

Backward Children

IN THE
Public Schools

WITH A PRELIMINARY STUDY ON
THE RELATION OF PHYSICAL TO MENTAL DEFECTS
IN SCHOOL CHILDREN

BY

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DEMONSTRATOR OF OSTEOLOGY, UNIVERSITY OF PENNSYLVANIA; PHYSICIAN TO THE DISPENSARY
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THE RELATION OF PHYSICAL TO MENTAL DEFECT IN SCHOOL CHILDREN.

THE age of our race between 6 and 15 years is a distinctive one, from the fact that the problem of diet, so important in infancy, decreases with the corresponding increase in bodily activity. So, also, the prevalence and effect of contagious disease suffer a reduction. For these reasons the mortality rate decreases progressively, and the probability of survival becomes steadily brighter.

The age of development, however, is one in which the subsequent physical and mental welfare is largely predetermined. Though the child's life be fairly safe, his fortune still lies largely in the hands of his parents, his environment, his teacher, and his physician. First must be met the burdens of heredity, producing thousands of sickly, deformed, and neurotic children. A perpetually (or rather, life-long) acting force is here to be combatted and reckoned with. Second to heredity is a poor city environment, with its lack of fresh air and its improper diet of canned foods. Exposed to these influences healthy infants succumb, and join the ranks of those already suffering from rickets, anæmia, and adenoid nasal obstruction. Finally, the ignorance of parents causes indifference to the damage already done, and adds premature decay of the teeth to the existing list of evident physical imperfections.

Are these injuries to the health of the child also harmful to his mind? Will he ultimately pass through their

pale of influence more or less scarred, but possessing the same knowledge and mental faculty that make for power, as his more vigorous neighbor?

The physical basis of mental defect becomes more and more evident as our psychopathic investigations increase in accuracy.

Among the imbecile and idiotic class in children, the agencies producing the mental condition, such as cerebral hæmorrhage and paralysis, or hydrocephalus, are very apparent to any observer.

Feeble-minded children, the result of vicious, drunken, or imbecilic ancestry, show physical defects less evident to gross observation, but demonstrable, nevertheless, by superficial examination, by autopsy, and by subsequent brain examination.

Backward and subnormal children approach so nearly the ordinary child that the connection between physical defect and brain defect is often not demonstrable at all in individual cases. In these the acting influences are of minor degree, being principally poor eyesight, deafness, and poor nutrition (adenoid growths are included in the latter two). We may either assume that the rule of a sound mind in a sound body is a natural law, and so reason by analogy that it operates in these cases, or by a study of a large series of cases draw positive original conclusions from this very class itself. The latter is well worth proving, if it be possible to do so.

That the mentally defective show physical defect is overwhelmingly proven by the statistics of asylums and training schools, by the writings of Shuttleworth, Barr, and Ireland, and by the most superficial observation on the part of any one who visits custodial institutions for these cases. Juvenile criminals usually show mental and physical de-

fect, as has been shown by MacDonald (*Medical Record*, July 20, 1907).

Even in the special classes for backward children conducted by our large cities, the reports show that almost every backward child shows physical defect of some sort. In these classes the proportion of such children is given by one authority as 95 per cent. of the whole number. Dr. John J. Cronin, of New York, tells me that of 150 backward children examined, 81 were actually operated upon subsequently for adenoid growths.

In regard to the backward children in the Boston schools, the Massachusetts Health Report (April, 1907) states:—

“Certain facts concerning some of the so-called ungraded classes in Boston are significant. These classes are composed of children who have failed to keep up with the work in the lower grades. They are grouped in small classes, and given chiefly individual work.

“Of 43 girls of this class in one school, but 2 were found normal in vision and hearing.

“Of 66 boys in another school, 64 per cent. were found defective in vision; while the rest of the school, 473 boys, 36 per cent. were defective.

“In another school, boys and girls, of 40 children in ungraded classes, 65 per cent. were found defective in vision or hearing, or both; while of the remaining 707 children, 36 per cent. were defective.”

The writer personally visited a special class in New York City in which the whole number of children (18) had nasal obstruction or catarrh; 8 were also defective in vision, and 3 of the latter suffered from deafness. Numerous other defects and malformations were evident.

That the physically defective among ordinary school-

children show subnormal mentality is the converse of the last proposition and should be capable of demonstration.

In the following investigation I have endeavored to clearly establish this relationship. The children studied were those of three Philadelphia public schools who had previously been physically examined by myself in conjunction with the official work of medical school inspection.

The first step was the recording, in each school, of the name, physical record, and scholarship of each child. The latter was obtained by using the previous term-marks in three of the school studies, from which an average mark was easily calculated.

The average term-mark of the whole school was first obtained by the simple process of adding the term-marks of all the children together, and dividing by the number of children. For instance, in the Claghorn School this was 73.1.

RELATION OF ALL PHYSICAL DEFECTS TO SCHOLARSHIP.

The record-cards of the children were then divided into two collections: one of the healthy or normal children, the other of the general group showing some noteworthy physical defect. The average term-mark (the scholarship index) was then calculated for each group separately, and the two compared, first with each other, and then with the term-mark of all the children previously calculated.

The results showed that in each school, *and in each individual branch of study in each school*, the healthy or normal children stood higher in their classes than the average children, and the physical defectives, taken as a class, stood lower than the average children.

ALLISON SCHOOL—219 CHILDREN, BOTH SEXES, 6 TO 12 YEARS OLD.

