

A Member: I move a vote of thanks to Miss Farrell her assistants for the splendid entertainment given to the association on Friday evening by the teachers of the upper classes of the New York Public Schools.

The motion was second and carried.

Adjourned.

REVIEWS AND NOTICES

A SCALE OF PERFORMANCE TESTS.

RUDOLPH PINTNER, Assistant Professor of Psychology, State University, and DONALD G. PATERSON, Instructor in Psychology, University of Kansas. D. Appleton & Co., N. Y. and London, 1912. Pp. X plus 218.

The work that led to the results published in this book grew from the mental examination of deaf children on whom most of the Binet and other mental tests cannot be used without alteration. The performance tests reported on are all of a nature that one does not require verbal responses, and the instructions necessary to give the examinee, according to the authors, can all be given in the form of natural gestures when the material is at hand. The tests are therefore designed to meet the needs of examining three different classes of cases, for which previously existing tests were not adequate, viz., foreigners not familiar with English, speech defectives, and the deaf. The presentation is divided into ten chapters: standardization of the tests; presentation of the data; a new scale; the median mental age scale; the point scale; the percentile scale; illustrative cases; conclusion.

In the introduction Stern's definition of "Intelligence" as "a capacity of an individual consciously to adjust his thinking to new situations" is accepted, and this has been used as one of the guides in the selection of the tests, the others being non-requirement of language, and variety of tests in order to bring all the various factors in intelligence into account. The history of mental tests given, shows how Binet was led to the test method followed in his scale, and continues with a critical survey of the Binet-Simon Scale and the progress made with it.

The present scale of the authors consists of fifteen performance tests arranged in a natural order of sequence. "The first test is one of the easiest and is of the picture form board variety. * * * * After the first two tests 2 to 8, which are all of the form board character. They are followed by the insertion of blocks in appropriate spaces and, increasing in difficulty, they do, the child is led naturally on from one to the other with a minimum of instructions. Tests 9 and 10 can hardly be called form board tests."

ature of the performance is similar. This time the child sees that he fit things together, but without the help of spaces into which the parts fit. Test 11 demands the construction of a picture. Test 12 demands fitting in of blocks, but this time there must be the selection of appropriate blocks from a large number of others." Tests 13 to 15 are quite different from the others.

The second chapter, "The Tests," describes the tests in detail, the method of giving them, and the records to be taken. A maximum time of five minutes is allowed for a test. A time and error score is made in nearly all.

Test 1. Mare and foal picture board. Seven parts of the picture cut out. The task is to replace the parts in their proper places. Time and error score. Each attempt of the child to place a part wrongly counts as an error. This is a test used by Healy and Fernald, except that the four geometrical forms cut out by the latter are not used.

Test 2. Seguin form board. Sylvester's modification, method and nomenclature are used.

Test 3. Five figure board. A row of five geometrical forms cut from a triangular board. These five are cut into eleven pieces. Procedure as in Test 2.

Devised by Paterson.

Test 4. Two figure board. A square and a cross cut out, and these are cut into nine pieces. Devised by Pintner.

Test 5. Casuist form board. Three circles of different sizes and one square cut out, these cut into twelve pieces. Devised by Knox.

Test 6. Triangle test. Triangle and a rectangle cut out, these cut into four triangles of same size. Devised by Gwyn.

Test 7. Diagonal test. One large rectangle cut out, cut into five pieces. Devised by Kemp.

Test 8. Healy Puzzle "A." One large rectangle cut out, cut into five pieces. Devised by Freeman.

Test 9. Manikin test. Human figure cut into six pieces. Devised by

Test 10. Feature profile test. Human head, with ear, and face from forehead of chin to top of forehead removed, the removed parts cut into ten pieces. Knox and Kemp.

Test 11. Ship test. Rectangular picture of ship with part of sky cut out into ten equal rectangles. Devised by Gluck.

Test 12. Picture Completion test. A group of ten pictures with a square cut from each removing one part from each. These ten squares are cut into forty others having pictures on them. Task is to replace the missing squares. Devised by Healy.

Test 13. Substitution test. A sheet with a row of five geometrical forms at the top, each with a number in it. Under this are these same forms arranged in five rows of ten each, and without the numbers. The task is to write the correct numbers in the latter. "Reported by Woodworth and Pillsbury."

