should be divided according to the normal curve of distribution, since intelligence is known to follow that sort of a distribution.

The best results from any scale appear to come from the use of the Army scale which uses the man-to-man comparison.² It will probably be found to work as well as a child-to-child comparison and is worth including in the directions. Curtis³ has used this device in a scale for the rating of teachers and Pressey⁴ has used it in a scale for rating school children.

When it comes to a selection of a definition of intelligence, there are a large number of definitions to be considered but many of them are too technical to be included in a set of directions to be used by teachers who are not psychologists. The definition used by the Virginia Education Commission seems to be an excellent definition put in terms that should be understood by any teacher. This definition was, therefore, adopted with very little change.

In chapter V. of this study it is shown that teachers do not rate children according to all children of their grade but rather according to the standard of intelligence in their particular grades. It is important that a direction be included which will attempt to have teachers think of all pupils of their grades.

2. Ibid. 3. Ibid. 4. Ibid.

Keeping in mind the principles outlined here, a set of directions was formulated as follows:

RATING FOR INTELLIGENCE.

Directions to teachers.

The rating will be done on a five point basis as follows:

- A. means superior, the rating given to the brightest five per cent of school children.
- B. means high average, above the average, but not so bright as A. About 20 per cent of all children would normally receive this rating.
- C. means average, the rating of the middle 50 per cent of children.
- D. means low average, below the middle 50 per cent but not so dull as the lowest five per cent.
- E. means inferior, the rating of the dullest five per cent in school.

By intelligence is meant the degree of brightness of a child. It is not the same as scholarship. Think rather of the skill with which a pupil is able to meet new situations, both in school and out. The most intelligent child does not always make the highest marks in school. An intelligent child may earn high school marks if he is industrious, if he is physically well, if he is regular in attendance and if all other school conditions are favorable. If these conditions are not favorable, he may still be very bright and not earn high marks.

A rating scale or measuring stick must be made before you begin to rate your pupils. Each teacher must make her own scale. A scale is made by selecting one or more children for each of the five ratings of intelligence. These children selected to be on the scale may be children from the class you now have or from classes you have taught before. As a sample for the rating of superior intelli-

gence, select one or two of the brightest children you have ever known. For the rating of inferior, select one or two of the dullest children you have ever meet in school. Fill in the average with the name of an average child and then proceed to fill in the steps between the average and the two extremes.

A sample scale might look like this:

Superior	rated A.	Mary J.
High Aver.	"	B. John S., William B.
Average	"	C. Roy C., Grace B.
Low Aver.	"	D. Robert S.
Inferior	"	E. Ruth B., Arthur A.

After you have completed the scale, compare each of your pupils with those whose names are on the scale and rate your pupils accordingly.

Take into consideration the age of the pupil to be rated. Before you begin to rate get the age of each pupil before you. A child who is over age for his grade is apt to have low intelligence unless his retardation is due to non-attendance or sickness and a child who is under age is apt to have high intelligence.

In rating try to think of children in general of your grade. You may not have any bright children compared with children in general of your grade or you may have more than the average number of bright children. This depends a great deal upon the community from which your pupils come.

A record sheet to facilitate the rating is provided for each teacher who is to rate. This sheet includes a column for the ages of the pupils to make sure that the teachers do not neglect to have the ages of their pupils before them when they rate. The

record sheet is headed in this manner:

RECORD SHEET.

Put a check in the correct column.

Name of Pupil.	Age.	A. Superior	B. High Aver.	C. Aver.	D. Low Aver.	E. Inferior.
Smith, James	12-11		✓	(sample name)		

B. METHOD OF TESTING THE DIRECTIONS.

Since the scale attempts to have pupils rated according to their intelligence quotients, the first thing to investigate was whether the teachers actually rated according to this standard when the scale was used. To investigate this point, the scale was given to some teachers who rated their pupils according to the directions. The results of their ratings were correlated with the scores made on the Delta 2 test, according to mental ages and intelligence quotients as found from the norms given for the test.

The teachers of the Lake Wilson school system were requested to do this rating.⁵ One teacher of the third and fourth grades

5. The author is indebted for this material to M. H. E. Tiegs, Sup't. of the Lake Wilson School. Mr. Tiegs gave the Delta 2 test and had the teachers do the rating with the scale provided by the author.

rated twenty pupils, the teacher of the fifth and sixth grades rated twenty-nine pupils and the teacher of the seventh and eighth grades rated twenty-four pupils.

The scores were translated into intelligence quotients and the ratings were correlated with these scores as well as with the actual score or the mental age score. The method of correlation used was the Ayres' short method of the Products'-Moment correlation.⁶

The results were found to be as follows:

Grades.	Teachers' ratings correlated with mental age scores.	Teachers' ratings correlated with intelligence quotients scores.
3-4	.564	.656
5-6	.803	.807
7-8	.616	.764

In two cases the teachers made much better ratings according to the intelligence quotients and in the other case there was little difference. The results of the rating seem to indicate that the scale is successful in getting the teachers to rate according to the intelligence quotients of their pupils.

The second attempt at using the scale was to determine whether teachers could do better rating with the scale than without it. The first part of this attempt was with twenty-nine eighth grade pupils of the Prescott school.⁷ These pupils were rated with a combined rating by three teachers who knew the pupils by contact in departmental teaching. Each teacher was then asked to rate the pupil using the scale. A composite rating was secured by taking the average of the three ratings. The pupils mental age scores and intelligence quotient scores as found from the Delta 2 test were

6. A description of this method can be found in the Journal of Educational Research, March 1920.

7. This material was obtained with the cooperation of E. W. Tiegs, Principal of the Prescott school, Minneapolis.

correlated with the ratings of the teachers and the following correlations were found:

	Scores obtained on the Delta 2 test.	
	Intelligence quotients.	Mental ages.
1st. composite rating (without the scale)	.845	.521
2nd. composite rating (with the scale)	.901	.578
Individual teachers' ratings (with the scale)		
Teacher A.	.844	.618
Teacher B.	.865	.638
Teacher C.	.827	.429

The composite rating of the three teachers improved when the scale was used from .845 to .901. Each teacher was able to rate with the use of the scale with a correlation better than .82. In obtaining the first composite rating the teachers were instructed to rate for intelligence with no definition of what that term meant. The ratings obtained show quite clearly that to correlate the score with the teachers' ratings is incorrect and that the scores made on the test must first be translated into intelligence quotient scores. In this case the correlation is only .521 when the test score is correlated with the teachers' ratings and when the intelligence quotient scores are correlated with the teachers' ratings the result is .845. In one case the teachers would be considered poor raters and in the other case they would be considered good raters.

The next attempt to use the scale was with some teachers in the Simmons school.⁸ Several teachers were asked to rate their pupils on general intelligence and were left to determine for themselves

8. This material was collected with the help of S. O. Severson, Principal of the Simmons School, Minneapolis.

what was meant by intelligence and what method to use in their rating. Within a few days these teachers were given the rating scale and asked to re-rate their pupils. The correlations between these two ratings and the results of the Delta 2 test are given below:

	Mental ages.	Intelligence	quotients.	
5C.	First rating	.662	.706	15 pupils.
	Second rating	.641	<u>.703</u>	
5A.	First rating	.396	.452	32 pupils.
	Second rating	.391	<u>.629</u>	
7B.	First rating	.520	.609	39 pupils.
	Second rating	.578	<u>.644</u>	
7A.	First rating	.229	.575	37 pupils.
	Second rating	.714	<u>.672</u>	
7A.	First rating	.418	.309	49 pupils.
	Second rating	.881	<u>.642</u>	

The numbers which are underlined are the correlations which are the result of the use of the rating scale. All of the teachers except the teacher of the 5C. grade were able to make considerable improvement with their rating when the scale was used. In the case of the 5C. grade there are only fifteen pupils and this small number makes the correlation very unreliable.

C. SUMMARY.

1. A set of directions for the rating of the intelligence of school children should include the following features:

A. A definite direction as to whether the teachers are to rate for mental ages or for intelligence quotients.

- D. The use of the terms "brightness" and "dullness" to mean high and low intelligence, if the intelligence quotients are what is meant by intelligence.
- C. Five steps on the scale divided according to the normal curve of distribution.
- D. A child-to-child comparison in place of a comparison of the child to a number or letter.
- E. A definition of intelligence that can be understood by any teacher.
- F. A direction which will get teachers to consider children of their grades in general and not those of their particular grade.

2. The rating scale formulated in this chapter includes the features listed above.

3. Three teachers of the Lake Wilson school used the scale in rating their pupils so as to get correlations with intelligence quotients found with the Delta 2 intelligence test of .656, .764 and .807.

4. Correlations of composite ratings of three teachers of an eighth grade of the Prescott school with intelligence quotients found with the Delta 2 intelligence test improved from .845 to .901 when the rating scale was used.

5. The separate ratings of the three teachers mentioned above when correlated with intelligence quotients gave the results .827, .844 and .865.

6. Five teachers in the Simmons school in using the rating scale made considerable improvement over previous ratings without the scale. The results of their ratings with the use of the scale when correlated with intelligence quotients gave correlations of .629, .642, .644, .672 and .703.

7. All the correlations found between the ratings of the teachers and the intelligence quotients of the pupils when the rating scale was used are as follows:

.629		
.642		
.644		
.656	Lowest correlation	.629
.672		
.703	Highest	.865
.764		
.807	Median	.703
.827		
.844		
.865		

8. The above results contain an answer for question 10. Can a set of directions be formulated that will enable teachers to rate general intelligence successfully?

The rating scale formulated and used in this study enabled eleven teachers to rate the intelligence of their pupils with a median correlation of .703. This correlation is much higher than the correlation of .48 given by Terman or the median correlation of .500 found in chapter V of this study. It appears that teachers can be aided in making much better ratings with the use of a properly devised set of directions.

BIBLIOGRAPHY.

- Boyce, A. C. "Methods for Measuring Teachers' Efficiency." Fourteenth Yearbook of the National Society for the Study of Education, 1915 Part II. p. 10 ff.
- Coffman, L. D. "The Rating of Teachers in Service." School Review Monograph, No. 5, 1914, p. 14 ff.
- Connor, W. L. "A New Method of Rating Teachers." Journal of Educational Research, Vol. I, May 1920, p. 338 ff.
- Courtis, S. A. "Manual of Directions for Making Efficiency Card Ratings." Board of Education, Detroit, May 1920.
- Downey, June E. "The Will-Profile." Bulliten No. 3, University of Wyoming 1919.
- Elliott, E. C. "How Shall the Merit of Teachers be Tested and Recorded." Educational Administration and Supervision, May 1915 pp. 291-99.
- Filter, R. O. A Scale for Rating the Trait of Agressiveness or Self-Assurance. Unpublished Thesis.
- Hill, L. B. "Score Card for Rating Practice Teachers and Teachers in Service." Report of the Society of College Teachers of Education, 1920.
- Kelley, F. J. "Teachers Marks." New York: Teachers College, 1914.
- Kelley, T. L. "Educational Guidance." New York: Teachers College 1914.
- Kent, R. A. "What Should Teacher-Rating Schemes Seek to Measure." Journal of Educational Research, Vol. II, No. 5 Dec. 1920.
- Ohio High-School Inspectors. "Score Card for Rating Teachers." Educational Administration and Supervision, May 1920.

Personnel Manual. "Rating of Officers." United States Army, Chap. 12
p. 252 ff.

Pressey, S. L. "An Attempt to Measure the Comparative Importance
of General Intelligence and Certain Character Traits in
Contributing to Success in School." The Elementary School
Journal, Nov. 1920.

Roecker, W. F. "An Objective Study of the Rating of Traits in School
Achievement." School Review 23, 1915, pp. 406-410.

Ruediger, W. C., and Strayer, G. D. "The Qualities of Merit in
Teachers." Journal of Educational Psychology, 1:272-78, May
1910.

Smith, E. R. "Teachers Manual of the Park School System of Pupil
Analysis." Syracuse: C. W. Bardeen, 1920.

Starch, Daniel. "Educational Measurements." New York: The Macmillan
Co. 1917.

Terman, L. M. "The Measurement of Intelligence." Chicago: Houghton
Mifflin Co., 1916.

Whipple, G. M. "Classes for Gifted Children." Bloomington, ILL,
Public School Publishing Co. 1919.

Virginia Public Schools Education Commission Survey and Report.
Richmond, Va: Everett Waddey Co. 1919

TABLE OF THE TEST SCORES AND TEACHERS' RATINGS OF 171 THIRD
GRADE PUPILS IN VIRGINIA.

Column A. is the rating of the teacher.
Column B. is the Verbal A scores.
Column C. is the Verbal B. scores.
Column D. is the Delta 2 scores.
Column E. is the Alpha 2 scores.
Column F. is the weighted scores.
Column G. is the intelligence quotients computed from the
Delta 2.