	Average
Normal child.....	75
Average child.....	74
General defectives.....	72.6
Adenoids and enlarged tonsils	72
Deaf	67.2

NINTH STREET PRIMARY SCHOOL—84 CHILDREN, BOTH SEXES,
6 TO 10 YEARS OLD.

	Language	Arithmetic	Spelling	Average
63 cases normal children.....	72.9	75.5	75.4	74.6
84 cases average child.....	70.5	74	72.8	72.4
21 cases general defectives.....	63.3	70	64.8	66
8 cases adenoids	60	66.7	65	63.9
No cases deaf.				

CLAGHORN SCHOOL—252 CHILDREN, BOTH SEXES, 12 TO 15 YEARS OLD.

	Language	Arithmetic	Geography and History	Average
179 cases normal children....	74.4	72	76.6	74.3
252 cases average child.....	72.7	70	76.5	73.1
73 cases general defectives....	71.4	65.1	76.2	70.8

An investigation on slightly different lines was afforded by the existence in the Claghorn School of four classes of the same grammar grade, which had been so made up at the beginning of the year that the brighter children constituted two classes, and the duller children the other two classes. The latter were smaller, so as to afford more opportunity for individual instruction. A comparison of the physical condition of the children is interesting and instructive:—

	Class 1	Class 15	Class 9	Class 11 Dullest Children
	Bright Children		Dull Children	
Number of children.....	50	39	32	29
Proportion of normal to defective children:—				
Normal	36	32	20	13
Defective	14	7	12	16
Percentage of normal children,	72%	82%	62.5%	44.8%

In June, 1906, the school medical inspection corps of Philadelphia was directed by its chief, Dr. Thomas J. Beatty, to make a comparative study of those bright children exempted from their annual examinations, and those children whose lower scholastic standard necessitated their examination for promotion. The proportion of physical defects recorded in the two groups was made the basis of comparison. I am indebted to Dr. Beatty for permission to publish the figures which I submitted to him at that time. It will be observed that, on averaging the five schools, the brighter children showed the less percentage of physical defect.

	Exempt Children.		Non-Exempt Children.	
	Normal.	Defective.	Normal.	Defective.
Ninth St. Primary School..	56	28	39	38
Rutledge School	87	35	75	34
Allison School	128	65	81	49
Camac School	183	71	103	75
Claghorn School	193	61	127	66
	647	260	425	262
	Percentage defective, 28.8 per cent.		Percentage defective, 38.1 per cent.	

The Massachusetts Health Report above quoted also demonstrates the close relation of physical and mental defect by an independent investigation. In part it states:—

“Of 420 children examined, 40 per cent. had perfect vision, 30 per cent. had mild defects, and 23 per cent. had serious defects.

“Of scholars ranked as ‘excellent,’ 50 per cent. had normal eyes, and 14 per cent. had serious defects.

“Of scholars ranked as ‘unsatisfactory,’ 40 per cent. had serious eye defects.

“Of the ‘excellent’ scholars, 17 per cent. had diminished hearing.

“Of the ‘good’ scholars, 20 per cent. had diminished hearing.

“Of the ‘unsatisfactory’ scholars, 52 per cent. had diminished hearing.

“Of the ‘poor’ scholars, 42 per cent. had diminished hearing.”

The standard of normal hearing in these tests was evidently placed higher than is usually the custom in routine school inspection.

RELATION OF POOR EYESIGHT TO SCHOLARSHIP.

A separate study was made to show the single influence of poor eyesight on the scholarship of the children (New York Medical Journal, June 1, 1907). The records of the Allison School were used. A series list was made of 219 children, their visual acuity, and their term-marks in arithmetic, geography, and spelling. For convenience vision was designated as normal if it exceeded three-fourths, fair if it exceeded one-half, and bad if it was one-half or less. The children were first grouped according to their acuity of vision with the following result:—

	Arithmetic	Geography	Spelling	Average
Normal vision.....	79	69	76	75—
Fair vision.....	70	71	77	73+
Bad vision.....	66	70	71	69

This difference of six points is often the difference between promotion and failure in a child's work. It is interesting also to note the great difference in the arithmetic marking and the slight difference in the geography marking, the latter being acquired largely by oral instruction rather than blackboard work.

RELATION OF NOSE AND THROAT DEFECTS TO SCHOLARSHIP.

An effort was made to determine the exact degree of influence of defect of the nose and throat. The harmful

results of these are well recognized in late years. In the Claghorn School the four classes of bright and dull children were examined again. Their eyesight proved to be about the same (averaging $\frac{5.26}{6}$, $\frac{5.41}{6}$, $\frac{5.3}{6}$, $\frac{5.08}{6}$). Enlarged tonsils, adenoids, deafness, and nasal catarrh occurred much more frequently, however, among the two classes of duller children. In many the adenoid expression was written only too plainly on their faces (see illustrations). The following table shows the findings:—

	Class 1 Bright Children	Class 15 Dull Children	Class 9 Dull Children	Class 11 Dullest Children
Number of children.....	50	39	32	29
Nose and throat conditions:—				
Number defective.....	6	4	9	9
With single or combined defects, viz.:—				
Tonsils	3	4	3	3
Adenoids	2	1	5	6
Deaf	2	—	5	1
Catarrh	—	—	2	3
Percentage of children with nose and throat defects.....	12%	10.2%	28.1%	31%

The conclusions to be drawn from the foregoing facts are very apparent. The educational result in our public schools suffers a discount of about 6 per cent. in the case of the physically defective children, as well as a waste of the time rightfully belonging to the normal children. The drain on the teacher's energies is more than proportionately increased by the presence of such children, because of their associated nervousness or stupidity.

