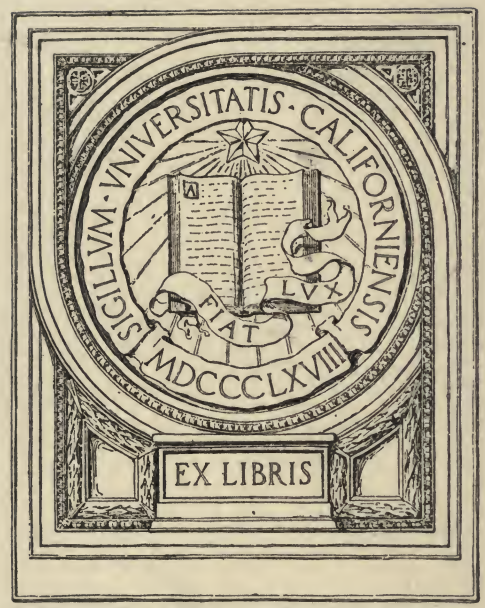
DEFICIENT CHILDREN

MAE C. TROVILLION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DEFICIENT CHILDREN

BEING AN APPLICATION OF THE BINET SCALE OF INTELLIGENCE TO THE BACKWARD CHILDREN IN THE BLOOMINGTON, INDIANA, PUBLIC SCHOOLS.

SUBMITTED AS PART REQUIREMENT FOR DEGREE OF MASTER OF ARTS IN THE SCHOOL OF EDUCATION, INDIANA UNIVERSITY
1914

BY
MAE C. TROVILLION

With Charts and Tables.

HERRIN, ILLINOIS
THE HERRIN NEWS
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TO

ELMER ELLSWORTH JONES, Ph. D.

UNDER WHOSE SCHOLARLY GUIDANCE
THIS WORK WAS PREPARED

INTRODUCTION.

The work of testing the defective children of the Bloomington graded schools was begun in January 1914 and was completed in May of the same year. Out of the total number of 1778 school children 286 were found to be defective, mentally. The Binet-Simon scale was used in the form in which it was revised by Dr. Henry H. Goddard, of the Training School of Vineland, New Jersey. From the teacher of each room was secured a list of the children whom she found to be, or at least suspected them to be, subnormal and unable to cope with the intelligence of the average child. The cloak rooms of the different buildings were turned into minature clinics, each of which was fitted up with a table, two chairs, and the different pieces of apparatus used in making the

tests. As soon as one child was tested, he was asked to tell the next child on the list to come down to the room. The average time taken to test the younger children was twenty minutes, and usually from thirty to thirty-five minutes was consumed in testing the larger ones.

The directions for giving the tests were followed as closely as deemed necessary, but at the same time I used my own judgment as to the exact method of procedure with each individual child. My first concern with the pupil was to gain his or her confidence. This kindly and friendly relation once established, the child will give you any amount of information you wish,—that is, the majority will re-act in this way. The average child is anxious and glad to tell you everything about himself, his father, his mother, his brothers, sisters, dog, or anything else, providing you first gain his confidence and can make him feel that it is he, more than any one else in whom you are most interested at that particularly moment.

One correction should be made in this introduction concerning the children who were over fifteen years of age. The records which were taken of this group are of course inaccurate. For, if a boy is sixteen years old and is tested only through the fifteenth year, he is bound to fall behind his age one year, at least. This method of grading is decidedly unfair to the child and for that reason none of the Eighth A grade was tested, except those of the colored school.

Another point which should be explained with regard to my method of grading in the tests is concerning the gap in the scale between the twelfth and fifteenth years. The question is, how to grade the child who is fourteen years old. There is no test for children of this age and yet, it would be unfair to give them the fifteen-year-old test. So, I used my own methods in these particular cases. The rule is, after you have counted up and decided on the mental age, then advance him one year for every five higher tests he has answered cor-

rectly, and two years for every ten tests. Since, Binet says, there is so little difference in the child from the age of twelve to fifteen years, no tests have been made for the two years thirteen and fourteen. So it seems reasonable that if the fourteen-year-old-child could answer three of the twelve-year-old questions, then he could probably answer three in the thirteen, and three in the fourteen-year-old, providing such tests were made. This is all theory, of course, and since we do not have these tests to present to the child, we can not tell by actual experiment whether this is true or not. Throughout my records, this method was employed in scoring the tests.

It is best always to begin the tests at least two years behind the chronological age of the child. These questions are easier for him and if he starts out by answering fairly well, it encourages him and helps him in the later tests. Under no consideration must defective children know that they have failed in a test. They

are more easily discouraged than normal children and are extremely sensitive. On the other hand, they are so susceptible to flattery that the more praise is given to children of this type the better the results.

MAE C. TROVILLION.
University of Indiana, 1914.

I.

LITERATURE.

Next to the exceedingly bad and incorrigible boy in the public school perhaps the greatest menace to the general school is the mentally-defective child. He is not able in any way to cope with the standards of the school, although he has been in the same grade for several years.

A few of our feeble-minded children might be passed, at a glance, for normal children, but the greater number presents unmistakable anomalies of bodily structure and function as well as having some mental defect. Investigations concerning these children usually show that they were slow about learning to talk, and the result is that they are unable to articulate well yet; consequently they are speech defectives. It will be found often that dentition, standing, and walking have also been abnorm-

ally delayed. The co-ordination of their muscles is poor; they are clumsy in their movements, and are not able to run, jump, and play as the ordinary child plays. They are the children with few perceptions; their faculty of observation, attention, and curiosity, are faulty, and the result is that the development of their sensorium must be looked after with special care.

Children of this type follow the crowd. They all lack confidence in themselves. They follow along the line of least resistance,—always imitating others, but never originating anything for themselves. They lack initiative, are afraid to venture out, and as a consequence they remain always in the same rut.

The Binet-Simon tests proved that the percentage of feeble-minded children was rather high, compared with Goddard's conclusions. He states [1]that from one to two per cent. of all school children belong in the

1 Boston, N. E. A., 1910, What can the public school do for the subnormal?--Goddard.

class of the feeble-minded. Out of the 1778 graded school children five and two-tenths per cent. were found to be feeble-minded, according to the standard which considers children that are retarded three or more years in this group.