The dotted lines mark off different grades.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
1	8-10	3	38	46	52	5.2	191	130
2	8-11	3	46	46	54	5.2	205	129
3	9-1	3	28	43	24	4.5	139	54
4	10-1	3	38	48	63	5.4	210	112
5	9-1	3	28	35	48	0	114	102
6	10-6	3	40	50	66	6.2	220	108
7	9-6	2	33	34	38	5.1	162	77
8	9-9	2	34	51	41	5.3	179	79
9	9-6	2	32	36	49	3.7	158	100
10	10-10	2	31	40	43	3.2	148	67
11	9-3	2	25	37	53	5.0	164	115
12	11-3	2	20	31	40	4.8	138	55
13	8-10	2	34	41	36	0	115	90
14	9-0	2	36	42	54	5.1	181	126
15	10-4	2	24	37	45	6.1	166	76
16	10-6	2	30	46	49	4.1	165	80
17	9-8	2	19	32	25	5.0	127	49
18	9-11	2	24	39	29	4.8	139	54
19	10-1	2	25	36	41	5.1	153	73
20	10-1	2	35	42	35	5.1	166	63
21	8-10	2	25	45	20	4.9	135	50
22	8-9	2	29	36	43	5.1	162	110
23	12-2	1	12	55	41	2.2	117	51
24	9-0	1	22	31	17	4.9	119	39
25	11-10	1	27	28	28	4.3	135	37
26	11-4	1	16	40	28	4.5	124	40
27	10-7	1	23	33	27	4.5	129	44
28	10-10	1	22	33	26	4.1	122	41
29	11-2	1	32	46	31	5.0	160	46
30	11-3	1	14	46	37	5.2	140	51
31	10-4	1	18	19	53	4.5	137	90
32	8-10	1	4	27	13	5.0	87	32
33	10-4	1	22	50	38	5.1	154	64
34	10-1	1	30	42	31	4.1	145	55

continued on the next page.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
35	8-6	3	22	46	36	5.3	152	106
36	10-2	2	7	24	21	0	48	37
37	9-7	2	19	12	18	0	55	38
38	7-8	4	26	52	52	4.9	175	200
39	7-3	4	31	48	54	6.2	194	210
40	8-4	4	30	48	47	5.2	176	151
41	8-3	4	31	39	47	5.4	173	157
42	7-9	4	26	40	24	5.2	141	115
43	9-0	4	24	42	46	5.4	164	107
44	8-11	4	28	30	48	4.5	155	114
45	8-4	4	22	30	29	5.3	135	99
46	8-3	4	25	25	38	4.5	136	123
47	7-4	4	13	22	37	3.6	107	180
48	9-1	4	36	59	70	5.2	216	159
49	10-0	3	31	26	36	4.5	144	65
50	9-8	2	32	21	28	5.3	143	55
51	9-7	1	16	25	29	4.8	117	58
52	10-2	4	36	39	51	5.1	182	89
53	9-4	4	47	43	53	4.5	198	113
54	8-8	4	40	60	50	6.2	212	135
55	9-7	4	28	35	36	4.9	151	72
56	8-11	4	42	54	44	5.5	198	105
57	8-3	4	22	45	50	4.5	158	147
58	9-1	4	35	53	63	4.3	194	143
59	8-11	3	29	31	44	5.3	161	105
60	10-8	3	22	35	22	5.3	132	30
61	9-1	3	29	41	30	5.1	153	69
62	9-3	3	26	48	58	4.2	175	125
63	8-11	3	16	33	36	4.5	127	85
64	11-0	2	28	34	31	4.8	143	45
65	9-3	2	18	49	43	4.1	143	93
<hr/>								
66	10-6	3	13	25	38	3.6	114	62
67	12-0	3	20	29	37	3.6	123	48
68	10-9	2	4	24	17	3.7	73	27
69	9-5	2	13	21	22	3.6	92	45
70	9-2	2	23	42	26	4.1	131	58
71	8-10	2	28	48	36	4.8	142	90
72	9-5	2	23	42	25	4.5	134	50
73	10-1	2	18	25	46	4.5	134	82
74	8-7	2	12	27	8	4.5	89	23
75	10-10	1	21	25	19	2.9	95	29
76	12-1	1	18	23	39	4.1	123	50
77	8-5	1	26	47	35	5.2	157	101
78	9-11	1	28	37	37	4.9	152	68
79	9-9	1	17	30	31	5.4	131	59
80	10-0	1	27	41	47	5.2	167	85
81	10-2	1	42	19	19	3.2	81	33

continued on the next page

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
82	9-0	4	13	49	34	4.1	127	79
83	8-8	4	41	45	47	4.3	186	126
84	9-7	4	28	35	51	4.3	165	102
85	9-5	4	21	31	18	4.5	115	25
86	9-0	4	43	55	45	5.5	201	87
87	9-0	3	18	41	35	4.1	131	81
88	9-1	3	19	24	46	4.5	136	105
89	8-3	3	42	45	58	4.9	200	156
90	9-1	3	22	53	40	3.3	142	91
91	9-5	3	29	48	20	4.3	143	42
92	11-1	2	19	34	46	4.5	147	67
93	8-8	2	13	44	35	4.5	130	94
94	9-3	2	13	35	30	4.5	119	65
95	9-0	2	19	33	47	4.5	143	109
96	9-3	2	5	41	40	2.9	105	86
97	11-1	2	13	25	17	4.9	102	24
98	12-1	2	14	42	31	5.1	131	39
99	9-1	2	18	25	28	4.8	119	64
100	11-2	2	38	52	42	4.9	183	62
101	10-6	2	12	19	16	5.0	96	26
102	9-1	2	37	18	50	4.9	165	113
103	12-3	2	13	37	26	4.9	119	31
104	9-1	2	21	35	37	2.2	114	84
105	9-3	2	14	32	33	4.9	125	67
106	10-1	1	3	16	27	0	42	48
107	11-6	1	21	40	38	4.1	137	53
108	10-7	1	13	24	31	4.5	112	51
109	10-6	1	14	33	39	4.3	125	64

110	8-9	4	43	45	58	0	152	148
111	9-3	4	36	43	41	0	125	83
112	9-11	3	20	15	22	2.9	91	41
113	9-10	3	15	28	40	3.6	117	75
114	9-3	3	25	40	40	4.5	148	87
115	8-3	3	21	25	41	3.6	124	132
116	10-11	3	21	38	50	5.3	160	77
117	10-4	3	34	37	40	3.3	148	68
118	8-9	3	15	33	28	4.1	113	78
119	8-8	3	34	39	55	5.0	182	149
120	9-5	3	18	36	16	3.7	104	33
121	9-3	2	5	11	16	0	41	35
122	8-5	2	14	23	27	4.1	104	85
123	9-3	2	19	33	29	4.1	121	63
124	9-0	2	20	40	40	5.4	151	82
125	9-3	2	12	25	36	5.3	123	73
126	11-0	2	9	21	26	3.7	84	25
127	8-0	2	23	24	39	4.0	120	100
128	9-0	2	17	22	32	2.9	101	74
129	10-10	2	40	51	66	5.1	211	103

continued on the next page.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
130	8-5	4	44	52	52	5.1	203	178
131	8-5	4	16	43	35	4.9	136	106
132	8-9	4	23	38	35	4.8	144	90
133	9-4	4	20	44	42	6.0	162	91
134	9-2	4	26	28	31	4.1	129	69
135	9-6	3	29	38	53	4.5	168	108
136	8-5	3	2	18	9	4.5	69	30
137	8-10	3	29	32	53	4.5	154	107
138	9-11	3	21	36	16	6.0	131	31
139	10-6	3	19	28	37	3.7	121	61
140	11-5	3	25	40	38	4.8	150	53
141	11-3	2	11	43	28	5.1	124	41
142	9-11	2	6	26	16	5.1	82	29
143	10-4	2	15	34	43	4.0	127	73
144	10-4	2	15	35	33	3.6	115	56
145	10-7	2	12	30	44	4.5	127	72
<hr/>								
146	8-11	4	48	55	41	5.2	201	99
147	8-3	4	43	49	67	5.2	217	223
148	8-6	3	20	41	29	4.5	132	85
149	11-0	3	36	62	45	4.9	190	68
150	10-8	2	31	50	43	5.0	173	69
151	10-2	2	27	54	57	5.5	189	100
152	9-2	2	31	42	31	4.6	151	69
153	11-11	2	53	7	89	5.1	225	117
154	11-11	2	24	38	43	5.2	156	58
155	9-7	2	41	54	64	5.2	212	128
156	8-8	2	23	51	31	2.9	130	83
157	10-1	2	31	48	50	4.9	181	89
158	9-10	2	22	35	29	3.7	121	51
159	12-3	2	27	33	37	6.0	180	46
160	10-6	2	37	48	38	3.1	161	62
161	11-2	2	13	53	38	5.2	146	55
162	10-8	2	17	32	33	5.5	136	53
163	10-7	2	29	41	44	6.1	177	72
164	10-1	2	36	42	64	5.2	198	114
165	9-2	1	24	48	63	5.1	186	140
166	10-6	1	18	45	15	3.1	103	24
167	8-8	1	34	41	41	3.2	172	121
168	10-10	1	29	58	43	4.5	171	67
169	11-3	1	27	47	58	5.2	183	84
170	10-2	1	38	55	59	5.0	202	103
171	10-10	1	35	53	46	4.9	183	72

TABLE OF THE TEST SCORES AND TEACHERS' RATINGS OF 148 FIFTH GRADE PUPILS IN VIRGINIA.

Column A. is the ratings of the teachers.
 Column B. is the Verbal A scores.
 Column C. is the Verbal B scores.
 Column D. is the Delta 2 scores.
 Column E. is the weighted scores.
 Column F. is the Alpha 2 scores.
 Column G. is the intelligence quotients computed from the Delta 2.

The dotted lines mark off different grades.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
1	10-11	3	68	67	90	252	7.3	138
2	11-2	4	62	62	84	240	7.3	124
3	10-7	3	45	58	86	220	7.3	141
4	10-9	4	80	76	95	268	6.6	151
5	13-4	3	67	73	115	276	7.3	126
6	11-7	3	60	73	102	263	7.5	142
7	12-2	3	72	68	94	263	7.3	119
8	14-2	2	59	58	81	231	7.3	79
9	13-1	2	37	60	92	220	7.5	104
10	12-1	4	72	67	98	263	7.5	120
11	9-8	3	53	55	80	209	6.0	157
12	12-9	3	41	56	62	183	6.0	74
13	12-8	3	72	61	103	243	7.3	123
14	11-11	3	49	78	64	206	5.7	84
15	12-0	3	63	60	88	244	7.5	114
16	12-1	3	73	69	84	251	7.3	108
17	12-4	3	58	65	88	227	6.0	109
18	14-6	3	61	60	78	234	6.6	73
19	12-1	4	56	63	89	240	7.6	114
20	13-2	3	59	71	90	217	5.2	101
21	13-7	1	52	65	88	211	4.9	93
22	12-3	4	87	63	92	264	6.6	114
23	13-2	4	86	78	96	283	7.3	108
24	12-4	3	68	74	99	269	7.6	122
25	12-0	4	85	74	93	270	6.6	121

26	10-8	4	61	62	82	226	6.4	132
27	10-10	3	32	42	39	151	6.1	61
28	10-9	3	62	55	79	209	5.1	125
29	11-1	3	44	51	67	185	5.8	100
30	10-8	3	41	52	72	180	5.1	116
31	10-9	3	59	49	89	219	6.2	141
32	11-1	3	63	70	64	196	5.6	93
33	11-8	3	71	68	90	221	6.0	123
34	13-7	3	49	55	66	209	5.9	71
35	10-5	3	38	56	58	173	5.5	91

continued on next page.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
36	12-9	3	37	47	59	192	5.9	70
37	12-3	2	34	52	56	170	5.9	70
38	12-1	2	38	55	72	185	5.8	92
39	12-7	2	30	45	44	142	4.9	54
<hr/>								
40	9-10	4	68	60	95	233	5.5	180
41	10-9	2	45	49	82	179	4.1	130
42	12-6	2	65	73	82	247	6.2	100
43	11-2	3	52	62	73	196	5.9	107
44	10-9	3	35	71	57	185	5.8	90
45	11-2	3	40	57	77	198	6.2	113
46	11-7	3	79	76	105	259	5.2	146
47	11-11	3	83	79	91	263	6.0	120
48	11-5	3	53	71	87	217	5.5	122
49	12-2	3	50	62	84	214	5.9	106
50	12-3	3	83	78	113	234	6.2	141
51	12-4	3	47	56	66	167	3.3	81
52	12-3	3	62	80	97	203	4.1	121
53	11-3	3	50	47	49	169	5.2	71
54	9-10	4	52	69	60	205	6.2	113
55	9-10	4	50	59	85	213	5.6	160
56	10-9	4	63	65	85	228	5.7	135
57	12-10	4	60	65	76	221	6.0	89
<hr/>								
58	10-8	4	60	67	97	223	4.4	156
59	9-6	3	61	67	94	219	4.1	191
60	12-10	3	55	61	82	207	4.9	96
61	11-9	4	43	49	69	180	6.2	93
62	10-6	3	44	48	59	181	6.0	97
63	10-6	3	50	56	86	208	5.6	141
64	11-10	4	57	55	91	224	6.2	121
65	11-0	3	19	57	46	153	6.0	70
66	10-9	3	39	60	68	191	6.1	108
67	11-4	4	46	53	83	179	6.4	119
68	11-0	4	41	45	69	167	4.5	104
69	10-9	4	50	58	83	215	6.2	131
70	10-9	4	50	58	83	215	6.2	131
71	11-0	4	71	64	79	216	4.5	120
72	11-4	4	59	57	78	208	5.2	111
73	9-11	3	48	53	64	177	4.5	118
74	10-3	4	31	52	60	160	4.9	103
75	10-2	3	36	48	69	179	5.9	121
76	10-0	3	37	56	55	182	4.9	100
77	10-0	3	49	58	89	203	4.8	161
78	10-8	4	34	34	69	165	5.9	111
79	12-9	3	21	44	60	148	5.2	74

continued on next page

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
79	11-3	2	36	47	85	177	4.5	123
80	10-8	3	59	58	69	203	5.4	111
81	10-8	3	32	49	48	162	6.1	78
82	11-5	3	51	57	85	198	4.5	120
83	11-9	3	44	46	58	150	3.1	78
84	12-0	3	57	56	65	188	5.03	85
85	13-0	1	42	49	63	182	5.9	72
86	12-7	2	55	53	74	188	4.1	89
87	12-8	2	40	59	73	184	4.5	87
88	14-4	1	52	57	85	213	5.9	81
89	12-4	3	44	65	80	108	6.6	99
90	12-2	3	42	60	72	186	5.0	91
91	12-2	3	36	63	81	199	6.0	103
92	11-10	2	47	55	81	190	4.5	108

93	11-0	3	42	61	54	184	5.1	82
94	11-0	4	61	61	74	220	6.2	112
95	10-4	3	76	52	92	239	5.9	155
96	10-5	3	47	48	51	177	5.9	85
97	10-5	3	61	55	82	210	5.0	120
98	14-4	3	35	60	56	165	4.8	53
99	11-11	3	58	63	72	218	6.4	95
100	9-11	3	72	74	95	255	6.2	176
101	11-9	2	42	56	72	178	5.4	98
102	11-4	3	40	57	61	179	6.0	87
103	11-7	3	77	62	89	239	4.8	173

104	12-4	2	30	55	52	156	5.0	64
105	15-1	2	61	64	68	222	6.7	59
106	13-4	2	39	48	54	163	5.2	58
107	12-2	2	71	69	105	264	8.8	126
108	13-4	2	34	51	61	151	3.7	67
109	11-0	2	51	59	85	215	6.0	129
110	10-4	3	85	66	79	262	7.3	134
111	11-11	3	39	64	80	255	7.3	105
112	14-7	3	80	63	83	264	8.0	76
113	12-3	3	94	70	96	266	5.1	120
114	11-2	3	57	72	84	238	6.0	123
115	12-0	4	60	68	75	231	6.8	98
116	11-8	4	40	65	71	214	7.6	97
117	13-1	4	53	47	69	201	6.4	78
118	10-6	4	77	60	72	231	6.0	118

continued on next page.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
119	12-2	3	64	68:	64	220	6.2	81
120	11-7	4	83	77	94	280	7.3	131
121	13-4	4	80	73	93	269	6.8	102
122	11-11	4	61	52	65	218	7.3	85
123	11-5	4	72	60	75	221	5.2	105
124	11-4	4	91	63	86	271	7.3	123
125	11-0	4	92	80	98	293	7.3	149
126	12-9	5	84	74	91	274	6.6	108
127	10-7	5	41	56	68	206	7.6	81
128	11-11	5	84	53	106	268	6.8	139
129	9-9	5	78	72	100	277	6.6	192
130	10-1	5	85	75	107	292	7.6	191
131	10-1	5	81	66	95	291	7.3	170

132	15-5	2	44	59	73	204	6.5	63
133	12-4	2	52	65	69	218	7.0	85
134	11-3	3	71	66	83	230	5.2	120
135	11-11	3	68	59	86	292	6.9	113
136	12-8	3	67	66	62	219	6.1	74
137	11-2	3	66	72	84	247	7.0	124
138	10-11	3	65	63	75	216	5.2	115
139	11-2	4	72	67	100	258	6.6	145
140	10-9	4	69	72	89	243	5.9	142
141	11-11	4	64	73	97	243	5.7	123
142	12-8	4	51	63	75	218	6.8	89
143	12-11	4	90	79	105	290	6.8	122
144	11-9	4	72	76	103	266	6.6	139
145	10-7	5	79	66	109	275	9.0	178
146	10-5	5	95	86	130	324	7.3	216
147	11-6	5	74	68	97	258	6.5	131
148	10-7	5	89	83	129	317	7.5	211

TABLE OF THE TEST SCORES AND TEACHERS' RATINGS OF 89 SEVENTH
GRADE PUPILS IN VIRGINIA.