To remedy these conditions, educators turn to the medical profession as their only source of relief, and the trusted family physician is largely responsible for the condition of affairs which exists, whether good or evil. In many cases he not only guards the health of his charges, but by his alertness or indifference determines their intellectual growth, their scholastic career, and their subsequent life's work.



New York school boy, before and after removal of adenoid growths from the naso-pharynx.



In this connection it is well to note that a laborious statistical study of the relation of nutrition to scholarship showed practically negative results. This investigation was made by Mr. Albert E. Dudley, principal of the Claghorn Grammar School, Philadelphia, in collaboration with the author. Three hundred and fifty-eight boys, whose ages ranged from nine to sixteen years, were weighed and classified in three groups. The middle group (class B) comprised those boys whose weight per age corresponded to the standard figures of the Metropolitan Life Insurance Company, or within one year's variation of the same. The boys of heavier weight per age constituted class A, and the boys of less weight per age (supposed to be poor nutrition cases) constituted class C. The same procedure was followed in the case of the girls. The scholastic standing of the individual in each group was then obtained and averaged, so that the groups could be compared. The results follow:—

Boys (358).	School term Average.
Class A, heavy weight for age (120 boys).....	71.6
Class B, medium weight for age (168 boys)	71.2
Class C, light weight for age (70 boys)	72.
 GIRLS (225).	
Class A, heavy weight for age (97 girls).....	73.7
Class B, medium weight for age (100 girls).....	72.1
Class C, light weight for age (28 girls).....	70.6

Since an accurate estimate of nutrition can be made only by taking the height as well as the age into account, the omission of the former procedure may possibly have introduced a factor of error in the above conclusion. For this reason it is our intention to revise this paper. There is no doubt, however, that numerous individual cases exist in which anæmia and poor nutrition not only retard school progress, but prevent it altogether.

BACKWARD CHILDREN IN THE PUBLIC SCHOOLS.

THE subject of mentally deficient school children is at the present time attracting the interest of educators to an extraordinary degree, and very naturally so, since the institution of classes for the special instruction of such backward children acts both as a benefit to them, and as an educational economy to the regular-grade teacher and to the great mass of normal children. Consideration of this aspect of special education, which may be called the pedagogical aspect, is given in the general chapter bearing on administration. In this connection the medical and psychological features will be considered.

Those who are especially interested in mental defectives should not content themselves with a mere book presentation of this subject. A clear, confident comprehension of it can be best obtained by actual observation of defective children in such institutions as the New Jersey Training School at Vineland, the Massachusetts School for the Feeble-minded at Waverly, the Pennsylvania Training School at Elwyn, and the special public school classes for backward children in New York City, London, and Berlin.

I. CLASSIFICATION

Children with mentality below the average may be divided into two great classes.

The first group consists of those children who are

but slightly below the normal standard. Their mind processes are sluggish, or of slower growth than normal, or perhaps they are peculiar emotionally or lacking in general nervous tone. These children are often termed backward, or "atypical," or "exceptional."

Backward children, such as may be found in the public schools, may be again classified into two groups. They are *truly backward* when the chief defect is in the brain itself, and *apparently backward* (or pseudo-backward) when defect of some other part of the body, or the child's home environment, is the cause. The causes producing *apparent backwardness* are largely removable by proper medical care and by improvement in the child's surroundings; and this would lead us to hope that a child placed in a good home, and perhaps fitted with proper eye-glasses or cured of deafness, is enabled thereby to resume his normal mental development, and cease to be a backward child. This is usually the case, but unfortunately not always so. A youthful brain arrested too long in its development suffers the same blighting effects as do the bound feet of the Chinese woman or the distorted, suppressed vision of a child's squinting eye. The brain may ultimately be given its opportunity, the bandage may ultimately be removed from the feet, and the crossed eye be made straight by operation, but lack of early exercise results in each case in permanent functional weakness.

Therefore a child originally *apparently backward* may become *truly backward* from lack of the brain exercise necessary to brain development.

The second group includes all these children below those of the first group, and generally termed "feeble-minded." They range from the highest grade of such children (classified as feeble-minded in its restricted sense)

through the various grades of imbecility down to idiocy. In them there is some inherent brain defect precluding the possibility of their attaining normal mentality, and often limiting their possibility of improvement. Their defect is usually evident to any one. They require institution care and training, and are not properly considered here.

II. THE CAUSES OF BACKWARDNESS.

Children of such mental development that their parents consider them capable of entering the public schools are usually normal, sometimes backward, and rarely actually feeble-minded. Occasionally feeble-minded and imbecile children creep in and lodge for a while. The minor grade cases, which make up the majority of public school defectives, are logically caused by the minor grade physical defects, such as deafness, malnutrition, adenoids, and poor eyesight. Gross deformities and diseases of the brain are more likely to produce imbecility or even idiocy, and condemn their possessors to asylums or training institutions.

The relation of physical to mental defect has been already discussed in the chapter devoted to that subject, and the demonstration made that normal children always attain higher school averages than physically defective ones, and further that the individual factors of poor eyesight, adenoids, deafness, and poor nutrition have each been shown to lower the scholastic average. The physical signs, as well as the child's words and actions, are therefore the criterion by which mental defect is diagnosed.