The majority of the backward children in the Bloomington schools came in the class retarded one and two years. Ten and two-tenths per cent. of the entire grades were classed in this group. This class consists of children who are mentally superior to the feeble-minded. They are the ones who are in that great group of people who are exceedingly slow of comprehension. It usually takes them twice as long to do their work as it does a normal person, and we find them dropping behind, becoming discouraged, and finally, giving up entirely.

The Binet-Simon Scale.

There has been, perhaps, no scale of tests for the measurement of of intelligence that has received as world-wide praise and fame as have

the tests worked out by Binet and Simon, the two Frenchmen.

In the *L'Annee Psychologique* for 1903, Prof. Binet published a scale consisting of thirty tests, which were arranged in order of difficulty. In the 1908 *Psychologique* there appeared a revised scale by Binet and Simon. It was in this scale that educators throughout the world became interested. It was tried by them on both normal and defective children over the country, and was found to be extremely valuable to teachers, physicians, and psychologists, in aiding them to judge the mental age of a child. The two men revised the scale again in 1911, and in the same year Dr. Henry H. Goddard, of the Training School of Vineland, New Jersey, also revised this scale, giving but five questions to each year, excepting those of the fourth and fifteenth years, and changing some of the tests to a higher or lower grade, as he saw fit. In 1909, Dr. Edward B. Huey tested the defective children of Lincoln, Illi-

nois, in the state institution, also at the Johns Hopkins Dispensary.

Louis M. Terman, of Stanford University, in California, tested about four hundred non-selected children by the Binet scale. His conclusions, after the examinations, was that a measuring scale of this general type was feasible, and that "when corrected, extended, and multiplied, they will prove of great practical and theoretical value."[1]

In 1911, Isabel Lawrence of the State Normal School at St. Cloud, Minnesota, experimented with the definition tests of the Binet-Simon scale, by testing seven hundred and forty-eight children, in the elementary schools in St. Cloud; and afterward, by comparing her results with the teachers' estimation of the pupils' ability in class. The definitions were those superior to use,—were such as required maturity of intellect. Since there were no definitions for the ages of seven, ten, twelve, fourteen, and older, the

1. Psychological Clinic, Dec. 15, 1911.

eleven-year-old child was marked retarded only one year, if he failed in the eleven-year-old tests, but passed the nine-year-old test. He probably would have passed on the ten-year-old, if there had been any definitions in the tests for that year.

The results from the Binet tests corresponded favorably with the teachers' estimate of the pupils. In other words, the child who was marked "very poor" by the teacher also measured "very poor" in the tests, which meant that he was retarded two or three years. And those pupils who were marked "very good" or "excellent" by the instructor, measured exactly up to their age, or a year or so in advance of their biological age in the scale.

Miss Lawrence States[1] that this is only a crude way of deciding the psychological age of the child, but it does show, concerning the exceptional children, that but few of this class are to be found in ex-

1. Psychological Clinic. Dec. 1911: Study of the Binet Definition Tests, by Isabel Lawrence.

ceptional grades for their age, and she suggests as a reason for this that the teachers are unwilling to put a child either back or in advance of the usual grade for his age.

Kuhlman, the psychologist, highly praises the tests and he found them to be of great benefit and use to him at the Minnesota State Institution for the feeble minded.

Decroly and Degand used the 1908 Binet-Simon scale in testing forty-three normal boys and girls in a private school in Brussels. All of the children were of the upper-class in the city. It was found from the results obtained that the Belgium children ranked higher than did those of Paris, which Binet says shows the difference in the intelligence-level and in language between children of the poor and of the rich.

The scale which was used in the testing of the 286 children in the Bloomington graded schools, was that revised by Dr. Goddard in 1911. It seems to be more suited to the American child than the one which

Binet first made. Goddard and his corps of workers in the Vineland schools have tested four hundred feeble minded children and nearly two thousand normal children. So the strong and weak points in his revision should be pretty clearly seen by this time.

The three main results which are obtained by the use of the scale are as follows[1] "(1) The child's intellectual level is measured. (2) Certain important practical data are obtained concerning the child's ability to read, write, draw, use language, use numbers, use money, do errands, imitate, etc. (3) The tests open up the case for varied observation, giving the examiner opportunity to make supplementary notes of the child's attitude, his emotional condition, his speech, his movements, and various other characteristics of his responses and conduct."

The simplicity of the method appeals to those who are not well train-

1. Backward and Feeble Minded Children.--Huey.

ed in psychological methods. But the fact that it is so simple does not make possible successful tests by everyone who tries it.

Binet says[1] concerning this point: "It is not, in spite of appearances, an automatic method, comparable to a scale which, when one stands upon it, throws out a ticket on which one's weight is printed. It is not a mechanical method, and we predict for the busy physician who wishes to apply it in hospitals, that he will meet with disappointments. The results of our examinations are of no value if they are separated from all commentary. An interpretation is necessary. We are aware that in stating this necessity, we apparently open the door to the arbitrary and deprive our method of all precision, but this is only apparent. Our scale will always be superior to the ordinary school examination because it has several advantages over them, it is evolved ac-

1. Bulletin de la Societe Libre pour 1' Etude Psychologique de 1' Enfant, April, 1911.

cording to an invariable plan, it takes the age into express account, and it notes the answers and compares them with a norm which is a true mean. If, in spite of all this precision, we recognize that it is necessary to use the scale with intelligence, we do not consider its value diminished by this reservation. The microscope and the graphic method are admirable methods of precision, but what intelligence, circumspection, erudition, and art, are essential to the practice of these methods! Imagine the value of observations made with the microscope by an ignoramus who is scarcely better than an imbecile. We have seen examples which caused a shudder." He goes on to say that the examination must be done by an intelligent hand, and that the methods cannot be made precise enough to be trusted to every one. He says that if the method is to have any scientific value, the examiner must have had an apprenticeship in a laboratory of pedagogy or

must possess a practical knowledge of psychological experimentation.