Column A. is the rating of the teacher.
 Column B. is the Verbal A scores.
 Column C. is the Verbal B scores.
 Column D. is the Delta 2 scores.
 Column E. is the Alpha 2 scores.
 Column F. is the weighted scores.
 Column G. is the intelligence quotients computed from the
 Delta 2.

The dotted lines mark off different grades.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
1	13-5	4	102	76	123	7.7	320	134
2	11-9	4	92	78	110	8.0	307	149
3	13-2	3	89	73	93	7.3	290	104
4	12-11	3	78	74	98	7.2	224	114
5	15-1	3	101	79	115	7.7	325	100
6	14-4	2	71	75	99	7.2	268	94
7	16-1	2	43	55	60	8.1	205	52
8	13-10	2	78	53	75	8.1	222	76
9	14-3	2	67	73	97	7.7	267	93
10	14-0	2	97	77	105	9.1	318	105
11	14-0	2	50	54	89	6.7	220	89
12	13-3	2	58	62	89	6.9	235	99
13	14-1	2	54	77	57	7.4	223	56
14	15-6	2	49	75	75	7.3	229	65
15	14-6	1	66	71	84	6.4	241	78
16	14-4	1	69	79	102	8.0	278	98

17	12-0	3	95	66	123	7.3	305	160
18	14-0	3	109	93	115	6.6	352	115
19	14-5	3	45	73	97	7.0	236	92
20	13-8	3	73	81	103	7.6	280	107
21	13-11	2	82	75	107	6.4	282	108
22	14-10	2	65	64	89	6.7	242	79
23	14-2	2	76	70	92	7.2	271	89
24	14-0	2	106	77	114	7.6	319	114
25	14-0	2	90	75	106	6.8	287	106
26	13-11	2	97	83	35	6.9	249	36
27	14-3	1	55	67	112	6.6	249	108
28	14-7	1	64	65	87	6.8	242	80
29	14-7	1	51	77	92	6.7	238	84
30	14-6	1	60	65	92	6.9	242	85
31	13-10	1	92	80	109	7.0	297	111

continued on next page.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
32	14-0	4	91	68	93	7.5	281	93
33	13-0	4	57	71	108	7.5	261	124
34	14-0	4	83	80	117	7.2	296	117
35	14-1	4	94	84	125	7.7	320	124
36	13-1	3	71	72	94	6.7	258	107
37	14-0	3	94	81	115	6.9	301	115
38	14-0	3	51	60	77	6.2	210	77
39	15-1	2	48	64	98	6.8	233	85
40	13-1	2	50	68	81	6.9	225	90
41	14-0	2	58	56	71	6.4	219	71
42	14-0	2	75	77	101	6.5	266	101
43	13-0	2	79	65	91	6.9	261	1105
44	14-0	2	38	61	68	6.1	198	68
45	16-0	2	53	52	81	6.3	211	70
46	16-0	2	58	55	77	6.7	215	61
47	14-1	2	60	71	99	6.77	250	98

48	13-0	3	105	92	125	8.8	354	143
49	13-7	3	83	80	90	7.2	278	95
50	14-3	2	62	74	91	7.0	251	88
51	12-10	2	53	57	79	7.4	205	93
52	13-9	2	76	69	88	6.6	254	90
53	14-0	2	80	63	87	6.8	256	87
54	15-7	2	77	64	107	7.6	276	93
55	13-1	2	84	76	106	8.0	295	120
56	14-2	2	79	79	96	7.4	283	95
57	13-10	2	63	62	83	7.1	238	85
58	15-3	1	62	60	81	7.2	234	70
59	15-11	1	44	58	59	6.8	196	51
60	14-3	1	80	72	83	7.7	267	69
61	13-8	1	81	81	85	6.9	247	84
62	14-0	1	73	77	101	7.2	272	101

63	12-9	4	107	86	127	8.3	344	149
64	13-10	4	90	74	111	7.2	295	113
65	13-3	4	92	85	133	7.9	327	148
66	12-2	4	114	76	133	7.9	343	168
67	12-5	4	113	82	132	9.6	362	163
68	12-7	4	120	96	145	8.6	378	174
69	13-2	4	85	71	116	8.8	308	130
70	13-1	4	110	80	126	8.3	340	143
71	13-9	4	96	81	114	7.4	307	117
72	14-3	4	67	65	90	7.5	257	87

continued on the next page.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
73	13-1	4	117	84	134	8.6	359	152
74	12-5	4	92	72	127	7.7	313	156
75	13-6	4	81	82	86	7.6	277	91
76	13-6	4	92	64	103	8.1	242	109
77	12-10	3	104	79	131	7.7	333	154
78	13-5	3	76	86	117	7.2	279	127
79	12-6	3	89	80	125	7.7	313	152
80	14-2	3	76	75	108	7.9	286	105
81	15-3	2	82	86	133	8.0	326	115
82	12-5	2	117	79	140	8.3	363	121
83	15-0	2	53	63	88	7.2	233	77
84	12-2	2	78	74	108	7.5	296	136
85	14-2	2	104	96	113	8.8	326	110
86	14-10	2	74	77	114	7.4	283	101
87	13-6	2	92	76	105	7.4	295	112
88	13-7	2	65	76	100	7.4	265	105
89	14-8	2	83	77	92	7.4	278	84

TABLE OF SCORES MADE BY THIRTY -FIVE EIGHTH GRADE PUPILS
OF THE HENDRICKS SCHOOL.

Column A. is the Delta 2 scores.

Column B. is the intelligence quotients computed from the
Delta 2 scores.

The letter H after the number of a pupil designates the pupils
who were selected as the highest twenty per cent. The letter L
designates the lowest twenty per cent.

Pupil	Age	A.	B.	Pupil	Age	A.	B.
1	13-8	87	91	19	14-4	112	106
2	14-7	101	92	20-H	13-4	145	159
3	15-5	95	79	21	13-5	103	112
4-H	13-4	126	138	22-H	14-10	101	91
5	14-4	100	98	23-L	13-6	94	100
6	14-9	103	99	24	13-6	106	112
7	13-8	89	93	25	14-2	135	131
8	13-5	99	107	26	13-5	113	121
9	13-11	108	109	27	13-11	113	114
10-L	15-5	85	71	28-L	16-7	102	78
11	13-1	113	134	29	14-5	100	94
12-H	14-0	113	113	30-H	13-3	119	132
13-L	14-1	66	65	31-H	13-10	132	135
14	13-11	85	86	32-L	15-7	100	82
15	13-1	92	104	33-H	13-3	119	122
16-H	15-0	86	74	34	14-3	112	104
17	13-8	131	37	35-L	15-1	89	76
18-L	15-11	96	73				

TABLE OF SCORES MADE BY THIRTY-SEVEN EIGHTH GRADE PUPILS
OF THE CROWLEY SCHOOL.

Column A. is the Delta 2 scores.

Column B. is the intelligence quotients computed from the
Delta 2 scores.

The letter H after a number of a pupil designates the pupils
who were selected as the highest twenty per cent. The letter L
designates the lowest twenty per cent.

Pupil	Age	A.	B.	Pupil	Age	A.	B.
1	16-1	92	70	20	16-8	87	67
2-L	18-9	81	61	21-H	14-1	114	113
3	15-2	102	87	22	13-8	113	117
4-H	13-5	100	108	23	15-0	109	94
5-H	13-11	129	130	24	13-11	132	133
6	13-8	106	111	25	14-2	97	95
7-L	15-7	109	89	26	14-9	90	80
8-H	16-3	92	69	27	16-3	114	87
9	13-0	114	131	28-	15-9	129	100
10	14-11	109	99	29-L	15-9	92	72
11	14-4	131	124	30-L	16-5	86	64
12-H	13-10	102	104	31	14-4	121	116
13-H	13-9	132	137	32	16-2	104	78
14-H	13-2	131	145	33	15-1	71	61
15	16-1	99	77	34-H	14-0	104	104
16-L	14-11	79	69	35-L	15-4	98	81
17	13-9	117	118	36	14-7	129	119
18	15-11	117	90	37	14-4	117	111
19-H	13-9	121	124				

TABLE OF SCORES MADE BY THIRTY-ONE PUPILS IN THE EIGHTH
GRADE OF THE HILL SCHOOL.

Column A. is the Delta 2 scores.

Column B. is the intelligence quotients computed from the
Delta 2 scores.

The letter H after the number of a pupil designates the pupils
who were selected as the highest twenty per cent. The letter L
designates the lowest twenty per cent.

Pupil	Age	A.	B.	Pupil	Age	A.	B.
1-H	14-4	136	129	17-H	14-2	133	130
2	13-9	134	138	18	13-5	123	133
3-H	13-11	133	134	19	14-1	117	116
4	13-11	149	150	20-L	15-3	122	102
5	14-2	140	137	21	13-4	111	110
6	13-4	139	141	22	13-11	135	137
7	13-3	120	133	23-L	14-8	120	109
8	13-9	135	139	24	13-8	134	141
9	14-3	131	126	25	14-8	145	132
10-L	15-8	120	99	26-L	14-1	118	117
11-L	16-4	134	100	27	14-8	144	131
12	14-2	137	135	28-H	13-7	135	143
13-H	15-0	144	125	29	14-0	137	137
14	13-5	132	144	30-H	14-1	129	127
15-H	13-10	128	130	31-L	15-7	131	108
16-L	15-8	148	120				

TABLE OF THE SCORES MADE BY THIRTY EIGHTH GRADE PUPILS OF THE JACKSON SCHOOL.

Column A. is the Delta 2 scores.

Column B. is the intelligence quotients computed from the Delta 2 scores.

The letter H after the number of a pupil designates the pupils who were selected as the highest twenty per cent. The letter L designates the lowest twenty per cent

Pupil	Age	A.	B.	Pupil	Age	A.	B.
1-L	15-6	100	84	16-L	14-8	125	113
2	15-2	110	93	17-H	14-4	113	107
3-H	14-1	116	114	18-L	15-7	121	100
4-H	13-10	123	125	19	13-5	114	114
5	14-4	123	117	20	14-3	119	114
6-H	13-4	126	140	21-H	14-7	130	111
7	15-9	128	101	22-H	13-2	116	128
8	14-1	108	107	23	15-4	117	99
9	15-4	104	97	24	14-4	108	102
10	14-2	106	102	25	13-7	116	123
11-L	15-3	101	86	26	13-10	118	122
12-H	14-11	120	105	27	14-1	116	113
13	14-9	106	98	28	14-1	118	114
14	14-11	110	97	29-L	15-4	110	91
15-H	14-5	121	114	30	15-7	113	91

TABLE OF THE SCORES MADE BY TWENTY-EIGHT EIGHTH GRADE PUPILS
OF THE GALTIER SCHOOL.

Column A. is the Delta 2 scores.

Column B. is the intelligence quotients computed from the
Delta 2 scores.

The letter H after the number of a pupil designates the pupils
who were selected as the highest twenty per cent. The letter L
designates the lowest twenty per cent.

Pupil	Age	A.	B.	Pupil	Age	A.	B.
1	13-9	113	117	15	14-11	115	100
2	14-11	117	102	16	14-4	111	105
3-H	13-8	127	148	17-L	14-9	101	92
4-H	13-11	133	134	18	14-9	120	109
5	14-2	105	102	19	13-7	115	122
6-H	14-2	130	126	20-L	16-2	83	64
7	15-6	116	96	21	14-3	128	123
8	14-4	125	119	22	13-9	106	108
9-L	15-0	103	89	23	14-0	78	78
10	14-3	120	115	24-H	15-1	131	113
11-H	14-5	130	122	25	13-9	125	127
12	14-8	112	103	26-H	14-8	151	137
13-H	14-10	127	113	27	12-11	147	170
14-L	14-11	113	101	28	14-3	120	115

TABLE OF THE SCORES MADE BY FORTY-FIVE EIGHTH GRADE PUPILS
OF THE MURRAY SCHOOL.

Column A. is the Delta 2 scores.

Column B. is the intelligence quotients computed from the
Delta 2 scores.

The letter H after the number of a pupil designates the
pupils who were selected as the highest twenty per cent. The letter
L designates the lowest twenty per cent.

