

THE PRESENTATION AND THE CRITICAL STUDY
OF THE ONTARIO SCHOOL ABILITY EXAMINATION BY
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by
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of the University of Ottawa through the
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of Arts degree.

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Intelligence in modern psychology has as many different meanings as there are investigators. The Journal Of Educational Psychology, Vol. XII, lists the opinions which are numerous due to the varied points of view. However, we recognize a certain uniformity of view: all agree that it is an ability. Presently, our interest lies not in its meaning, but in its measurement. The measuring rod is the intelligence test. In schools, tests given in less than an hour, yield a more accurate idea of a subject's intelligence than would be possible on the basis of years of ordinary observation. Today, they are of utmost importance to test the mental resource of the individuals in juvenile courts, reform schools, and all branches of the industry.

Among the various tests available, we have selected one which has been used in the Ontario Schools. It is the Ontario School Ability Examination, written by Harry Amoss, formerly Inspector of the Auxiliary Classes, Department of Education. Originally, this performance test was a mental diagnosis of the deaf. But, soon it was extremely used in the case of hearing students of all nationalities, for the

1.- Amoss, Harry, The Ontario School Ability Examination, Toronto, Ryerson Press, 1936.

extremely used in the case of hearing students of all nationalities for the language difficulty was eliminated.

To our readers, we offer the description of the O.S.A.E. and a brief discussion of the author's text, besides the general appraisal of our results based on some three hundred subjects from three French-Canadian districts, and the critical study of the items constituting the O.S.A.E. After the detailed analysis of the subtests, we suggest a few modifications which, in our opinion, will give the test a higher reliability and a greater discriminating power. Before discussing the O.S.A.E. , we have decided to give the historical setting of the intelligence test, as psychologists had previously done. Thus the first two chapters are of a historical nature. Our research really begins with Chapter III.

CHAPTER I

INTELLIGENCE TESTS

Intelligence tests, nowadays, have a world-wide renown and a far-reaching effect, not only in the various firms, but also in modern educational centres. In the most important branches of training, mental tests are excellent instruments to measure the abilities of the individuals. We shall not stress the importance of tests in the school grading, nor their assistance in educational guidance, and in the adjustment of children, but their value in solving the problems of the feeble-minded. To us, the latter point is important because intelligence testing owes its origin to the interest of the human beings in the mentally deficient. Throughout the ages, there has been the desire of Citizens to separate the less gifted from the highly endowed individuals. To satisfy this need of discrimination, man has developed a method of diagnosis known as the intelligence test.

What is the modern attitude towards the feeble-minded?

Society is tolerant towards the feeble-minded especially in the delinquent cases. At the beginning, studies on the relationship between physical abnormalities and mental

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deficiency were made and were very interesting. It was afterwards discovered that physical defects were not a reliable measure rod and that intelligence tests proved their superiority. The marks obtained by these individuals revealed a direct rapport with mental deficiency. For those cases, the offence is considered less incriminating and the punishment is not as severe. For the great number of the simple-minded, unconscious of their actions, the asylums offer shelter and care.

What was the Spartan attitude towards the feeble-minded?

Physical fitness was primarily important. The Spartans had but one idea--- that every citizen should be a good soldier. The Spartans began at a boy's birth. A group of older men looked at the new-born child. If he were weak, the parents were ordered to put him on the mountain side to die. Thus the physically defective were condemned. Later on the feeble-minded were put in the same class.

What was the Roman attitude?

Among the Romans, exposure was not common. The

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father made all the rules for the household. His commands had to be obeyed. Although he had much power, he was usually kind. With the advent of Christianity, during the reign of Augustus, man dealt more humanely with the mentally deficient. No more were idiots shackled and incarcerated, for sympathy urged people to be kinder towards these unfortunate.

The European attitude during the XVIII century

In France occurred a strange event that is worthy of mention in the historical background of the intelligence testing.¹ A wild boy was found in the forest of Aveyron near Cannes in France. He was then placed in the charge of Itard, the physician at the Institution of the Deaf Mutes. The doctor tried to educate the boy by using form boards and other instruments. However, his efforts were vain and he gave up the task in disgust. Itard's pupil Seguin believed that training could better the mentally deficient. He and his followers continued to study ways of delineating the sane from the insane.

1.- Drever James, Collins Mary, Performance Tests of Intelligence, Edinburg, Oliver and Boyd, 1936, p.12.

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Intelligence testing owes its origin to the interest of psychologists in the individual differences.

What do we understand by individual differences?

Terman tested a representative group of 12 year-old children to conclude that 10% had a mental capacity below 10 yrs.2 mos., and 10% had a mental age of 13 yrs 11 mos. The others would be placed above or below the average. Thus, there are individual differences in mental endowment between people of the same class.²

The ability between children in a specialized direction is surprising. A pupil endowed with high general intelligence may be poor in manual work, while the less gifted will have a great ability.

Among the psychologists who had observed that subjects acted differently in the experiments, let us note Wundt. He established a psychological laboratory at Leinsig.³ Through a series of experiments, he verified the experiments of the others. His work was recognized by other psychologists so that around his discoveries, there developed a new science

2.- Freeman Frank W., Mental Tests, Boston, Houghton-Mifflin Company, 1939, p. 351.

3.- Freeman Frank W., op. cit., p. 1.

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more human and more practical. In the United States, the most celebrated of his followers was William James. His Principles of Psychology which appeared in 1890 at once won him international recognition.

Then the word test came into our educational language through the writings of Cattell who wrote in 1890 Mental Tests and Measurements.⁴ Working in the Wundt's laboratory, he discovered that there are individual differences in the reaction time of the different persons. After 1890, he applied mental tests in Columbia University.

Alfred Binet

A more direct approach in the measurement of intelligence was made by Alfred Binet. He thought he had found a one-directional road to intelligence by measuring attention and adaptation. The examinees on whom he experimented were his two daughters. He found other investigators working in the same field, collaborated with some and criticized others in his Annee Psychologique. His chief collaborators were Simon and Henri. His conception of intelligence is as follows: It seems

4.- reeman Frank N., op. cit., p. 37.

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to us that in intelligence, there is a fundamental faculty, the lack of which is of utmost importance for practical life. To judge well, to comprehend well, these are the essential activities of intelligence." Binet's contribution to intelligence testing was outstanding. The principles on which he based his research are worthwhile noting:

1.- Human activity represents a continuous line of development.⁵

2.- Mental measurement is not a mathematical process.

3.- The third principle involves content. Binet strove to make his tests simple and varied, not related with school learning.

4.- Intelligence depends upon many psychic powers and manifesting differences in ability.

5.- The fifth principle asserts mental age as a measure of intelligence.⁶

5.- Terman Lewis M., The Measurement of Intelligence, Boston, Houghton-Mifflin Co., 1916, p.45.

6.- Freeman Frank N., Mental Tests, p. 88.

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Binet's followers

Goddard

Adaptations of the Binet's scale were made in different countries. In America, pioneer work was done by Goddard in Vineland, New Jersey. He visited France and became speedily interested in the usefulness of Binet's work. Though Binet's scale was reliable, Goddard believed that individual tests were not properly placed, that certain tests were too easy. From Vineland, the scale spread and was used in classifying normal children as well as the feeble-minded.

Bobertag

In Germany, Bobertag gave the Binet tests to children and reported the percentage each test of the scale. When 75% passed, he placed the test at that mental age.

Terman

Another important figure in the history of intelligence testing is Terman. The Terman Revision⁷ which appeared in 1916 was later revised in 1935. In his 1916 edition, he

7.- Terman Lewis M., the Measurement of Intelligence, Boston, Houghton-Mifflin Co., 1916.

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examined some 3000 subjects of whom 1700 were normal and then, arranged the tests in age groups.* In order to perfect and extend the scale, make it more useful, Dr. Terman based his revision upon larger and more representative groups. Dr. Merrill was his collaborator. Two new equivalent scales in the Terman test offer the advantage of retesting. Thus, the results are more reliable. Pintner remarks "much of what is only explicit in Binet is made implicit by Terman".

Herring

In a revised Binet test in 1931, he took most of them from the original while the rest of the 38 are his. He arranged them in five groups of increasing difficulty. If a child obtained a high score in one test, it would mean that the easier tests in the other groups may be omitted. The intelligence quotient is calculated in the same way as in the Stanford Revision.

Kinds of tests

There are two kinds of tests: the individual with which we are familiar, and the group test.

8.- Terman Lewis M., Merrill Maud A., Measuring Intelligence, Boston, Houghton-Mifflin Co., 1935.

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Group tests

During the World War I, intelligence testing found a practical use. It was decided to test all the men enlisted in the American Army with the exception of field and general officers. The army testing was a success. It succeeded so well that the nation became convinced of the predictive value of tests, that their use was extended to nearly every department of life. The Army Alpha Scale was similar to the Stanford Revision while the Army Beta was used in the case of the subjects who did not understand English. It contained maze tests and geometrical constructions.

Otis

Otis had started to work on the group test before the war in 1914, and in 1918, he published his examination which was designed for High School students.

Whipple

Whipple studied individual tests made previously and the result of his research was the Group Tests for Grammar Grades.⁹

Haggerty in 1919 worked the Delta I and II.

9.- Freeman Frank N., Mental Tests, Boston, Houghton-Mifflin Co., 1939, p. 141.

CHAPTER II

PERFORMANCE TESTS

While the Binet Scale was extensively used in America and in Europe, there was one objection directed against the great number of tests that require language. Is the ability to handle language an indication of intelligence? The language difficulty becomes more pronounced as soon as the scale is spread in different fields of work. The psychologist often faces a foreign child. It is clear that the Binet scale cannot be used for those cases. Tests not involving language were issued and this type of test is known as the performance test. Its characteristic is that it shall not require any kind of language response.

The earliest attempt was made by Greenberger in 1889.¹ He suggested that the child be shown attractive pictures and that the examiner observe the reactions of the child. If he is indifferent, it is a bad sign; if he shows an interest in them, his mentality is fair. Macmillan and Bruner in 1906 seem to have been the first psychologists to apply mental tests.

We shall note among the non-language tests, the Myers Mental Measure useful to the kindergarten and the graduate school, the Pintner Non-Language Test practical in

1.- Drever James, Collins Mary, Performance tests of Intelligence, Edinburgh, Tweeddale Court, Oliver and Boyd, 1936, p. 15.

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the case of the deaf. Thorndike's test destined to measure the mental capacity of the adults, based its score on language ability.

Uses of the performance tests

Performance tests will overcome the handicap of the speech defective and the foreigner because they remove the language difficulty of the verbal test.

At the beginning of the XIX Century, Itard tried to educate a boy by means of coloured shapes and forms.

Knox tested the English-speaking immigrants at Ellis Island and could not use a scale involving language unless an interpreter were present. He arranged a series of tests in a scale which was not standardized.²

A second use of the performance tests lies in the examination of the deaf.

Pintner and Paterson had written the Binet Scale and the Deaf Child in 1915 and afterwards A Scale Of Performance Tests including the Five Figure Board, Casuist Form Board, and the Manikin Test. In one chapter, the authors

2.- Knox H.A., A Scale Based on the Work at Ellis Island for establishing mental defects, Jour. American Medical Association XLII, 1914 quoted by Freeman Frank W., Mental Tests, Boston, Houghton-Mifflin Company, 1939, p.179.

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outline in detail the tests with diagrams and indicate the method of procedure. Another chapter presents the data with tables and graphs for the purpose of illustration. This scale has been most useful and widely known in the testing of the deaf.³

Drever Collins in 1936 produced the Performance Tests of Intelligence⁴ consisting of the Block Designs, the Knox Cube Test, the Size and Weight Test, Manikin and Profile, Domino Test, with the purpose of measuring the intelligence of the deaf. The research was initiated by the Headmaster of the Royal Institution for the education of the deaf, Henderson Row, Edinburg.

In the same year, Harry Amoss devised the Ontario School Ability Examination with the aim of selecting children eligible to the Ontario School of the Deaf.

They are useful in testing normal children. Verbal and non-verbal tests give the most comprehensive view of any one individual's mental ability.

Healy was a psychologist at the psychopathic Institute connected with the Juvenile Court of Illinois. He and

3.- Pintner Rudolph, Paterson Donald G., A Scale Of Performance tests, New York, D. Appleton-Century Co., 1917.

4.- Drever James, Collins Mary, Performance Tests of Intelligence, Edinburg, Tweeddale Court, Oliver and Boyd, 1936.

Fernald introduced the Tests for Practical Mental Classification to diagnose the mentality of the children coming to court in the hope of finding reasons for delinquency.

Kohs.

Kohs in the desire of discovering the nature of the mind, devised a performance test based on block-designs. By it, he believes to be able to measure the "high intellectual processes of analysis and synthesis". In Intelligence Measurement,⁵ he makes a thorough study of the subjects and criticizes the results fully by means of diagrams.

Porteus Maze Scale is composed of a single type of performance for all ages. The type is the maze. He has constructed a graded series of mazes. All the mazes are carried out by tracing the path on a printed maze. The number of trials affect the score. This scale is suitable for the testing of non-English-speaking children.

In 1936, Brown published the Chicago Non-Verbal Examination consisting of 10 tests with new content. For example, in one of the tests, the subject is required to write digits under symbols according to a given key.

5.- Kohs S.C., Intelligence Measurement, New York, Macmillan Company, 1923.

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Amoss' conception of intelligence

Amoss devised this test with the purpose of "measuring intelligence native or acquired".¹ In educational psychology, investigators attach different meanings to the word. Thus there are various points of view on the subject. In the first chapter of his text, Amoss states his opinion.

"Intelligence is the ability to eliminate trial and error forms of behaviour, by taking into consideration the facts of a situation and planning a course of action adequate to the occasion. To plan truly and avoid fumbling is surely the mark of a superior mind."²

Opinions on the nature of intelligence

Dr. Pintner of Columbia University has a similar view on the subject.

"I have always thought of intelligence as the ability of the individual to adapt himself adequately to relatively new situations of life. It seems to include the capacity for getting along well in all sorts of situations."

1.- Amoss Harry, The Ontario School Ability Examination, Toronto, Ryerson press, 1936, p.3

2.- Amoss, Harry, op. cit., p. 3.

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While Amoss believes that the course of action has to be adequate to the new situations, with the elimination of "fumbling" Dr. Pintner estimates that intelligence to be the capacity to meet adequately new situations.³ Dr. S.S. Colvin of Columbia had this view point: An individual possesses intelligence in so far as he has learned or can learn to adjust himself to his environment.⁴ The latter part of this opinion resembles the others previously mentioned. Dr. Terman, on the other hand, has another conception. He seems to stress on abstract thinking. In the Measurement of Intelligence, he gives Binet's conception.

Binet's conception of intelligence emphasizes three characteristics of the thought process: its tendency to take and maintain; one direction; the capacity to make adaptations for the purpose of attaining a desired end; the power of auto-criticism.⁵

While one views intelligence from the educational point of view, another cares little for a precise definition. But one can detect a certain uniformity of view. " All agree

3.- Goldring, Cecil C., Intelligence testing in a Toronto P. School, Toronto, Oxford University Press, p. 14

4.- Goldring, Cecil C., op. cit., p. 12.

5.- Terman, Lewis M., Measurement of Intelligence, Boston, Houghton-Mifflin Co., 1916, p. 45.

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that intelligence is an ability operating in different ways: it is specially evident in dealing with novel situations".⁶

Intelligence tests

There are numerous tests designed and labelled by psychologists as intelligence tests. These tests purport to measure some mental factor. Dr. Terman, in his Revision of the Binet Scale, includes tests of language comprehension, of free association, constructive imagination, ability to see and contradict novel situations.⁷ Speaking generally, an intelligence test measures knowledge which grows with the child's development up to a certain age and then appears to stop.

Development of intelligence

Dr. Woodrow of the University of Minnesota said: Intelligence except for being a growing thing, is fixed partly by heredity and partly by environmental factors before the age of 5.⁸ It is neither produced nor appreciably accelerated by learning.

6.- Goldring, Cecil C., Intelligence testing in a Toronto Public School, Toronto, Oxford University Press, 1916, p. 14.

7.- Goldring, Cecil C., op. cit., p. 15.

8.- Goldring, Cecil, C., op. cit., p. 13.

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It seems to bear up to a certain age a constant relation to the chronological age. Amoss adopts this principle in his test. On page 54 of his text, he states that "should a candidate be over the age of 16 years, the maximum divisor in the evaluation of the intelligence quotient $\frac{\text{Mental age in months}}{\text{Chronological age in months}}$ will be 192. A mental age of 15 or under 3 should be considered as suggestive only.

In Measuring Intelligence,⁹ Terman and Merrill mention:" For our data, the only gain begins to decrease at the age of 13 and by the age of 16, it has become approximately zero. From 13 to 16, we cumulatively drop one out of every three additional months of chronological age, and all of it after the age of 16. Beyond the age of 15, the mental ages are entirely artificial and are to be thought of as simply numerical scores. Some tests are more difficult than others. A mental age of 14 on one test may be compared with a mental age of 16 on another. But we may safely say that 16 years is considered as the highest chronological age in computing the intelligence quotient.

9.- Terman Lewis M., Merrill Maud A., Measuring Intelligence, Boston, Houghton-Mifflin Co., 1935, p.30.

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Difficulty in measuring intelligence

Amoss believes that the estimation of the mind is complicated due to growth and decay. If the measurement, instead of being one concerning intelligence were one as to height or weight, there would be no difficulty in giving an exact answer. The height and the weight can be exactly determined in such small units as eighth-inch or ounce. An intelligence test is an attempt to apply exact measurement to mental processes as area, length and volume are subject to exact measurement in terms of certain units. Terman says in the Preface of *Measuring Intelligence*:

The tools of psychology, particularly those dealing with the more complex mental processes, belong to an entirely different order of precision from those employed by the physical scientist. So far as one can see, they always will. Apart of the general plan on which scales are built, there are minor imperfections which only extended use will disclose.¹⁰

10. Terman, Lewis M., Merrill, Maud A., op. cit. p. ix.

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The measurement of the mind is complicated not only by changes due to growth and decay, but due to the imperfection of the tools to evaluate the mental capacity which is intangible and estimated by its effects only. Then Amoss hopes to obtain a mathematical method of measurement which would be the "ideal desideratum".¹¹ To reach this objective, a "knowledge of forms and functions of intelligence" has to be given to man. Amoss seems to compare this "knowledge to that of chemistry__ an exact science. But the latter science allows man to experiment on matter which is governed by universal laws. On the other hand, specific laws of the mind have not been determined. Man would be too great if the spiritual became known to him. Intelligence scales will be developed till the end of times in the endeavour to provide greater objectivity in the evaluation of intelligence.

Practical requirements of a performance test

Amoss believes in certain practical requirements of a standardized examination. He wants cheap, simple testing material. Besides an average testing time of 30 minutes, he wishes

11.- Amoss, Harry, Ontario School Ability Examination, Toronto, Ryerson Press, 1936, p. 6.

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scoring rules to be simple.¹² The examiner, he says, must receive preparatory training to obtain better results and must avoid giving help to the subjects. We will, without criticism, accept these requirements which seem practical and sound.

Purpose of the O.S.A.E.

The O.S.A.E. is a performance test destined to discover some way of testing the deaf eligible to the Ontario School of the Deaf.

Preparatory work of the O.S.A.E.

In the preparation of this study, Amoss devised a battery composed of tests of Drever Collins, Garry Meyers, Pintner Paterson, Lorteus Maze test. Experiment was carried on 31 backward and 8 average of the Institution. The sample, we admit, is not large. Afterwards, he elaborated a composite examination from the Gesell Block-Building, Healy Fernald, Drever Collins Block Designs, Stanford Revision drawing, Dominoes, Knox Cube test, weight test. Thirty deaf and fifty hearing, he tested, and then introduced modifications. The tapping and items from the

12.- Amoss Harry, op. cit., p. 6.

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Stanford Revision were added. The test was tried on hearing students who had passed the Stanford Revision and on the deaf who had taken the original form of the test.

Description of the O.S.A.E.

The O.S.A.E. is composed of six examinations. For each one of these examinations, we shall give the materials and outline briefly the method of procedure.

Examination I

Series A.- Locomotion

The examiner judges whether the subject is able to stand without support and walk three steps alone.

Series B.- Paper Folding

Materials

Sheets of plain paper, 3 inches square.

Method

This test is adapted from Gesell. The subject is required to fold a sheet diametrically once; diametrically and from left to right, at right angles with the first fold. He repeats this test and folds the paper diagonally so that the left hand corner overlaps the upper right hand corner.