In the lower social strata, among the poor and ignorant, the active causes producing backward school children are frequently environmental, including evil home surroundings, poor nourishment, and the inherited taints of syphilis and alcohol.

A systematic classification of the causes of backwardness may be made as follows:—

A. True Backwardness.

1. An inherent functional weakness of the brain and nervous system. This is often hereditary. It may be due to injury or illness of the mother previous to the birth of the child, to poverty, or to parental dissipation.
2. Serious defects of the special senses. This is especially true of deafness, for blind children are saved in this respect because of their early institutional training. Defects of the external sense organs prevent the exercise and development of their corresponding brain centres.
3. Any of the physical causes of feeble-mindedness, but acting to a less degree. This is but simple mention of numerous accidents, diseases, and deformities enumerated in detail in the chapter devoted to that subject. They consist mainly in organic defects and lesions of the brain.

B. Apparent or Pseudo-backwardness.

1. Children with slower rate of mental development, or uneven rate of development. These children may subsequently show great ability. It is said that Hawthorne, Sir Walter Scott, Napoleon, Clive, Wellington, Froebel, Linnaeus, Webster, Chatterton, Leigh Hunt, and Sir Isaac Newton were dull boys at school.
2. Lesser defects of eyesight and hearing.
3. Poor nourishment, anæmia, and physical weakness. This may be due to poverty, or to very rapid growth, or to illness, such as scarlet fever, or to Bright's disease.

4. Adenoid growths. These act by producing deafness and poor nutrition, and possibly by inducing a sluggish circulation at the base of the brain.
5. Troublesome, spoiled, unhappy, and neglected children.

This classification is partly based on the admirable one of Dr. M. P. Groszmann, of Plainfield, New Jersey.

III. THE SYMPTOMS AND DIAGNOSIS OF BACKWARDNESS.

The preliminary diagnosis is made by the teacher. The final official diagnosis should be made by the medical inspector or consulting physician.

A. Teacher's Preliminary Diagnosis.

A very helpful knowledge of the diagnostic signs of mental incompetency may be obtained from a book description, and certainly enough may be obtained for an intelligent teacher to tentatively select such cases in her class and set them aside for expert examination. A thorough and practical knowledge, which gives the power of confident and accurate diagnosis, is only acquired, however, by actual contact with numbers of such children in classes or institutions. The latter, containing feeble-minded children of all degrees, whose physical and nervous defects are pronounced enough to admit of study and comparison, furnish practical instruction in diagnosis that cannot be obtained elsewhere.

The student or teacher who derives his knowledge solely from text-books is apt to assume that their classifications of mental deficiency are exactly illustrated in life by the subjects, whereas such classifications are entirely artificial and devised simply for the sake of convenience. In a graded series, the mentality of the lowest member of one group is exactly that of the highest member in the



Case of nasal obstruction from adenoids, showing characteristic dull facial expression.
(Courtesy of Dr. B. C. Gile.)



Group of New York school children who had previously suffered from adenoid growths. These children were operated upon and sent to the country for two weeks, and are now returning improved in health. The cases marked with a cross + also show, when smiling, the broad bridge of the nose and sunken vacant mouth often resulting from adenoids.

(Courtesy of Dr. Thomas Darlington and Dr. John J. Cronin.)

group below. The complexity of the various manifestations of the mind, such as the emotions and intellect, and of the moral sense make even an exact gradation impossible.

Text-book statements of the physical defects often accompanying feeble-mindedness in its various degrees of existence are also apt to cause the inexperienced teacher to form the hasty conclusion that every mentally defective child bears a sort of label or tag, such as adenoids, or protruding ears, or a peculiarly shaped head, by which obvious physical defect it can be readily distinguished from its fellows. As a matter of fact, *these signs are simply suggestive and corroborative*; and there exist idiot children of perfect physical development, as well as extremely bright children with all sorts of unfortunate physical characteristics. The occurrence of these physical defects should simply be regarded as ground for suspicion, but nothing more.

The diagnosis of a poorly developed mind should be based entirely on the child's thoughts as expressed by its words and actions.

The grade teacher herself should make the preliminary observations and diagnosis of backwardness in a child. The evidence, both direct and corroborative, should be carefully recorded on an appropriate official card.

The teacher's diagnosis should rest upon:—

1. **Observation of Obvious Physical Defects, or knowledge of the existence of such defects from the official physical record.**
2. **Observation of Symptoms indicative of nervous disorder.**
3. **Observation of Psychic Symptoms indicative of mental deficiency.**
4. **Knowledge of such Mental Defect gained by systematic routine testing of the whole number of children.**

1. Physical Defects Frequently Associated with (and Often Causative of) Backwardness:—

- Very poor eyesight, including squint cases.
- Deafness, with or without discharging ears.
- Poor general health.
- Peculiar shape or size of the skull.
- Low forehead, peculiar ears, high palate.
- Vacant facial expression.
- Adenoid growths, causing nasal obstruction.

2. Disorders and Defects of the General Nervous System:—

These signs may or may not be indicative of mental defect. They are suspicious, not conclusive.

- Lack of strength and vigor, manifested by rapid fatigue, shambling gait, and slouching position.
- Low or irritable nerve-tone, manifested by uneasiness, restlessness, and muscle twitchings, particularly of the fingers and jaws. A more severe condition is chorea (St. Vitus dance), characterized by involuntary rolling of the eyeballs, by spasmodic movements of the muscles of the face, jaws or neck, or by shuffling of the feet. Some cases of epilepsy are the result of a highly irritable nervous system.