Pupil	Age	A.	B.	Pupil	Age	A.	B.
1-L	14-5	110	105	24-H	14-3	129	125
2	12-10	139	163	25	16-3	105	80
3-L	13-8	123	129	26	15-1	149	128
4	13-7	134	142	27	13-10	135	139
5	13-7	127	135	28	13-6	135	145
6	13-7	138	147	29-L	15-5	82	61
7	13-10	120	124	30-H	13-0	127	145
8	12-10	138	163	31-L	15-5	101	84
9	13-7	113	120	32	12-8	132	155
10	14-1	118	117	33-L	13-3	115	127
11	13-2	132	146	34	15-1	110	96
12	13-10	119	121	35-L	14-5	136	128
13-L	13-3	106	117	36	14-3	139	133
14-L	14-1	105	104	37	12-11	119	138
15	13-2	106	117	38	14-1	133	131
16-H	13-3	132	146	39	13-3	121	134
17	14-0	116	116	40	15-3	123	104
18-H	13-3	130	144	41-H	14-8	153	139
19-H	12-11	155	180	42-L	15-8	128	101
20-H	13-9	155	161	43	12-8	142	167
21	12-7	128	152	44	12-11	137	160
22-H	12-6	131	158	45-H	12-11	150	176
23	15-0	107	93				

TABLE OF SCORES MADE BY THIRTY-SEVEN 2-A PUPILS OF THE
SCHEFFER SCHOOL.

Column A. is the Delta 1 scores.

Column B. is the Pressey scores.

Column C. is the total of the Delta 1 and Pressey scores.

Column D. is the intelligence quotients computed from the
Delta 1 scores.

Column E. is the intelligence quotients computed from the
Pressey tests.

Column F. is the average intelligence quotients.

The letter H after the number of the pupil designates the
pupils who were selected as the highest twenty per cent. The letter
L designates the lowest twenty per cent.

Pupil	Age	A.	B.	C.	D.	E.	F.
1	7-10	38	74	112	79	112	96
2	8-4	37	76	113	66	109	88
3	8-0	72	76	148	144	112	128
4	7-9	66	48	114	152	74	113
5	7-8	53	89	142	118	139	129
6 -L	7-10	66	67	133	137	101	119
7	7-5	42	67	109	100	108	104
8	7-1	42	70	112	116	118	117
9	8-1	55	78	133	108	113	111
10 -H	8-5	65	81	146	113	114	114
11 -H	8-7	49	56	105	83	77	80
12	7-2	37	65	102	99	105	102
13 -H	7-6	46	65	111	107	103	105
14 -L	7-11	34	58	92	70	87	79
15 -L	7-5	48	66	114	114	106	110
16	8-3	54	72	126	100	103	102
17	8-6	47	38	85	81	53	67
18	6-11	45	72	117	136	124	130
19 -L	9-6	21	42	63	28	50	39
20	6-8	56	56	112	186	104	145
21	7-4	54	70	124	132	113	122
22 -H	9-1	59	72	131	90	92	91
23 -L	7-6	24	46	70	56	73	52
24 -L	7-3	44	73	117	112	120	116
25 -H	7-4	56	67	123	136	108	122
26 -L	7-7	36	64	100	82	100	91
27 -H	8-4	44	69	113	79	97	88
28	8-7	59	57	116	100	78	89
29 -L	8-1	31	49	80	60	71	66
30 -H	7-3	48	9	116	123	15	123
31	8-1	72	70	142	144	101	118
32 -H	9-3	50	95	145	74	120	97
33	7-3	56	75	131	143	118	131
34	8-6	63	76	139	108	105	107
35 -H	8-3	43	84	127	177	120	102
36 -H	8-0	56	75	131	112	110	111
37 -L	8-0	47	83	130	94	122	108

TABLE OF SCORES MADE BY TWENTY-SIX 2-B PUPILS OF THE LONG-FELLOW SCHOOL.

Column A. is the Pressey scores.

Column B. is the intelligence quotients computed from the Pressey scores.

The letter H after the number of the pupil designates the pupils who were selected as the highest twenty per cent. The letter L designated the lowest twenty per cent.

Pupil	Age	A.	B.
1-L	7-2	54	88
2	8-0	79	116
3	8-5	74	105
4	8-5	74	105
5	6-9	60	109
6	6-11	73	125
7	7-10	66	100
8-L	7-11	56	84
9-H	6-8	67	124
10	6-7	81	156
11	6-11	61	104
12-H	6-7	73	140
13	6-11	77	130
14-L	8-8	67	90
15	7-6	55	87
16	7-0	67	113
17-L	9-11	66	80
18	7-6	65	104
19	7-0	70	118
20	6-10	78	135
21	6-11	68	117
22	8-5	92	129
23-H	6-10	73	130
24-H	6-8	49	90
25-H	7-0	68	115
26-L	6-10	51	62

TABLE OF SCORES MADE BY SEVENTEEN 2-B PUPILS OF THE NEILL
SCHOOL.

Column A. is the Delta 1 scores.

Column B. is the Pressey scores.

Column C. is the total of the Delta 1 and Pressey scores.

Column D. is the intelligence quotients computed from the
Delta 1.

Column E. is the intelligence quotients computed from the
Pressey scores.

Column F. is the average intelligence quotients.

The letter H after the number of the pupil designates the
pupils who were selected as the highest twenty per cent. The letter
L designates the lowest twenty per cent.

Pupil	Age	A.	B.	C.	D.	E.	F.
1	7-0	51	63	114	146	106	126
2	9-2	51	60	111	77	78	78
3-L	7-8	55	65	120	122	100	111
4	8-5	51	73	124	89	103	96
5	7-9	56	81	137	121	124	123
6-H	7-5	62	69	131	147	111	129
7	7-4	62	76	138	151	121	136
8-L	7-11	31	56	87	63	86	75
9-H	7-9	43	52	95	95	80	88
10	7-10	41	76	117	85	115	100
11	7-6	59	62	121	137	99	118
12	8-3	54	83	137	100	118	109
13	7-11	44	78	122	90	116	103
14	8-9	30	28	58	50	38	44
15-L	9-2	70	85	155	106	110	108
16	7-8	30	43	73	67	67	67
17-H	7-2	44	69	113	115	113	114

TABLE OF THE SCORES AND RATINGS OF TWENTY-NINE EIGHTH GRADE
PUPILS OF THE PRESCOTT SCHOOL.

Column A. is the Delta 2 score.
 Column B. is the intelligence quotient computed from the
 Delta 2 scores.
 Column C. is the first composite rating without the scale.
 Column D. is the rating of teacher F.
 Column E. is the rating of teacher J.
 Column F. is the rating of teacher X.
 Column G. is the second composite rating made by averaging
 the individual ratings.

Pupil	Age	A.	B.	C.	D.	E.	F.	G.
L. E.	13-10	134	136	B	A	A	B	A
A. S.	14-9	132	119	A	B	B	C	B
M. W.	15-3	129	108	C	C	C	D	C
E. H.	12-9	128	152	A	A	B	A	A
A. M.	14-6	127	118	A	B	B	C	B
M. P.	14-0	126	126	C	C	C	C	C
E. S.	15-6	125	103	C	D	D	D	D
C. D.	14-7	124	114	C	C	C	D	C
B. D.	13-6	123	129	B	B	B	B	B
D. S.	13-8	123	129	B	B	B	B	B
A. S.	13-6	122	131	C	C	C	C	C
C. S.	14-3	121	116	B	B	B	B	B
M. B.	12-5	118	146	B	B	B	B	B
J. R.	15-3	116	93	C	C	D	C	C
L. M.	12-9	114	136	A	B	B	A	B
E. B.	13-4	114	125	A	B	B	B	B
W. A.	15-3	112	90	C	D	D	D	D
E. L.	14-3	112	108	C	D	C	C	C
M. S.	14-2	109	106	C	C	C	C	C
G. T.	13-6	108	116	B	B	B	C	B
E. S.	14-3	108	104	C	D	C	C	C
L. L.	13-5	105	114	C	C	C	C	C
L. J.	14-5	102	96	C	C	C	C	C
M. O.	14-10	102	91	E	D	E	E	E
E. W.	14-7	99	91	D	D	D	D	D
W. G.	14-4	95	90	C	C	C	C	C
H. L.	13-10	95	97	B	C	C	C	C
A. M.	15-6	95	78	C	D	D	D	D
F. P.	15-5	85	70	E	E	E	E	E

TABLE OF SCORES AND RATINGS OF FIFTEEN 5-C PUPILS OF THE
SIMMONS SCHOOL.

Column A. is the first rating without the use of the scale.
Column B. is the second rating with the use of the scale.
Column C. is the Delta 2 scores.
Column D. is the intelligence quotients scores computed
from the Delta 2.

Pupil	Age	A.	B.	C.	D.
1	10-5	B	A	99	165
2	10-7	B	A	84	135
3	10-0	B	B	84	140
4	10-0	B	B	72	120
5	9-0	B	B	91	180
6	9-0	B	B	67	134
7	10-0	B	B	78	130
8	11-4	B	C	78	111
9	11-1	B	B	92	137
10	11-2	D	C	59	88
11	12-4	C	C	81	100
12	10-10	C	C	65	101
13	12-0	D	C	82	108
14	11-8	D	D	51	70
15	10-9	D	D	62	98

TABLE OF THE SCORES AND RATINGS OF THIRTY-TWO 5-A PUPILS OF
THE SIMONS SCHOOL.

Column A. is the first rating without the use of the scale.
Column B. is the second rating with the use of the scale.
Column C. is the Delta 2 score.
Column D. is the intelligence quotient scores computed from
the Delta 2.

Pupil	Age	A.	B.	C.	D.
1	12-0	B	D	67	87
2	11-2	C	D	77	112
3	11-9	C	C	91	121
4	11-2	A	B	84	124
5	11-4	B	C	73	104
6	11-4	B	C	85	121
7	11-1	B	B	107	159
8	11-2	B	C	65	90
9	10-8	B	B	83	130
10	10-9	B	C	78	124
11	10-8	B	C	56	89
12	10-7	B	C	92	148
13	12-0	C	D	95	123
14	10-1	B	B	92	164
15	11-10	C	C	108	142
16	10-10	B	C	97	149
17	12-1	B	C	88	112
18	11-8	C	C	66	90
19	10-5	B	A	97	161
20	13-0	A	B	118	136
21	12-2	B	B	100	125
22	11-7	C	C	78	107
23	11-9	A	A	114	150
24	10-6	C	D	50	82
25	12-8	B	B	68	81
26	10-9	A	A	88	135
27	11-5	C	D	49	70
28	11-0	A	A	101	153
29	10-7	C	B	88	142
30	10-10	B	B	88	135
31	10-8	A	A	97	155
32	11-9	C	D	68	90

TABLE OF THE SCORES AND RATINGS OF THIRTY-SEVEN 7-A PUPILS OF THE SIMMONS SCHOOL.

Column A. is the first rating without the scale.
Column B. is the second rating with the use of the scale.
Column C. is the Delta 2 scores.
Column D. is the intelligence quotients scores computed from the Delta 2.

Pupil	Age	A.	B.	C.	D.
1	12-7	A	C	81	98
2	12-2	A	C	105	132
3	13-0	A	D	87	100
4	13-1	A	B	114	127
5	12-6	A	B	121	147
6	12-7	C	E	96	114
7	11-7	A	C	113	154
8	13-6	C	E	82	88
9	15-2	C	D	96	82
10	12-9	D	D	104	122
11	12-4	A	B	118	145
12	14-8	A	D	80	72
13	13-3	C	D	104	115
14	12-9	A	C	98	115
15	13-9	B	D	89	93
16	12-11	B	D	82	95
17	13-8	C	E	95	100
18	14-9	C	D	95	95
19	15-0	C	D	116	96
20	14-2	C	E	70	67
21	15-4	C	E	76	63
22	14-0	D	E	81	81
23	14-2	C	D	82	80
24	13-5	B	C	116	126
25	13-6	B	D	98	105
26	13-7	A	B	108	115
27	14-3	B	D	91	88
28	12-7	B	C	114	137
29	12-6	B	C	100	122
30	14-1	C	D	100	99
31	14-11	C	D	85	75
32	13-11	C	D	82	83
33	12-6	C	E	92	112
34	15-7	B	D	86	70
35	14-1	B	D	107	106
36	12-5	B	C	98	120
37	15-3	C	D	98	83

TABLE OF THE SCORES AND RATINGS OF FORTY-NINE 7-A PUPILS OF
THE SIMMONS SCHOOL.

Pupil	Age	A.	B.	C.	D.
1	12-11	C	C	114	133
2	12-2	B	C	123	155
3	12-3	B	B	124	155
4	12-10	B	C	103	120
5	12-6	A	B	112	155
6	12-5	B	C	100	123
7	13-2	B	C	102	114
8	14-4	D	C	108	102
9	13-11	B	B	129	130
10	14-4	C	D	102	98
11	12-2	B	D	89	113
12	12-4	B	C	125	154
13	12-7	A	C	104	125
14	13-1	A	A	132	150
15	13-0	B	D	101	116
16	13-9	B	D	95	98
17	11-9	A	A	132	179
18	13-1	B	C	130	145
19	14-3	E	D	99	97
20	14-1	B	D	79	78
21	12-1	A	A	120	153
22	12-2	A	C	103	130
23	12-11	A	A	136	158
24	13-0	B	D	79	91
25	12-9	C	C	94	111
26	12-7	A	B	114	137
27	12-0	B	D	92	119
28	15-0	C	C	93	81
29	14-0	C	C	107	107
30	12-8	B	D	87	104
31	13-1	B	C	119	135
32	12-9	A	C	103	121
33	12-10	A	B	111	131
34	13-8	C	E	66	69
35	12-9	A	C	104	122
36	13-0	A	C	109	126
37	12-11	B	B	126	146
38	14-6	D	D	103	96
39	14-7	D	D	97	90
40	13-2	D	D	90	101
41	13-11	D	E	64	65
42	12-7	B	C	110	132
43	15-0	C	D	91	79
44	13-6	D	D	90	96
45	14-1	C	C	108	107
46	14-6	B	D	88	82
47	13-2	B	B	132	148
48	12-5	B	C	113	139
49	13-5	C	C	103	112

Column A. is the first rating without the use of the scale.

Column B. is the second rating with the use of the scale.

Column C. is the Delta 2 score.

Column D. is the intelligence quotient score computed from the Delta 2.

Haggerty Intelligence Examination

DELTA 2

FOR GRADES 3-9

Arranged and standardized by M. E. HAGGERTY, University of Minnesota

An adaptation of the Army Intelligence Examinations. Used in the Virginia School Survey

My name is I am a
First name Last name Write boy or girl

This is the day of 19..... I am years old.

My next birthday will be 19..... I am in half of Grade.....

The name of my school is The name of my city (county) is.....

The name of my state is.....

Do not turn this page until you are told to do so.