Test 14. Adaptation board. A large rectangular board with four circles cut out near the four corners, three circles with a diameter of 6 cm. and one of 7 cm. diameter. The task is to replace the large circles in their right place in successive trials when the board is turned each time so as to bring the large hole in a different position. Error score only. Dev. by Goddard.

Test 15. Cube test. Four one-inch cubes placed in a row. The examiner taps these in irregular order from 1 to 4, as follows:

1 2 3 4	1 4 3 2	1 3 1 2 4
1 2 3 4 3	1 4 2 3	1 4 3 1 2 4
1 2 3 4 2	1 3 2 4 3	1 3 2 4 1 3
1 3 2 4	1 4 3 2 4	1 4 2 3 4 1

In each case the task is to tap the blocks in the same order. Dev. by Knox.

To get an accurate idea of the nature of most of these tests the reader must consult the original, as this is determined quite entirely just how the forms are cut.

While most of the tests were borrowed from the literature, norms had not been secured for any but one or two. The chief contribution of the authors lies in establishing these norms and standardizing the tests. In establishing norms mere numbers of cases examined is regarded as unimportant. The essential thing is to have the cases properly selected. Their norms are secured from public school children of the middle class. The failure of additional numbers to materially alter the norms already secured is laid down as a guide in determining whether the number of cases is adequate to make the norms reliable. This was used as a guide in selecting cases, and some illustrations are given on norms based on about 350 cases, as compared with norms based on about 1000 cases.

Three different types of standardization are discussed, standardization here referring to methods of using the results of an examination to give a score the case examined.

(1) The first establishes the median or average performance. It requires a relatively small number of cases. (2) The second places a child at a specific age in an age scale. This is done on the basis of a certain percentage of cases of that age passing it. The authors choose seven per cent as the correct one for such placing of tests. (3) The third is the percentile method. The scores of all cases tested are arranged in order from lowest to highest, and this range is then divided into an arbitrary number of percentile groups. This method is preferred, the advantage claimed being that "it allows a comparison of a particular child's performance with the performance of other children of the same age." But this method requires a larger number of cases to give reliable norms.

The children examined with these tests ranged from five to ten years in age. The number of cases for each age varied, very roughly from about thirty to about a hundred. In presenting the results the data

each test in tables and curves. The scores are arranged in a number of arbitrary steps from lowest to highest. Each table then gives the number of cases for each age that come under each score. At the foot are given the percentile, the median, the 25 percentile, and the quartile, curves being drawn for the first three. A brief discussion follows the results of each test.

The authors next use their results to construct scales according to the usual types of standardization already mentioned, and discuss them in detail. The "year scale" is obtained by following the method used by Binet-Simon. In this their tests are placed in different age-groups, so that in each age-group seventy-five per cent of the children of corresponding chronological ages pass them. Computing of the mental age of a case is then done according to the Binet-Simon rule. The procedure results in an unequal number of tests for the different age-groups. In allowing credits for extra tests passed in an age-group in which a case passes all, they follow a suggestion made by Terman and Childs, according to which a child gets one-fifth of a credit for an extra test passed in an age-group in which there are five tests, one-sixth of a year for a test in an age-group in which there are six tests, and so on.

A "median mental age" scale is considered next. Considering that the score for each age in each test is already determined, the score of an individual case examined then consists of the average or median of all the medians that he approximates. For example, a case might get a score in Test 1, equal to the median score for age six; in Test 2, he might get a score equal to the median score for age eight, and so on. These scores are averaged by averaging the ages whose median scores are equalled, and this average gives his mental age. The special advantage of this scale lies in the fact that tests may be eliminated or added to the list without disturbing the result of those used, except in general re-

The results are next used to construct a "point scale." In this scale a certain number of points is allotted to each test, part of a test, or part of performance. The norm for each age consists of the average or median number of points made by children of each age, and the score of an individual examined consists of the total number of points made, which may be expressed in relation to the norm for his age. In any point scale the allotment of points should be made on the basis of some principle, and not arbitrarily. Of such principles the authors note three. (1) Points allotted should be proportional to the discriminative capacity of the test; the number of points should be the larger the greater the difference in the median scores from one age to the next for the test in question. A difficulty with this procedure lies in determining what constitutes discriminative capacity. The amount of points to be allotted from one age-median to the next depends on whether these medians are in large numbers or small, in seconds or minutes, for example. A further difficulty is met in the fact that it allows no more for a difficult test passed than for an easy one passed. (2) Allotment of an equal