The scale is by no means yet complete. It is still in the experimental stage. From the fact that the experimenters who have used the scale in Belgium, France, Germany, England, and in the United States, are disagreeing as to their conclusions, it seems that the tests will necessarily have to be different for each country. It remains for an educator and experimenter of each country to establish forms for his particular country. "It is questionable whether we can calibrate and improve the scale by confining the testing to a very limited range of years. The further improvement of the scale, we may add, requires the transposition of certain tests, the elimination of certain others which seem valueless, the equalization of the number of each age, or the proper differential adjustment of the system of accrediting points and the *increase rather than the decrease of the number of tests for each age.* * * * * We need to

probe for a considerable number of traits and capacities * * * * if we would arrive at a true clinical picture of the child or a correct classification. We cannot hope to *diagnose* or to *grade* accurately if we test only a few capacities, or if we base our judgment on only a few symptoms. The element in variation in human traits is too large. What is needed is a *well-balanced, comprehensive survey of the fundamental human capacities.*"[1]

This seems to be a general criticism of the Binet-Simon scale. The tests do not tell one enough about the child. We are able to tell how old the child is mentally but the scale does not state just what is the trouble with him. It should be so extended that the examiner could have a chance to see wherein the subject is lacking. In the use of the present meager scale one has no way of telling very much about the physical condition of the subject. There are

1. Experimental Studies of Mental Defectives. Pages 55-56. J. E. W. Wallin.

no tests to show the co-ordination of his muscles, or his actual ability to construct things with his hands. Nor is there any chance to get a line on his senses.

However the method has many good points which should not be overlooked. For instance the apparatus that is required is very simple and very handy to carry around with one. It is also very inexpensive, as it can be prepared by anyone who understands the tests and has a manual to follow. It now remains for the psychological and educational students to revise and standardize the scale so as to make it a practical measuring rod for the classification of all children.

The following are the tests as they have been revised by Dr. Goddard:

Children of Three Years.

1. Where is your nose, your eyes, your mouth?
2. Repetition of sentences of six syllables. *It rains. I am hungry.*
3. Repetition of figures. "6-4."
4. Describing pictures.

5. Name of the family.

Children of Four Years.

1. Sex of child. *Are you a little girl or little boy?*

2. Naming familiar objects; as *key, knife,* and a *penny.*

3. Repetition of three figures, as, 7, 2, 9.

4. Comparison of two lines. *"Which is the Longer Line?"*

Children of Five Years.

1. Comparison of two weights. *"Which is the Heavier?"*

2. Copying a square.

3. Repeats a sentence of 10 syllables. "His name is John. He is a very good boy."

4. Counting four pennies.

5. Game of patience with two pieces.

Children of Six Years.

1. Distinction between morning and afternoon. *"Is this morning or is it afternoon?"*

2. Definition of known objects. *"What is a fork, a table, a chair, a horse, a mama?"*

3. Execution of three simulta-

neous commissions. *"Do you see this key? Put it on that chair. Then shut the door. After that bring me the box that is on the chair. Remember, first put the key on the chair, then close the door, then bring the box. Do you understand? Well, then, go ahead."*

4. Right hand. Left ear.

5. Aesthetic comparison. *"Which is the prettier?"*

Children of Seven Years.

1. Counting thirteen pennies.

2. Description of pictures.

3. Unfinished pictures. *"What is lacking in that picture?"*

4. Copying a diamond.

5. Name four colors.

Children of Eight Years.

1. Compare two things from memory. "What is the difference between a butterfly and a fly," "wood and glass," "paper and cloth?"

2. Count backwards from 20 to 1.

3. Days of the week.

4. Count three one-cent and three

two-cent stamps. "How much are they worth?"

5. Repetition of five figures. "4, 7, 3, 9, 5."

Children of Nine Years.

1. Make change. 9 cents out of 25.

2. Definitions better than by "use."

3. Name the day of the week, the month, the day of the month, and the year.

4. The months of the year.

5. Arrangement of weights.

Children of Ten Years.

1. Naming nine pieces of money. One may use cent, nickel, dime, quarter, half dollar, dollar, five dollars, and ten dollars.

2. Draw design from memory.

3. Repeats six figures.

4. Questions of comprehension.

5. Using three words in a sentence, *Philadelphia, money, river.*

Children of Eleven Years.

1. Criticism of sentences.

2. Three words in a sentence. (Given under age ten.)

3. Sixty words in three minutes. *"Say as many words as you can think of in three minutes."*

4. Rhymes. (With day, spring, and mill.)

5. Words to put in order. "Make a sentence out of these words." Started, the, for, an, early hour, we, country, at.

Asked, paper, the, to, I, teacher, correct, my.

A, defends, dog, good, his, master, bravely.

Children of Twelve Years.

1. Repetition of seven figures. 2, 9, 4, 6, 3, 7, 5. 1, 6, 9, 5, 8, 4, 7. 9, 2, 8, 5, 1, 6, 4.

2. Abstract definitions. "What is charity, justice, goodness?"

3. Repetition of a sentence of 26 syllables. "I saw in the street a pretty little dog. He had curly brown hair, short legs, and a long tail."

4. Resists suggestion.

5. Problem of various facts. (What is it?)

(1) "A person who was walking in the forest suddenly stopped much

frightened and hastened to the nearest police and reported that he had seen hanging from a limb of a tree a——." (After a pause.) "What?"

(2) "My neighbor has been having strange visitors. He has received one after the other, a physician, a lawyer, and a clergyman. What has happened at the house of my neighbor?"

Children of Fifteen Years.

1. Interprets picture.
2. Change hands of the clock.
3. Code.
4. Opposition.

II.

CLASSIFICATION OF BACKWARD CHILDREN.

There have been a great many classifications made by different authors and experimenters of backward and deficient children, but I intend in this chapter to make a classification based upon my own observations in the testing of these 286 children. They seem to fall into three groups,—those with (1) defective vision and those who are defective in (2) reasoning, and (3) in memory. These are not wholly separate and distinct groups. Defective senses may be and often are direct causes of the retardation of the child in many lines. The fact that mental deficiency is really a pathological condition which is produced by diseases, is well established and noted by all observers and educators all along this special line.