(To be read silently by pupils while examiner reads aloud)

This little book contains some exercises which will show how well you can do certain things. Some of the things are very easy and some are very hard. There are six exercises in all. You will be shown them one at a time and will finish each one before you see the next one. Do not turn any page until you are told to do so. As soon as you turn the page, lift your pencil, with your elbow on your desk, and do not put your pencil down until we have read the instructions and until I say, GO!

Now turn the page to Exercise 1.

EXERCISE 6

Look at this sentence: People hear with the eyes — ears — nose — mouth.

The correct word is "ears," because it makes the truest sentence. In each of the sentences below you have four choices for the last word. Only one of them is correct. In each sentence draw a line under the one of these four words that makes the truest sentence. If you cannot be sure, guess. The first one is already marked as it should be.

France is in Europe Asia Africa Australia.

1	The apple grows on a shrub vine tree bush.....	1
2	The day before Thursday is Tuesday Wednesday Friday Saturday.....	2
3	America was discovered by Drake Hudson Cabot Columbus.....	3
4	The first President of the United States was Lincoln Washington Jackson Garfield.....	4
5	The capital of the United States is New York Chicago Washington New Orleans.....	5
6	Wool is obtained from the ocean the ground a plant an animal.....	6
7	The Amazon is a river city mountain country.....	7
8	Boston is in Connecticut Rhode Island Maine Massachusetts.....	8
9	The capital of France is London Rome Paris Berlin.....	9
10	The second month before July is August May June April.....	10
11	The number of days in a year is 144 287 365 412.....	11
12	The Leghorn is a kind of cow horse granite fowl.....	12
13	Charlie Chaplin is noted as an actor soldier preacher physician.....	13
14	The commander of the allied armies was Wilson Foch Lloyd George Hindenburg.....	14
15	Moses was a great Greek Roman Japanese Jew.....	15
16	Shakespeare is noted as a soldier statesman writer scientist.....	16
17	A pound of tea usually costs about 10 cts. 5 cts. \$2.00 50 cts.....	17
18	Ivory is obtained from elephants oysters mines reefs.....	18
19	The Durham is a kind of horse cow goat sheep.....	19
20	Indigo is a food drink color fabric.....	20
21	It is usually coldest at sunrise sunset noon midnight.....	21
22	The U. S. School for army officers is at Annapolis West Point New Haven St. Paul.....	22
23	Leap year comes every two years four years six years eight years.....	23
24	Rubber is obtained from ore petroleum trees hides.....	24
25	Darwin was most famous in literature politics war science.....	25
26	The battle of Lexington was fought in 1620 1775 1812 1864.....	26
27	Combustible things will rip fight burn break.....	27
28	Emeralds are usually red blue yellow green.....	28
29	Diamonds are obtained from mines reefs elephants oysters.....	29
30	Turpentine is obtained from rivers rocks trees animals.....	30
31	The saber is a kind of musket sword cannon pistol.....	31
32	The larynx is in the head neck shoulder abdomen.....	32
33	Larceny is a term used in medicine theology law pedagogy.....	33
34	Alfalfa is a kind of corn hay print rice.....	34
35	Maroon is a kind of food fabric drink color.....	35
36	The clarinet is used in music stenography lithography drawing.....	36
37	The mimeograph is a kind of typewriter copying machine phonograph pencil.....	37
38	The constitution of the league of nations was written in France Russia England Germany.....	38
39	Monogamy is a term relating to electricity business the family manufacture.....	39
40	A five-sided figure is called a scholium pentagon parallelogram trapezium.....	40

Score.....

EXERCISE 1

DIRECTIONS.

1. Read this question: Do cats see? NO YES
 The right answer is Yes; so a line is drawn under Yes.
2. Read the next question: Is coal white? NO YES
 The right answer is No; so a line is drawn under No.

Below are a great many more questions. Read them carefully, one at a time, and draw a line under the right answer. When you are not sure, guess.

- | | | | |
|-----|--|-----|----|
| 1. | Do dogs run?..... | YES | NO |
| 2. | Can a doll sing?..... | YES | NO |
| 3. | Does the sun shine?..... | YES | NO |
| 4. | Do men drink water?..... | YES | NO |
| 5. | Are all apples red?..... | YES | NO |
| 6. | Does a table have legs?..... | YES | NO |
| 7. | Are eggs good to eat?..... | YES | NO |
| 8. | Are two more than four?..... | YES | NO |
| 9. | Are children's dresses always blue?..... | YES | NO |
| 10. | Are houses sometimes made of bricks?..... | YES | NO |
| 11. | Do soldiers ever live in camps?..... | YES | NO |
| 12. | Does it rain every morning?..... | YES | NO |
| 13. | Do all travelers have companions?..... | YES | NO |
| 14. | Is south different from north?..... | YES | NO |
| 15. | Do pupils attend school at midnight?..... | YES | NO |
| 16. | Does lightning sometimes occur at night?..... | YES | NO |
| 17. | Do guards ever take captives?..... | YES | NO |
| 18. | Are all barbers wealthy persons?..... | YES | NO |
| 19. | Does the country need patriotic citizens?..... | YES | NO |
| 20. | Should school teachers be continually tardy?..... | YES | NO |
| 21. | Are all swimming animals quadrupeds?..... | YES | NO |
| 22. | Is the development of trees ever stunted?..... | YES | NO |
| 23. | Is electricity used only for lighting?..... | YES | NO |
| 24. | Do all foreigners make good citizens?..... | YES | NO |
| 25. | Is the government of colonies important?..... | YES | NO |
| 26. | Are future events definitely predictable?..... | YES | NO |
| 27. | Is hospitality likely to be appreciated?..... | YES | NO |
| 28. | Are missionaries ever persecuted by natives?..... | YES | NO |
| 29. | Is a faithless commander deserving of reward?..... | YES | NO |
| 30. | Do governors ever issue proclamations?..... | YES | NO |
| 31. | Does the ascent of a mountain conduce to fatigue?..... | YES | NO |
| 32. | Do arguments arise over political questions?..... | YES | NO |
| 33. | Should a sentinel's challenge be ignored?..... | YES | NO |
| 34. | Are integrity and obedience virtues?..... | YES | NO |
| 35. | Are historians infallible?..... | YES | NO |
| 36. | Are "patriotism" and "elocution" synonyms?..... | YES | NO |
| 37. | Does allegiance imply loyalty?..... | YES | NO |
| 38. | Is surgery the vocation of diplomats?..... | YES | NO |
| 39. | Are all lunatics in penitentiaries?..... | YES | NO |
| 40. | Are judicial decisions ever enforced?..... | YES | NO |

Score.....

EXERCISE 5

This is a test of common sense. Below are sixteen questions. Three answers are given to each question. You are to look at the answers carefully; then make a cross in the square before the best answer to each question, as in the sample:

- SAMPLE {
- | | | |
|-------------------------------|-------------------------------------|-------------------|
| Why do we use stoves? Because | <input type="checkbox"/> | they look well |
| | <input checked="" type="checkbox"/> | they keep us warm |
| | <input type="checkbox"/> | they are black |

Here the second answer is the best one and is marked with a cross. Begin with No. 1 and keep on until time is called.

- | | |
|--|--|
| <p>1 Cats are useful animals, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> they catch mice <input type="checkbox"/> they are gentle <input type="checkbox"/> they are afraid of dogs <p>2 Why are chairs made of wood? Because</p> <ul style="list-style-type: none"> <input type="checkbox"/> wood is cheap and light <input type="checkbox"/> wood burns <input type="checkbox"/> wood is easily broken <p>3 A house is better than a tent, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> it costs more <input type="checkbox"/> it is more comfortable <input type="checkbox"/> it is made of wood <p>4 Shoes are made of leather, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> it is tanned <input type="checkbox"/> it is tough, pliable, and warm <input type="checkbox"/> it can be blackened <p>5 Why judge a man by what he does rather than by what he says? Because</p> <ul style="list-style-type: none"> <input type="checkbox"/> what a man does shows what he really is <input type="checkbox"/> it is wrong to tell a lie <input type="checkbox"/> a deaf man cannot hear what is said <p>6 If you were asked what you thought of a person whom you didn't know, what should you say?</p> <ul style="list-style-type: none"> <input type="checkbox"/> I will go and get acquainted <input type="checkbox"/> I think he is all right <input type="checkbox"/> I don't know him and can't say <p>7 Why does it pay to get a good education? Because</p> <ul style="list-style-type: none"> <input type="checkbox"/> it makes a man more useful and happy <input type="checkbox"/> it makes work for teachers <input type="checkbox"/> it makes demand for buildings for schools and colleges <p>8 If the grocer should give you too much money in making change, what is the right thing to do?</p> <ul style="list-style-type: none"> <input type="checkbox"/> buy some candy from him with it <input type="checkbox"/> give it to the first poor man you meet <input type="checkbox"/> tell him of his mistake | <p>9 If you are lost in a forest in the daytime, what is the thing to do?</p> <ul style="list-style-type: none"> <input type="checkbox"/> hurry to the nearest house you know of <input type="checkbox"/> look for something to eat <input type="checkbox"/> use the sun or a compass for a guide <p>10 The feathers on a bird's wings help him to fly, because they</p> <ul style="list-style-type: none"> <input type="checkbox"/> make a wide, light surface <input type="checkbox"/> keep the air off his body <input type="checkbox"/> keep the wings from cooling off too fast <p>11 Why are criminals locked up?</p> <ul style="list-style-type: none"> <input type="checkbox"/> to protect society <input type="checkbox"/> to get even with them <input type="checkbox"/> to make them work <p>12 Why should all parents be made to send their children to school? Because</p> <ul style="list-style-type: none"> <input type="checkbox"/> it prepares them for later life <input type="checkbox"/> it keeps them out of mischief <input type="checkbox"/> they are too young to work <p>13 Why do inventors patent their inventions? Because</p> <ul style="list-style-type: none"> <input type="checkbox"/> it gives them control of their inventions <input type="checkbox"/> it creates a greater demand <input type="checkbox"/> it is the custom to get patents <p>14 A train is harder to stop than an automobile, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> it is longer <input type="checkbox"/> it is heavier <input type="checkbox"/> the brakes are not so good <p>15 We see no stars at noon, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> they have moved around to the other side of the earth <input type="checkbox"/> they are so much fainter than the sun <input type="checkbox"/> they are hidden by the sun <p>16 Why is it colder nearer the poles than near the equator? Because</p> <ul style="list-style-type: none"> <input type="checkbox"/> the poles are always farther from the sun <input type="checkbox"/> the sunshine falls obliquely at the poles <input type="checkbox"/> there is more ice at the poles |
|--|--|

Go to No. 9 above

Score.....

EXERCISE 2

Get the answers to these problems as quickly as you can. Use the side of this page to figure on if you need to.

- SAMPLES { 1 How many are 5 men and 10 men?.....Answer (15)
 2 If one pencil costs 5 cents, what will 4 pencils cost?.....Answer (20)
- 1 How many are 30 men and 7 men?.....Answer ()
 - 2 A boy had 10 cents and spent 4 cents. How many cents had he left? Answer ()
 - 3 If you save \$7 a month for 4 months, how much will you save?.....Answer ()
 - 4 If 24 men are divided into groups of 8, how many groups will there be?.....Answer ()
 - 5 A boy had 12 marbles. He bought 3 more, and then lost 6. How many marbles did he have left?.....Answer ()
 - 6 Mary was carrying a dozen eggs in her apron. Two eggs fell out and were broken. How many eggs had she left?.....Answer ()
 - 7 An army advanced 5 miles and retreated 3 miles. How far was it then from its first position?.....Answer ()
 - 8 How many hours will it take to drive a team 66 miles at the rate of 6 miles an hour?.....Answer ()
 - 9 How many apples can you buy for 50 cents at the rate of 2 for 5 cents?.....Answer ()
 - 10 A regiment marched 40 miles in five days. The first day it marched 9 miles, the second day 6 miles, the third 10 miles, the fourth 8 miles. How many miles did it march the last day?.....Answer ()
 - 11 If you buy two writing tablets at 7 cents each and a book for 65 cents, how much change should you get from a two-dollar bill?.....Answer ()
 - 12 If there are 5 school days in a week, 4 weeks in a month, and 9 months in a school year, how many school days are there in a school year?.....Answer ()
 - 13 A dealer bought some mules for \$800. He sold them for \$1000, making \$40 on each mule. How many mules were there?.....Answer ()
 - 14 A rectangular bin holds 400 cubic feet of corn. If the bin is 10 feet long and 5 feet wide, how deep is it?.....Answer ()
 - 15 If it takes 6 men 3 days to dig a 180-foot drain, how many men are needed to dig it in half a day?.....Answer ()
 - 16 A soldier spent one eighth of his money for post cards and four times as much for a box of letter paper, and then had 90 cents left. How much money did he have at first?.....Answer ()
 - 17 If $3\frac{1}{2}$ tons of coal cost \$21, what will $5\frac{1}{2}$ tons cost?.....Answer ()
 - 18 A ship has food to last her crew of 500 men 6 months. How long would it last 1200 men?.....Answer ()
 - 19 If a man runs a hundred yards in 10 seconds, how many feet does he run in a fifth of a second?.....Answer ()
 - 20 A submarine makes 8 miles an hour under water and 15 miles on the surface. How long will it take to cross a 100-mile channel, if it has to go two fifths of the way under water?.....Answer ()

Score.....

EXERCISE 4

Look at these two words :

little—small

same—opposite

They mean the same thing ; so a line is drawn under same.

Now look at the next two words :

good—bad

same—opposite

These two words do not mean the same. They mean just the opposite ; so a line is drawn under opposite.

Now look at all the other words on this page. If the words of a pair mean the same or nearly the same, draw a line under same. If they mean the opposite or nearly the opposite, draw a line under opposite. If you cannot be sure, guess.