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Series C.- Block Building adapted from Gesell.

Materials

A set of 13 blocks enamelled red.

Method

The examiner arranges a tower, then a kindergarten chair with 3 blocks and requires the subject to repeat the performance. Behind a screen, he builds a gate, with 5 blocks, a flight with 10, a cross with 4. After exposing the construction for 10 seconds, the subject has to repeat the test.

Series D.- Forms adapted from the Stanford Revision

Materials

Two cards like the one given below.

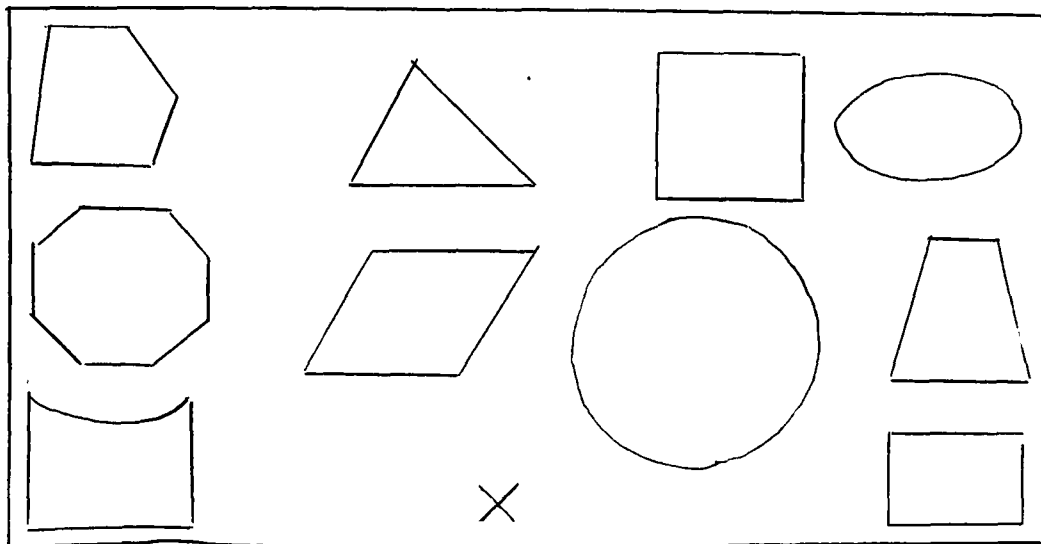


Fig 1. FORMS ADAPTED FROM THE STANFORD REVISION

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The designs are cut outside the outlines on one card.

Method

The examination consists of placing the cardboard with the X nearest the subject. He places the cut-out circle on X and then asks him to show the circle on the other card. This method is repeated with all the other figures.

Series D Part II

Materials

Two cardboard circles 3" in diameter, one divided in half. Two rectangles 2" by 3" one of which is divided diagonally.

Method

The examiner places the cardboard circle, two semi-circles in front of the subject. He places the two semi-circles so that a circle similar to the one on the table is obtained. The same is repeated with the rectangle, but no demonstration is given.

Series E.- Knot test adapted from the Stanford Revision

Material

Two shoe laces and a round stick 6" long by $\frac{1}{2}$ " in diameter.

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Method

The examiner ties an ordinary knot about the stick and requires the subject to test his ability by repeating the knot about the third finger of the examiner's hand.

Series F.- Healy Pernald Test

Material

A frame $5\frac{1}{2}$ x $4\frac{1}{2}$ (outside measurements) and 4 x 3 (inside measurements) with five oblong blocks of different size.

Method

The examiner empties the five blocks on the table and requires the subject to set them in the vacated place three times in succession to eliminate the chance element.

Series G.- Weights of Drever Collins

Material

Seven pill boxes with shot in cotton batting to weigh 5, 8, 11, 14.5, 18, 24, and 32 gms.

Method

The examiner sets the 5, 14.5, 32 gm. boxes in front of the candidate, lifts them in the order mentioned, lets the candidate repeat the performance so that he notes

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variation in weight. The examiner shuffles the boxes and asks the subject to set them in the correct order. The 8 and 18 gm. boxes are added to the first three and the procedure repeated. In the last case, the 11 and 24 boxes are added to the first five and the seven are placed in ascending order of weight.

Examination II

COLOUR PATTERNS

This test is adapted from Drever Collins

Materials

16 inch cubes, each having faces alike, white, blue, yellow, red, blue and yellow coloured diagonally, red and white coloured diagonally.

10 cardboard rectangles on which are painted designs on a scale $\frac{1}{2}$ " x 1".

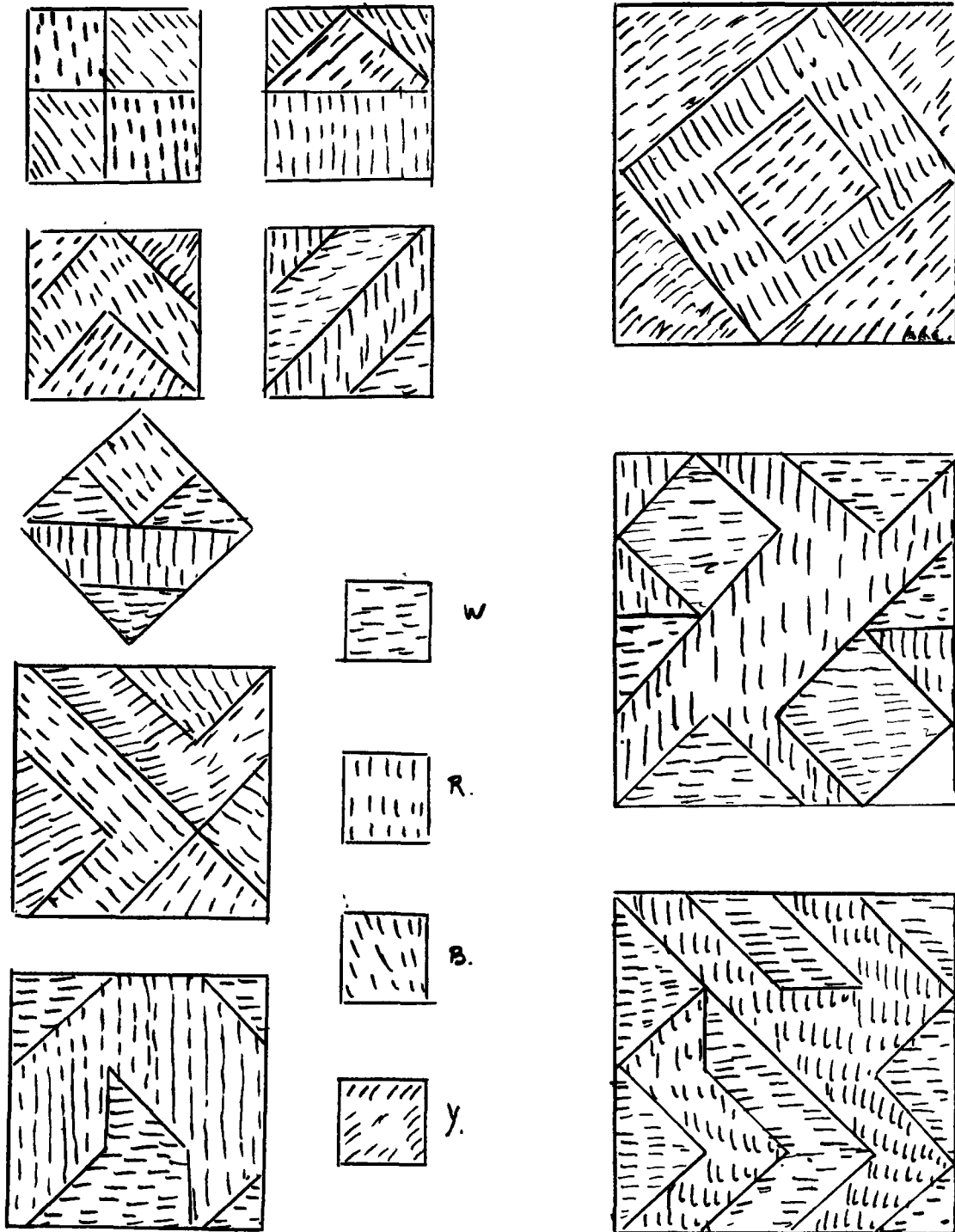


Fig. 1.- Block-Designs of Examination II.

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Method

The examiner sets the cardboard patterns and the subject tries to obtain the designs in the time allotted. There are four series of increasing difficulty. If he misses one series, the examiner needs not present the patterns of the next series.

Examination III

KNOX CUBE

This test is adapted from Knox and Pintner.

Materials

A set of 13 cubes.

Method

The examiner places 4 blocks in front of the candidate and with a fifth, taps different sequences. In Series C, there are combinations of 4; in series D, combinations of 5; in series E, combinations of 6; in series F, combinations of 7; in series G, combinations of 8. Very few attempted series E onwards.

Examination IV

DOMINO TEST

This test is adapted from Drever Collins.

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Materials

Two sets of wooden blocks 2" x $1\frac{1}{2}$ " enamelled with white dots.

Method

The examiner places one domino behind the screen, exposes it for three seconds and asks the subject to set the required one in front of his row. In series C, the experimenter places two dominoes behind the screen. In series D, three are hidden; in series E, four; in series F, five; in series G, six; in series H, seven; in series I, eight.

Examination V

DRAWING

This test is adapted from Gesell.

Material

Series B.- A sheet $11 \times 8\frac{1}{3}$ with six figures.

Series C.- Two cardboard sheets 8" x 6" as shown on the following page.

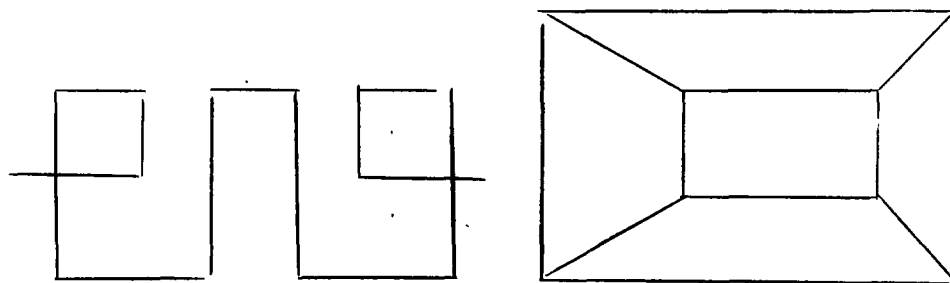
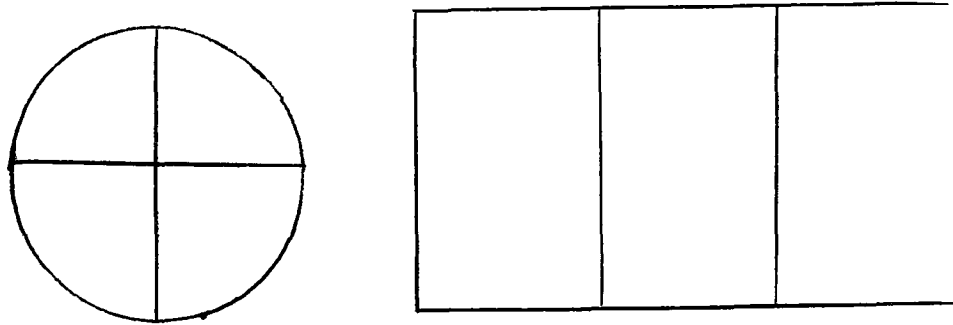


Fig.3.- Tests of series C in Examination V.

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Series D

Material

A cardboard 8" by 6" on which is the following ring design illustrated on the next page.

Method

If a child is eight years old mentally, section B may be omitted. In series C, the examiner exposes the design for ten seconds. The subject draws from memory. Marks are given for partial drawings. In section D, the same procedure is followed for the Ring Design.

EXAMINATION VI

TAPPING

Material

A set of thirteen red cubes.

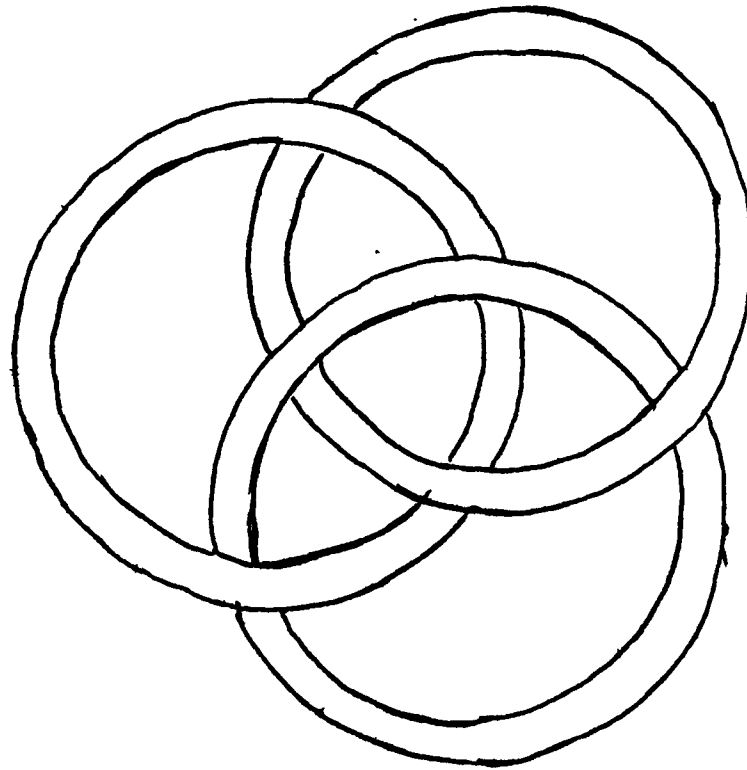


Fig.4.- Ring Design of Examination V.

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Method

The examiner places 6 cubes one inch apart in front of the candidate. Using another block, he taps a sequence on the table. In series A, the subject repeats 6 different sequences. For series B, 9 blocks are used. The sequences become more difficult and complicated with series C and D in which 12 cubes are used.

Criticism of Amoss' results

The outline of the test constitutes the major part of the O.S.A.E. while the results are given at the beginning of the text. The I.Q. obtained from 288 deaf students are given on page 9. The range 49-192 shows that the sample contained a great variety of capacities. If they be grouped in classes, the distribution will follow a normal curve. The graph with a median of 94 could have been easily illustrated. In connection with the condensed table of results on page 10, Amoss lists these factors that influence the scores obtained: social conditions. A reader has difficulty to remember all the observations because they are not detailed enough. In 37 pages he outlines the test, while he attempts to give the

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history of establishment, and the criticism of the results in 13 pages. We have tried to remember facts given at the beginning of the text with the result that very few out of the long list could be memorized.

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If an interested parent were to ask a teacher about the intelligence of his child, the teacher would reply that he regarded the child as bright, average or dull. Or he might compare him with the extremes of his class. If the question were one of height or weight instead of intelligence, there would be no trouble in giving an exact answer. But the evaluation of intelligence cannot be mathematically determined and the unit of measurement has not yet been invented.

Intelligence tests have spread in various fields of the industry but especially in educational centres. Nowhere have they been more useful. This fact becomes evident after the reading of the following paragraphs.

Is the teacher's rating of intelligence reliable?

Psychologists have repeated the following experiment during the last 25 years. A class was tested and the teacher was asked to rate them in the order she thought they should be, based on intelligence only. The examination marks were collected and averaged, a list prepared giving the order of the pupils based on examination. In one case, the corre-

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lation between mental age grading and the teacher's grading ranged from .09 to .77. It is evident that teachers differ in the ability to rate their pupils. Furthermore, facts reveal that the experience of the teacher does not affect this ability.

For what reasons is the teacher's ability to rate the pupil's mentality, often unreliable?

It seems that factors other than native ability enter the judgment of intelligence.

Some teachers call for the exercise of a few mental faculties and neglect others. For this reason, the examinations often do not estimate the student's ability.

On the other hand, the intelligence test covers various mental abilities unexplored by some school examinations. In order to support this statement, let us recall that boys and girls who are supposed to be failures in school, become very successful after leaving school. It is probable that there are some mental powers that the school examinations never tested, but which are essential to success in life.

In ranking pupils, a teacher is influenced by the examination record and in her marking, her opinion of the

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pupil's ability affects the score.

Intelligence tests have helped to correct those errors and to obtain a better grading in the school.

But they have their limitations. Let us quote E.A.

Lincoln:

The record which an individual makes on an examination is not due to his native ability alone. It is influenced by his mental health and general environment including formal and informal education to which he has been subjected.

There are factors that influence the child's score on a mental test.

Limitations of a test due to the subject

Psychologists agree that physical ability is a great factor. A change in the condition may affect the I.Q. If a child has been weak, kept at home, he cannot have the range of experiences of an ordinary child. With the betterment of his health, the intelligence quotient improves with health

1.- Lincoln, E.A., in *Journal of Psychology*, Nov. 1922, quoted by Cecil C. Goldring, Intelligence testing in a Public School, Toronto, Oxford University Press, 1924, p. 103.

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Children who suffer from nervous disorder make it very difficult for the examiner to test their intelligence accurately. They are ill at ease and not doing their best. The quiet, reserved, repressed child will not answer unless he is sure; he refuses to guess. A child who is superficial, lacking interest is thoughtless in his answers.

The emotional condition of a pupil may affect his intelligence quotient. Some girls especially are anxious to do well because they have the reputation for good work in school. There is often the lack of ability to concentrate.

Limitations due to the examiner

The one giving the test should follow the instructions regarding the administering and the scoring of the test. Any variation in the instructions will lead to inaccurate results.

Most intelligence tests have parallel forms to secure a greater objectivity in scoring. This however, does not apply in our case. If a child is tested and the result revealed to the teacher, it is probable that the teacher may so instruct him, that his I.Q. will be higher in a later test.

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Drill could be unintentional, still it has an indirect effect of improving the I... This is an indirect way of coaching.

A serious danger arises from the examiner's desire to see the child perform to the limit of his ability. Unconsciously, he may give help. It is right to encourage the subject. But, by nods and smiles, great help may be given, especially if the candidate seeks approval. Such an attitude will influence the result. It is understood that the examiner has tried to study the test in order to be able to manipulate the materials easily. After sufficient practice, he is ready to test the subjects.

Limitations due to the test itself

We should remember that a test with a high reliability yields scores which have a probable error. For example, in Terman's Revision of 1935, a score above 130 has a P.E. of 3.5 and for a score below 70, it is only 1.5. Thus a student may score between 133.5 and 126.5 if he obtained a mark of 130.

Conclusion regarding the limitations

After this brief study of the limitations of an intelligence test, we sincerely think that it is impossible to arrive at a mathematical method of computing the I.Q. and of discovering an intelligence unit of measurement. Amoss,

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on the other hand seems to believe in such a theory.

The Surroundings

The Amoss test was given to three different groups in three different communities.² The testing-room in two localities was one to which the subjects were accustomed. We admitted the candidates to a living-room devoid of "distracting stimuli". Most of the time, the examiner was alone in the house; elements such as the slamming of doors, distant voices, the presence of people in the room are entirely out of question. We did not allow parents in the testing-room with the effect that candidates were not disturbed in any way.

Local conditions and attitude of the subjects

Out of 299 French-Canadian subjects, the examiner had already met 245. For this reason, it was not necessary to win their confidence. With this information in mind,

2.- The test was given to candidates of the following communities: Hawkesbury, Plantagenet, and Ottawa.

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it is easily conceivable that the students cooperated splendidly. The examiner was not acquainted with the 54 subjects who belong to Grade V B of the Ottawa Garneau School. We shall note that the room in this locality was not entirely suitable. A classroom does not appeal to children, any more than a bare clinic room. We believe that the physical conditions are very inadequate. The task is not so interesting. For the purpose of grading, this class had already been given a group test. A performance test was intended to help in the classification. It is interesting to note that these candidates were not as enthusiastic to handle the material like those of the two first groups. On the other hand, all seemed anxious to obtain a good score. The other groups did not seem to care about their intelligence rating. But the Grade V students knew that their scores were listed on the Principal's record. We found it very surprising to see those boys coming at eight o'clock on Saturday mornings during the month of February. On several occasions, we noticed that it was still dark. During the forenoon, they left their hockey game to return to school. They were all extremely polite. After some thinking, we believe that an

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outside influence must have affected their behaviour.

Home life

The social conditions in the first community were not exceptionally good. In a commercial town, these children are moderately interested in school life. Few of the parents are wealthy, but few are in poverty. Most of them are uninterested in education and believe that their sons and daughters should be on their own at the early age of 16. In such an environment, we may easily note that the intellectual life has no stimulus. While testing, we observed few active interested candidates. The task was somewhat tedious and monotonous. The children of the other two communities lived in an environment that was favourable to their education.