Epileptic convulsions.

Poor coördination, manifested by inability to thread needles, button garments, lace shoes, or perform any but the simplest mechanical acts.

3. Direct Psychic Evidence of Mental Defect by Observation:—

Inability to perform regular school work, designed for average pupils of the child's age.

Rapid mental fatigue.
Dullness and listlessness.
Excitability and emotionalism.
Stubbornness and bad temper.
Demonstrative expression of desire.
Lack of judgment.
Inattention.
Untidy or uncleanly personal habits.
Defective speech.

4. Knowledge of Mental Defect by Test:—

DEFECTS OF PERCEPTION (of color, form, size, number).

DEFECTS OF CONCEPT OF NUMBER.

DEFECTS OF MEMORY.

DEFECTS OF ASSOCIATION.

DEFECTS OF ATTENTION.

DEFECTS OF COÖRDINATION.

DEFECTS OF IMITATION.

It is understood, of course, that the following tests are elementary in character and do not assume to classify the faculties nor to investigate thoroughly those that are touched upon. The first is beyond our power, and the second too complex for our practical purpose.

The exact value of psychological tests for the detection of mental defect is as yet undetermined. In the first grade, containing the younger children, the elementary lessons in arithmetic, spelling, and writing are now so scientifically formulated as to call directly upon the simplest faculties of the mind almost as well as any special tests that can be devised. Simple counting of concrete objects, for instance, is the test for the perception of number; spelling and the recognition of words show the power of memory and the

perception of form. Addition or multiplication of abstract numbers is the test of the concept of number. Writing is a test of coördination, not to mention motor power. However, special tests of the simplest character, such as the form board, tests of color and of size, will help much to fix the grade of a small child's intellect.

Among the older children, the complexity of their studies makes it difficult for the teacher to accurately perceive the particularly defective faculties in the child's mental make-up. For this reason attempts have been made by psychologists, with varying degrees of success, to prepare mind-charts and systematic tests, and thus obtain the accurate insight desired.

I am greatly indebted to Dr. Goddard, psychologist to the New Jersey Training School for Feeble-minded Children, for suggestions and material embodied in the test system given below and in the appendix.

The tests embodying words and letters are abstracted and condensed from a thesis on this general subject by Dr. Naomi Norsworthy, of Columbia University.

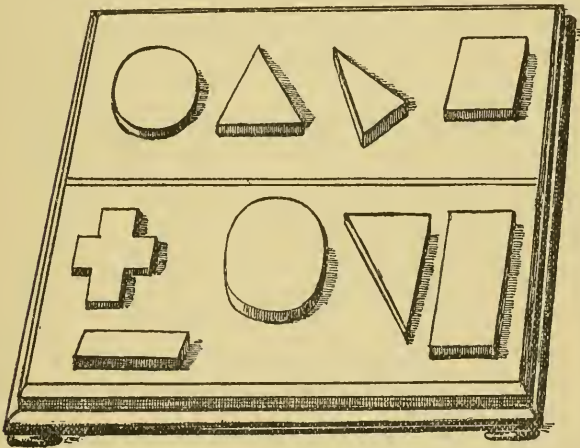
TEST OF COLOR:—

- A. Kindergarten Children: Color sense may be tested by the ability to recognize differences of color. A pile of blocks or cards, or some yarns of, say, three different colors, may be used. It should be remembered that a very small number of children are born color-blind, and in these cases red and green cannot be distinguished. It is well, therefore, not to use these colors exclusively.
- B. Primary Children: Test as for "A." After the child demonstrates that he distinguishes differ-

ence of color (color-sense), he may be tested, after instruction, for the recognition of simple colors (color perception).

TEST OF FORM PERCEPTION:—

A. Kindergarten Children: The form board is useful, the test consisting in the placing of the blocks in their proper places. The facility with which this is done should be noted. A child of six to fifteen years will fill a board of ten blocks in thirty to fifteen seconds.



Form Board.

B. Primary Children: The recognition of some letter known to the child, as it may happen to occur in a mass of printed matter, is a good test. Thus, on a printed or mimeographed slip the children may be given an exercise to cross out the letter A wherever it may occur, a time-limit being observed. Such a test, already tried and standardized by Dr. Norsworthy, is given below.

Table Containing the Letter A One Hundred Times. As many of these as possible to be crossed out in one minute.

OYKFIUDBHTAGDAACDIXAMRPAGQZTAACV
 AOWLYXWABBTHJJANEEFAAMEAACBSVSK
 ALLPHANRNPKAZFYRQAQEAXJUDFOIMWZSA
 UCGVAOABMAYDYAAZJDALJACINEVBGAOFH
 ARPVEJCTQZAPJLEIQWNAHRBUIASSNZMWA
 AAWHACAXHXQAXTDPPTYGSKGRKVLGKIM
 FUOFAAKYFGTMBLYZIJA AVAU AACXDTV DAC
 JSIUFMOTXWAMQEAKHAOPXZWCAIRBRZNSO
 QAQLMDGUSGBAKNAAPLPAAAHYOA EKLNV
 FARJAEHNPWIBAYAQRKUPDSHAAQGGHTAM
 ZAQGMTPNURQNXIJEOWYCREJDUOLJCCAKSZ
 AUAFERFAWAFZAWXBAAAVHAMBATADKVS
 TVNAPLILAOXYSJUOVYIVPAAPSDNLKRQAAO
 JLEGAAQYEMPAZNTIBXGAIMRUSAWZAZWXA
 MXBDXAJZECNABAHGDVSVFTCLAYKUKCWA
 AFRWHTQYAFAAAAOH