1	no—yes	same—opposite	1
2	big—large	same—opposite	2
3	leap—jump	same—opposite	3
4	day—night	same—opposite	4
5	cold—hot	same—opposite	5
6	wet—dry	same—opposite	6
7	in—out	same—opposite	7
8	wide—broad	same—opposite	8
9	bitter—sweet	same—opposite	9
10	slim—slender	same—opposite	10
11	go—leave	same—opposite	11
12	begin—commence	same—opposite	12
13	take—accept	same—opposite	13
14	find—lose	same—opposite	14
15	joy—happiness	same—opposite	15
16	asleep—awake	same—opposite	16
17	command—obey	same—opposite	17
18	beg—entreat	same—opposite	18
19	appeal—beseech	same—opposite	19
20	legible—readable	same—opposite	20
21	ancient—modern	same—opposite	21
22	lax—strict	same—opposite	22
23	acquire—lose	same—opposite	23
24	sacred—hallowed	same—opposite	24
25	compute—calculate	same—opposite	25
26	repress—restrain	same—opposite	26
27	bestow—confer	same—opposite	27
28	amenable—tractable	same—opposite	28
29	avert—prevent	same—opposite	29
30	contradict—corroborate	same—opposite	30
31	dearth—scarcity	same—opposite	31
32	prefix—append	same—opposite	32
33	amiable—surly	same—opposite	33
34	docile—refractory	same—opposite	34
35	celibate—married	same—opposite	35
36	extinct—extant	same—opposite	36
37	pertinent—relevant	same—opposite	37
38	diatribe—invective	same—opposite	38
39	apathy—indifference	same—opposite	39
40	fallacy—verity	same—opposite	40

Score

EXERCISE 3

Each of these pictures has something missing, and you are to put in with your pencil the missing part. Look at the first one. It is the picture of a boy's face, but it has no mouth. Now with your pencil mark in a mouth. The woman has no eye. Give her an eye. The other pictures are to be finished in the same way.



A



B



1



2



3



4



5



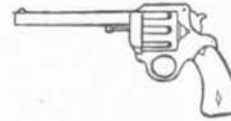
6



7



8



9



10



11



12



13



14



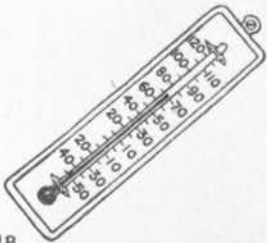
15



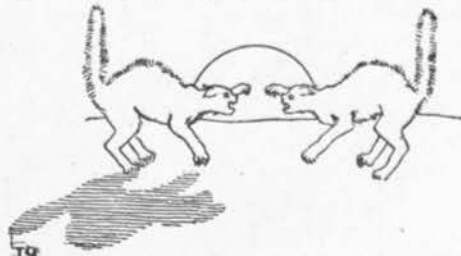
16



17



18



19



20

Score.....

VERBAL B

Name..... Grade.....

Age at last birthday..... My next birthday will be.....
(write in figures) (write month and day)

Name of teacher.....

Name of school.....

Name of city.....

Score	R	W	O	Net
Test 1				
Test 2				
Test 3				
Test 4				
Test 5				
Test 6				
Total				

TEST 1

Do this work in arithmetic as quickly as you can without making mistakes.

(1)

Add

$$\begin{array}{r} 4 \\ 2 \\ \hline \end{array}$$

(2)

$$4 \times 5 =$$

(3)

Subtract

$$\begin{array}{r} 5 \\ 3 \\ \hline \end{array}$$

(4)

$$\begin{array}{r} 2 \overline{) 8} \\ \hline \end{array}$$

(5)

$$12 \div 3 =$$

(6)

Multiply

$$\begin{array}{r} 13 \\ 2 \\ \hline \end{array}$$

TEST 1

Do this work in arithmetic as quickly as you can without making mistakes. You are not expected to finish, but do as much as you can. Use the bottom of the page to figure on.

(1)	(2)	(3)	(4)	(5)	(6)
<u>Add</u>		<u>Subtract</u>		<u>Add</u>	<u>Multiply</u>
<u>2</u>	$2 \times 4 =$	<u>4</u>	$3 \overline{) 6}$	<u>17</u>	<u>27</u>
<u>3</u>		<u>1</u>		<u>4</u>	<u>3</u>

(7)	(8)	(9)	(10)	(11)
<u>Subtract</u>		<u>Add</u>	<u>Multiply</u>	<u>Subtract</u>
<u>14</u>	$13 \div 6 =$	<u>43</u>	<u>3037</u>	<u>39.2607</u>
<u>8</u>		<u>15</u>	<u>8</u>	<u>16.6785</u>
		<u>19</u>		

(12)	(13)	(14)	(15)
	<u>Add</u>		
$248 \div 7 =$	1 hr. 46 mins.	$16 \frac{2}{3}$ of 120 =	$\frac{3}{8} - \frac{3}{16} =$
	27 mins.		
	<u>1 hr. 30 mins.</u>		

(16)	(17)	(18)	(19)	(20)
	<u>Add</u>	<u>Multiply</u>		
$\frac{2}{3} \div 5 =$	8.460	<u>237 $\frac{2}{3}$</u>	$138.22 - 36.76 =$	<u>54)17388</u>
	.200	<u>25</u>		
	1.003			
	.502			
	20.110			
	<u>203.021</u>			

TEST 2

Read each question and draw a line under the right answer.

- 1 Can cows eat?..... Yes No
- 2 Do stones swim?..... Yes No

- 3 Do flowers bloom?..... Yes No
- 4 Are apples good to eat?..... Yes No
- 5 Do birds fly under the water?..... Yes No
- 6 Are houses ever built of stone?..... Yes No
- 7 Do trees grow on moist land?..... Yes No

TEST 2

Draw a line under the right answer to each question. Do as many as you can.

- | | | | | |
|----|---|-----|----|----|
| 1 | Can you see?..... | Yes | No | 1 |
| 2 | Do stars sing?..... | Yes | No | 2 |
| 3 | Do boys drink?..... | Yes | No | 3 |
| 4 | Can girls run?..... | Yes | No | 4 |
| 5 | Do mice eat cats?..... | Yes | No | 5 |
| 6 | Is green a color?..... | Yes | No | 6 |
| 7 | Do books have hands?..... | Yes | No | 7 |
| 8 | Do robins wear shoes?..... | Yes | No | 8 |
| 9 | Does a house have doors?..... | Yes | No | 9 |
| 10 | Are dry leaves heavy?..... | Yes | No | 10 |
| 11 | Are rose-buds always pink?..... | Yes | No | 11 |
| 12 | Do potatoes grow on bushes?..... | Yes | No | 12 |
| 13 | Are there letters in your name?..... | Yes | No | 13 |
| 14 | Are stockings made of paper?..... | Yes | No | 14 |
| 15 | Do most houses have more than three windows?..... | Yes | No | 15 |
| 16 | Is a fish covered with skills?..... | Yes | No | 16 |
| 17 | Do members of the family sometimes need vacations?..... | Yes | No | 17 |
| 18 | Are kitchens usually found in chimneys?..... | Yes | No | 18 |
| 19 | Do people sometimes stumble through thickets?..... | Yes | No | 19 |
| 20 | Do newspapers contain words?..... | Yes | No | 20 |
| 21 | Should Congress use good judgment? | Yes | No | 21 |
| 22 | Do all girls study mechanics? | Yes | No | 22 |
| 23 | Are accurate reports ever worth while? | Yes | No | 23 |
| 24 | Are arteries found within the body? | Yes | No | 24 |
| 25 | Do all lectures require electric lights? | Yes | No | 25 |
| 26 | Can you frustrate calico?..... | Yes | No | 26 |
| 27 | Should we build on insecure foundations? | Yes | No | 27 |
| 28 | Is philanthropy the custom of peddlers? | Yes | No | 28 |
| 29 | Are human beings sometimes criminals? | Yes | No | 29 |
| 30 | Can advertisements be the subject of discussions?..... | Yes | No | 30 |
| 31 | Do emergencies generally require immediate decision?..... | Yes | No | 31 |
| 32 | Does a conscientious commander mourn the loss of his men?..... | Yes | No | 32 |
| 33 | Are the words "progenitor" and "ancestor" synonymous?..... | Yes | No | 33 |
| 34 | Are avenues usually paved with oxygen?..... | Yes | No | 34 |
| 35 | Do pheasants instigate filibusters?..... | Yes | No | 35 |
| 36 | Is a percolator used in place of a cameo?..... | Yes | No | 36 |
| 37 | Is the destruction of priceless mosaics regretted?..... | Yes | No | 37 |
| 38 | Can an albatross matriculate in the autumn?..... | Yes | No | 38 |
| 39 | Is everybody obligated to prescribe for cases of insanity?..... | Yes | No | 39 |
| 40 | Is violent exercise likely to be sudorific?..... | Yes | No | 40 |

TEST 3

Write on each dotted line the word that has been left out.

1. Sugar sweet.
2. Mary John play.
3. sing.
4. The apple is
5. Cows eat
6. Children like to
7. Fish swim the water.
8. Boys girls like to ball.

TEST 3

Each dotted line shows where a word has been left out. Think what the word should be and write it in. Write just one word on each dotted line. Do as many as you can.

1. The mice were caught the trap.
2. The sow wheat.
3. Both armies claimed the
4. Be sure you right, then go ahead.
5. I do not know whether to or stay.
6. The cup which is will hold no more.
7. The busy gathers honey the flowers.
8. A should to govern himself.
9. Each and each hour brings own duty.
10. He follows the advice of many not be able to assert himself.

TEST 4

SAMPLES	{	play can kittens.....	<u>true</u>	false
		eat boys stones.....	true	<u>false</u>
		fly high cats.....	true	false
		trees in nests birds build..	true	false

If a sentence is true, draw a line under the word true.
 If a sentence is false, draw a line under the word false.

Begin here

1. dogs meat eat..... true false
2. ball play pigs..... true false
3. mice a cat catches..... true false
4. burns dry quickly wood..... true false
5. hot is always water..... true false
6. trees roses sea and in grow the..... true false
7. trees in nests build birds..... true false
8. blue red are and colors not..... true false
9. green the yellow and flag is American..... true false
10. it the are wet when streets rains.... true false

TEST 4

If the sentence is true, draw a line under the word true.

If the sentence is false, draw a line under the word false.

SAMPLES	{	play can kittens.....	<u>true</u>	false
		eat boys stones.....	true	<u>false</u>
		trees in nests birds build..	<u>true</u>	false

- | | | | | | |
|-------------------|----|---|------|-------|----|
| Begin here | 1 | birds sing can..... | true | false | 1 |
| | 2 | hot ice is..... | true | false | 2 |
| | 3 | hear are with to ears..... | true | false | 3 |
| | 4 | school to go children should... | true | false | 4 |
| | 5 | eat gunpowder to good is.... | true | false | 5 |
| | 6 | east the in rises sun the..... | true | false | 6 |
| | 7 | months coldest are summer the.. | true | false | 7 |
| | 8 | good are shots women all..... | true | false | 8 |
| | 9 | will live man no forever..... | true | false | 9 |
| | 10 | are clothes all made cotton of... | true | false | 10 |
| | 11 | million horses a worth all dollars are..... | true | false | 11 |
| | 12 | every times makes mistakes person at..... | true | false | 12 |
| | 13 | are used plows cities mostly in..... | true | false | 13 |
| | 14 | explosive a dynamite powerful is..... | true | false | 14 |
| | 15 | countries several produced wheat in is..... | true | false | 15 |
| | 16 | see we see those us always who..... | true | false | 16 |
| | 17 | property floods life and destroy..... | true | false | 17 |
| | 18 | flag the English same the as is the American. | true | false | 18 |
| | 19 | a ocean the cross in minutes a few can boat... | true | false | 19 |
| | 20 | friends in us disaster often false desert | true | false | 20 |
| | 21 | in stars sun daytime the the the than brighter shines | true | false | 21 |
| | 22 | will without a bread water life preserve man's..... | true | false | 22 |
| | 23 | repeated call human for courtesies associations..... | true | false | 23 |
| | 24 | never is man what show a deeds..... | true | false | 24 |

TEST 5

In each set of words put a cross in the square before the two words that tell what the thing always has.

1. A man always has

- cane
- body
- shoes
- head
- teeth

2. A dog always has

- blanket
- chain
- collar
- legs
- nose

3. A house always has

- cellar
- paint
- rooms
- servants
- walls

4. A table always has

- books
- cloth
- dishes
- legs
- top

TEST 5

In each set of words put a cross in the square before the two words that tell what the thing always has. Begin with Number 1 and take the words in the order they are numbered.

1. A baby always has
- ears
 - eyes
 - laugh
 - rattle
 - teeth

2. A farm always has
- field
 - hay
 - pigs
 - soil
 - wheat

3. An apple always has
- basket
 - redness
 - seeds
 - skin
 - sweetness

4. A candle always has
- flame
 - smoke
 - stick
 - wax
 - wick

5. An army always has
- airplanes
 - music
 - officers
 - soldiers
 - war

6. A dance always has
- drapery
 - laughter
 - persons
 - movement
 - music

7. A bottle always has
- bottom
 - cork
 - glass
 - label
 - neck


8. An arrow always has
- bow
 - head
 - hunter
 - quiver
 - shaft

9. A citizen always has
- city
 - country
 - male
 - privileges
 - vote

10. A dungeon always has
- chains
 - crime
 - gloom
 - prisoner
 - walls

11. Falsehood always has
- deceit
 - injury
 - misrepresentation
 - punishment
 - shame

12. Hope always has
- belief
 - desire
 - expectancy
 - prosperity
 - success

 Go to Number 7 above

VERBAL A

Name..... Grade.....

Age at last birthday..... My next birthday will be.....
(write in figures) (write month and day)

Name of teacher.....

Name of school.....

Name of city.....

Score	R	W	O	Net
Test 1				
Test 2				
Test 3				
Test 4				
Test 5				
Test 6				
Total				

TEST 1

Find the answers as quickly as you can.
Write the answers on the dotted lines.
Use the side of the page to figure on.

- 1 How much must you add to 75 cents to make a dollar?..The answer is.....
- 2 How many yeast cakes at 2 cents each can you get for 10 cents?The answer is.....
- 3 John's grandmother is 86 years old. If she lives, in how many years will she be 100 years old?.....The answer is.....
- 4 How much longer is one foot than 10 inches?.....The answer is.....
- 5 60 minutes make an hour. How much longer is 100 minutes than an hour and a half?.....The answer is.....

- 6 How many inches equal a foot and a half?.....The answer is.....
- 7 A train that usually arrives at half-past ten was 17 minutes late. When did it arrive?.....The answer is.....
- 8 A half ounce of gold is worth \$8. What is the weight of \$50 worth of gold?.....The answer is.....
- 9 Half of what number equals $\frac{1}{3}$ of 21?.....The answer is.....
- 10 How many $\frac{3}{4}$ yd. lengths can be cut from 6 yds. of wire?The answer is.....