Results

We have mentioned that the Grade V boys compared with the rest of our sample, behaved in an entirely different way. For this reason, their I.Q. were set apart. In the Appendix, we have calculated for the two groups and for the whole sample, the Mean, Median, Sigma and Q. In Table I, we have listed our results.

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TABLE I

Measures of central tendency and variability of the two groups O.G., H.P., and of the whole sample.

Gr.	No.	Mean	Median	Q	Sigma
O.G.	54	97.84	96.8	10.5	13.9
H.P.	245	93.33	91.5	9.45	14.9
Total	299	94.15	92.27	9.68	17.5

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Analysis of Table I.

Means

In calculating the mean of any distribution, each score has an equal weight in determining the central tendency. All the I.Q. determine the average score of a group. It is considered as the measure of highest reliability. The majority of the Grade V boys had an average of 100 with the result that the average for the group was 97.84. The second group included 245 students between 6 and 19, with the majority above 10 years. A boy of 12 years with an I.Q. of 90 has a higher mental age than a boy of 10 with an I.Q. of 105. The scores in the second group were lower for that reason. Besides, let us bear in mind that their attitude was not serious. We note that the mean of the whole distribution is 94.15. Thus, the scores of the first group have raised the average from 93.33 to 94.15. The increase is not considerable.

Medians

A second measure of central tendency used by

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psychologists is the median. The important difference between the two measures is that extreme measures do not affect the median, while they influence the mean considerably. The median is the score about which the distribution seems to be concentrated. From Table I, we note that the medians are lower than the means: 96.8 for Group I, 91.5 for the second group and 92.27 for the whole distribution. Our three distributions show a drop of 2 points between the mean and the median.

Sigma and Q

The Q is a quick measure of variability and seeks a degree of concentration around the median itself. On the other hand, extreme measures affect the sigma. This fact becomes evident if we consider Table I. The scores about the mean of 94.15 are subject to the large deviation of 17.5 while the I.Q. are concentrated about the median of 92.27 with the smaller spread of 9.68.

Our main interest in the research was to collect data for the analysis of the O.S.A.E. While carrying on the study, the method was to ask all the pupils who were willing. Without the assistance of teachers, we had to

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accept those who were kind enough to come. In any research based on intelligence testing, psychologists have been very careful to select a sample that would be representative. Terman, for example, spent years to make a revision of the original Stanford-Binet scales, basing it on large representative groups. In this important respect, we have failed due to the circumstances. The candidates have not been selected from classes with the help of teachers. But all the children who were willing to try the test were accepted. We are conscious of the fact that our purpose was to accumulate data. No school record of the pupils was offered. In reality, we had to face strangers with the exception of a dozen of High School students. Thus the particular home conditions, disposition, physical ability of the subjects has to be ignored. We had to judge the results without due consideration to the candidate's background.

The graph on the next page reveals a frequency of 94 in the step-interval 85-95. The curve on each side decreases more abruptly on the left than on the right. It is evident that too many of the candidates were of

FREQUENCY

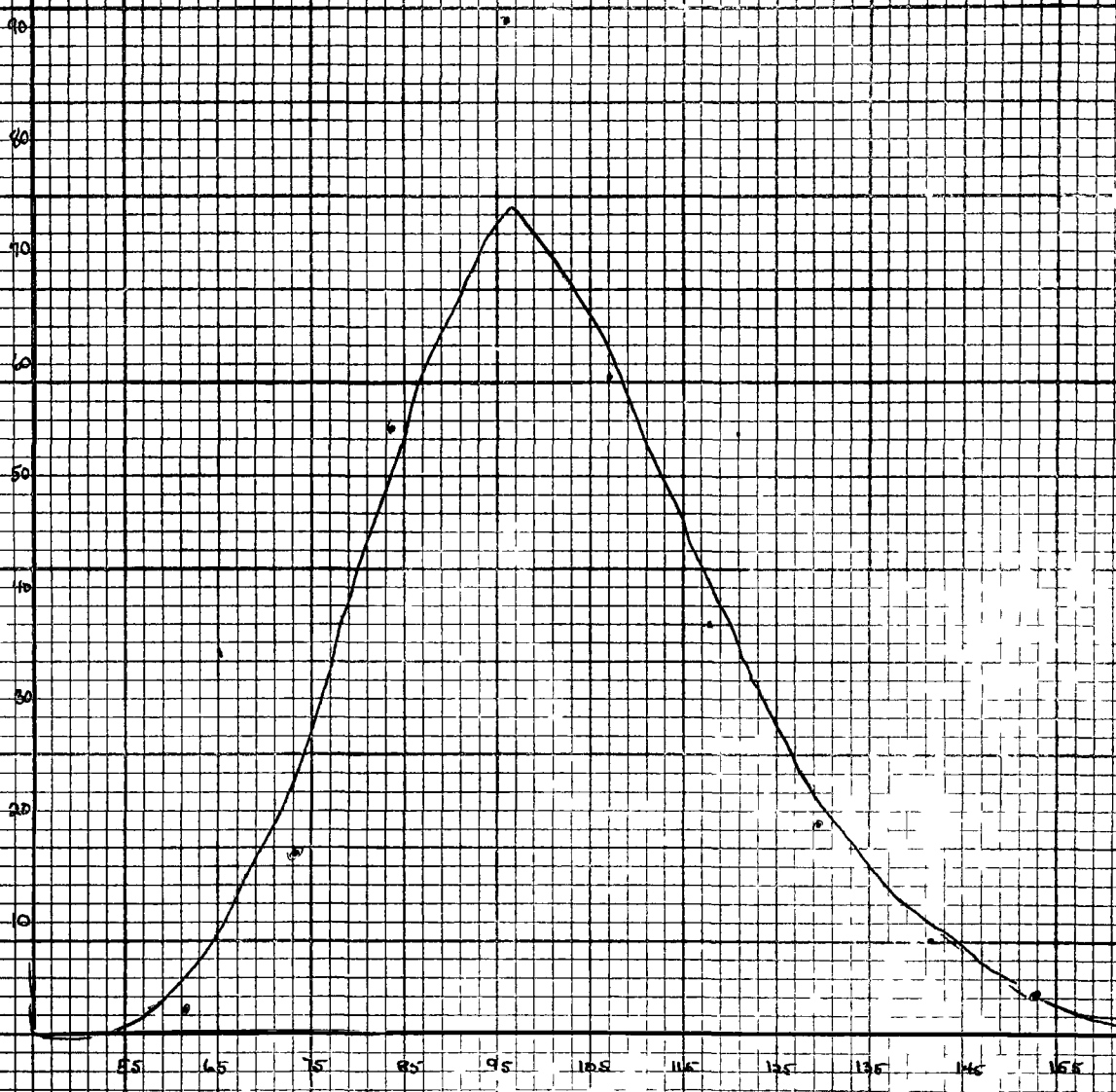


Fig. 5.- I.Q. of 299 subjects on the O.S.A.E.

This plate 10 x 7 inches. Edge of each small square 1/10 inch

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average intelligence. If we remove the 57 in the step-interval 75-85 and 62 from 95-105, there are 80 who are above 105 and below 75. In eliminating 19 on the left side, there are 61 who are beyond 105. The mean and the median are nearly outside the step-interval which contains the greatest number of scores. We may say that there are too many average children for the less gifted. In a normal distribution, we would expect about 12 more in the step-interval 65-75, more in the step-interval 55-65 and 12 fewer at the centre of the distribution. The frequency of 94 causes the curved line on the graph to be peaked while it should be smooth. We note that the line is steeper on the left than on the right, due to the large number of subjects in the step-interval 85-94.

Urban Candidates

Let us consider the results of the city candidates. In Garneau School, they have selected classes for some grades. The principle involved for such a grading is this: "A teacher cannot effectively instruct in the same class pupils whose range of mental age is too great."³ In the

3.- Goldring, Cecil C., Intelligence testing in a Public School, Toronto, Oxford University Press, 1924, p.48.

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grading of children in city schools, the standards differ greatly for several reasons. In the richer sections, where the socio-economic status is high, the environment, the relatively better home conditions will affect the mental life. Children tending to inherit the mental ability of their parents ought to show differences in intelligence as we proceed from the lower to the higher occupation of their parents. The poorer sections on the other hand, offer slim chances for the development of intellectual life. It is evident that a Grade A from a rich section cannot be compared with a Grade A from a poor section. The mental levels differ considerably. We do not know how a child is selected for a Grade A, B, or C. In some cases, the average of the final marks is the criterion. Since subjects taught in a school e.g. spelling, literature, arithmetic, are intended to develop intelligence we could rely on the scores obtained to determine the mental ability of a child. But we have emphasized that the teacher's rating and marking differ so greatly that we doubt about their validity. In other schools the standard is different. Some subjects such as reading, writing,

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and spelling determine the promotion of a child to a selected class. For the reasons mentioned the grading of pupils is far from perfect. School grades cannot be adequately compared.

From the next figure, we notice that out of 54, there are 30 above the median of 96.8 and 37 between 85 and 105. This is not a wide spread. Since the curved line in Fig. 6 is flattened, we note that the frequencies of 10, 13, 14 cause the straight line on the graph.

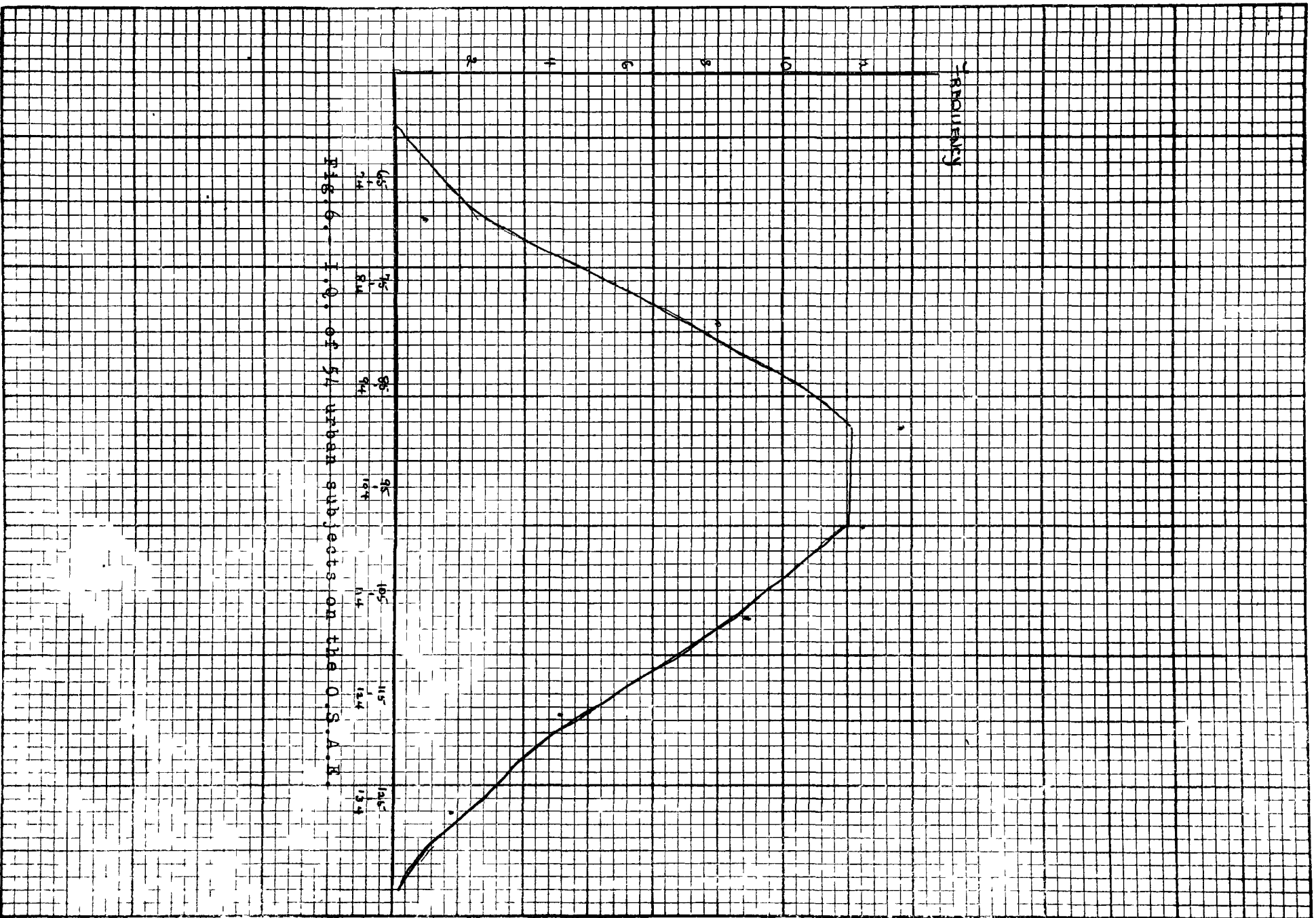


FIG. 6. - I. Q. of 54 wear subjects on the O.S.A.R.

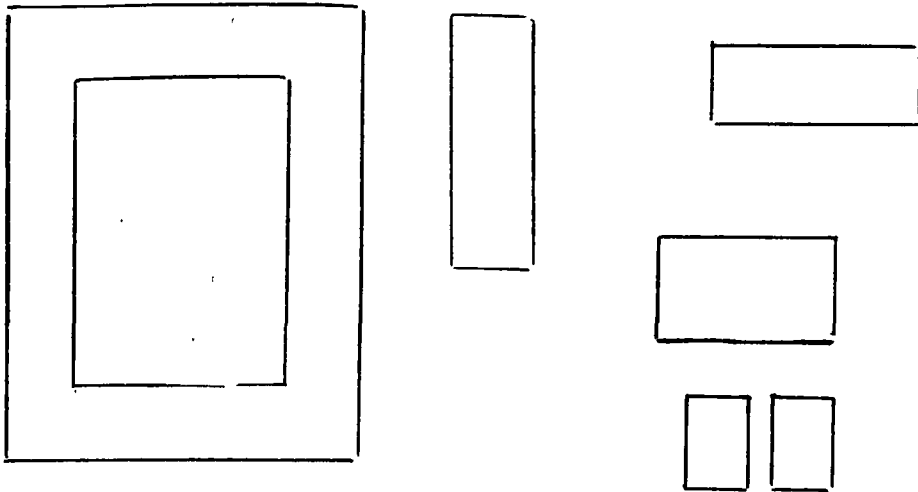
This plate 10 x 7 inches. Edge of each small square 1/10 inch.
C.C.C.

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Healy Fernald Test

A picture of the test is given below.



Purpose

Healy gives Freeman credit for making the first sketch of this test. But Healy and Fernald have altered the original. The purpose is "to bring out perception of relationship". The authors recommended the consideration of the following factors for scoring: time, number, of moves number of impossible moves, repetition of obvious impossibilities.

Many candidates, we have observed start out with a good move by chance and complete their performance by trial and-error or by planning.

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Difficulties

This test, to a certain extent, belongs to the "puzzle variety" and is "open to criticism". But Healy seems to believe that "no normal person over 8 or 9 years should fail to do the test in five minutes". A.F. Bronner in Construction Test A of the Healy Fernald Series (1916) seems to question the value of the test as an age test.¹ Our experience seems to doubt the intelligence estimate of this test. The attitude of the candidates with the exception of the Grade V boys was not serious. When required to repeat the performance, they seemed as puzzled as before. This fact led us to believe that chance before planning explained the successes. Those of high mental age showed by their expression, considerable thinking and trial. In most cases, the same arrangement was repeated. For the majority, this test was the first. Candidates who lack concentration, or are overenthusiastic needed this test to quiet them. But the results were not satisfactory.

1.- Pintner Rudolph, Paterson, Donald G., A Scale of Performance Tests, New York, D.Appleton-Century Co., 1917, p.122.

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Modifications of the original

Amoss has introduced certain modifications in requiring the subject to repeat the performance three times in the time limit of five minutes. Healy's norm which we have stated previously cannot apply in this examination due to the repetition. Furthermore, Amoss believes in the elimination of trial and error forms of behaviour. Yet he does not offer a method of scoring that checks the unnecessary moves. On the time required, Amoss states the limit only. If the candidate is successful in 1 minute, he scores 6 points; in 3 min. he gains 4 points; in 5 min., 2 points.

Results

In the first column of Table II, we refer to the mental age obtained on the test. For example, if a candidate scored 120 points, his mental age would be 10 years. In the second column, we have listed the number who were successful in one, three, five minutes.

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TABLE II
Healy's Puzzle

Mental age	Passes	Number
8	10	40
9	28	59
10	67	88
11	36	43
12	20	25
13	21	21
14	8	8
15	4	4
16	1	1

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Criticism

It is interesting to note that out of 54 city candidates, 40 were successful. Our experience revealed that their serious attitude, honest effort in planning and their great concentration of mind were important factors. Out of 245, 90 fail to fulfill the conditions. Still we do not think that these ought to be classified as abnormals.

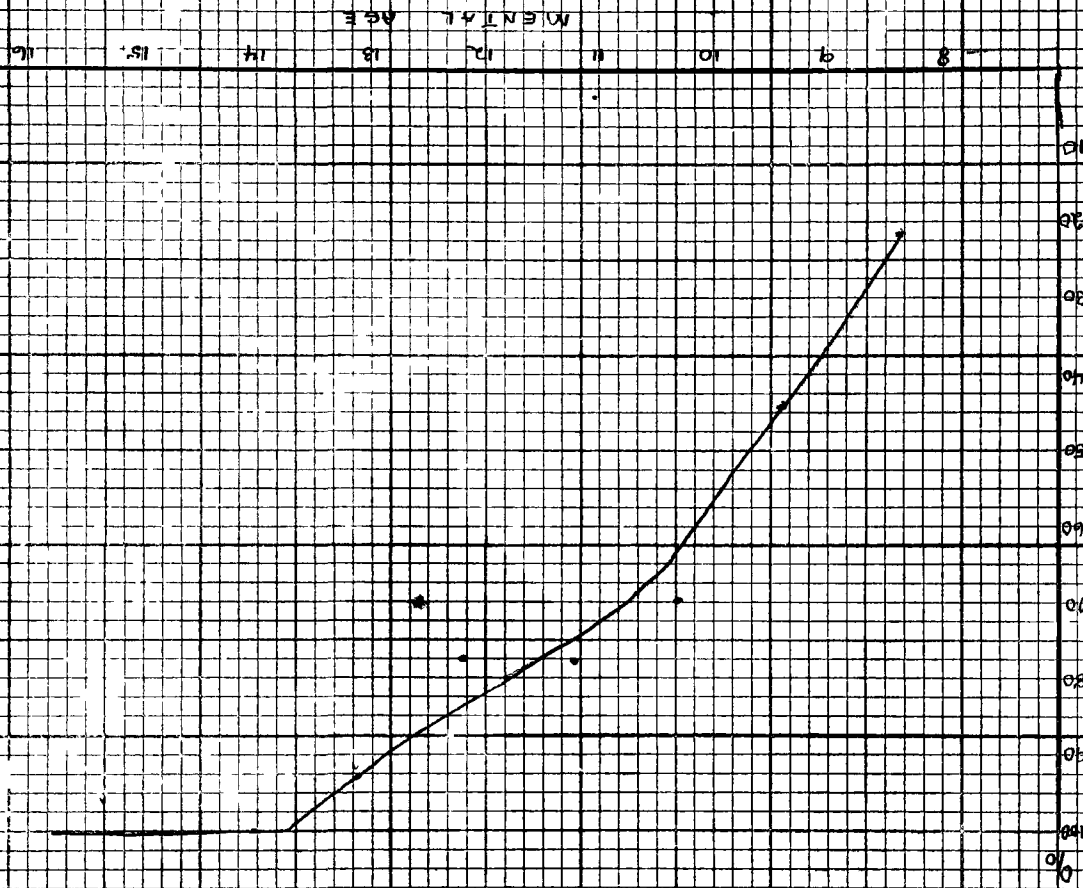
After calculating the percentage of successful candidates at each mental age, we have drawn the graph of our distribution in Fig.7. The distribution is moderately spread across the figure. The differences between the mental ages 8,9,10 cause the line to have an inclination of 70 degrees. However there is less discrimination for the ages 10 to 13.