AGE	GIRLS		BOYS	
	Average Number of A's Crossed Out	Normal Limit of Variation	Average Number of A's Crossed Out	Normal Limit of Variation
9	32.6	4.5	28.4	2.1
12	45.9	7.3	41.3	4.4
15	54.1	7.3	48.6	4.4
16.5	57.0	7.3	51.2	4.4

TEST OF SIZE PERCEPTION:—

- A. Kindergarten Children: Marbles of two or three sizes may be used and the child asked to pick out the large ones or the small ones. He may be asked to make big circles or little circles.
- B. Primary Children: The comparative size of two or three objects, such as books or pencils, or the comparative size of other children may be questions asked.

TEST OF NUMBER:—

- A. Kindergarten Children: The perception of number may be tested by asking the child to count the number of pennies on a table or the marks on the blackboard. The concept of number may be tested by simple abstract processes, such as adding two and three, and multiplying small figures.
- B. Primary Children: Test as for A, but with larger numbers.
- Lack of number percept indicates very low mentality.

TEST OF PERCEPTION OF WEIGHT:—

- A. This may be omitted with kindergarteners.
- B. Primary Children: Test by using large pill-boxes of the same size, but filled with substances of different weight. Let the child take a box on the palm of each hand and discover the heavier. Any two objects of about the same size, but of different weight, will answer.

TEST OF PERCEPTION OF TEMPERATURE:—

- A. Kindergarten Children: This test may be omitted. Children with lack of temperature sense are the victims of serious organic nervous disease, and therefore not encountered in public schools. An endeavor to test the ability to perceive comparative temperatures in very small children is difficult and apt to be terrifying to them.
- B. Primary Children: Take two tumblers of water, one warm and the other cool, and have the child distinguish temperature by dipping the fingers

of the same hand into them. This test need only be applied to extreme cases of backwardness, where imbecility or idiocy is suspected.

TEST OF MEMORY:—

- A. Kindergarten Children: See if the child remembers his name, age, number of brothers and sisters, and the names of familiar animals and objects.
- B. Primary Children: Also the child's address, the names of other boys, other streets, father's name and business, events of the day, etc. Reading of words is a test of the memory, requiring also a normal perception of form in order to first distinguish the letters.

TEST OF ATTENTION:—

This is really a matter of observation as much as test, but a test has the advantage of accuracy from being conducted systematically. The children should be told a story or shown a series of colored pictures or unusual articles. The story told should not be too interesting or too dry. Those with poor powers of attention soon betray it by their wandering eyes and vacant facial expression.

TEST OF COÖRDINATION:—

- A. Kindergarten Children: Inability to button clothes, and to do the ordinary kindergarten exercises with blocks, pegs, and paper strips.
- B. Primary Children: Inability to thread large-eyed needles. Inability to do the simpler physical exercises, such as touching the fingers over the

head. A precision test may possibly be useful. It is given in the Appendix.

TEST OF ASSOCIATIONS:—

The association of ideas may be tested by endeavoring to elicit from the child prominent characteristics of a thing mentioned, or opposite qualities and characteristics may be sought for. The request may be made to name the whole after the exhibition of a part. These may be done informally with each individual child, or a class test may be made by giving to each pupil a printed list, with a request to set down alongside of each term given its opposite adjective. Such a test, already standardized by Dr. Norsworthy, by experiment on several hundred children, is as follows:—

List A given. Pupils (boys or girls) asked to write list B; 20 words maximum; no time limit.

Age	Number of Opposite Characteristics Correctly Stated	Normal Limit of Variation
9	9	2
12	13.5	2.6
15	15	2.3
16½	15.5	2.3

List B given. Pupils (boys or girls) asked to write list A; 20 words maximum; no time limit.

Age	Number of Opposite Characteristics Correctly Stated	Normal Limit of Variation
9	9.5	1.7
12	14.7	3.6
15	18.5	2
16½	19	2

List A	List B
good	bad
outside	inside
quick	slow
tall	short
big	little
loud	soft
white	black
light	dark
happy	sad
false	true
like	dislike
rich	poor
sick	well
glad	sorry
thin	thick
empty	full
war	peace
many	few
above	below
friend	enemy

TEST OF IMITATIVE FACULTY:—

This is best shown in physical exercises. Test by facing the class and asking them to imitate the move-

ments. After the coarser and easier movements have been tried, Dr. Francis Warner suggests a finger exercise, such as bending certain fingers simultaneously, and moving one finger from side to side. This idea was first suggested by Seguin ("Idiocy and Its Treatment").

TEST OF REASON:—

Reason is in reality a complex act, involving so many mental factors that it may be safely taken as an index to the intellect itself. *The good judgment or reasoning power of the individual is therefore the best criterion of his intellect*, and Professor Johnstone, of the New Jersey Backward School, has said that to him the foremost characteristic of feeble-minded children is the lack of good judgment displayed by them in their ordinary activities.

Some tests of reasoning power are simple enough in themselves, and yet they should be made carefully, since a timid, confused child will not do himself justice. His confidence should be secured by dealing with him in a gentle, deliberate manner, and by asking him a few easy questions of no particular consequence.