Defective vision was very noticeable in the retarded children that were tested. Tredgold says[1] that fifteen per cent. of the feeble-minded children have defective vision. In Elmira, N. Y., out of the 449 children examined, twenty-two per cent. had defective eyes. Concerning this, D. C. Bliss in his article[2] on "Relation of Physical Defects to Retardation in Elmira, N. Y.," says: "It has been found in Elmira that with these children there is a definite increase of percentage of those with eye-trouble as the number of years required to complete the grade increases." His table shows that of 345 pupils who were retarded two years twenty-one per cent. had defective eye sight. Twenty-four per cent. of the 86 children retarded three years, and twenty-six per cent. of the 15 who were retarded four years were found to have defective vision.

About ten per cent. of the Bloomington defective children, as far as

1. Mental Deficiency: Chapter on "Feeble Mindedness in Children." Page, 131. Tredgold.
2. Psychological Clinic. May 1, 1911.

could be gathered from observations and from questioning, had bad eyes. The greater number of children who were tested were of an inferior class of people. They came, mostly, from homes, where the child's physical defects had received no attention and the parents were ignorant as to the bad results that might come from such physical abnormalities, and in many cases were unable financially to consult a physician. So, children came to be tested whose eyes were apparently in good condition, but upon close observation their defective vision could be detected by the manner in which they bent down over the paper and strained their eyes, when taking those tests which required drawing of designs, squares, diamonds, etc.

Reasoning.—A child who is retarded mentally has not the ability to reason as does the healthy normal child. He does not seem to be able to apply his very limited knowledge to any new circumstances ,and consequently, goes on from day to day in

the same rut. When any new circumstance is presented, he is without resources and is incapable of reasoning out and solving a solution to the problem.

There are four tests in the Binet scale which require reasoning on the part of the child. The first one is question number four in year eight. The child is asked to tell how much three one-cent stamps and three two-cent stamps will cost. Of the thirteen eight year-old pupils to whom this test was given, only four were able to reason out the problem, and nine gave it up as hopeless. Test one, in year nine, requires some reasoning, as for example, that of changing money, twenty-five cents and nine cents. The examiner plays store with the subject, buying something from him that costs nine cents, but gives him a quarter. The subject must then give back the right change. For the deficient child, this bit of reasoning involves activities of a somewhat higher order than any of which he has yet come in contact.

Quite frequently, the children counted out and gave me twenty-five cents in change instead of sixteen cents. Twenty-one of the twenty-six nine-year-olds failed in this as did also twenty-five of the forty-one ten-year-olds. The fifth test in year twelve reads, "A person who was walking in a forest suddenly stopped, much frightened, and hastened to the nearest police and reported that he had seen hanging from the limb of a tree a——." (After a pause) "What?" The child all this time is quite excited, but he is not quite capable of filling out the blank. He reasons merely from his own standpoint. What sort of a thing hanging from the limb of a tree would *he* be afraid of? The answer usually was a snake or a big bear. Few think it is a dead man hanging there. Likewise in the next one, "My neighbor has been having strange visitors. He has received one after the other a physician, a lawyer, and a clergyman. What has happened at the house of my

neighbor?" They know why the physician comes, but they ponder as to why the lawyer and minister were there. The reason for so many failing on these two problems may not be due solely to a lack of reasoning power, but it may depend more on a lack of the general worldly knowledge. He may be ignorant as to just what a will is or what connection there is between a lawyer and a will. But a normal twelve-year-old child should have some conception of these points. However, not one twelve-year-old was able to answer both of the questions correctly. Nineteen out of the twenty-three thirteen-year-old children missed them, as did the fourteen of the seventeen who were fourteen years old.

Very few children were able to answer satisfactorily the second series of questions of test four in the tenth year. The child must reason and use his judgment in certain situations which the examiner reads to him. For instance, the child is asked the following questions: (1) "Just

what is the thing to do if you were late at school some day?" (2) "What should you do before taking part in an important affair?" (3) "Why should you excuse a wrong act committed in anger more easily than a wrong act committed without anger?" (4) "What should you do when asked your opinion about some one whom you know only a little?" (5) "Why ought you to judge a man more by his acts than by his words?" The child is given credit if he answers three out of the five questions, but very few were able to answer even three. None of the nine-year-old children were able to answer as many as three of these and twenty-four out of the forty-five ten year-old people failed on the test altogether.

Memory.—The inability to recall and to remember the little incidents in their daily life, is a very serious and yet a common defect that is very often met with in a deficient child. The chief trouble lies in the fact that a child does not concentrate his at-

tention and mind on any one thing, and then does not make the right association later when he wishes to recall some fact.

In speaking of children in the special school, that is children who are mentally behind their age three and four years, Tredgold says: [1]"The most trifling thing serves to distract these children from their occupation, so even where the attention is readily gained, it is with difficulty held. Many of them become capable of pursuing a congenial task with a certain amount of patience, but the majority have neither power of concentration nor will sufficient to be capable of substantial mental effort against inclination or interposed obstacles."

The table at the end of chapter 7, shows that the third test in year six was missed quite often by children as far up as nine years. Three commands are given to the child: "Put the key on the chair." "Shut the door." "Bring me the box." The

1. Mental Deficiency: "Feeble Mindedness in Children." Page, 132.

accuracy with which he performs these tasks will depend upon the comprehension of these instructions and his ability to remember all of them in their consecutive order. Two in the seventh year missed it. Two of the eight-year-olds and two of the nine-year-olds were also unable to carry out the orders.

Auditory memory of these children is generally poor, according to my table, as shown in the tests of repeating five, six and seven numerals in the eighth, tenth, and twelfth years, respectively; also the repeating of sentences with ten and twenty-six syllables in years five and twelve, are tests for auditory memory. These seemed very difficult for the children. For instance, in the repeating of twenty-six syllables, no child in all the 286 was able to repeat these correctly. The difficulty of this test, however, will be discussed in another chapter.