Objections to the test

A child may place all five pieces correctly at the first trial. Cases of this kind occurred at every age. We cannot help think that this is due to the puzzle value of the test which admits an element of chance to influence the solution. Pintner Paterson¹⁴ have given the test to

¹⁴- Pintner Rudolph, Paterson, Donald G., A Scale of Performance Tests, New York, D. APPLETON Co., 1917, p.126.

Fig. 7. Percentages passing the Healy's maze at the different mental ages.



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1005 subjects and are under the impression that chance affects the results to a greater degree than in other tests. They believe that it is unreliable if used by itself, but in a group of mental tests, the chance element will be modified by the other performance tests.

Weights of Drever Collins

Modifications

This test which Drever Collins introduced has known a modification. Amoss altered the weights slightly and the method of procedure without stating his reasons. After demonstrating, we ask the subject to set the three weights in ascending order. The performance is repeated with five and seven weights.

Attitude

In general, the candidates showed a "superiority complex" for the three parts of the test, and there was no way of hampering this unfounded confidence. Too many apparently convinced of their ability, made a real flop. There was a lack of confidence with the younger ones. They did not grasp the meaning of the test. Uninterested in setting the weights in the correct order, they would seek to place them

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in the same position on the table. Instead of lifting the weights, the candidates would shake them, listen to the rattle and finally set them on the table.

Results

In Table III, the percentage of successful candidates for the different mental ages, has been calculated. By G3, G5, and G7, we refer to the tests with 3,5,7,weights respectively. Under each one, we have listed the percentage of passes. No time limit has been assigned.

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TABLE III

Weights of Drever Collins

Mental age	G3	G5	G7
8	82	45	12
9	90	65	48
10	94	75	42
11	88	70	44
12	100	80	56
13	96	86	52
14	100	87	87
15	100	100	100
16	100	100	100

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Criticism of Table III.

In G3, the percentages are quite high and do not reveal any difference between the mental ages. It is not expected to notice a drop of 6 points between the ages 10 and 11. In the administration of the test, the element of chance affected the solution. A common error was to set the weights from left to right instead from right to left. G5 reveals a gradual increase while in G7, the percentages are lower and uneven.

Fig 8-10 illustrate the results of G3, G5 and G7.

Criticism of the figures.

In Fig. 8, the scores are scattered at the top of the graph. We may understand that G3 is too easy and has no discriminating power. Such is not the case with G5. Its graph shows an almost normal increase for the inclination is approximately 45 degrees. Fig 10 offers a better distribution than Fig. 8 and is more discriminating. It did not record any differences between the mental ages 9 to 13 because the line is almost parallel to the X axis. Due to the small number of subjects above the mental age of 14,

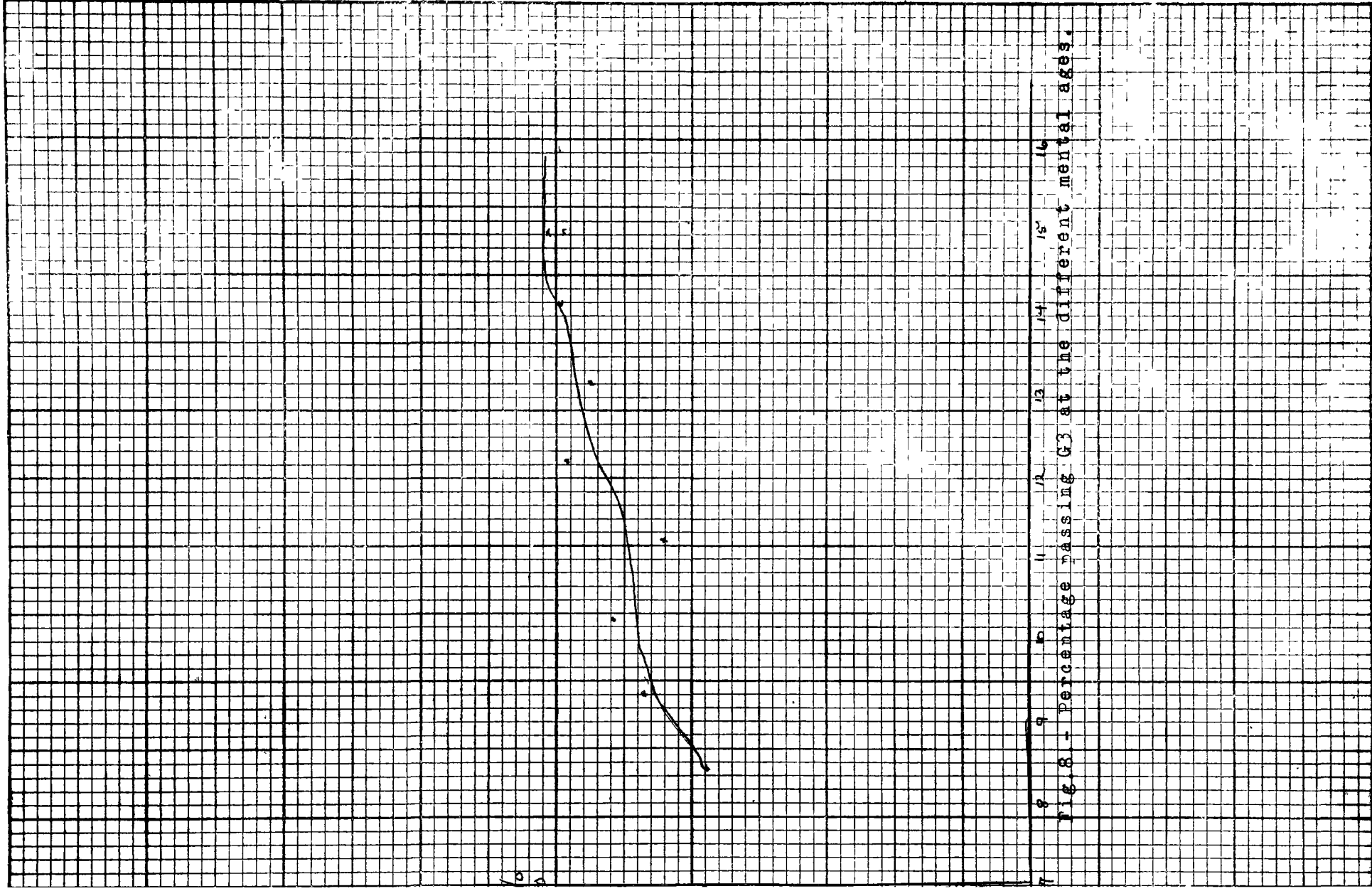


Fig. 81 - Percentage passing G3 at the different mental ages.

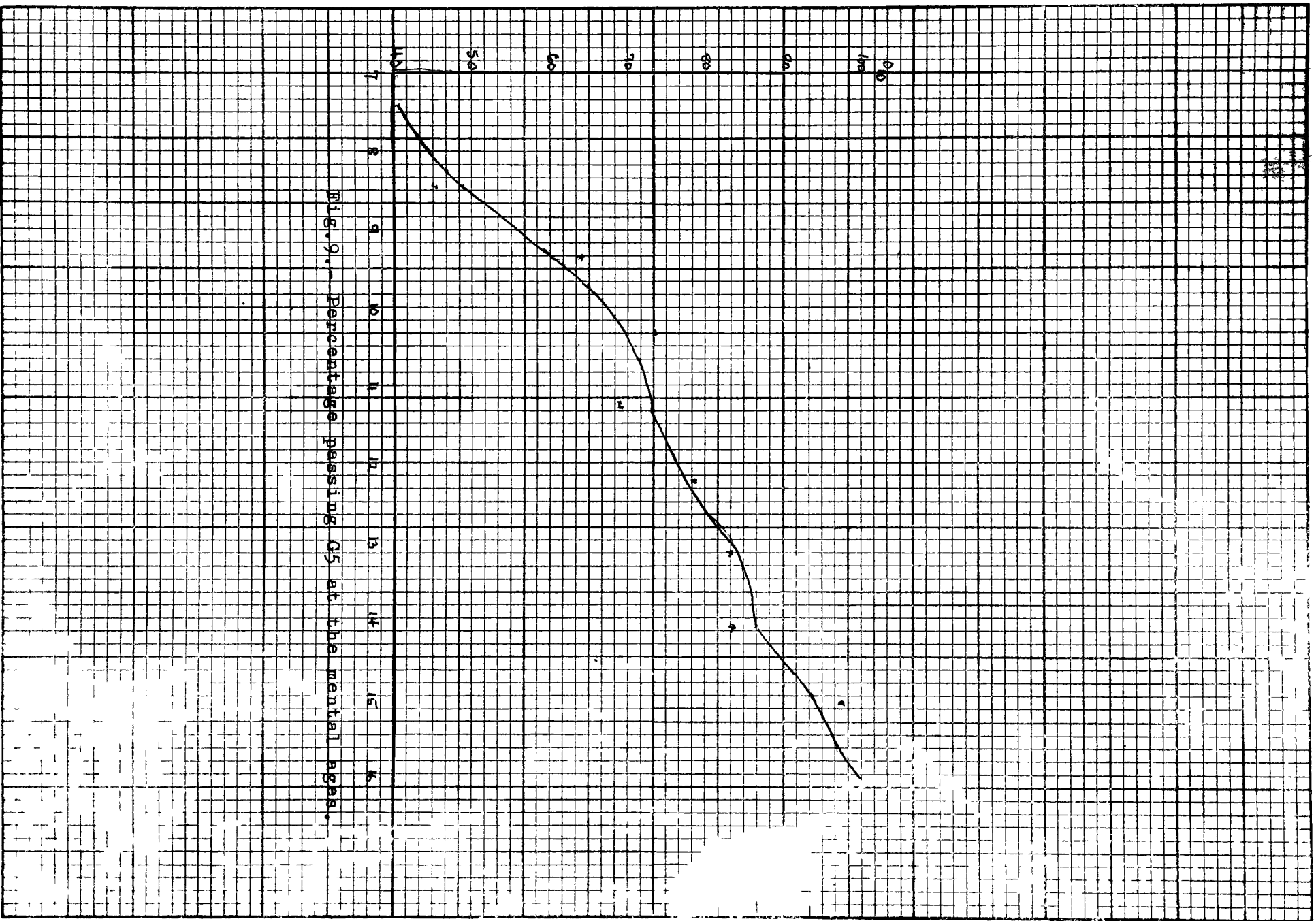


Fig. 9. Percentage passing G5 at the mental ages.

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C.C.C.

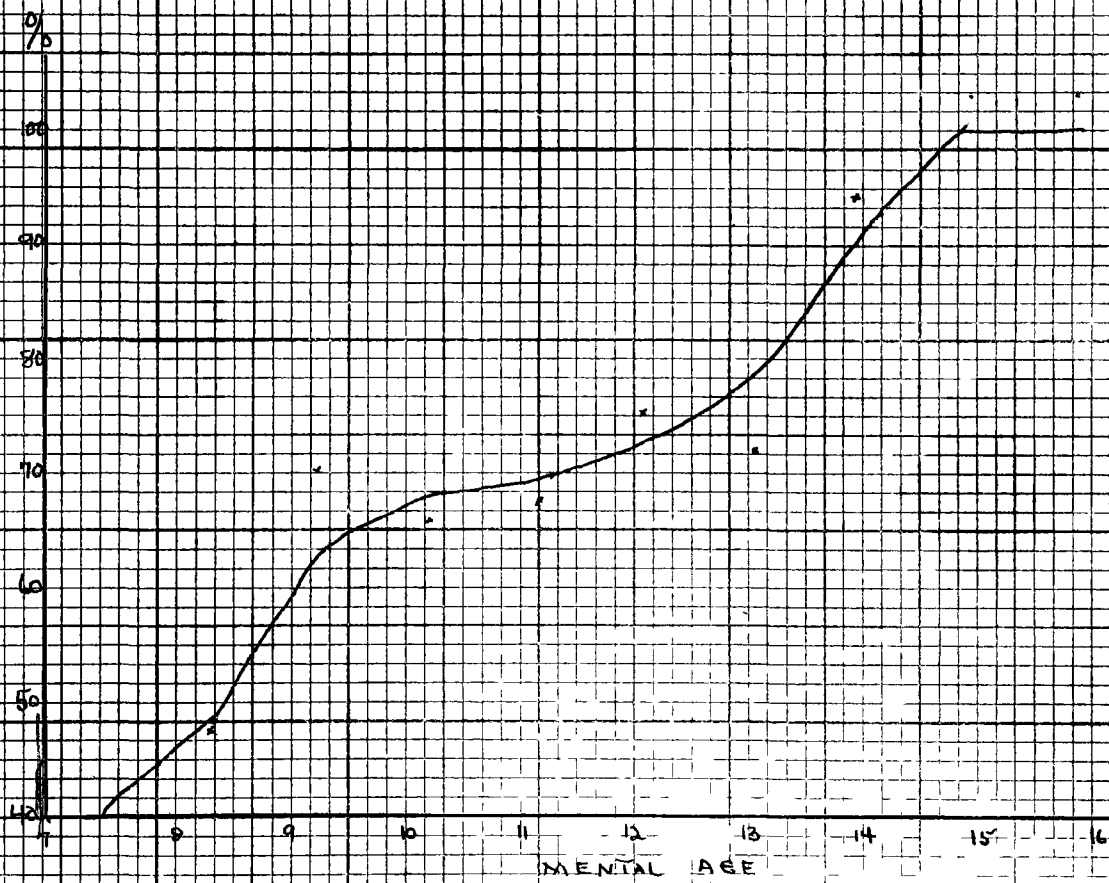


Fig. 10.- Percentage passing G7 at the mental ages.

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we have obtained a high percentage. But we have reason to believe that above the M.A. of 14, candidates would easily succeed. The test in our opinion is superior to the preceding one, but we do not favour the chance element that enters the performance. In order to secure a degree of reliability, there should be a time limit and a record of the number of moves. The test, as it is, does not measure intelligence adequately.

Examination II

BLOCK DESIGN TEST

Purpose

The block designs according to Amoss, is one of the tests that can measure intelligence very adequately. We have mentioned previously the test material needed for the examination,- 16 cubes of 1" dimension differently coloured. The examiner takes a block, turns it from side to side to show the colours. Because none of the subjects was colour-blind, we are certain that the problem was understood. Four blocks are given to the subject and the design cards lain on the table for series B. In Series C, nine blocks are used and in D, sixteen.

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Modifications

Out of the XX designs of Kohs, Amoss selected 10. While Kohs recorded the time needed and the number of moves, Amoss fixes the time limit only. A "move" is a separate and distinct change in the position of a block. Kohs' scoring card is very handy in marking the test, but Amoss does not use it. A score of 29 points is given to those who construct the ten designs within the time limit.

Original

The Block Designs are taken from Kohs' Intelligence Measurement.² The author interested in discovering the nature of the mind, introduced a mental test method "independent of the language factor". A performance test does not always measure the "upper ranges of intelligence". In the Preface of Intelligence Measurement, Dr. Terman states that "in the Block Designs, Dr. Kohs has largely overcome this difficulty".³ Besides increasing the number of blocks, the dissymmetry in design, he eliminates the outside boundary

2.- Kohs, S.C., Intelligence Measurement, New York, the Macmillan Company, 1923.

3.- Kohs, S.C., op. cit., p vii

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decreases the number of different colours used in each design.

Results

The first test of series B is easy because the four blocks are of the same colour. But, with the cubes coloured diagonally, the candidates found the tests more difficult to perform. Thus the contrast between B1 and B2 is sharp. Fig. 13-14, of which the second is slightly more discriminating, have an inclination of 65 degrees with the X axis. The steep slant marks the mental ages 8 to 13 very distinctly, forgetting to differentiate for the ages 14 to 16. In spite of the fact that our sample included very few of a high mental age, there would still be the possibility that they could not have been successful. If this were so, the parallel lines at the 100% level would fall. Then the mental abilities 14-16 would be at the same level on the graph as those of 12 or 11 years. In either case, the three tests do not set a real difference between the higher mental abilities.

The candidates somewhat embarrassed for test C1 proceeded too slowly at first. For this reason, many on the right track, did not complete it within the time limit. Fig. 17 on the other hand, marks off the mental levels 9-13 quite well.

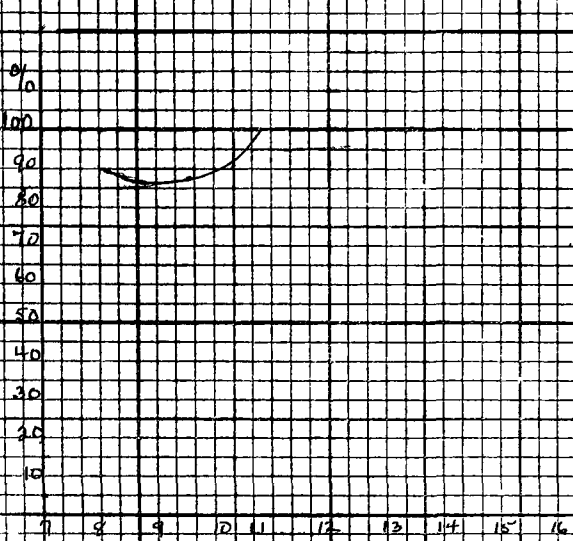


Fig. 11



Fig. 12

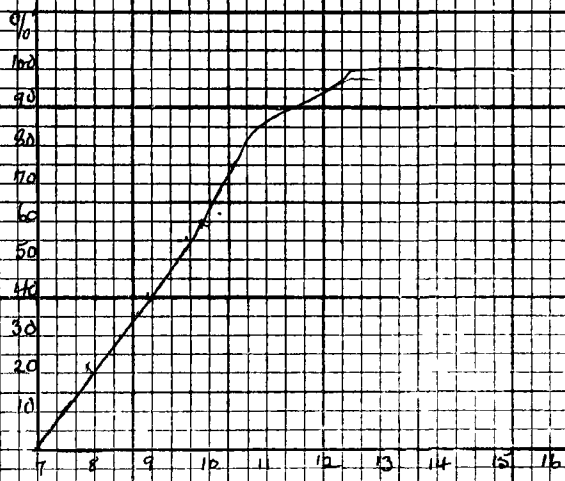


Fig. 13

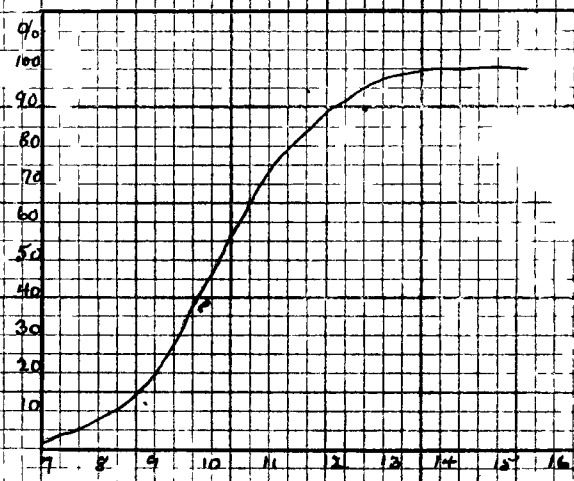


Fig. 14

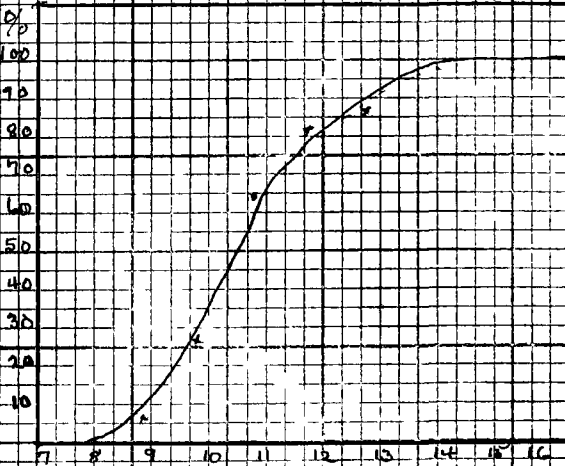


Fig. 15

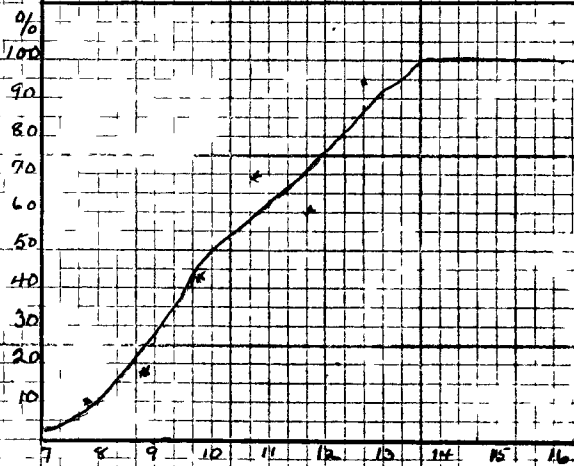


Fig. 16

Fig. 11-16.- Percentage passing tests B and CI of Examination II at the different mental ages.