Such questions as these will test the reasoning power:—

"What would happen if I put my finger in the fire?"

"What would happen if I went out in the rain?"

"What will the dog do if I kick him?"

"Why does the man carry an umbrella?"

"Why do you wear an overcoat to-day?"

Or (exhibiting a picture of a girl and a broken doll), "Why does the little girl cry?"



High-grade feeble-minded girl.
Institution case.

The general way in which this information is given to the examiner is the best single index of the child's mental capacity. I remember one occasion (not in the public schools) on which a normal child who had been mistakenly sent by a nurse with several feeble-minded children to be examined and committed to an asylum, showed at once, by his prompt, clear answers, his healthy mind.

Illustrative Case:—

A fair example of what may be ascertained by any intelligent teacher, after reading these instructions as to observation and test, is as follows:—

C—— McC——; age, six years; good family. Has been in the first grade two months and is so stupid that he does not know a word or a letter, and cannot add two and two. It is difficult to get him to talk. His speech is fair but short, much like that of a quiet three-year-old child. He seems to have no memory, although he imitates well enough. His attention is always wandering, and he appears restless. Frequently he stands up in his place, turns and leans over the desk behind him, with no apparent reason for so doing. He occasionally pinches the other boys around him. He appears to see well enough, but breathes through his mouth. He has a good color and complexion, and is a rather good-looking boy, although his face has very little expression.

By test he told his name but not his address, saying that he lived "down there," pointing in any direction. (He knew his way home every day, however.) He did not know his parents' names, and, on being pressed to name a brother or sister, gave the name of a classmate. On being asked his teacher's name (he had had three, owing to the sickness

of first one and then another), he gave the name of his first teacher, last seen two months since. He had little or no perception of color, form, number, or weight, calling a red vase and a green blotter "blue," not recognizing letters, stating that two fingers plus two more fingers were "five."

Observations on Child Proposed for an Ungraded Class

P. S. _____
Borough _____

Name J. T.
Address 716 B Street,
Age 8 yrs. 2 mos. Grade 1A.
Home conditions Dirty; ill-cared for. Nationality Russian; Hebrew
School attendance Elementary 2 yrs. Irregular.
Cause of any irregularity Sickness and truancy.
Health Fair - poor digestion.
General appearance Stupid looking; anaemic, slouching.
Disposition Ugly; easily offended. Behavior Obedient but ugly
Habits Hangs head; when addressed, merely averts eyes. and recentful to class-mates.
Peculiarities Extreme faithfulness to one kind to him.
Observation Poor. Attention Fluctuating. Memory Verbal
Oral expression Fragmentary, esp. when expected. Reading Recognizes words. Writing Writes own first name.
Number By rote to 12; add. to 5. Hand-work Poor but always completed.
Special tastes Music. Reads (large). Color work. House cleaning.
Any other information Adenoids; defective speech and hearing. Very grateful for kindness. Would wish any danger for person he likes.

Date December 1907.

Principal.

He recognized a penknife and a pencil, however, called a five-cent piece a "quarter," and knew that the dog was bigger than the cat. He was reminded that "the doggie barked," and was then asked what the cat did. The cat "jumped over the fence," which was a bright enough answer, although a failure in the endeavor to test his association sense. A preliminary diagnosis of backwardness was made, the stupidity probably caused by adenoid growths in the pharynx.

Systematic observation and test by the teacher having been made, these should be recorded. A printed blank for this purpose is very helpful to the teacher without special knowledge or previous experience. An actual case history on the form provided by New York City is here given.

B. Medical Examiner's Official Diagnosis of Backwardness.

The medical inspector or consulting psychiatrist should confirm or reject the teacher's preliminary diagnosis by:—

1. **A Review of the Teacher's Record.**
2. **A Careful History of the Case.**
3. **A Thorough Physical and Mental Examination.**

1. Review of Teacher's Record:—

The tests and points of observation should be repeated, the object being the confirmation of the preliminary diagnosis. If it be the first case passed upon by the teacher in her teaching career, the skill and experience of the physician may lead to an opposite conclusion. An experienced teacher is, however, usually correct in her judgment.

The official diagnosis of backwardness is largely a matter of expediency. Pronounced cases should be removed at once from the general class, as a relief to

their fellows, the teacher, and themselves. Less evident cases should be classed as backward only when the facilities for dealing with these children are satisfactory.

In an ideal school system, with special classes conducted unostentatiously in the regular school buildings, the teacher's diagnosis should be accepted. This includes all doubtful cases with no confirmation of the mental defect from either the history or the physical examination. In the ideal special school the children are given individual instruction under skilled observation. The environmental conditions rendering an exact diagnosis possible are obtained, and the public is none the wiser. On the other hand, in cities with no special provision for backward children, or in those where a poorly organized system herds the incorrigibles and plain backward children together, or compels the backward children to travel long distances to special centres, the diagnosis should be made with caution. Under these conditions the backward child is treated with scant consideration and publicly stigmatized. Therefore, parents have a right to demand that mental defects in their children shall be certified to by a physician from personal observation and examination.

2. The History of the Case:—

This comprises (*a*) the family history, which may show a record of insanity, idiocy, intemperance in the parents. (*b*) The personal medical history, such as injury at birth, subsequent accidents, or disease, such as meningitis. (*c*) The social history, particularly the factors of poverty and neglect, and intemperance.