- 11 4 per cent of \$600 equals 6 per cent of what amount?...The answer is.....
- 12 What is the cost of 18 articles at 3 for 5 cents?.....The answer is.....
- 13 At what price must tickets be sold to net \$500 from a fair, supposing that the expenses are \$250 and that 1,500 tickets can be sold?.....The answer is.....
- 14 A family spends \$600 on rent, \$3,000 on other expenses and saves \$200. If they increase their total expenses to \$4,200 and their savings in the same ratio, how much will they save?The answer is.....
- 15 How much must a road rise in each 100 feet of length if it rises 60 feet in 2,000 feet of length?.....The answer is.....

TEST 2

DO WHAT IT SAYS TO DO

- 1 Make a 6 in the largest square



- 2 Make a cross in the first circle and a figure 2 in the third circle



- 3 Put in the square a number that is more than 3 and less than 6



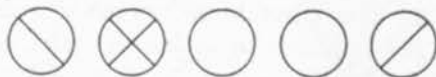
- 4 Put in the square a number that is less than 6 and more than 3, and put in the circle below it the letter that comes between D and C in the word EDUCATION



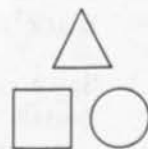
- 5 If a cat is larger than a mouse, put the first letter of the word mouse in the square; if it is smaller, draw a line **under** the word NO



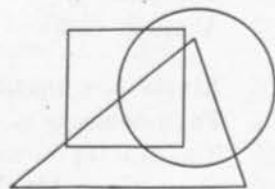
- 6 If there are 30 months in a year, write YES here.....
But if there are not so many, make the first and the third circles look like the second one



- 7 In the triangle put the right answer to the question "How many legs has a cow?" In the square do nothing, but in the circle put any number that is a wrong answer to the question that you just answered correctly



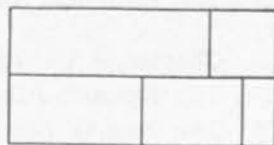
- 8 Make a figure 1 in the space which is in the circle, but not in the triangle or square, and also make a figure 2 in the space which is in the triangle and circle, but not in the square



- 9 Cross out the figure 6 in every line that does not begin with 9, unless the line begins with 8. If the line does begin with 8, put a ring around the 6

9	2	4	1	7	3	6	5
8	5	3	7	6	1	4	2
0	7	3	1	5	6	2	4
8	2	6	4	3	1	7	5
9	1	2	7	6	5	3	4

- 10 Put an odd number between 11 and 14 in each of the two largest parts; and also put an even number between 4 and 7 in the part next in size to the smallest part unless the smallest part is in the lower half of the figure, in which case put in it an odd number between 4 and 7



TEST 3

In each sentence draw a line under the word that makes the sentence true, as shown in the samples.

SAMPLES { Sheep eat chiefly nuts grass fruit bread
 The number of cents in a dime is 2 5 10 25
 The day after Friday is Thursday Saturday Sunday Monday

- | | | |
|----|--|----|
| 1 | The apple grows on a bush shrub tree vine..... | 1 |
| 2 | Mice are fond of cats cheese owls rabbits..... | 2 |
| 3 | New Year's Day is April 1 January 1 July 1 December 1..... | 3 |
| 4 | Sunday comes two days before Friday Thursday Tuesday Wednesday..... | 4 |
| 5 | The first month of the year is February January March December..... | 5 |
| 6 | The colt is the young of the bear dear horse lion..... | 6 |
| 7 | Wine is generally made from apples grapes oranges peaches..... | 7 |
| 8 | The beech is a kind of bush flower tree vine..... | 8 |
| 9 | The number of inches in a foot is 6 10 12 20..... | 9 |
| 10 | A pint of water weighs about 1 oz. 4 oz. 1 lb. 3 lbs..... | 10 |
| 11 | A solo is sung by one two four six..... | 11 |
| 12 | The number of seasons in a year is 4 7 12 30..... | 12 |
| 13 | A famous Indian fighter was Daniel Boone Grant Lee LaFayette..... | 13 |
| 14 | The article costing least is automobile bicycle carriage motorcycle..... | 14 |
| 15 | Dishes are made of asbestos clay gravel sandstone..... | 15 |
| 16 | The emerald is a kind of dog fish gem plant..... | 16 |
| 17 | A mandolin is played with a bow mouth pick sticks..... | 17 |
| 18 | The Plymouth Rock is a kind of cattle fowl granite horse..... | 18 |
| 19 | The man who was cast into a lion's den was Daniel Jonah Joseph Sampson..... | 19 |
| 20 | Black Beauty is the story of a bear boy dog horse..... | 20 |
| 21 | Satin comes from a kind of beetle plant sheep worm..... | 21 |
| 22 | Seattle is in California Idaho Oregon Washington..... | 22 |
| 23 | A "main spring" is a part of an automobile motorcycle wagon watch..... | 23 |
| 24 | The King is used in base-ball checkers croquet tennis..... | 24 |
| 25 | A much disliked bird is the English sparrow linnet swallow wren..... | 25 |
| 26 | Rivets are usually put in harness hats pencils shoes..... | 26 |
| 27 | Pneumonia is a disease of the heart kidneys lungs nerves..... | 27 |
| 28 | The tractor is used in farming fishing gardening racing..... | 28 |
| 29 | One of the toughest kinds of wood is cedar cottonwood hickory pine..... | 29 |
| 30 | The larynx is in the abdomen head neck shoulder..... | 30 |
| 31 | Electric bulbs were invented by Edison Marconi Morse Volta..... | 31 |
| 32 | Treasure Island tells about Black Dog Fagin Miss Hazy Oliver Twist..... | 32 |
| 33 | Little Lord Fauntleroy was written by Barrie Burnett Burns Scott..... | 33 |
| 34 | The English first settled in Georgia New York Pennsylvania Virginia..... | 34 |
| 35 | The Columbia River touches California Nevada Oregon Utah..... | 35 |
| 36 | Cheviot is the name of a cloth dance drink food..... | 36 |
| 37 | The Spanish-American war started in 1876 1888 1898 1914..... | 37 |
| 38 | The British armies in France were led by Haig Jellico Joffre Pershing..... | 38 |
| 39 | A famous state for lumbering is Colorado Massachusetts Nevada Oregon..... | 39 |
| 40 | The electro-magnet is used in carpentry printing stenography telegraphy..... | 40 |

TEST 4

If they mean the same, write S between them.

If they are as different as can be, write D between them.

SAMPLES { cold - D - - hot
big - S - - large
best - D - - worst
go - S - - leave

-
- | | | |
|------------|-----|--------------------------------|
| Begin here | 1. | new - - - old |
| | 2. | fall - - - drop |
| | 3. | sick - - - well |
| | 4. | quick - - - slow |
| | 5. | aid - - - help |
| | 6. | east - - - west |
| | 7. | hit - - - strike |
| | 8. | false - - - true |
| | 9. | sharp - - - dull |
| | 10. | weak - - - feeble |
| | 11. | polish - - - shine |
| | 12. | take - - - give |
| | 13. | thaw - - - freeze |
| | 14. | disease - - - sickness |
| | 15. | raise - - - lower |
| | 16. | error - - - mistake |
| | 17. | cease - - - quit |
| | 18. | answer - - - response |
| | 19. | plentiful - - - scarce |
| | 20. | guilt - - - innocence |
| | 21. | magnificent - - - grand |
| | 22. | severe - - - mild |
| | 23. | jest - - - joke |
| | 24. | gradual - - - sudden |
| | 25. | peevish - - - cross |
| | 26. | disaster - - - ruin |
| | 27. | accept - - - reject |
| | 28. | create - - - originate |
| | 29. | appeal - - - beseech |
| | 30. | charm - - - repel |
| | 31. | frigid - - - torrid |
| | 32. | diligent - - - industrious |
| | 33. | eminent - - - obscure |
| | 34. | economy - - - frugality |
| | 35. | adequate - - - sufficient |
| | 36. | longitude - - - latitude |
| | 37. | perpendicular - - - horizontal |
| | 38. | besmirch - - - cleanse |
| | 39. | frank - - - candid |
| | 40. | stagnant - - - sluggish |

TEST 5

Make a cross in the square before the best answer, as shown in the sample.

- SAMPLE { Why do we use stoves? Because
- they look well
 - they keep us warm
 - they are black

- | | |
|---|--|
| <p>1 Shoes are made of leather, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> leather is tough, soft and warm <input type="checkbox"/> leather is thick <input type="checkbox"/> leather can be made black <p>2 Dogs are useful, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> they chase cats <input type="checkbox"/> they catch hawks <input type="checkbox"/> they are good for hunting and to watch the house <p>3 Children should sleep more than older people, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> they have more time <input type="checkbox"/> it keeps them strong <input type="checkbox"/> they play so much <p>4 We should not repeat unkind things we hear of others, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> they may find it out <input type="checkbox"/> it usually does no good and what we have heard may not be true <input type="checkbox"/> people may not believe us <p>5 The main reason why farmers cultivate their corn is</p> <ul style="list-style-type: none"> <input type="checkbox"/> to kill the weeds and make the corn grow <input type="checkbox"/> to make the ground soft <input type="checkbox"/> to make it look better <p>6 There are more English sparrows than canaries, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> sparrows are smaller <input type="checkbox"/> sparrows are better fighters and lay more eggs <input type="checkbox"/> sparrows eat worms <p>7 Children should be trained to work, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> work is not dishonorable <input type="checkbox"/> there is too much time to play <input type="checkbox"/> they need the habit of work in later life <p>8 Schools have football teams, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> some football players are good students <input type="checkbox"/> boys like to play <input type="checkbox"/> it is played with a large ball | <p>9 It pays to get a good education, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> it makes a man more useful and happy <input type="checkbox"/> it makes work for teachers <input type="checkbox"/> it makes demand for buildings for schools and colleges <p>10 A horse costs more than a sheep, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> horses do not have wool <input type="checkbox"/> there are more sheep <input type="checkbox"/> it costs more to raise horses <p>11 Why is winter colder than summer? Because</p> <ul style="list-style-type: none"> <input type="checkbox"/> the sun is not directly overhead <input type="checkbox"/> January is a cold month <input type="checkbox"/> there is much snow in winter <p>12 Why should we have Congressmen? Because</p> <ul style="list-style-type: none"> <input type="checkbox"/> the people must be ruled <input type="checkbox"/> Congressmen are usually honest <input type="checkbox"/> the people are too many to meet and make their laws <p>13 Some men lose their breath on high mountains, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> the wind blows their breath away <input type="checkbox"/> the air is too thin <input type="checkbox"/> it is always cold there <p>14 Inventors patent their inventions, because</p> <ul style="list-style-type: none"> <input type="checkbox"/> it gives them control of their inventions <input type="checkbox"/> it creates a greater demand <input type="checkbox"/> it is the custom to get patents <p>15 The saying "Make hay while the sun shines" means</p> <ul style="list-style-type: none"> <input type="checkbox"/> hay is made in summer <input type="checkbox"/> we should make the most of our opportunities <input type="checkbox"/> hay should not be cut at night <p>16 The saying "A bad workman quarrels with his tools" means</p> <ul style="list-style-type: none"> <input type="checkbox"/> a bad workman is quarrelsome <input type="checkbox"/> if the workman loses his temper he is more likely to break his tools <input type="checkbox"/> a poor workman often excuses himself by blaming his tools |
|---|--|

☞ Go to No. 9 above

TEST 6

Do them all like the samples.

SAMPLES	{	<u>shoe</u> is to <u>foot</u> as <u>hat</u> is to coat nose <u>head</u> see
		<u>leg</u> - - - <u>frog</u> <u>wing</u> - - - nest <u>bird</u> eat swim
		<u>eat</u> - - - <u>bread</u> <u>drink</u> - - - <u>water</u> iron lead stones

Begin here

- | | | |
|---|--|----|
| 1. <u>ear</u> is to <u>hear</u> as <u>eye</u> is to | <u>table</u> see <u>hand</u> play..... | 1 |
| 2. <u>hat</u> - - <u>head</u> | <u>thimble</u> - - sew cloth finger needle..... | 2 |
| 3. <u>sheep</u> - - <u>wool</u> | <u>cat</u> - - fur bark scratch squirrel..... | 3 |
| 4. <u>man</u> - - <u>walks</u> | <u>bird</u> - - slimy small earth flies..... | 4 |
| 5. <u>pan</u> - - <u>tin</u> | <u>table</u> - - chair wood legs dishes..... | 5 |
| 6. <u>coat</u> - - <u>clothing</u> | <u>bread</u> - - milk food wheat butter..... | 6 |
| 7. <u>ocean</u> - - <u>deep</u> | <u>pond</u> - - broad sail shallow water..... | 7 |
| 8. <u>cellar</u> - - <u>dark</u> | <u>porch</u> - - light airy cool warm..... | 8 |
| 9. <u>pitcher</u> - - <u>milk</u> | <u>vase</u> - - table pitcher flowers pottery.... | 9 |
| 10. <u>nail</u> - - <u>tack</u> | <u>broom</u> - - sweep brush room clean..... | 10 |
| 11. <u>hat</u> - - <u>milliner</u> | <u>necklace</u> - - girl neck lawyer jeweler..... | 11 |
| 12. <u>sit</u> - - <u>stand</u> | <u>down</u> - - chair bench up go..... | 12 |
| 13. <u>carriage</u> - - <u>road</u> | <u>train</u> - - engine cars rails run..... | 13 |
| 14. <u>lamb</u> - - <u>chops</u> | <u>beef</u> - - butcher shop eat steak..... | 14 |
| 15. <u>teacher</u> - - <u>school</u> | <u>priest</u> - - church Bible Sunday pray..... | 15 |
| 16. <u>hinge</u> - - <u>door</u> | <u>joint</u> - - bone fasten stiff open..... | 16 |
| 17. <u>Edison</u> - - <u>phonograph</u> | <u>Columbus</u> - - Spain ship Washington America. | 17 |
| 18. <u>northpole</u> - - <u>equator</u> | <u>frigid</u> - - cold Canada torrid Iceland..... | 18 |
| 19. <u>tolerate</u> - - <u>enemies</u> | <u>welcome</u> - - thanks give polite friends..... | 19 |
| 20. <u>birth</u> - - <u>death</u> | <u>beginning</u> - - grave end Adam Eve..... | 20 |
| 21. <u>whale</u> - - <u>large</u> | <u>thunder</u> - - lightning rain kill loud..... | 21 |
| 22. <u>officer</u> - - <u>private</u> | <u>command</u> - - army general obey regiment.... | 22 |
| 23. <u>hour</u> - - <u>time</u> | <u>mile</u> - - post rod fence distance..... | 23 |
| 24. <u>sorrow</u> - - <u>tears</u> | <u>joy</u> - - trip laughter girls happy..... | 24 |

SET VI. DIFFICULTY 8 2/3

SET VIII. DIFFICULTY 9

Read this and then write the answers to 1, 2, 3 and 4. Read it again if you need to.