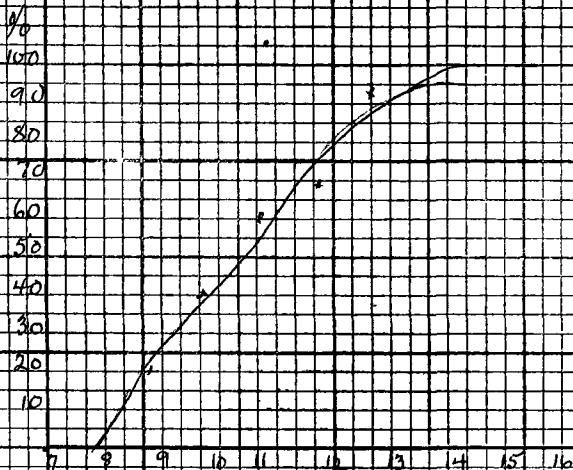


Fig. 17

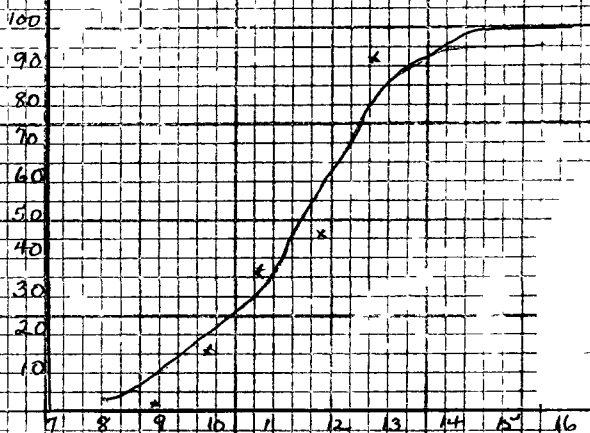


Fig. 18

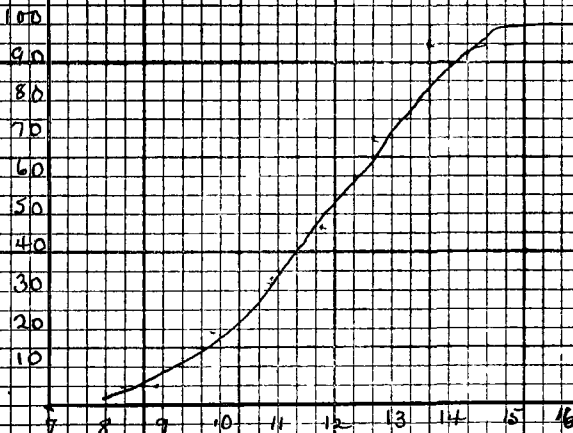


Fig. 19

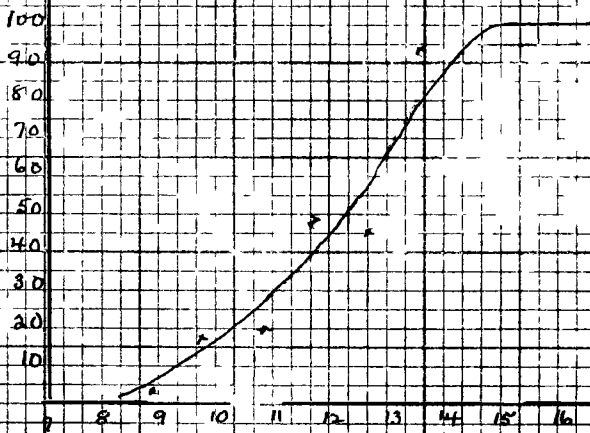


Fig. 20

Fig. 17-20.- Percentage passing tests C2 and D of Examination II at the different mental ages.

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CRITICAL STUDY OF THE O.S.A.E.

When sixteen blocks were used, the problem is more difficult. Graphs for D1 and D2 reveal discrimination for the ages 10-14 while D3 tested the abilities 12-14.

With the exception of the tests D1, D2, D3, all the distributions are situated on the left side. We may conclude that either the passes are not scattered or that the discriminating power for the lower mental ages only, is high.

In our opinion, such a test is not satisfactory if we intend to measure intelligence adequately. Terman believed that the Block Designs could easily rate the "higher mental levels". His opinion was based on the author's method of calculating the moves, the time limit and his principle. Underneath this apparent game with blocks, it is a work of criticism involving, as Kohs mentioned in Intelligence Measurement, three processes of attention, adaptation, and autocriticism.

We believe that Kohs' method is superior. During the research, it was surprising to observe that candidates of evidently different ability scored 20 points. In the following graphs, we compare Kohs' results with ours on tests B5, C1 and D1, to illustrate that the distributions



FIG. 21-3. - Percentage passing Tests B5, O1, D1 at the different mental ages.

Kolbski
M.L.

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are more scattered according to the mental ages. Another worthwhile difference in the original test has to be stated. Kohs leaves the sixteen blocks on the table. In so doing, the subject has to decide how many are required for each design.

We prefer Kohs' results to ours from the Fig.21-3 . Due to the fact that Kohs' tests are more discriminating, we expect a higher degree of reliability.

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EXAMINATION III
Knox Cubes

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Original

This test was described by Knox in a Scale based on the work at Ellis Island for estimating mental defect (1914).⁵ Pintner and Paterson modified and expanded the Knox test, used five blocks of the same colour. Afterwards, Knox devised four cubes, red in colour, while the original were black.

Method

After placing the four cubes in front of the subject, the examiner, with a fifth, taps the blocks in a definite order. An arrangement of taps is known as a line. In Pintner and Paterson's test, there are 12 lines. Amoss introduces two other tests containing 8 tests for the mental ages 17-19.

Results

Some candidates did not grasp the meaning of the test. Instead of noting the cubes tapped, they tried to follow the rhythm. After the first demonstration, they

5.- Pintner Rudolph, Paterson Donald G., A Scale of Performance tests, New York, D.Appleton-Century Co., 1917, p. 67.

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repeat the performance more easily. The graphs of C2 and C3 in Fig. 25-6 are alike and offer little discrimination between the mental ages 8 to 11. Chance affects the results in the tests of series D. D2 with its arrangement of 13243 and D3 with 12434 are not difficult to repeat. If we compare D3 and E, we may easily see that the drop is evident. It is interesting to note that the three graphs of E are much alike. E2 shows a slightly greater distribution. It seemed to be that candidates could repeat 132413 better than the other two. The graphs are almost equally difficult. It is hard to follow the moves of the examiner. Series F and G were not attempted by any of the candidates.

In order to obtain better results, we suggest using differently coloured blocks.

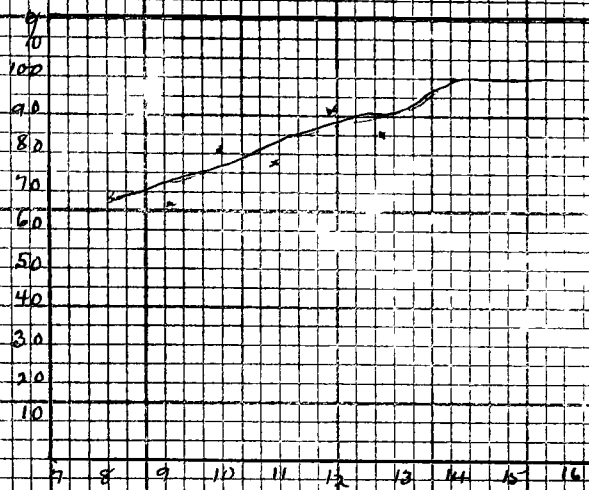


Fig. 24

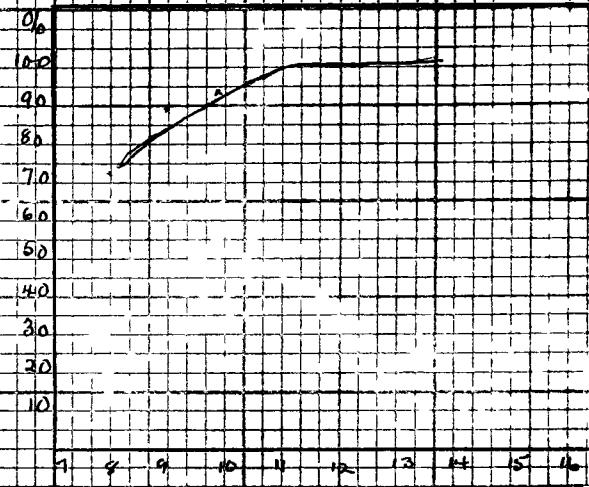


Fig. 25

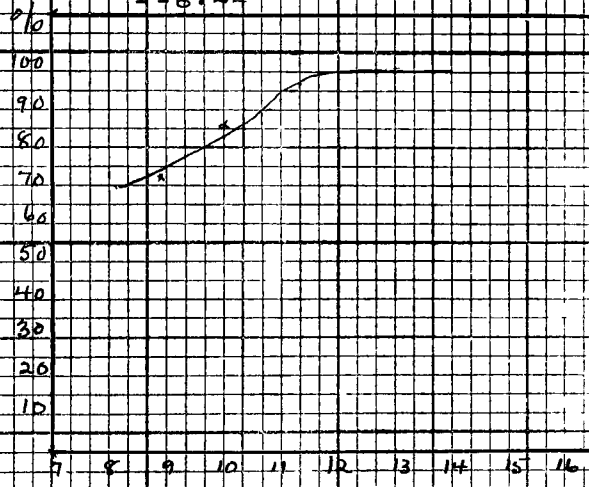


Fig. 26

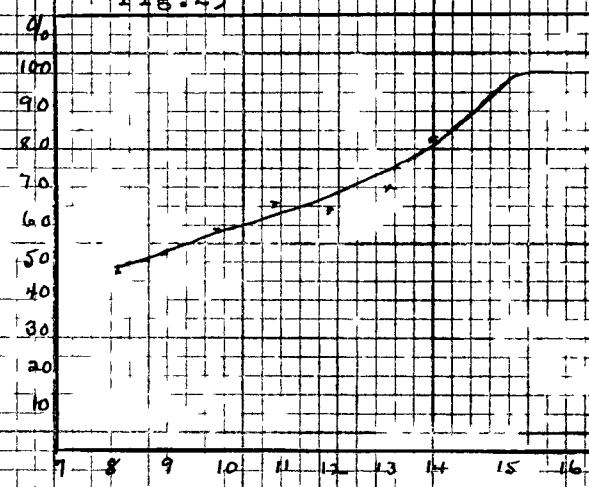


Fig. 27

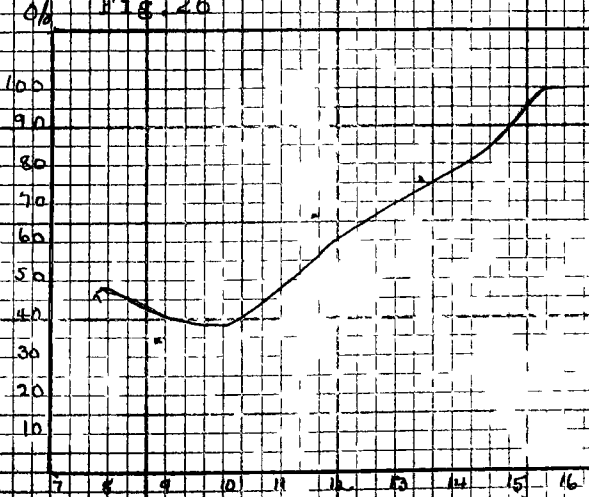


Fig. 28

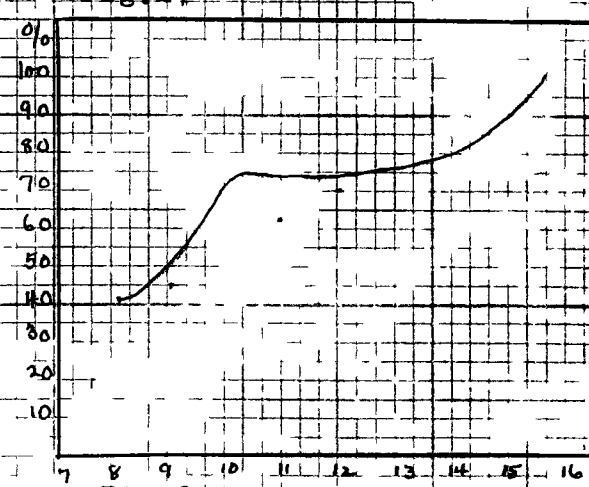


Fig. 29

Fig. 24-9. - Percentage passing tests O and D of Examination III at the different mental ages.



Fig. 30

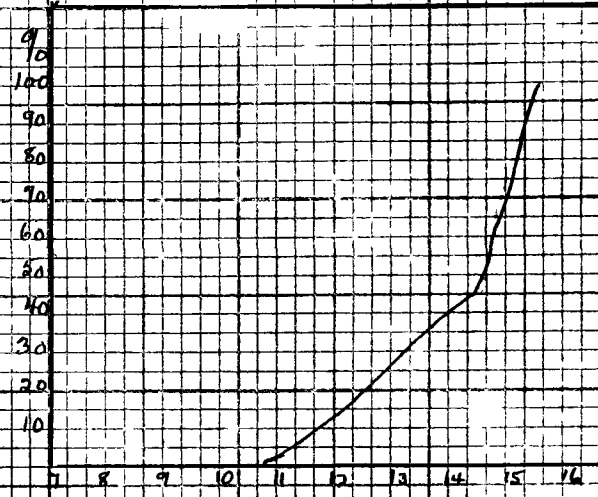


Fig. 31

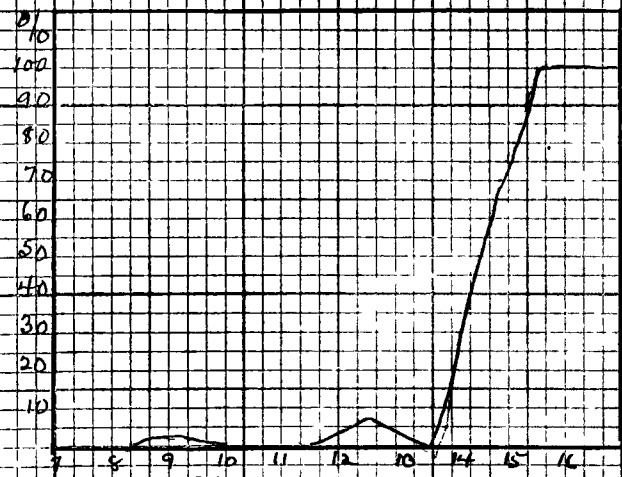


Fig. 32

Fig. 30-2,- Percentage passing test E of Examination III.

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EXAMINATION IV

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We have outlined the method of procedure previously in Chapter III.

Modifications

Drever Collins who devised the test set all the dominoes on the table in the order 0 to 9. Amoss, on the other hand, begins with 6 and adds the others at series F only. The original test did not require the placing of more than 6 dominoes. The addition of two other tests by Amoss meets our approval because some candidates were able to repeat the performance. The most important modification is given above. The fact that the examiner sets all the dominoes 6 and onwards at series F and for the remaining series affects the results. The individuals became nervous and believed the test difficult before they even tried it. The drop between the successes in E3 and F1 is not surprising. Drever Collins trained the subjects with all the dominoes right from the beginning. We believe that their method of procedure is preferable.

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Results

Series C is evidently easy from Fig. 33-5. Those who failed the first tests did not set the dominoes in the correct order. Leaving these for the purpose of demonstration, let us consider the next ones. Series D and E possess the same characteristic as series B and C of Examination II. Fig. 36-41 reveal increasing difficulty between the mental ages under 11. In our opinion, F1 offers the best scatter but not the best discrimination. The tests F2 ,F3 and G2 ,G3 differentiate the mental levels 11 to 15 only. Series H had very little success. For this reason, we will overlook this difficult test.

Criticism

We have seen that the series C,D,E mark off clearly the ages 8 to 11, while the series F and G discriminate the ages 11 to 15. Not one test differentiates all the ages at the same time. The graphs clearly indicate a break in the middle of the examination. In order to obtain better results, we suggest placing all the dominoes on the table for the whole test.

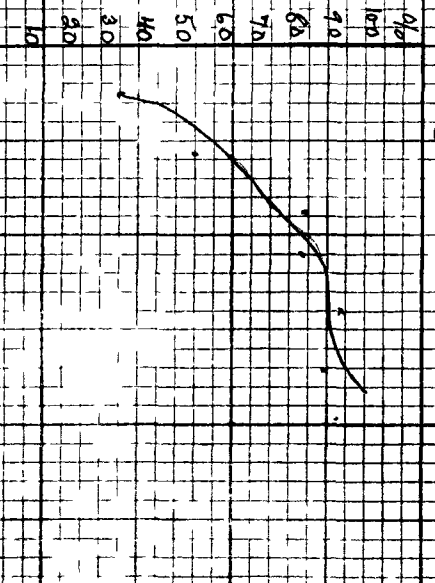
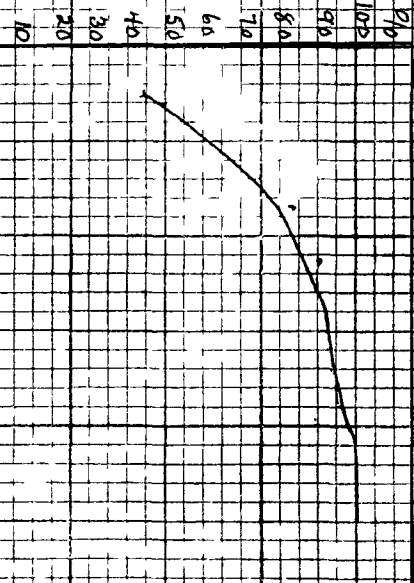
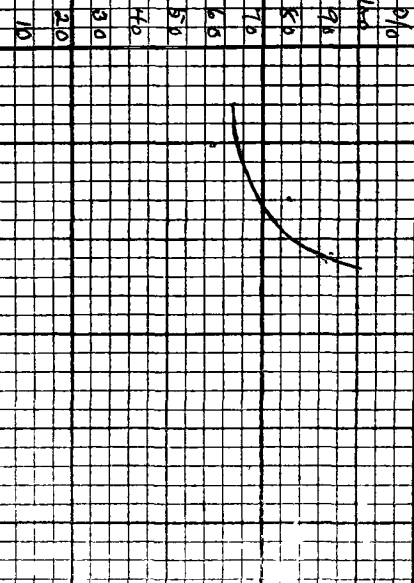
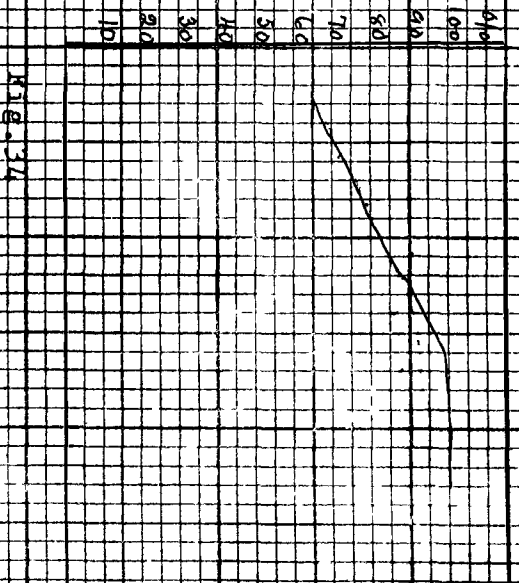
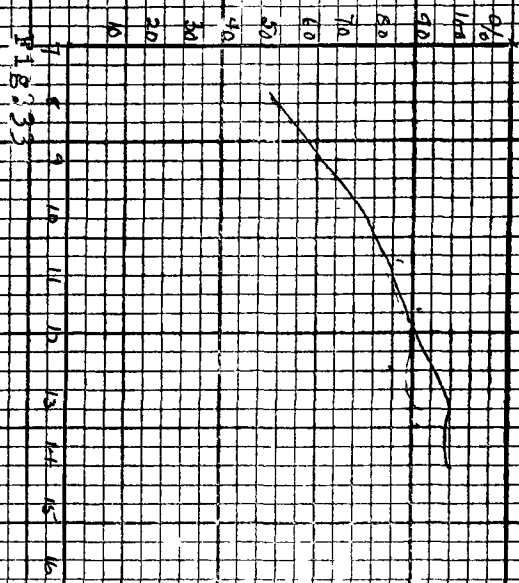


Fig. 37

Fig. 38

Fig. 33-38. Percentage passing tests C and D of
EXAMINATION IV.

