A Member: I move a vote of thanks to Miss Farrell and her assistants for the splendid entertainment given to the Association on Friday evening by the teachers of the ungraded classes of the New York Public Schools. The motion was second and carried. Adjourned.

REVIEWS AND NOTICES

A SCALE OF PERFORMANCE TESTS.


The work that led to the results published in this book grew out of 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 need 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: instruction; standardization of the tests; presentation of the data; the scale; the median mental age scale; the point scale; the percentile method; illustrative cases; conclusion.

In the introduction Stern's definition of "Intelligence" as "a capacity of an individual consciously to adjust his thinking to new demands" is accepted, and this has been used as one of the guides in selecting the tests, the others being non-requirement of language, and variety in the tests in order to bring all the various factors in intelligence into play. A history of mental tests given, shows how Binet was led to the tests and the 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 low tests 2 to 8, which are all of the form board character, the insertion of blocks in appropriate spaces and, increasing in difficulty as 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, but..."
nature of the performance is similar. This time the child sees that he
must 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 appro-
appropriate blocks from a large number of others." Tests 13 to 15 are quite dif-
ferent from the others.

The second chapter, "The Tests," describes the tests in detail, the meth-
ods 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
are cut out. The task is to replace the parts in their proper places. Time
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
generical forms cut out by the latter are not used.

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

Test 3. Five figure board. A row of five geometrical forms cut from
a rectangular board. These five are cut into eleven pieces. Procedure as in
Devised by Paterson.

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

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

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

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

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

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

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

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

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

Test 13. Substitution test. A sheet with a row of five geometrical
the top, each with a number in it. Under this are these same
arranged in five rows of ten each, and without the numbers. The
write the correct numbers in the latter. "Reported by Woodworth
Test 14. Adaptation board. A large rectangular board with four circles cut out near the four corners, three circles with a diameter of 6.8 cm and one of 7 cm diameter. The task is to replace the large circles in the 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. Device 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. Device 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 tests. In establishing norms mere numbers of cases examined is not as unimportant. The essential thing is to have the cases properly selected. Their norms are secured from public school children of the middle classes. The failure of additional numbers to materially alter the norms already secured is laid down as a guide in determining whether the number tested is adequate to make the norms reliable. This was used as a guide in cases, and some illustrations are given on norms based on about 350 as compared with norms based on about 1000 cases.

Three different types of standardization are discussed, standardizing here referring to methods of using the results of an examination to 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 test 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 seventy-five per cent as the correct one for such placing of tests. (3) The third 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 that "it allows a comparison of a particular child's performance with 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 fifteen years in age. The number of cases for each age varied, very roughly 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 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 the first three. A brief discussion follows the results of each test.

The authors next use their results to construct scales according to the 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 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 by 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 by the 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 year 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 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 a child 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, his average gives his mental age. The special advantage of this method 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 method a certain number of points is allotted to each test, part of a test, or type 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 taken 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 according to the discriminative capacity of the test; the number of points should be 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 difference from one age-median to the next depends on whether these medians are in large numbers or small, in seconds or minutes, for example. This difficulty is met in the fact that it allows no more for a difficult test 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 capacity and the underlying principle is the chronological age. Since points 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 "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 age method."

As illustrative of a point scale, the authors then drew one up 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 discussed. It appears to be the most "thorough," and "allows the differentiations and the most just comparisons of an individual with individuals of the same age." Accordingly a percentile table for each test was 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 given 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 of 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, frequently have the same score for several successive percentiles.

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

This study is easily the most important contribution yet made to mental tests in the field for which they are intended. This field is by no means small, and the demand is very urgent with all who believe in the mental test method of determining grades of intelligence. There has been much loose procedure with most of these tests, and many others, in using 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 on 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 to be put into practice, but only as a contribution towards such a scale.
viewer'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.
scale would be decidedly useful as it stands, and the test of actual prac-
the best method of eliminating imperfections, and of supplying fur-
requirements.
one suggestions have occurred to the reviewer in this connection.
(1) Too many of the fifteen tests chosen involve approximately the
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 al-
ways equal or closely approximate the average chronological age of each
up of children examined. When this is done it will be found that the
at each age that pass an individual test will not be 75 throughout, but
age from nearly 100 per cent at the age of one to two years to about 50
is at the age of twelve.
(3) Scoring grades of intelligence in terms of mental ages and "in-
te quotients" is a much superior method to any yet proposed. The
method preferred by the authors does not lend itself to as fine
ons, and does not convey as useful or readily comprehensible meaning
the intelligence quotient. If scores for all grades of feeble-minded,
as for all grades of the very brightest, had been included in their
range of scores obtained would have been increased immensely.
percentile gradations from 0 to 100 would have become correspond-
ough. The percentile score does not tell us directly the capacity
ase, but only that it is exceeded by a certain percentage of cases
age. The mental age and I. Q. score tell us what age of average
his capacity is the equivalent of, and what percentage his capacity is
average for his age.

F. KUHLMANN.

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NEWS AND NOTES

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

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