We are able to get a line on the visual memory of the child in the second test of year ten, in which the

child is asked to draw two designs from memory after the designs have been previously exposed for ten seconds.

So, the basis on which I should classify backward children is, (1) defective vision, (2) defective reasoning power, and (3) defective memory power.

III.
A COMPARISON OF THE BOYS AND GIRLS.

The boys were found to be very much more enthusiastic and willing to take the test than the girls. The majority of the girls seemed slightly dubious about the affair and were shy until we got on intimate terms by means of conversation which was not concerning the tests. With the larger girls it was necessary to use great care and precaution lest they suspect why they were sent in for the test when so many of their other schoolmates did not have to take it. The object was to deceive the child (especially if he seemed over sensitive) into thinking that the tests were meant for every pupil in the school, but since the time was limited, they could be given to only about half of the school. This brief explanation to the thirteen or four-

teen-year-old girl made more difference than one would imagine. Her face would lighten up and after that she took more interest and tried to answer every question to the best of her ability. This misrepresentation seems to me not only legitimate, but in many cases almost absolutely necessary. The examiner wishes to obtain the best results possible from the tests. How is he to get these results if the child is intimidated or allowed to feel that he or she has been picked out from among his classmates as a child not as bright as his fellow school mates? The girl is naturally more sensitive than the boy, so, I maintain that one will always be rewarded with better results if pains are taken to keep the real purpose from the defective girl. Enough care should be taken with the boy, but the boy is a different proposition. You have not the shy, subdued, sensitive nature to deal with as when handling girls. Just as the healthy normal boy feels himself more important and is more confident than his equally

normal sister, so the deficient boy has more confidence than the backward girl. The boy does not then need nearly so much encouragement as does the girl. With each sex, however, the more praise given them the better the results obtained. Praise the girl on one question and she will try all the harder on the succeeding ones. The same applies in like manner to the boy. By the close of the test they have a somewhat exalted opinion of themselves, because, since they have been praised for their answers, they imagine that they have passed a fine examination. But do not disturb this impression. Aid them in every conceivable way possible to gain confidence, a thing which children of their type lack. Let them at least *strive* to be on a level with their fellow schoolmates, even if they are sadly lacking in strong mental traits.

The backward boys outnumber the girls. Fifty-seven per cent, of the 286 backward children were boys and only forty-three per cent. were girls.

The table shows that, with two exceptions, the boys outnumber the girls in the greatest number of years retarded. This is indicative of the fact that the boys who were tested are actually more defective or that they did not take the tests seriously and did not put forth the best possible effort. The boys, to be sure, did not appear to be as conscientious during the tests as the girls, and, as was stated above, this may have been the difficulty, and probably was the cause of the boys measuring lower in the scale than the girls.

Retardation by Years.

Number of Years Retarded	Boys	Girls	Total
1 year retarded	42	44	86
2 years retarded	60	37	97
3 years retarded	34	28	62
4 years retarded	12	8	20
5 years retarded	12	8	20
6 years retarded	4	2	6
7 years retarded	4	0	4
8 years retarded	1	0	1
10 years retarded	1	0	1

In general I observe that the boys have more general knowledge than the girls, but otherwise in the tests, I could see no very marked difference. In testing the smaller children up to the fourth grade, they seemed about the same as to their manner, behavior, and in their responses in the examination. It was in the higher grades that the differences between the sexes appeared.

IV.
A COMPARISON BETWEEN THE COLORED AND WHITE CHILDREN.

The colored children were not as free, and were a great deal more shy than the white children. This, I concluded, was partly due to the fact I was so utterly strange to them, and not being of their race, they felt somewhat constrained. They were ever so much more sensitive than the white children. They imagined I was ready to make fun of them and laugh at their little mistakes. In spite of the fact that I made a supreme effort to put myself as much as possible on the same level with them, they, nevertheless, seemed to have the feeling that I was their superior. It was almost an impossibility to enter into any sort of friendly conversation with them, and for this reason, I got but very little in-

sight into their home life. The white child, on the other hand, needs only one question to get him started, and without further inquiry he will tell you all about the family, the neighbors, the household pets, etc. But not so with our little negro child. If possible, he will answer wholly in monosyllables and if the question requires more he frames his answer in the fewest words possible. With a few exceptions, the white children entered into the spirit of the test as if it were some game, and they were enthusiastic and eager for the next question. But the colored children rather felt, it seemed to me, that I might be trying to catch them up on some question. However, in every case they answered to the best of their ability and were not silent at times on account of stubbornness. Owing to the small number in the colored school, compared to the large number of other children in our schools it is not exactly fair nor is it possible to draw any true con-

clusions as to the likenesses and differences.

There is one thing, however, for which I can commend the colored children, and that is their behavior during the time of the tests. Although some of them were even sullen, and not exactly prone to talk, yet they were always ready to help me in any way they could. If my papers blew off the table, the little colored child was right after them, replacing them on the table and closing the window without my telling him to do so. The white child, on the other hand, had to be told to close the window, or if I suddenly lost some of my material for the test, to help in the search for the lost article never occurred to him. I have come to the conclusion that, in the matter of doing things for himself instead of depending on some one else to do it for him, the colored child is the more independent of the two. Although this lack of independence is one of the characteristics of a deficient or backward child, yet it

is not so true of the colored defective —so far as I could discover. The white child is more likely to be spoiled and petted by his family at home, especially if he is weaker generally than his brothers and sisters; while the little colored boy "just naturally grows up."

In general, the drawings made by the colored children were much larger and more crude than in the other schools. I find also that they do not seem quite as careful and painstaking as the white children.

RETARDATION AMONG COLORED AND WHITE CHILDREN.