This plate 10 x 7 inches. Edge of each small square 1/10 inch.

CCC

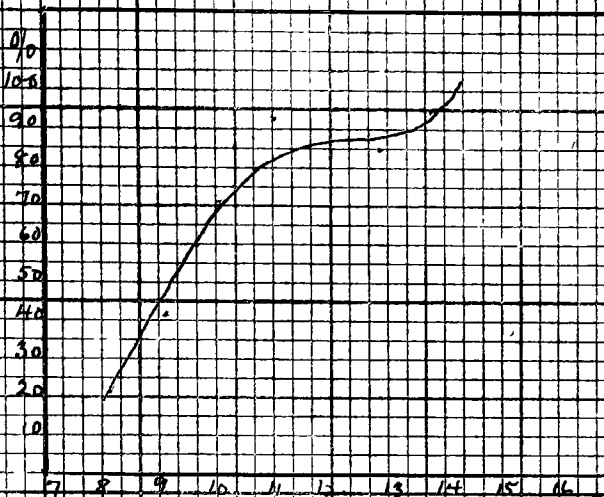


Fig. 39

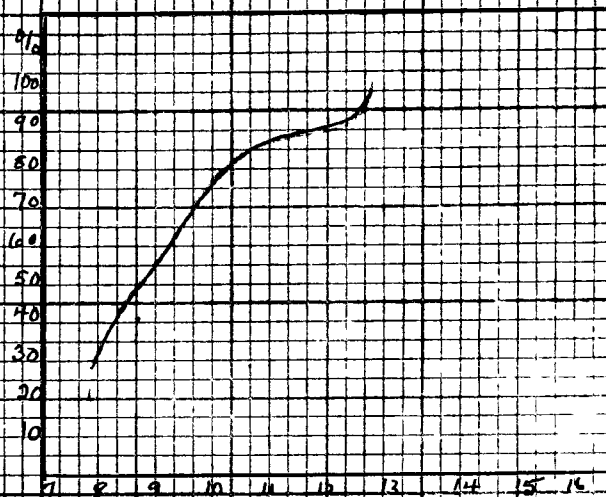


Fig. 40

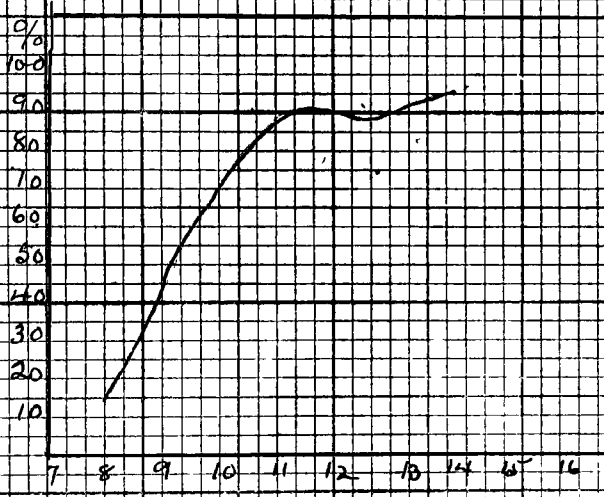


Fig. 41

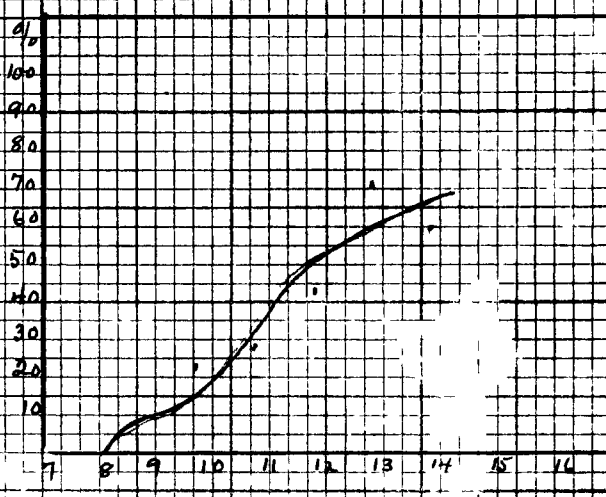


Fig. 42

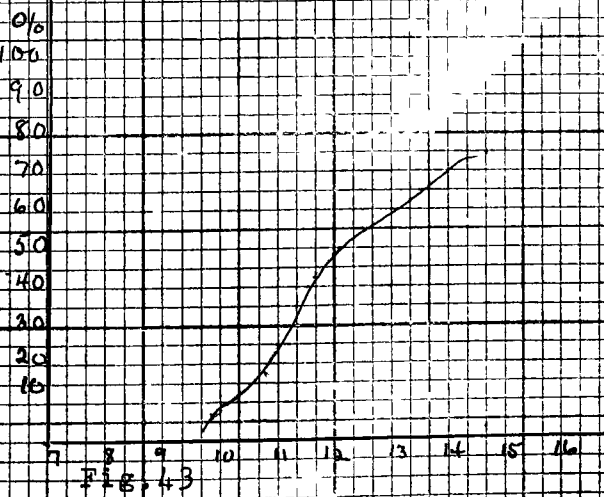


Fig. 43

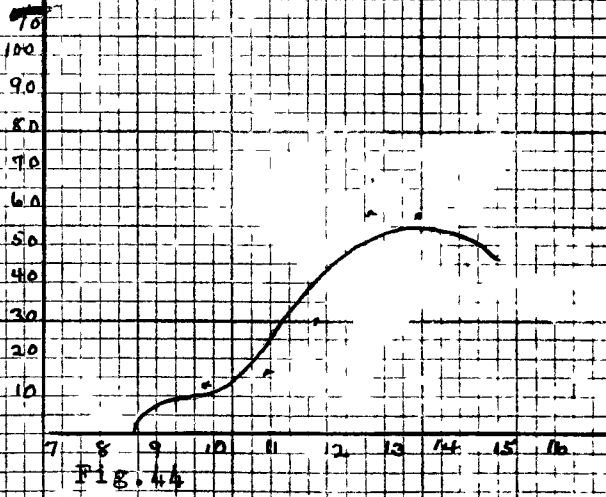


Fig. 44

Fig. 39-44, - Percentage passing tests E and F of Examination IV.

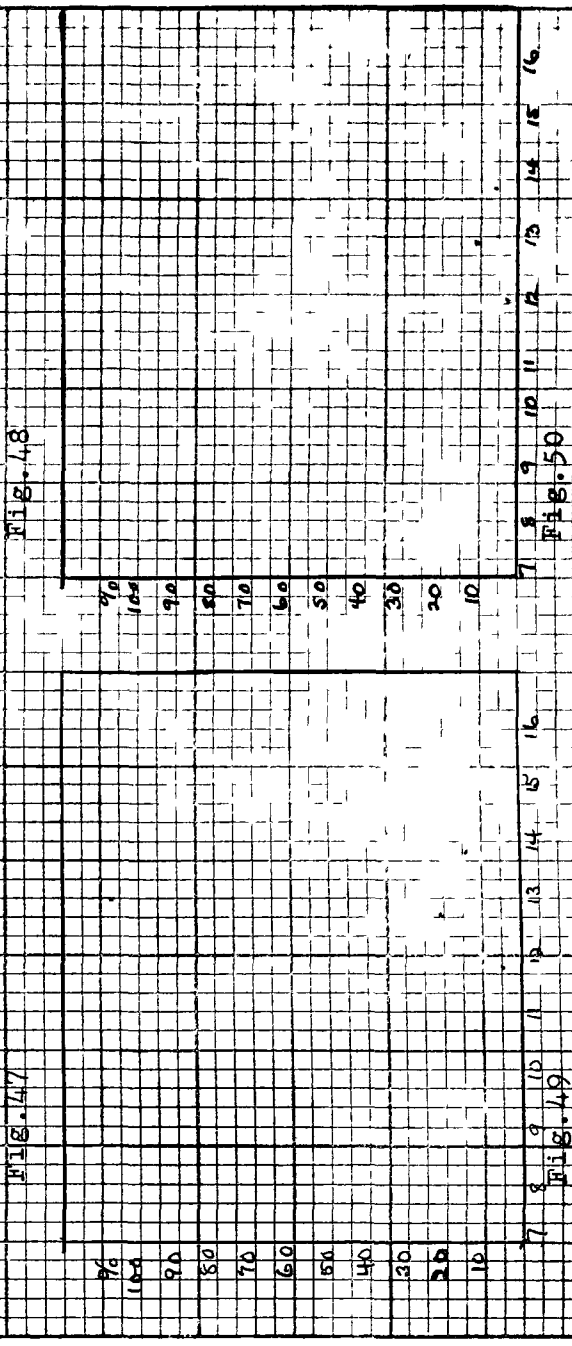
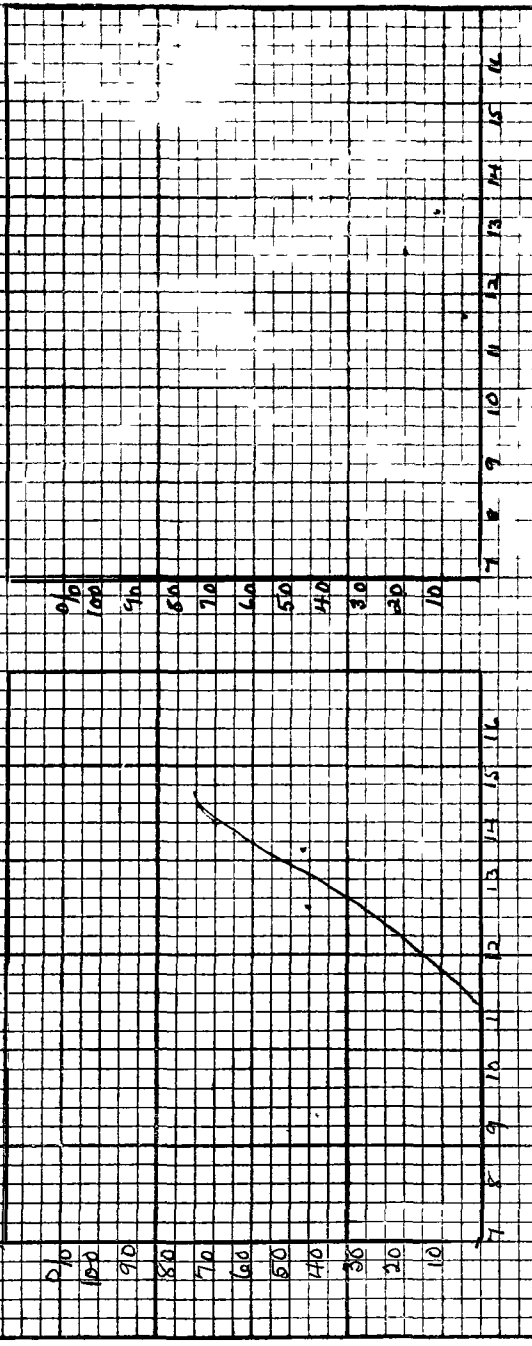
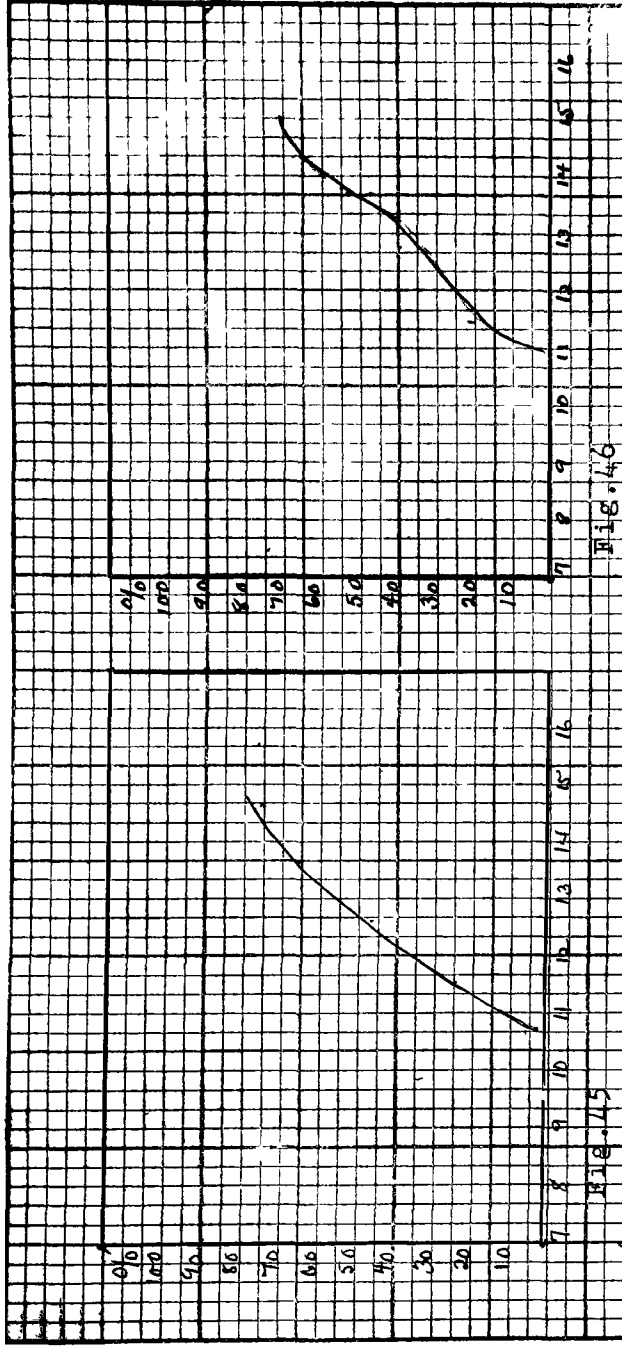


Fig. 45-50.- Percentage passing tests G and H of Examination IV.

This plate 10 x 7 inches. Edge of each small square 1,10 in. b. CCC

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Drawing test

In the drawing test, the candidate looks at a design for 10 seconds and repeats it on the back of the examination sheet.

Attitude

In general, subjects are not enthusiastic to draw and they feel ill at ease, should they not possess artistic ability. Those who are able insist on drawing straight or curved lines and forget the design shown. Some were self-conscious and refused to repeat the performance.

Results

The graph of C1 does not scatter the distribution very much. On the other hand, there is discrimination in C2 which offers the best scatter. The successes seem to be proportional to the mental ages because the line graph is inclined at an angle of 45 degrees. The Ring Design has not been successful. Note the sharp contrast between the Fig. 51 and Fig. 53. In the Ontario School Ability Examination, Amoss has placed D1, D2, D3 at a mental age of 16, 17, 18⁶

6.- Amoss Harry, the Ontario School Ability Examination, Toronto, Ryerson Press, 1936, p. 8.

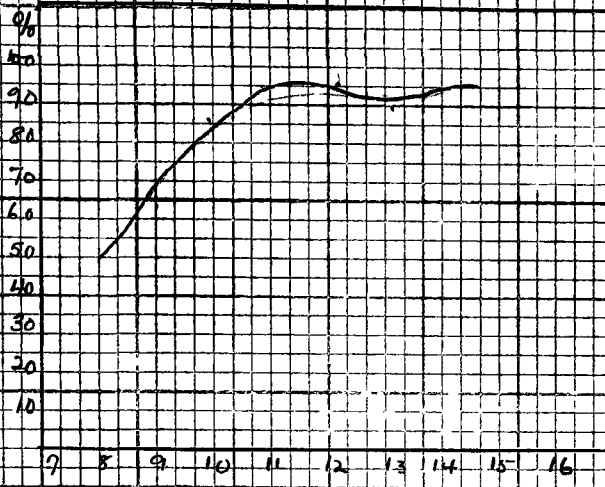


Fig. 51



Fig. 52

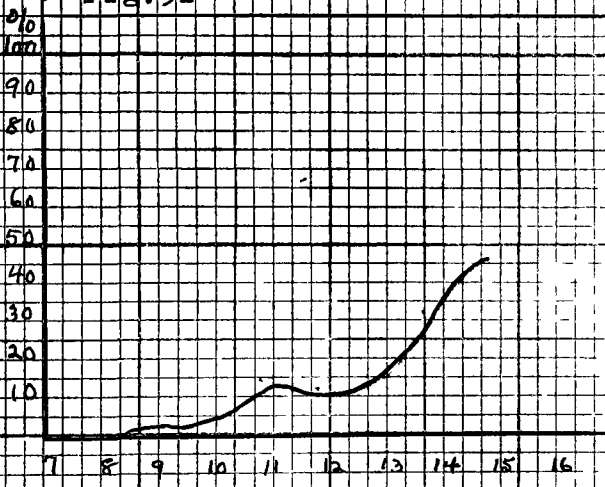


Fig. 53

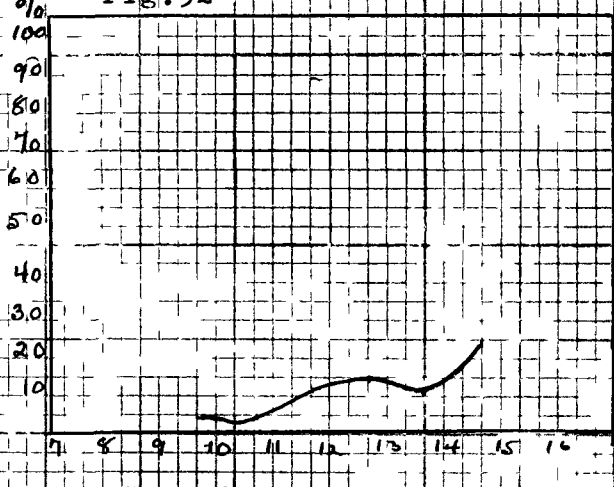


Fig. 54

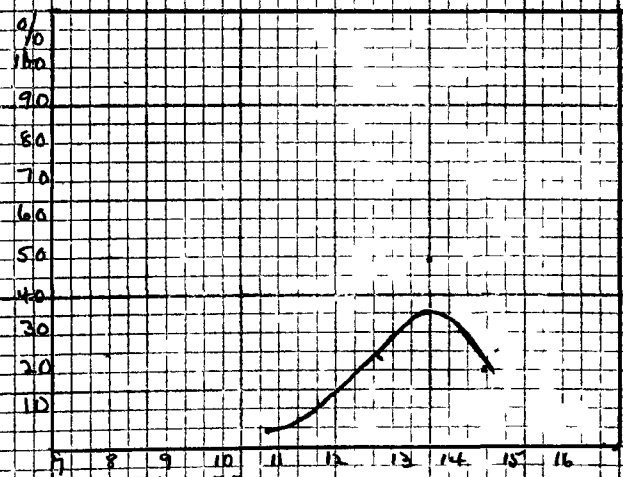


Fig. 55

Fig. 51-55.- Percentage passing tests C and D of Examination V.

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respectively. A test is placed at a mental age if 75% of the hearing subjects are successful. It is not surprising to observe that few candidates have passed because the mental level of our sample did not reach 16 years.

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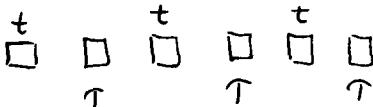
CRITICAL STUDY OF THE O.S.A.E.

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EXAMINATION VI

Method

Six cubes are placed on the table in front of the subject. The examiner with a seventh taps alternately the blocks and the table in a certain definite order.

e.g. 

The tapping is regular so that the candidates will not grasp the nature of the sequence.⁷ In series A, there are 6 arrangements. In series B, with nine blocks, there are two sequences. Series C and D require twelve with four arrangements each. The subjects who grasp the sequence readily did not complete the last series because the monotony of the taps dulls their attention.

Attitude

The majority of the candidates considered this examination as a continuation of the Knox Test because the same coloured blocks were used. For this reason, we have suggested differently painted cubes.

7.- Amoss, Harry, op. cit. p. 47.

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Results

The first four tests in series A are easy for they serve as demonstration. The graphs show increasing difficulty. But there is discrimination between the ages 8 and 10 in test A5, 8 and 12 in A6. Series B offer better results. The inclination in Fig. 62 is steep between the ages 10 and 15. In our opinion, the test B2 offers the best scatter of the whole examination. The four graphs of series C bear a great resemblance with a gradual decrease of the number of passes. In C2, we observe a steady increase from the mental ages 10 to 13. Very few have attempted series D. D2 and D3 show similar graphs while D4 is a real drop.