Read these paragraphs and then write the answers to questions 1, 2, 3, 4 and 5. Read the paragraphs again if you need to.

We often think of a rich man as one who has much money, as if money and wealth meant the same thing. However, money is only one sort of wealth and some money is not exactly wealth. A twenty dollar bill, for example, is only someone's promise to pay so much gold. Wealth means land, houses, food, clothes, jewels, tools, gold, silver, coal, iron—anything that a man can have that satisfies some want. Money means something which a person can exchange for any one of many sorts of wealth. The main value of any piece of wealth, such as a barrel of flour, a house, or a cow is the direct use you can make of it. The value it has by reason of what you can exchange it for is of less importance. The main value of any piece of money, such as a silver dollar, a ten-dollar bill, or a nickel, is not any direct use you can make of it. Its main value is by reason of what you can exchange it for.

The most serious objection against the government ownership of railways is connected with the question of rates. Every change in rates means a change in the relative advantages of one part of the country as compared with another part of the country.

Under national ownership and management of the railways there would be a continual struggle of section with section for advantageous rates, and unless the rate problem could be worked out in some simple, easily comprehended way which would commend itself to the public at large, this struggle of section with section would scarcely fail to prove disastrous.

Perhaps the greatest single danger in the private ownership of railways is that it tends first to form classes, and then to array class against class. It forms classes in the very nature of the case. First we have the classes in the railway service. About one per cent. of those engaged in the service are officers and the rest employees, and the contrasts among these employees in remuneration and in conditions of employment are vast, and, whether they ought to do so or not, do have a tendency to cultivate bitterness and class division.

There is still another way in which the private ownership of railways tends to class formation, and that is through the favoritism shown to individuals in the community, which is largely responsible for the bad features of the trust movement. Everywhere throughout the United States we can find manufacturers and shippers who have been favored, and if there are any favored it is necessarily at the expense of others. We have favored classes, and this tends to promote class formation and to incite one class to hate another.

1. In what does the main value of wealth lie, according to the paragraph?

2. In what does the main value of money lie, according to the paragraph?

3. Name something that is money, but is not exactly wealth?

4. What do you suppose is the thing which is defined by business men as "a medium of exchange"?

1. What is stated as the cause that would produce sectionalism?

2. Under the present condition of ownership of railways, in what two ways does class formation occur?

3. Which is the supposedly favored class in the railway service?

4. What is stated to have been a main cause of the undesirable results of the replacement of many small manufacturing and selling concerns by a few large ones?

5. By what means, according to the paragraph, might disaster from sectionalism under public ownership be avoided?

ADDITION

SERIES B

(2)	(3)	(5)
2	17	72
4	2	26
<u>3</u>		

	(7)	(10)
	$3 + 1 =$	21
		33
		<u>35</u>

(14)
 $25 + 42 =$

(16)	(19)	(20)
9	\$.75	\$12.50
24	1.25	16.75
12	.49	<u>15.75</u>
15		
<u>19</u>		

	(22)	(23)
.00	547	$\frac{1}{3} + \frac{1}{3} =$
.75	197	
.33	685	
.16	678	
.94	456	
<u>.32</u>	393	
	525	
	240	
	<u>152</u>	

	(24)	(30)
	4.0125	2 $\frac{1}{2}$
	1.5907	6 $\frac{3}{8}$
	4.10	<u>3$\frac{3}{4}$</u>
	8.673	

(36)
2 yr. 5 mo.
3 yr. 6 mo.
4 yr. 9 mo.
5 yr. 2 mo.
<u>6 yr. 7 mo.</u>

(38)
 $25.091 + 100.4 + 25 + 98.28 + 19.3614 =$

SET IV. DIFFICULTY 7

SET V. DIFFICULTY 8

Read this and then write the answers to 1, 2, 3 and 4. Read it again if you need to.

You need a coal range in winter for kitchen warmth and for continuous hot-water supply, but in summer when you want a cool kitchen and less hot water, a gas range is better. The xyz ovens are safe. In the end-ovens there is an extra set of burners for broiling.

1. What effect has the use of a gas range instead of a coal range upon the temperature of the kitchen?.....
2. For what purpose is the extra set of burners?.....
3. In what part of the stove are they situated?.....
4. During what season of the year is a gas range preferable?.....

Read this and then write the answers to 5, 6 and 7. Read it again if you need to.

Hay-fever is a very painful, though not a dangerous, disease. It is like a very severe cold in the head, except that it lasts much longer. The nose runs; the eyes are sore; the person sneezes; he feels unable to think or work. Sometimes he has great difficulty in breathing. Hay-fever is not caused by hay, but by the pollen from certain weeds and flowers. Only a small number of people get this disease, perhaps one person in fifty. Most of those who do get it, can avoid it by going to live in certain places during the summer and fall. Almost every one can find some place where he does not suffer from hay fever.

5. What is the cause of hay-fever?.....
6. How large a percentage of people get hay-fever?.....
7. During what seasons of the year would a person have the disease described in the paragraph?.....

Read this and then write the answers. Read it again if you need to.

It may seem at first thought that every boy and girl who goes to school ought to do all the work that the teacher wishes done. But sometimes other duties prevent even the best boy or girl from doing so. If a boy's or girl's father died and he had to work afternoons and evenings to earn money to help his mother, such might be the case. A good girl might let her lessons go undone in order to help her mother by taking care of the baby.

1. What is it that might seem at first thought to be true, but really is false?.....
2. What might be the effect of his father's death upon the way a boy spent his time?.....
3. Who is mentioned in the paragraph as the person who desires to have all lessons completely done?.....
4. In these two lines draw a line under every 5 that comes just after a 2, unless the 2 comes just after a 9. If that is the case, draw a line under the next figure after the 5:

5 3 6 2 5 4 1 7 4 2 5 7 6 5 4 9 2 5 3 8 6 1 2 5
4 7 3 5 2 3 9 2 5 8 4 7 9 2 5 6 1 2 5 7 4 8 5 6

Read this and then write the answers to 5, 6, 7 and 8. Read it again if you need to.

In Franklin, attendance upon school is required of every child between the ages of seven and fourteen on every day when school is in session unless the child is so ill as to be unable to go to school, or some person in his house is ill with a contagious disease, or the roads are impassable.

5. What is the general topic of the paragraph?.....
6. How many cases are stated which makes absence excusable?.....
7. What kind of illness may permit a boy to stay away from school, even though he is not sick himself?.....
8. What condition in a pupil would justify his non-attendance?.....

SUBTRACTION

SERIES B

(3)

$$2$$

1

(6)

$$11$$

7

(7)

$$13$$

8

(13)

$$16$$

9

(14)

$$50$$

25

(17)

$$393$$

178

(19)

$$67482$$

$$06493$$

(20)

$$2\frac{3}{4} - 1 =$$

(24)

$$8\frac{7}{8}$$

$$5\frac{3}{4}$$

(25)

$$27$$

$$125\frac{5}{8}$$

(27)

$$\text{yds. } 1 \text{ ft. } 4 \text{ in.}$$

$$\text{yds. } 2 \text{ ft. } 8 \text{ in.}$$

(31)

$$7.3 - 3.00081 =$$

(35)

$$37\frac{7}{8} - 15\frac{5}{8} =$$

READING TEST

READING

TEST III DIFFICULTY 3

Page 3

PRELIMINARY TEST

Read this and then write the answers to the questions. Read it again if you need to.

Ruth and Jack live in the country. They play in the woods and fields and have flowers and birds for their friends.

- 1. Where does Ruth live?
2. What do Ruth and Jack do in the woods and fields?

SET I. DIFFICULTY 4 (approximately)

Read this and then write the answers. Read it again if you need to.

John had two brothers who were both tall. Their names were Will and Fred. John's sister, who was short, was named Mary. John liked Fred better than either of the others. All of these children except Will had red hair. He had brown hair.

- 1. Was John's sister tall or short?
2. How many brothers had John?
3. What was his sister's name?

SET II. DIFFICULTY 5.25

Read this and then write the answers. Read it again if you need to.

Long after the sun had set, Tom was still waiting for Jim and Dick to come. 'If they do not come before nine o'clock,' he said to himself, 'I will go on to Boston alone.' At half past eight they came, bringing two other boys with them. Tom was very glad to see them and gave each of them one of the apples he had kept. They ate these and he ate one too. They all went on down the road.

- 1. When did Jim and Dick come?
2. What did they do after eating the apples?
3. Who else came besides Jim and Dick?
4. How long did Tom say he would wait for them?

SET III. DIFFICULTY 6

Read this and then write the answers. Read it again if you need to.

It may seem at first thought that every boy and girl who goes to school ought to do all the work that the teacher wishes done. But sometimes other duties prevent even the best boy or girl from doing so. If a boy's or girl's father died and he had to work afternoons and evenings to earn money to help his mother, such might be the case. A good girl might let her lessons go undone in order to help her mother by taking care of the baby.

- 1. What are some conditions that might make even the best boy leave school work unfinished?
2. What might a boy do in the evenings to help his family?
3. How could a girl be of use to her mother?
4. Look at these words: idle, tribe, inch, it, ice, ivy, tide, true, tip, top, tit, tat, toe.

Cross out every one of them that has an i and has not any t (T) in it.

Read this and then write the answers to 5, 6 and 7. Read it again if you need to.

Nearly fifteen thousand of the city's workers joined in the parade on September seventh, and passed before two hundred thousand cheering spectators. There were workers of both sexes in the parade, though the men far out-numbered the women.

- 5. What is said about the number of persons who marched in the parade?
6. What did the people who looked at the parade do when it passed by?
7. How many people saw the parade?

MULTIPLICATION

SERIES B

(1) $3 \times 7 =$

(3) $2 \times 3 =$

(4) $4 \times 8 =$

(5) 23
3

(9) 254
6

(11) 1036
8

(12) 5096
6

(13) 54
8

(16) 7898
9

(18) 24
234

(20) 287
.05

(26) 9742
59

(27) 6.25
3.2

(29) $\frac{1}{8} \times 2 =$

(33) $\frac{1}{2} \times 3\frac{1}{2} =$

(35) $987\frac{3}{4}$
25

(37) $2\frac{1}{4} \times 4\frac{1}{2} \times 1\frac{1}{2} =$

(38) $.0963\frac{1}{8}$
.084

SERIES B
DIVISION

DIVISION

PRELIMINARY TEST

SERIES B

SET II. DIFFICULTY 6

(1) $3 \overline{) 16}$

(2) $9 \overline{) 27}$

(7) $4 \div 2 =$

(8) $9 \overline{) 0}$

(11) $2 \overline{) 13}$

(14) $8 \overline{) 5856}$

(15) $\frac{1}{4}$ of 128 =

(17) $50 \div 7 =$

(19) $248 \div 7 =$

(23) $23 \overline{) 469}$

(27) $5 =$

(28) $.003 \overline{) .0936}$

(30) $\frac{3}{4} \div 5 =$

(34) $62.50 \div 1\frac{1}{4} =$

(36) $9 \overline{) 69 \text{ lbs. } 9 \text{ oz.}}$

SERIES B

MULTIPLICATION

DIRECTIONS TO TEACHERS

Follow these directions exactly:

1. In the place indicated write the first and last names of each pupil being tested.
2. Under *Age* give the exact present age in years and months, as 8-3.
3. For *Race*, write W (white) or C (colored).
4. *Father's Occupation*. Give as exactly as possible, farm hand, tenant farmer, farm owner (meaning one who owns a farm and works it), or farm landlord (meaning one who owns a farm but does not work it).
5. *School Grade*. Write 1, 2, 3, 4, etc., showing present school grade of pupil. Indicate grade exactly, showing half grades where possible as 3 F. H. (3rd grade, first half), 3 S. H. (3rd grade, second half).
6. *Years in School*. Write 3, 4, 5, etc., to indicate the exact length of the time pupil has been in school, from the time he first entered school to the date of the examination.
7. *Ratings by Teachers*. These ratings are to be made on a five point scale, as follows:
 - A means *superior*, about the score of the best 5 per cent. of children of that race and age in public schools.
 - B means *high average*, above the average, but not so good as A. About 20 per cent. of the children make this score.
 - C means *average*, the score of the middle 50 per cent. of that race and age in the public schools.
 - D *low average*, means below the best 75 per cent. of school children of that race and age, *i. e.*, below the middle 50 per cent., but not so poor as the lowest 5 per cent.
 - E means *inferior*, about the score of the poorest 5 per cent. of the children of that race and age in the public schools.

QUALITIES

- a. *Scholarship*. In rating a pupil in scholarship, think about how well he does in his school studies. If he is average, mark him C. If he is as good as the best 5 per cent. of children you have known in the public schools, mark him A. If he is better than the poorest 75 per cent. of the public school children you know, but not so good as the best 5 per cent., mark him B. If he is poorer than the best 75 per cent., you have known, *i. e.*, poorer than the middle 50 per cent., but not so poor as the poorest 5 per cent., mark him D. If he is as poor as the poorest 5 per cent. of children in the public schools, mark him E.
Proceed similarly with every other child on the list.
- b. *Intelligence*. Intelligence is not the same as scholarship. In scoring pupils for intelligence, think of the skill with which they are able to meet new situations, both in school and out. It is not always true that the most intelligent pupil makes the highest marks in school, nor that the pupil with the highest marks in school subjects is the most intelligent child. An intelligent child may earn high school marks if he is industrious, if he is physically well, if he is regular in attendance and if all other school conditions are favorable. If these conditions do not maintain he may still be intelligent and not earn high marks.
Proceed in estimating the intelligence by the same method as used in estimating scholarship, scoring each pupil A, B, C, D or E as indicated.
- c. *Industry*. In rating a pupil for industry, consider his ability to apply himself to his *school* work, both in school and out, to learning his lessons and to doing other set tasks, so far as this may be known to you.
Proceed as in the case of scholarship and intelligence and score each pupil A, B, C, D or E as indicated.

EXAMINER'S RECORD

1. Examiner should record below all information necessary to a proper interpretation of the tests.
2. Date of examination.....
3. Variations from guide in giving tests
 - a. Spelling
 - b. Handwriting
 - c. Arithmetic
 - d. Reading
 - e. Delta I
4. Number present in room during examination.....
5. Number taking test..... Other persons present.....
6. Attitude of children toward examinations.
7. Other comment.