Number of Years Retarded.	Colored		White	
	Number	Per Cent.	Number	Per Cent.
1 year retarded	12	30	74	29
2 years retarded	10	25	87	35
3 years retarded	12	30	50	24
4 years retarded	2	5	18	7
5 years retarded	0	0	9	3
6 years retarded	1	2.5	5	2.02
7 years retarded	1	2.5	3	1.2
8 years retarded	0	0	1	.4
10 years retarded	1	2.5	0	0
Total	39		247	

There is a large percentage of defective colored children than white children. Figures show that only 16.6 per cent. of the 1,778 white chilren are in the backward class, while there is 43 per cent. of the 90 pupils in the colored school. Another difference shown by the table is that a greater percentage of the colored children come in the class of the feeble-minded, there being 42.5 per cent. and only 37.8 per cent. of the white children. Some allowance should be made, however, concerning the fact mentioned in the introduction relative to the testing of the eighth-grade children. Two from this grade in the colored school were tested and only a few of the eighth-B-grade and none of the eighth-A-grade were tested in the other schools. However, it seems to me that we are safe in saying that the colored child measures lower than the white child.

V.

A STUDY OF FAMILIES.

It was not possible, on account of the limited time to go into many of the homes to see for myself the general conditions of the home, the environment, and the status of the family itself. But in general I found that some of these children, a very small number, however, come from homes in which the influence and environment are excellent. One could but wonder just why these children whose parents are educated and whose home conditions are good, were sent in to be tested as subnormal children. Upon further investigation we find that this child whose mother and father are intellectual and who help and encourage her at home, had a severe attack of illness, measles, or some of these other "harmless" diseases, as some ignorant people consider them, and

that since the time of her illness, her brain seemed to have grown and developed more slowly than her body. What is there to do in a case of this kind? Nothing but what these sensible parents are doing, that is, they are helping her at home and drilling her on the lessons which she could not seem to get in the required length of time at school. In short, she is having to spend twice as much time on her problems as the ordinary child spends.

Among the 286 children who were tested, there were thirty-two families having two or more children in the school who were considered and actually measured below the average normal child. Twenty-six of these thirty-two families had two defective children and six of the families had three defective children.

I found that the majority of the children from families having two or more of their children in the subnormal class, were in this condition partly on account of neglect. I have in mind a family, the home of which

I visted often two years ago while I had M——, the oldest girl, in my special class at Central school. Of course conditions could have been worse, but they were anything but pleasant there in the home. These three children, who were nine, twelve, and fourteen years of age, were found to be very defective. The oldest girl was six years behind her biological age. The twelve year-old-boy measured three years back, and the little nine-year-old girl measured two years behind her biological age. But this fact is not at all astonishing when one takes a peep at the home influence and environment of these unfortunate children,—the mother dead, an ignorant, hard-hearted step-mother, with two of her own babies to care for, and a drunkard for a father. They received absolutely no care, such as every child needs, but were simply allowed to exist and to get along the best way they could. They feared their father as they would a monster, and their very manner of

fearing and cowering plainly showed the kind of life that they lived at home. Such children have no individualism for the very simple reason that they are allowed no freedom at home. The individual is thrust into the background and is not allowed to manifest itself. Is there then any wonder that these children lack confidence and initiative? For no reason at all they are kept from school by the step-mother, and the result is that they advance in school only every two or three years. If these children could be taken into an entirely different environment, with a pleasant, helpful, and sympathetic family, were cared for in the proper way, and were allowed as much freedom as necessary, they could be, I believe, put on the level, intellectually, with that of their average schoolmates. At least the two younger ones could be made more nearly normal, but there might be some doubt as to the possibility of helping the oldest one as she seems to be a type of the really defective child.

I might cite any number of such cases. One need only to look into the faces of these poor little neglected children to be able to read the sorry story of their lives. Their bad, unsanitary environment is reflected in their little pale, pinched faces. And a few questions as to their parents, brothers and sisters would usually verify my suppositions. Another means I often used to get a line on their home conditions, besides merely asking questions, was the use of test three, in year eleven. The examiner asks the child to say as many words as he can think of in three minutes. As a suggestion, I told them to name some of the common objects in their home or around the neighborhood in which they lived, and after he has named several such objects as, wash-tub, wash-board, clothes-pin, tin can, pipe, beer bottle, etc., one is safe in guessing about what sort of a family he comes from, the mother's occupation, and the environment in general. It is easy then

to account for the physical and mental condition of our subject.

On the other hand, we meet with children whose parents are on the other extreme,—parents who watch their children too closely, who give them too much care and attention, and who make their little ailments seem big to them. Gradually we come to see, in a way, that over indulgence and too much care and coddling may produce the same sort of child as we find in the degenerated environment. He does not take the initiative because "mamma" has always done it for him at home. He does not study hard at school, for he thinks what is the use, "mamma" will help him to get it at home. He is kept out of school every other day because his head hurts a little bit, and his mother does not want him to over-work. In talking with the teachers I have mentioned such and such a boy, and very often their reply would be, "That boy would have been all right if his mother had not been so indulgent with him."

In my work this year, I had a case of this kind. The child is actually feeble-minded and her present bad condition has been augmented by the over-indulgent mother. She never gave R—— a chance to show what she could and might do alone. With their home in sight of the school she would not even trust her ten-year-old child to go alone a distance of about two and one-half blocks. Instead of teaching and helping her by assigning her little tasks to do around the house, the mother waits upon her herself, never giving the child a chance to learn by experience. The child showed clearly the influence of this too-careful mother. I made it a point in the school to select R—— to do many errands, and it was truly pathetic to see her stumbling awkwardly about trying to perform the mission, but usually failing sadly in the satisfactory performance of the task.

For my own satisfaction I experimented with her to see if, by diligently working with her daily,

she could be taught to perform well a certain task and how long it would take before I could see an improvement. The first few weeks of school last fall, I asked R—— each morning to raise the window, and each morning it was always the same reply, "I can't." I showed her how it was done, and after getting a chair at my suggestion and standing on it, she could raise the window very easily, and she was usually delighted and very proud of her feat, being actually surprised that she could really do something. But as is typical of her class, she was not able to apply her previous knowledge to the next day's task, and for a month she always replied, "I can't," upon being asked to raise the window. However, after a long time, she came to realize that it was possible for her to raise that window, and I finally trained her to perform the task as well as any one could have done it. But kindly observe the time that it took her to get these simple facts ground into her nervous system sufficiently to apply the experience

of yesterday to the task of to-day. A normal child needs to be told only once, but this defective girl had to be told exactly twenty-three times before she could actually perform that simple little task.