Criticism

This test is long for the examiner and for the examinee. We suggest reducing the length of the series.



Fig. 56

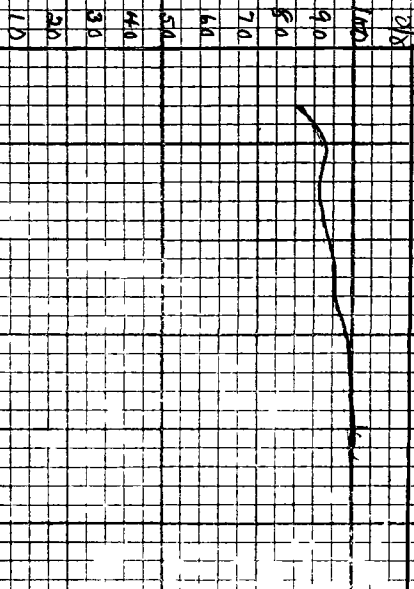


Fig. 58

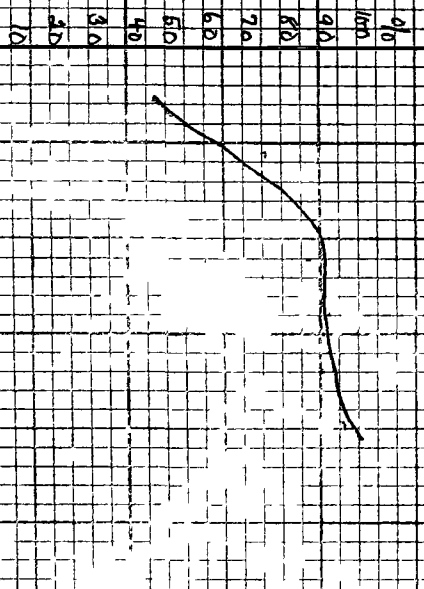


Fig. 60

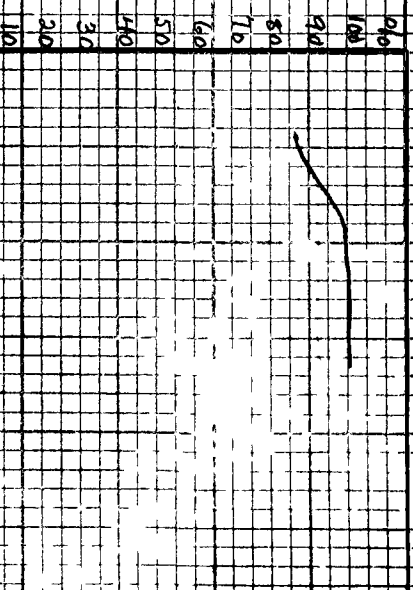


Fig. 57

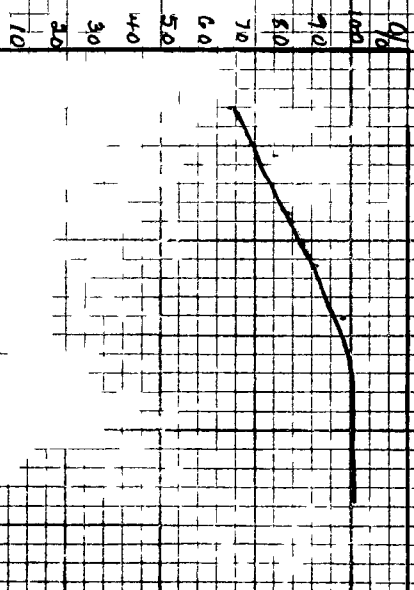


Fig. 59

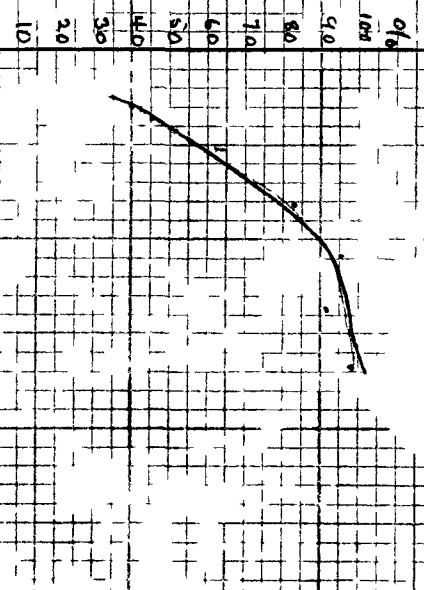


Fig. 61

Fig. 56-61. - Percentage passing test A of Examination VI.

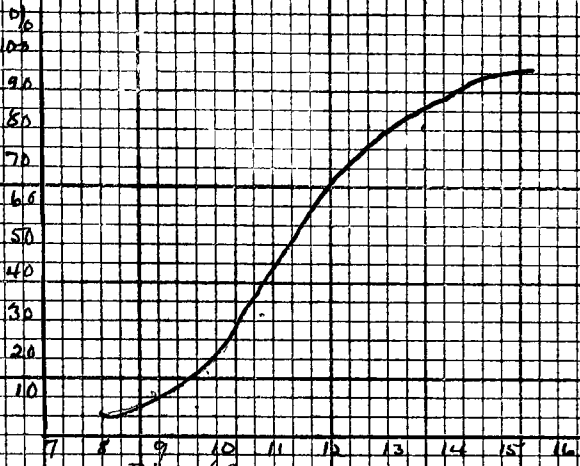


Fig. 62

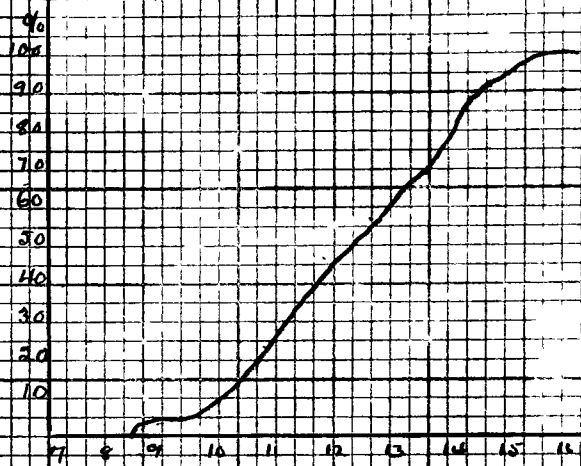


Fig. 63

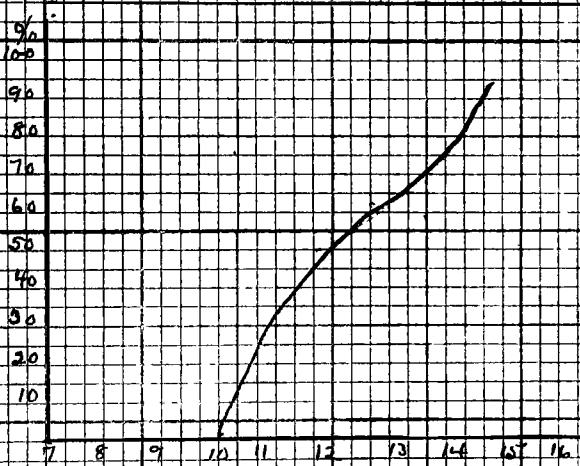


Fig. 64

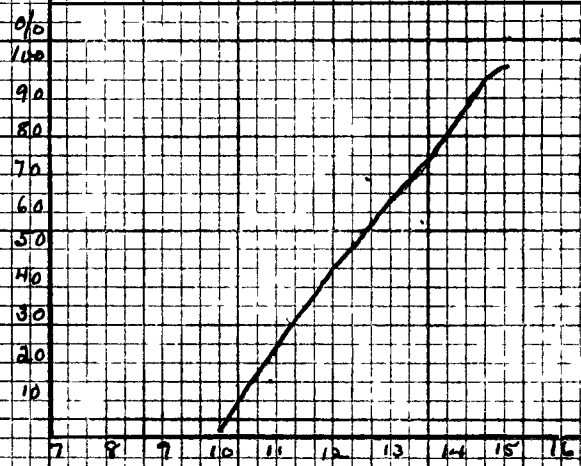


Fig. 65

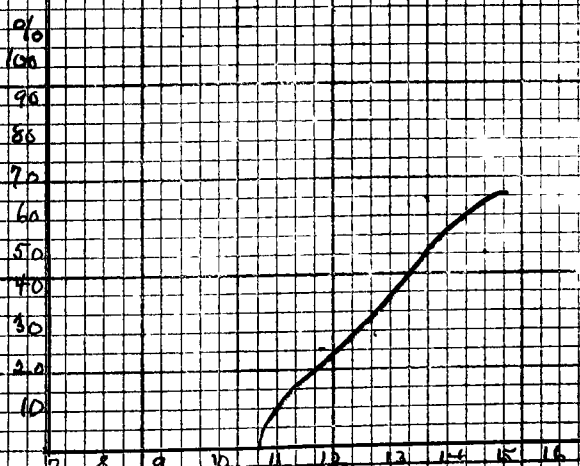


Fig. 66

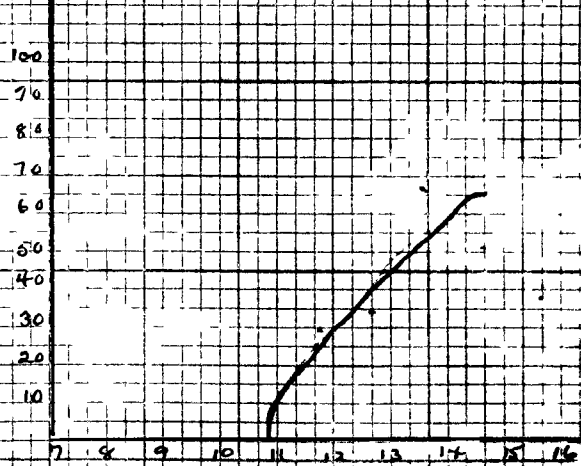
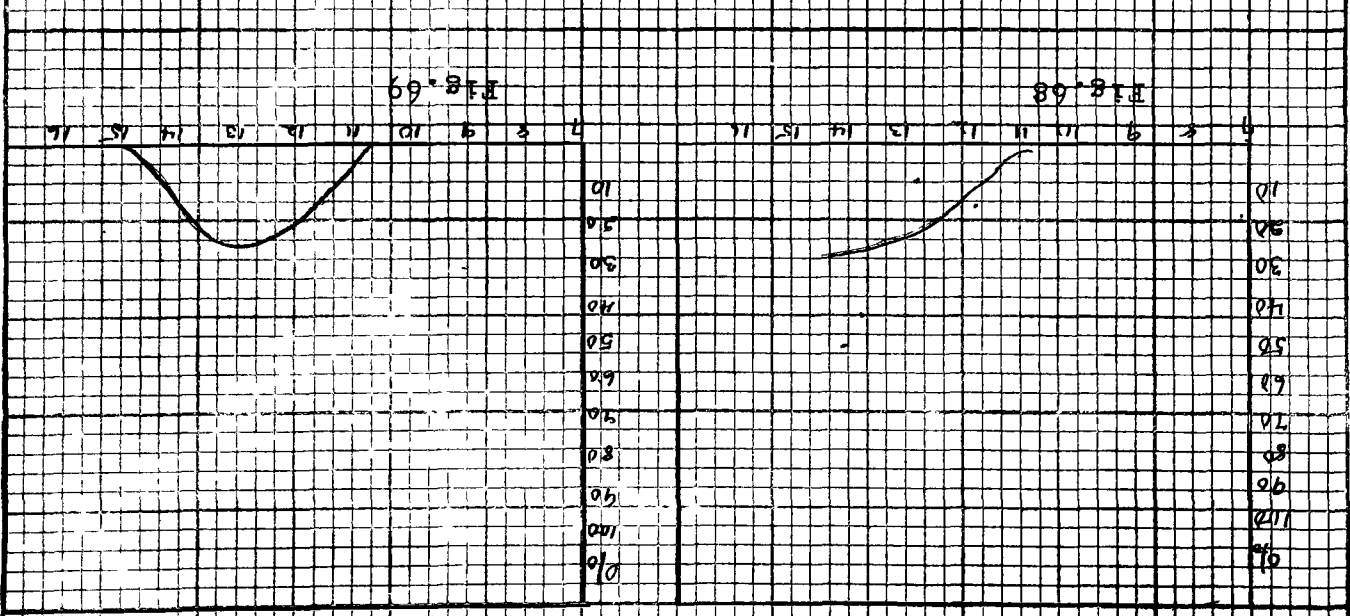
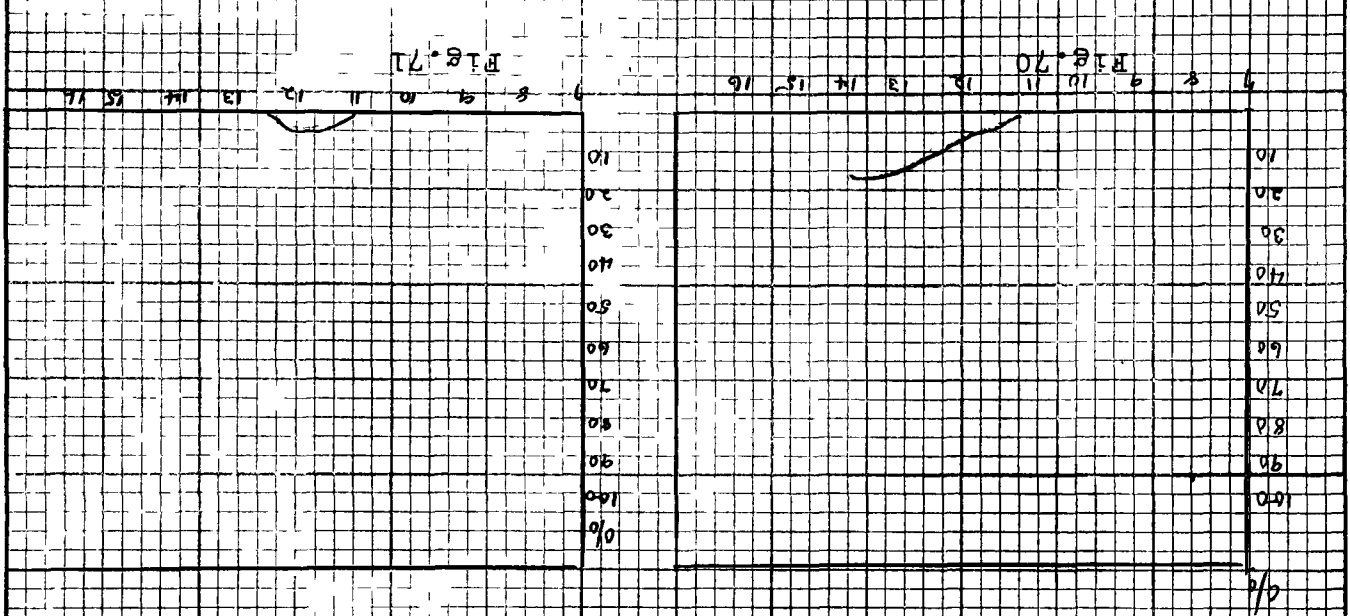


Fig. 67

Fig. 62-67. - Percentage passing tests B and G of Examination VI.

Fig. 68-71. - Percentage passing test D of Examination VI.



CHAPTER VI

CORRECTIONS AND SUGGESTIONS

Psychologists deem it important to give their opinion on the nature of intelligence at the beginning of their study of mental tests. Others list previous definitions and select certain parts of them. At any rate, there is always an attempt to explain the meaning of the word. Imitating the usual procedure we intend to offer our notions on this faculty. After our research, we believe that intelligence is the ability to meet speedily and efficiently all kinds of problems. We refer to native or acquired ability. Native ability is inherited and is influenced by environmental factors in the preschool period. Acquired ability implies the mental development due to learning. The problems are either natural or artificial. We are familiar with the first type because every day life wants us to make rapid decisions. Man encounters problems in his daily routine and solves them unconsciously. When a person is asked "What would you do in such a circumstance?", he states after some thinking his course of action. This is an artificial problem which has the definite purpose of judging the mental capacity, if we observe the time required for deliberation and the method of procedure. In our opinion, a person with a high mental capacity will proceed speedily and efficiently. A problem

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CORRECTIONS AND SUGGESTIONS

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may be solved adequately in ten minutes, in one case and in twenty in another. Both solutions are correct, but the speed of performance varies. To us rapidity and efficiency are inseparable in estimating mental ability.

Amoss' point of view given on page three of his text, is similar to ours. " To plan truly and avoid fumbling is surely the mark of a superior mind ". Fumbling which means the seeking for something awkwardly opposes the systematic proceedings of a sound mind. Thus trial and error forms of behaviour would in our opinion indicate the mental deficiencies of the individual. It is advisable to record all the attempts in order to evaluate a subject's method of procedure. Amoss did not apply this method in his examination. The Block Design Test is not reliable due to the way of scoring. Other experiments reveal that examiners are often careless in correcting the test. Kohs on the other hand, devised a means by which a great number of moves affects the score. In the Healy's Puzzle and Drever Collins tests, a dull child may show poor planning and yet, he will obtain the same number of points as a bright child. Where do the discriminating power and reliability reside? The same conclusion would apply to a wrongly corrected exam. A teacher may set

a paper whose items are valid. But if the marks are not proportionate to the difficulty of the questions, the scores would not indicate the ability of the class. An intelligence test may not be reliable if wrongly scored, although it could be valid. In our opinion, the Block Design Test and the Healy's Puzzle could be discriminating if the method suggested by the authors be used.

Another factor besides the record of the trials and errors deserve our consideration. It is the rapidity with which problems are solved adequately. In our opinion, the speed of performance is an index of mental endowment. In the Healy's Puzzle and the Block Design, the Drawing Tests the scores would be different if the time were registered.

Modifications of the O.S.A.E.

We believe that the Block Design Examination should have the following modifications:

The sixteen blocks should be placed on the table at the beginning as in Kohs' original.

It is preferable to use the scoring table in the Intelligence Measurement.

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Kohs' method is in accordance with our definition that stresses two important factors -- rapidity and efficiency in performance.

The Knox Cube Test has been used very often with blocks of the same colour. However, we suggest coloured cubes especially if the Tapping enters the performance test. Our experience reveals that the subjects considered both tests similar. Their success in the first affected their attitude in the second. For this reason, a change in the colour of the cubes might eliminate their prejudice. We intend to shorten the length of the sequences so that the Tapping may not be tedious and monotonous. In the Knox Cube, we have added one line to Series C, 2 lines to Series D and 1 line to Series E. We did not include Series F and G in this examination due to the difficulty of the sequences. In the Tapping Examination, we have eliminated the first three tests of Series A, the last two of series D. From Series C onwards, twelve blocks are used. However, nine would be sufficient. This will prove to be an advantage to the examiner and the examinee.

The Domino Test is very interesting. But our observations demand the following change. All dominoes are to be lain on the table at the beginning, as in

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CORRECTIONS AND SUGGESTIONS

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Pintner and Paterson's. Amoss places five at first and adds the others afterwards. We believe that the first arrangement will provide a better distribution. Due to this change, we have altered C, D, E of the O.S.A.E. by introducing the dominoes 0 to 9 in a line of five arrangements for each series. The time of exposure and the score varies as the difficulty of the lines increases. In Series I the arrangement 40273854 (an error because the number 4 as a domino occurs twice) has been changed to 40273859.

The Digit Test does not appear in the O.S.A.E. It resembles the Domino Test except that the numbers will be painted on the blocks. We intend to correlate the results of this examination with those of the Domino.

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Examination I

Block Designs

Series A.-	Designs 1, 2, 3, 4, 5,	Score 10
Series B.-	Designs 6, 7,	6
Series C.-	Designs 8, 9, 10,	15

Examination II

Knox Cube Test

Series A.-	12341	12343	12342, 3
	1432	1324	1432, 6
	1412	2314	4243, 6
	14324	13243	12434, 6
	24312	43423	31324, 6
	21434	31432	42314, 6
	143124	132413	134213, 6
	431423	243132	431324, 6

Examination III

Domino Test

Series A.-	24	36	59	87	48	10
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						Score
Series B.-	146	438	905	862	713	10
Series C.-	1306	4925	6108	9523	7426	15
Series D.-	36194		73208		15768	12
Series E.-	283671		417362		190365	12
Series F.-	4162593		3826475		9452837	15
Series G.-	37986241		40273859		92864735	6

Examination IV

Tapping

Series A.-	1t	2tt	3t	4tt	5t	6tt	2
	1t	2TT	3t	4TT	5t	6TT	2
	1t	2TTT	3t	4TTT	5t	6TTT	2
Series B.-	1t	2tt	3ttt	4t			3
	1t	2TT	3ttt	4t			3
Series C.-	1t	2tt	3ttt	4tttt	5t		3
	1t	2TT	3ttt	4TTTT	5t		4
	1t	2ttt	3tt	4tttt	5t		3
	1t	2TTT	3tt	4TTTT	5t		4
Series D.-	1tTT	3tttTTTT		5tTT			4
	1tTTT	3ttTTTT		5tTTT			4

Examination V

The digit test is the same as Examination III.