number of points to each test. (3) Allotment of points according to the degree of difficulty of the test. The degree of difficulty of a test is determined by actual scores made by children. In this way it is determined that, for example, to do a certain amount of one test, get a certain score, is of the same degree of difficulty as to do a certain amount of another test. The test of degree of difficulty lies in the child's case and "the underlying principle is the chronological age." Since points are thus allotted in accordance with the performance of children of different ages, the question arises as to what gain there is in a point scale. We are "compelled to question the validity of a point scale that differs in principle from the median mental age. * * * * A point scale, as such, has no right to exist. It can only be a modified form of the median mental age method."

As illustrative of a point scale, the authors then drew one on the basis of the second method stated, the allotment of an equal number of points to each test, giving illustrations of scoring and directions for its use.

The "percentile" method is preferred over the several others that are discussed. It appears to be the most "thorough," and "allows the most differentiations and the most just comparisons of an individual with individuals of the same age." Accordingly a percentile table for each test is constructed. This gives the scores for each age for the different percentiles in ten steps of ten points each, from 0 to 100. In this the child of a certain age that gets the best score is the "100 per cent" child, the "90 per cent" child is the one whose score is exceeded by 10 per cent of the children his age, and so on. A difficulty met in this method lies in the fact that tests having a limited range of scores, do not allow of fine gradations and frequently have the same score for several successive percentiles.

The chapter on illustrative cases scores the same two cases by the three methods, the median mental age, the point scale, and the year scale. Case 1 gives mental ages of 10.25, 11.2, and 13.2, respectively for the three methods. Case 2 similarly gives mental ages of 5, 5.5, and 6.05. The authors regard it as undecided as to which of these three methods gives the best scoring.

This study is easily the most important contribution yet made in the field of mental tests in the field for which they are intended. This field is a small one, and the demand is very urgent with all who believe in the use of a mental test method of determining grades of intelligence. There has been much loose procedure with most of these tests, and many others, and their use for them for diagnostic purposes before any norms for them were known. The authors' careful work in securing these norms should leave no excuse for any more of this procedure. Their penetrating analysis in the discussion of standardization will be read with keen satisfaction by all interested in the general principles and theory underlying mental tests and scales.

They do not offer the results of their study as a perfected scale ready to be put into practice, but only as a contribution towards such a scale.

reviewer's judgment they have come near enough to the attainment of and to make it highly desirable that it be put at once into usable form. It would be decidedly useful as it stands, and the test of actual practice the best method of eliminating imperfections, and of supplying further requirements.

Some suggestions have occurred to the reviewer in this connection.

(1) Too many of the fifteen tests chosen involve approximately the same kind of task, and therefore, add less to the reliability of the total than would be true of a greater variety.

(2) In using the results to construct a year scale the tests should be arranged in age-groups that the median or average mental age would be equal or closely approximate the average chronological age of each group of children examined. When this is done it will be found that the number at each age that pass an individual test will not be 75 throughout, but will range from nearly 100 per cent at the age of one to two years to about 50 per cent at the age of twelve.

(3) Scoring grades of intelligence in terms of mental ages and "intelligence quotients" is a much superior method to any yet proposed. The present method preferred by the authors does not lend itself to as fine gradations, and does not convey as useful or readily comprehensible meaning as the intelligence quotient. If scores for all grades of feeble-minded, as well as for all grades of the very brightest, had been included in their range the range of scores obtained would have been increased immensely. The percentile gradations from 0 to 100 would have become correspondingly rougher. The percentile score does not tell us directly the capacity of a case, but only that it is exceeded by a certain percentage of cases of the same age. The mental age and I. Q. score tell us what age of average capacity is the equivalent of, and what percentage his capacity is above average for his age.

F. KUHLMANN.

NEWS AND NOTES

Frankwood E. Williams, M. D., Vice Chairman of the Mental Hygiene Research Committee, sends the following report of the Committee on Methods and Standardization of Examinations and Reports, a sub-committee of the former. "The report has been accepted by the Surgeon General and will be used as the basis of an official circular from the Department."

Psychiatrists and Neurologists Assigned to Special Duty in the Military Camps of the United States Government:
The detailing of psychiatrists and neurologists to special duty with the Surgeon General has had in mind (1) the proper care and treat-