If parents could only realize what injury they are doing to their child by over indulgence! But most of them are too narrow, weak, and ignorant to see that their apparent kindness to their child is really the worst sort of unkindness. There should be, by all means, a school for parents where they could be taught how to bring up children.

The defective children coming from the immoral families deserve to be mentioned in this general survey of families. I tested two subjects of the Runyan tribe. This family probably contains the greatest number of imbeciles and feeble-minded members of any family in the city. E—— aged fourteen, measured nine years mentally. He always gave one the impression that he had been guilty of some terrible act, for he always

looked some other direction when talking to any one. He seemed unable to look one squarely in the eye. He did not lack very much of being a moral imbecile of the very worst type, and I suppose when he arrives at the age when he can stop school that he will join the rest of his class of paupers and criminals.

Another child who comes from one of the most immoral homes in the city is G——, aged twelve, but whose mental age is seven. She was one of the pupils in the special class two years ago. At that time she was ten years old and still in the 1 B grade, and was exceedingly deficient. She had every indication of being a moral imbecile, if not at that time, she gave promise of developing into one at a later age. It is almost impossible to imagine a worse home life than hers. The family is both poverty stricken and immoral, and G—— is following in the foot-steps of her immoral mother and sisters. Her face and hands are never clean, her clothes ragged and dirty. Her

stature is far below the average child of twelve. She has a little head with small, slating eyes, and a large mouth. Her expression is blank and stupid, and exceedingly silly, partly due to the fact that she grins almost constantly or laughs at nothing. She is nervous and flighty and never seems to be able to concentrate her thought on any one subject for any length of time. There is no doubt that G——has directly inherited her feeble-mindedness from a long line of ancestors. Tredgold, in his chapter on "Intrinsic and Hereditary Influences," says[1] "I think, therefore, that it cannot be questioned that the germinal plasm shares in those alterations of the bodily protoplasm which result from disease and environment. According as this is favorable or unfavorable, the modification will be progressive or retrogressive; consequently, each individual is a potent influence for good or ill in the development of the race. The environ-

1. Tredgold: Mental Deficiency, Intrinsic and Hereditary Influences, pages 36-37.

ment of to-day will become the heredity of tomorrow, and the statement that the sins of the father are visited upon the children unto the third and fourth generations is an undoubted and important physiological truth." I am unable to state the exact per cent. of the children that were tested, who came from immoral homes, but as far as I could find out, there is a comparatively small per cent.

VI.

BACKWARDNESS IN GRADES.

According to the small scale on page 60, the grade containing the greatest number of backward children is the fourth, which has 58, and the fifth grade following close with 51.

After carefully considering the problem why the fourth and fifth grades should contain more backward children than any of the other grades, I was unable to come to any definite conclusion. The age may have something to do with the matter, however. The average ages for these children in the two grades are between eleven and twelve for the fourth grade and between twelve and thirteen for the fifth grade. A child at the age of eleven, twelve or thirteen is at that awkward stage in his development. In short the child has reached that adolescent age when the

physical nature and the body are undergoing a great change. As adolescence appears later in boys than in girls, this applies more to the girls under consideration. The body is making new and great demands on the blood supply, to help in its great development. The result is that the brain must suffer. It is at a standstill, so to speak, while the body is growing. Another significant fact shown by the table is the small number of defectives in the sixth grade compared to that of the previous grades. That is probably accounted for by the present rule concerning that class which dislikes school and is unable to cope with the standards of the school. The rule is that no child is allowed to stop school unless he has completed the fifth grade. But the authorities will permit him to leave sooner if he has reached the fifteenth year of his age. So the small number possibly is due to the fact that a great many deficient children have taken advantage of the

chance to leave school after completing the fifth year, thereby decreasing the number in the sixth grade.

Retardation By Grades.

Grades	1	2	3	4	5	6	7	8	Total
Number in Each	35	37	45	58	51	10	48	2	286

Retardation by Grades and Years.

Number of Years Retarded.	1B	1A	2B	2A	3B	3A	4B	4A	5B	5A	6B	6A	7B	7A	8B	8A
1	8	5	6	5	5	7	12	11	9	6	0	1	5	6	0	0
2	6	9	5	8	9	10	6	8	5	7	0	3	7	13	0	1
3	3	1	4	4	2	4	6	9	2	7	2	2	3	12	0	1
4	0	1	1	1	1	2	3	1	3	4	1	0	0	2	0	0
5	0	2	0	2	1	1	0	0	0	2	0	1	0	0	0	0
6	0	0	0	1	0	0	0	1	2	2	0	0	0	0	0	0
7	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0
8	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

The table shows the fourth grade to contain the highest number of defectives who are one year behind their physiological age. The seventh grade contains the largest number which are two years retarded. The fourth and seventh rank equally in the number retarded three years. The fifth has the greatest number retarded four years, but has the same number as the first, second and third grades of those who are five years behind, and contains the highest number six and seven years retarded. The third grade holds the record for having the only two children who are retarded eight and ten years respectively. (The records of those retarded eight and ten years are not accurate, since those children should have been given the adult test, but it has not proved as efficient as the other tests and is therefore not standardized as are the others.)

Here again, according to the table, we find the fourth and fifth grades containing not only the largest number of defectives in general, but also

the largest numbers which are retarded one, three, four, five, six and seven years.

It is interesting to note at what age there is the greatest number of this slow class in the schools. The following table shows that we find 58 ten-year-old children, 46 eleven-year-old, and 39 thirteen-year-old.

Number and Ages of Pupils Tested.