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CORRECTIONS AND SUGGESTIONS

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This test which we suggest is not easy and would be unsuitable in the case of young children. But we had in mind to set the examination for students between the ages 10 to 16 years old of different communities and of different nationalities.

Problems to be solved

We intend to compare the results between the rural and the urban subjects. Some psychologists like Drever Collins have studied the differences between the mental abilities of the two sexes and have tried to establish norms for their tests.

We would like to know the mental age judged by the teacher in order to set a relationship if any between our scores and the teacher's estimate.

It is of importance to study the home conditions which will be very good, good or poor in the endeavour to discover the effect of environment on the mental life of the individuals.

Another important problem is this one. To what extent is intelligence inherited? By studying the occupation and the mentality of the parents, can we predict the native ability of the children? If the difference in intelligence

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between the parents and the children be great, would the cause reside in environmental factors that might have affected the intellectual life.

There is another question frequently discussed nowadays. Are mental health and physical fitness dependent upon one another? In our research, we plan to classify subjects as very healthy, healthy, and unhealthy. We want to discover if ill-health affects the functioning of the brain. Our opinion is that there will be, due to physical unfitness, many impulses carried to the brain which will remain unnoticed. Thus the number of reactions is decreased considerably. This slowing-down of intellectual vitality will sooner or later influence the reasoning and other signs of mental life. But our opinion will be valid only if based on statistical facts.

The critical study of the O.S.A.L. and the discussion of our results have often called for immediate concluding notes. In this chapter, we intend to group the various deductions which are scattered throughout the description of this research.

The first two chapters are, as we have seen, historical in nature. In our opinion, the origin of the intelligence test reveals a double aspect: one is sociological, and the other is psychological. The first reason for the development of the test was the interest of society in separating the sane from the insane. The second is quite different. Psychologists becoming more interested in the individual differences devised methods of observing the reactions of the individuals. The advent of Binet accelerated intelligence testing considerably. Due to his outstanding contribution, we have emphasized his principles. His followers worthy of mention have been listed. After stating the three main uses of the performance test in the second chapter, we group the psychologists who have devised methods for measuring the mental ability of the foreigner in the first place; of the deaf in the second, and of the normal children in the third.

At the beginning of the third chapter, we discussed

Amoss' conception of intelligence compared with some psychologists' opinions along with the development of mental ability before the age of sixteen, and the difficulty of measuring intelligence. Regarding the O.S.A.E. , we have thought worthwhile to stress the practical requirements of a performance test, its purpose, besides Amoss' preparatory work. The second part of the chapter outlines the material and the method of procedure for the six examinations constituting the O.S.A.E. while the third section briefly discusses Amoss' tabulated results.

In the General Appraisal, we emphasized the importance of tests in schools. The teacher's ability to rate intelligence is not reliable due to the various points entering his judgment. Intelligence tests have helped to correct these errors, to secure a better grading in the school, and to seek an adjustment for certain children. However, their value though great, must not be overestimated. Due to their limitations, it is with great precaution that we interpret a score. Before attempting to present our data, we discussed briefly the local conditions, home life and the attitude of the subjects, besides mentioning the factors that might have influenced the I.Q. obtained.

The critical study of the sub-tests in Chapter V follows the plan which is now given. For each one, we mention the original and the author's purpose, along with the modifications demanded by Amoss. The discussion of the results is illustrated with diagrams.

The Healy Fernald test in our opinion is not reliable because the method of scoring does not eliminate the element of chance entering the performance. We suggest the careful recording of the moves and the time required as in Pintner and Paterson's Scale of Performance Tests. The Drever Collins test admits guessing as in the preceding but yields a better distribution. The Second Examination would give a discriminative distribution if we adopted Kohs' method of scoring time and moves. Amoss' way of assigning 29 points to all correct solutions within the time limit is unsatisfactory. We find that there is discrimination for certain mental abilities but not for all mental abilities at the same time. For the Knox Cube Test, the use of coloured blocks and the elimination of difficult sequences may improve the test. The Domino Test as given on Page 34 of a Scale Of Performance Tests would be preferable. By setting all the dominoes on the table, the distribution

might be more evenly scattered. In the Examination V, the Ring Design placed at a mental level of sixteen is too difficult for our sample. In the Examination VI, we propose to shorten the length of the sequences so that the Tapping be less monotonous.

After discussing our opinion on intelligence in Chapter VI, we suggest improvements for each one of the tests to secure a greater reliability.

Our research has dwelt on a very popular subject for the grade of intelligence is significant for all individuals. To-day intelligence tests are a widely used instrument for determining vocational fitness. In industrial concerns, they help considerably to classify the efficiency of the employees. In schools, they aid in the correct grading of children. If teachers would forget their prejudice against this educational method, they would find in the intelligence test a precious auxiliary. With the help of teachers, more Canadian tests would be available. But to devise a system of intelligence tests, needs the cooperation of hundreds. With the required leadership, Canadian schools will experience the benefits that followed their use in other countries.

Finis

BIBLIOGRAPHY

Amoss Harry, Ontario School Ability Examination, A performance test prepared more especially for use among the children who are deaf, whose native tongue is other than English, or who, for any reason, are lacking in language facility, Toronto, The Ryerson Press, 1936.

The author carefully outlines the material required and the method of proceeding for the examiner. This text constitutes the basis of our research.

Drever James, Collins Mary, Performance Tests of Intelligence, A series of non-linguistic tests for the deaf and normal children, Edinburg, Tweeddale Court, Oliver and Boyd, 1936.

Here they discuss the uses of the performance tests stressing on the detailed description of the examination and slightly attempting the criticism of their results.

Freeman Frank N., Mental Tests, Their History, Principles and Applications, Boston, Houghton-Mifflin Co., 1939.

This text has yielded information regarding the history of intelligence testing which constitutes the first two chapters of our thesis.

Goldring Cecil C., Intelligence testing in a Toronto Public School, Toronto, Oxford University Press, 1924.

This book has given us the " meaning, method, practical applications of Intelligence Testing".

Kohs S.C., Intelligence Measurement, A psychological and statistical study based upon block-design tests, New York, The Macmillan Company, 1923.

We have sought information in this book for the critical study of the second examination, the block-design test.

Pintner Rudolph, Intelligence Testing, Methods and results, New York, Henry Holt Company, 1931.

This text has given us the origin of intelligence testing, and the usefulness of tests.

Pintner Rudolph, Laterson Donald G., A Scale of Performance Tests, New York, D.Appleton-Century Co., 1917.

The authors have emphasized the importance of performance tests besides the thorough analysis of fifteen different sub-tests.

BIBLIOGRAPHY

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Terman Lewis M., The Measurement of Intelligence, An explanation of and an extension of the Binet-Simon Intelligence Scale and a complete guide for the use of the Stanford Revision, Boston, Houghton-Mifflin Co., 1916. .

Terman Lewis M., Merrill Maud A., Measuring Intelligence, Boston, Houghton-Mifflin Co., 1937.

These books have given a sound analysis of data and of factors influencing the scores obtained on a test.

I.Q. Table of 299 French-Canadian subjects.

158	107	100	95	89	86
140	107	100	95	89	86
130	107	100	95	89	85
130	107	100	94	89	85
129	107	100	94	89	85
129	107	100	94	89	85
129	106	100	93	89	85
128	106	99	93	89	85
127	106	99	93	89	85
126	106	99	93	89	85
124	106	99	93	89	85
124	106	99	93	88	85
123	106	99	93	88	85
122	106	98	93	88	83
121	105	98	93	88	83
121	105	98	93	88	83
120	105	98	93	88	83
120	105	98	92	88	83
119	105	98	92	88	83
119	105	97	92	88	83
119	105	97	92	88	83
117	105	97	92	88	83
117	105	97	91	87	83
117	105	97	91	87	83
115	105	97	91	87	82
115	103	97	91	87	82
115	103	96	91	87	82
115	103	96	91	87	82
114	103	96	91	87	82
113	102	96	90	87	82
113	102	95	90	87	82
113	102	95	90	87	81
112	102	95	90	86	81
112	101	95	90	86	81
112	101	95	90	86	81
111	101	95	90	86	
110	101	95	90	86	
109	100	95	90	86	
109	100	95	90	86	
108	100	95	90	86	
108	100	95	90	86	
108	100	95	89		

I.Q. Table of 299 French-Canadian subjects

80	75
80	75
80	75
79	75
79	75
79	74
79	73
79	73
79	73
78	72
77	72
76	72
76	71
76	71
76	71
76	70
75	70
75	69
75	68
75	68
75	67
75	65
75	64
75	61

TABLE IV

Measures of central tendency and variability of 299 I.Q.

Step-int.	f	x	fx	fx	fc
155- 164	1	6	6	36	299
145- 154	0	5	0	0	298
135- 144	1	4	4	16	298
125- 134	8	3	24	72	297
115- 124	18	2	36	72	289
105- 114	39	1	39	39	271
95- 104	62	0	0	0	232
85- 94	94	-1	-94	94	170
75- 84	57	-2	-114	228	76
65- 74	17	-3	-51	153	19
55- 64	2	-4	-8	32	2

Mean = 94.15, Median = 92.27, Sigma = 17.5, Q = 9.68

TABLE V

Measures of central tendency and variability of 245 I.Q.

Step-int.	f	x	fx	fx	fc
155- 164	1	7	7	49	245
145- 154	0	6	0	0	244
135- 144	1	5	5	25	244
125- 134	6	4	24	96	243
115- 124	13	3	39	117	237
105- 114	29	2	58	116	224
95- 104	49	1	49	49	195
85- 94	78	0	0	0	146
75- 84	50	-1	-50	50	68
65- 74	16	-2	-32	64	18
55- 64	2	-3	-6	18	2

Mean = 93.33, median = 91.5, sigma = 14.9, q = 9.45

TABLE VI

Measures of central tendency and variability of 54 I.Q.

Step-int.	f	x	fx	fx	fc
125- 134	2	3	6	18	54
115- 124	5	2	10	20	52
105- 114	10	1	10	10	47
95- 104	13	0	0	0	37
85- 94	14	-1	-14	14	24
75- 84	9	-2	-18	36	10
65- 74	1	-3	- 3	9	1
55- 64	0				

Mean = 97.84, Median = 96.8, Sigma = 13.9, Q = 10.5

AN ABSTRACT OF

The presentation and the critical study of the Ontario School Ability Examination by Harry Amoss.

From the numerous intelligence tests available, we have selected one which has been used in the Ontario schools. It is the Ontario School Ability Examination devised primarily for the deaf and afterwards adapted for the normal children. The basis of our research was a problem with a double aspect. The presentation of the test consists in the detailed description of the O.S.A.E. while the critical study involves the discussion of the examination based on the results of 300 cases. Regarding the O.S.A.E., we have stressed the practical requirements and Amoss' preparatory work besides outlining the material and the method of procedure. The critical study follows the general plan. For each one we have mentioned the original test and the modifications demanded by Amoss. After the analysis of our results, we suggest improvements in order to seek a greater reliability.

Our research has led to the following concluding notes:

The Healy Fernald test in our opinion is not reliable because the method of scoring does not eliminate

AN ABSTRACT OF

The presentation and the critical study of the Ontario
School Ability Examination by Harry Amoss.

the element of chance entering the performance.

The block-Design test would yield a discriminative distribution if we adopted Kohs' method of scoring time and moves. Amoss' idea of assigning 29 points to all accurate solutions within the time limit, is not satisfactory. We find that there is no discrimination for all mental abilities at the same time.

For the Knox Cube test, the use of coloured blocks and the elimination of difficult sequences may improve the test.

In the Domino test, we prefer to set all the dominoes at the beginning in order to secure a more scattered distribution.

The Ring Design in Examination V is somewhat too difficult for our sample.

If the length of the sequences be shortened in Examination VI, the tapping would be less monotonous for the examiner and the examinee.

Our experience after our research has led us to

AN ABSTRACT OF

The presentation and the critical study of the Ontario
School Ability Examination by Harry Amoss.

introduce certain modifications. In general, we have sought the original test, the author's method of administering and scoring. The performance test which we suggest will know its value after it is given to a representative sample.

ONTARIO SCHOOL ABILITY EXAMINATION

Please fill in all blanks, underline characteristic words and indicate real grade standing in subjects.

TEACHER'S CONFIDENTIAL REPORT

Municipality..... School..... Room No.....
 Pupil's Name..... Age on first entering a school.....
 Date of Birth..... Day..... Mth..... Yr..... Present Grade.....
 Nationality..... Mean Grade Age.....
 Parent or Guardian..... Retardation..... yrs..... mos.....
 Address..... Grades repeated.....
 Mental Age (teacher's estimate)..... yrs..... mos. I. Q. (teacher's estimate).....
 School Opportunities—good or poor, due to change of school—home conditions.
 Attendance—regular or irregular, due to truancy—sickness—distance from school.
 Tendencies—Stable, unstable. Restless, quiet. Good-natured, ill-tempered. Social, isolated.
 Plays with juniors, age groups, hangs about adults.

Cleanliness:	good, average, poor.	Posture:	erect, stooped, slovenly.
Tidiness:	good, average, poor.	Speech:	normal, defective, foreign.
Politeness:	good, average, poor.	Alertness:	quick, slow, dull.
Obedience:	good, average, poor.	Dexterity:	handy, fair, awkward.
Industry:	good, average, poor.	Reading:	Kn., Gr. 1, Gr. 2, Gr. 3, Gr. 4, Gr. 5, Gr. 6, Gr. 7, Gr. 8.
Self-control:	good, average, poor.	Writing:	Kn., Gr. 1, Gr. 2, Gr. 3, Gr. 4, Gr. 5, Gr. 6, Gr. 7, Gr. 8.
Kindness:	good, average, poor.	Arithmetic:	Kn., Gr. 1, Gr. 2, Gr. 3, Gr. 4, Gr. 5, Gr. 6, Gr. 7, Gr. 8.
Truthfulness:	good, average, poor.	Spelling:	Kn., Gr. 1, Gr. 2, Gr. 3, Gr. 4, Gr. 5, Gr. 6, Gr. 7, Gr. 8.
Honesty:	good, average, poor.	Drawing:	Kn., Gr. 1, Gr. 2, Gr. 3, Gr. 4, Gr. 5, Gr. 6, Gr. 7, Gr. 8.

REMARKS:

Date..... Grade Teacher.....

NURSE'S CONFIDENTIAL REPORT

Birth—Normal, abnormal.
 Home Conditions—Uplifting, depressing. Comfort, poverty. Care, neglect.
 Brothers and Sisters—older..... younger..... school progress.....

{	Family	Health: father..... mother.....
		Mentality: father..... mother.....
		Occupation: father..... mother.....
		Remarks: father..... mother.....
{	Child	Walked at..... talked at.....
		Past health.....
		Present health.....
		Nutrition.....
		Physical defects.....
		Personal habits.....
		Vision..... Hearing..... Speech.....
		Nurse.....

EXAMINER'S CONFIDENTIAL REPORT

Examinee—Nervous, composed. Repressed, free. Language handicap.
 Examination—disturbed, uncompleted, abbreviated, satisfactory, unsatisfactory.
 C.A..... yrs..... mos. M.A..... yrs..... mos. I.Q.....
 Recommendation.....
 Date..... Examiner.....

OTHER EXAMINATION (if any)

C.A..... yrs..... mos. M.A..... yrs..... mos. I.Q.....
 Date..... Examiner.....

CIRCLE SUCCESSES, STROKE FAILURES AND UNDERLINE ACCEPTANCES

I. Examination—Manipulation:

A—Stands (4)	Walks (4).....	_____
B—Folds Once (4)	Folds Twice (2)	Folds Diagonally (2).....
C—Tower (4)	Chair (2)	Gate (2)
D—Forms 4/10 (2) (or) 7/10 (4)	Rectangle (two of three, 1 min.) (2).....	(2 min.)
E—Double Knot (2)	Bow Knot (2).....	(1 min.)
F—Three in Five Minutes (2) (or) Three in Three (4) (or) Three in One (6).....		
G—Three Weights (2)	Five Weights (2)	Seven Weights (2).....

II. Examination—Colour Patterns:

A—Matching (four of six) (2)	Square (one of two) (2).....	_____
B—Pattern One (2)	Two (2)	Three (2)
C—Pattern Six (3)	Pattern Seven (3).....	(3 min.)
D—Pattern Eight (3)	Pattern Nine (3)	Pattern Ten (3).....

III. Examination—Knox Blocks:

A—1 2 3 4,	1 2 3 4,	1 2 3 4 (two of three) (2)
B—1 2 3 4 1,	1 2 3 4 3,	1 2 3 4 2 (two of three) (2).....
C—1 4 3 2 (2)	1 3 2 4 (2)	1 4 2 3 (2).....
D—1 4 3 2 4 (2)	1 3 2 4 3 (2)	1 2 4 3 4 (2).....
E—1 4 3 1 2 4 (2)	1 3 2 4 1 3 (2)	1 3 4 2 1 3 (2).....
F—1 4 1 3 2 4 3 (2)	1 3 4 1 3 2 4 (2)	1 4 2 3 4 1 2 (2).....
G—1 3 1 4 2 3 4 2 (2)	1 4 3 1 3 2 4 1 (2)	1 3 2 4 2 3 1 2 (2).....

IV. Examination—Dominoes:

A—1, 3, 0, 2, (two of four) (2)	_____
B—1, 0, 2, 3, (two of four) (2).....	(3 sec.)
C—21 (2)	30 (2)
D—142 (2)	431 (2)
E—1302 (2)	2415 (2)
F—36194 (2)	73208 (2)
G—283671 (2)	417362 (2)
H—4162593 (2)	3826475 (2)
I—37986241 (2)	40273854 (2)

V. Examination—Drawing:

A—Vertical (two of three) (4)	Horizontal (two of three) (4).....	_____
B—Circle (2)	Cross (2)	Square (2)
C—One Design (2)	Second Design (2).....	(10 sec.)
D—One Pair (2) (or) Two Pair (4) (or) Three Pair (6).....		(10 sec.)

VI. Examination—Tapping:

A—1, t;	2, t;	3, t;	4, t;	5, t;	6, t (2)			
1, tt;	2, tt;	3, tt;	4, tt;	5, tt;	6, tt (2)			
1, t;	2, T;	3, t;	4, T;	5, t;	6, T (2)			
1, t;	2, tt;	3, t;	4, tt;	5, t;	6, tt (2)			
1, t;	2, TT;	3, t;	4, TT;	5, t;	6, TT (2)			
1, t;	2, TTT;	3, t;	4, TTT;	5, t;	6, TTT (2)			
B—1, t;	2, tt;	3, ttt;	4, t;	5, tt;	6, ttt;	7, t;	8, tt;	9, ttt (2)
1, t;	2, TT;	3, ttt;	4, t;	5, TT;	6, ttt;	7, t;	8, TT;	9, ttt (2)
C—1, t;	2, tt;	3, ttt;	4, tttt;	5, t;	6, tt;	7, ttt;	8, tttt;	etc. (3)
1, t;	2, TT;	3, ttt;	4, TTTT;	5, t;	6, TT;	7, ttt;	8, TTTT;	etc. (3)
1, t;	2, ttt;	3, tt;	4, tttt;	5, t;	6, ttt;	7, tt;	8, tttt;	etc. (3)
1, t;	2, TTT;	3, tt;	4, TTTT;	5, t;	6, TTT;	7, tt;	8, TTTT;	etc. (3)
D—1, t, TT;	3, ttt, TTTT;	5, t, TT;	7, ttt, TTTT;	etc. (3)				
1, t, TTT;	3, tt, TTTT;	5, t, TTT;	7, tt, TTTT;	etc. (3)				
1, tt; 2, T;	3, tttt; 4, TTT;	5, tt; 6, T;	7, tttt; 8, TTT;	etc. (3)				
1, tt; 3, TTTT;	2, t; 4, TTT;	5, tt; 7, TTTT;	6, t; 8, TTT;	etc. (3)				

Total.....

EXAMINATION V, SERIES C AND D