Physiological Age	6	7	8	9	10	11	12	13	14	15	16	17	Total
Number Tested	2	7	20	31	58	46	30	39	27	13	11	2	286

VII.
SUMMARY.

In the 1908 *L'Annee Psychologique* in M. Binet's article on his estimate and interpretation of his scale he says, "The result of the tests depend upon (1) intelligence, pure and simple; (2) school knowledge which may be acquired earlier than the usual age, (3) school knowledge that cannot be acquired before the usual age, (4) knowledge involving language and vocabulary, belonging under both two and three and depending partly upon the school and partly upon the general surroundings." So according to these interpretations, we find by carefully examining and working over the scale that the knowledge of different parts of the body, knowing sex, arrangement of weights, definitions superior to use, definitions of the three abstract terms, giving sixty words in three

minutes, interpretation of pictures, and changing the hands of the clock, all come under one. The intelligence, pure and simple, under the classification two, are those questions which test the child's knowledge of colors, of common objects, and ability to name the days of the week and the months of the year. The ability to count backward from 20 to 0, to change money, to count stamps, to make original sentences containing three given words, to put dissected sentences together, to give three rhymes with each of the three given words, and to answer the series of questions which involve reasoning, all would depend upon results three and four.

In the same chapter mentioned above[1], Binet makes a distinction between two kinds of intelligence, the maturity of intelligence and the accuracy of intelligence. "An intelligence which is not ripe is an infantile intelligence; an intelligence that is ripe before its time is called

1. L' Annee Psychologique, 1909.

precocious. Maturity consists, in part, in a development of the abilities of comprehension and judgment; at least, that is possible, a child comprehends less and judges with less penetration than an adult; it consists also in the increase of the bulk of acquisitions of all sorts—the child has less experience, it knows less than the adult. * * * * We believe the maturity of intelligence is brought out by three or four tests. * * * * These tests are definitions, descriptions of pictures, construction of a sentence containing three given words, and, perhaps, also the arrangement of weights. * * * * It is easy to see of what the infantile turn of thought consists. In definitions, it is the utilitarian point of view, the idea of the self is not lost and the objects are imagined in their relation to the person; in description of pictures, it is in enumeration, instead of recognition of the relation of things; in the construction of sentences, it is in the production of three different ideas; * * * * in the comparison of

weights, it is somewhat analogous; the contrast between the difficulty of comprehending and retaining the idea that the blocks are to be arranged in the order of weight and the facility of comparing one with another. These are some of the traits of infantile intelligence."

According to the classification of M. Binet, I find by looking over the records of the 286 children who were tested, that a great majority of the older ones whose intelligence should be mature intelligence according to their age, are decidedly the type with the infantile intelligence. When we find a boy whose age is sixteen years, but who we learn by testing, cannot name the four colors which we place before him, who does not know a two cent stamp from a one cent stamp, and who cannot even name the months of the year, surely he has only infantile intelligence; although, according to his age, his intelligence should be mature.

The great number of children who missed question two in year nine,

proves that point which Binet makes concerning the point of view the child takes in giving these definitions. From the table we find that of the eight-year-old children, not one was able to give any better definitions than those of use. Of the nine-year-old group, only five defined the objects in terms superior to use, while twenty-two failed entirely. I varied my questions in every way I could possibly think of in order to get the child to tell just how a table was made, what a chair looked like, what it was made of, etc., but he seemed to be able to think of these objects only from his own point of view, namely, not of what these articles are made, but of what service they were to him and how he used them.

According to my table, there are two tests that seem to be too easy and should be set back a year or so in the scale. The first test in year six, in which the child was asked to state whether it was morning or afternoon, proved very easy for most of the

children who were given the six-year-old test. The two six-year-old children answered it correctly, as did all of the seven-year-olds, and only one eight-year-old failed. The other is test one, in year ten. We show the subject a penny, a nickel, a dime, a quarter, a half-dollar, and a two, a five, and a ten dollar bill. I followed carefully Dr. Goddard's suggestions on this point in his revised method. He makes the suggestion that since our coins above fifty cents are so rarely seen by children that we should show coins up to the dollar, but not in their order. He says that the child may name the paper money from memory, and if he tells you that he has seen a three or a four-dollar bill, then you are pretty safe in judging that he does not know much about paper money. I followed these instructions and found that only two out of the ten in their ninth year did not know the different coins, while every one of the ten, eleven, and on up through the sixteen-year-

old children knew all of the different pieces of money.

So it stands to reason that if these two tests seem easy for the backward child, it is very good proof that they would be far too easy for the normal child.

The third test in year twelve is entirely too difficult. Among the 286 children, there was not one child who was able to repeat the given sentence correctly. The sentence reads, "I saw in the street a pretty little dog. He had curly brown hair, short legs, and a long tail." Not even were they able to reproduce the sentence with no more errors than one omission and one transposition. According to Dr. Goddard's manual, the child should be given credit if he made no other errors than those mentioned.

Aside from these three tests the scale is well arranged and the questions are well suited to the age for which they are designed.

Terman, in giving his impression of the Binet Scale after he himself had tested ninety children and had

supervised the testing of four hundred, said[1] "However, in spite of the many imperfections and inadequacies of the revised scale, I believe that by its use it is possible for the psychologist to submit, after a forty minute diagnostication, a more reliable and a more enlightening estimate of the child's intelligence than most teachers can after a year of daily contact in the school-room."

In the above tables of the summary of the tests, the vertical column of figures on the left refers to the number of the questions as given in Goddard's revision of the tests; the horizontal row of figures, under "Chronological Ages" at the top of tables refers to the chronological ages of the children tested; the letters "R" and "W" refer to the answers to the questions made by the children of the respective ages and grades, "R," indicating the right

1. Article by Dr. Edward B. Huey on the Present Status of the Binet Scale of Tests for the Measurement of Intelligence.--Psychological Clinic, 1911.

answer, and "W," indiciating wrong answer.

M. Binet's Method for the Measurement of Intelligence——Some Results—Katherine L. Johnson—Journal of Experimental Pedagogy, 1911.

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Four Hundred Feeble-minded Children Classified by the Binet Method,

—H. Goddard, Journal of Psycho-Asthenics.

The Binet-Simon Tests,—C. E. Seashore,—Journal of Educational Psychology, 1912.

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