Since intemperance is the most potent of all agencies in producing degeneracy, its existence in the child's parents should always be suspected and inquired for. In this connection I may quote from an admirable paper by Dr. T. Alexander MacNicholl,¹ of New York City:—

“Beer-drinking children are notoriously sluggish in their mental operations, while spirit-drinkers gravitate into habits which seriously impair the higher intellectual properties and cloud the judgment.

“When the drink habit is linked with an hereditary alcoholic taint, dullness is perceptibly increased. From 15 to 25 per cent. of drinkers, free from hereditary alcoholic taint, are dullards. From 53 per cent. to 77 per cent. of the descendants of a drinking ancestry are dullards. From 4 per cent. to 10 per cent. of the descendants of a total abstinence ancestry are dullards.

“DRINKING HABITS OF CHILDREN.

“Dividing the pupils into two classes (*a*) prosperous; (*b*) poor, we have the following:—

“(a) In this class, 32 per cent. have drinking parents; 68 per cent. have abstaining parents. (b) In this class, 85 per cent. have drinking parents; 15 per cent. have abstaining parents. (a) Of 12,919 dullards, 9,689 had drinking parents. (b) Of 3195 dullards, 2715 had drinking parents.

“One hundred and two children in twenty-five families of heavy drinking parents show the following: Seven had tuberculosis, 8 had diseases of the heart, 31 had functional diseases of the nervous sys-

¹“Alcohol and the Disabilities of School Children,” Journal of the American Medical Association, February 2, 1907.

tem, 41 were drinkers, 6 were degenerates, and 4 were idiots. Only 5 of the entire number were normal.

“Tracing ten families of total abstaining parents, we note the following: First generation, 34 children, of whom 11 per cent. suffered from organic or functional diseases; second generation, 38 children, of whom 26 per cent. suffered from organic and functional diseases; third generation, 58 children, of whom 7 per cent. suffered from organic and functional diseases.

“Ten families of moderate-drinking parents show the following: First generation, 47 children, of whom 59 per cent. suffered from organic and functional diseases; second generation, 90 children, of whom 62 per cent. suffered from organic and functional diseases; third generation, 82 children, of whom 95 per cent. suffered from organic or functional diseases.”

3. Physical and Mental Examination of Backward Children:—

Briefly, the following characteristics are noticeable in this connection. They may or may not be present:—

1. Defects of the special senses in greater proportion than is found in average children.
2. Certain special physical markings (*a*) indicative of injury to the brain (*e.g.*, depressions on the skull, paralyses), or (*b*) indicative of possible degeneracy (*e.g.*, asymmetrical ears or skull, faulty development of anatomical organs or members).
3. Words and actions of a crude or purposeless or immoral character (*e.g.*, grinning, uttering of uncouth sounds, and the commission of crime).

4. Poor nutrition.
5. Nervous disorders.

By these various means the medical inspector should arrive at a fairly exact diagnosis of *the grade of the mental defect* and *the cause of the mental defect*.

He should make his classification as scientific and exact as possible, giving consideration to the age of the person examined, the grade of intelligence existing, and whether it is improvable or not. For this purpose it is most convenient to state primarily whether the patient be a child, youth, or adult, and by qualifying adjectives to further state whether he is progressing, stationary, or retrogressing, and the grade of mental defect at the time. Thus the diagnosis may be "male, improvable imbecile child," "male, retrogressive idiotic youth," etc. The cause of the defect may be "alcoholism," "syphilis," "injury at birth," "deafness," "hydrocephalus," etc.

Record of Case.

It is obviously important that systematic record be made of these cases while in the special classes. For this purpose a large individual record-card should be kept, containing full information contributed both by the teacher of the class, and by the medical examiner. Such a card is here presented. On the reverse side is a list of detailed points to be considered in every case. Furthermore, a child transferred to a special class should have sent with it all the helpful information possible; and a blank space is reserved on the reverse side of the card for such notes received. To facilitate this, blank cards should be kept on hand in every school. A child re-transferred to a regular grade should take a duplicate of his special record-card with him.

School
 Name
 Address
 Color
 Father's Occ.
 Sex
 Nativity
 Fam. Hist.
 Age
 Prev. School

Date,
O SCHOOL RECORD IN SPECIAL CLASS.
 Improvement
 Time in Class
 Disposition of Case

SPECIAL EXAMINATION

X PHYSICAL.

Nutrition
 Eye
 Nose and Throat, Mouth.....
 Teeth
 Orthopaedic
 Peculiar Skull, Face, Ears.....

X O MOTOR CONTROL.

Promptness
 Coordination
 Prehension
 Enunciation
 Gait

X O MENTALITY

Speech.....
 Perception
 Attention
 Memory
 Association
 Reason (good judgment).....
 Number Work.....
 Other School Work.....

X O MISC. (see other side).

.....

X O NERVOUS

Facial Expression.....
 Temperament
 "Nerve Signs".....

X O DIAGNOSIS (see other side).

.....

X O RECOMMENDATION (see other side).

.....

X—Data to be filled in by Medical Examiner. O—Data to be filled in by the Teacher.

Author's Record Card to be Used in Special Classes for Backward Children.

HISTORY AND RECORD OF THE CASE

From the Principal, Teachers and Medical Inspector of Regular Grade School.

REFERENCE TABLE.—For the Medical Examiner of Special School. Details to be Considered in Every Case.

FAMILY HISTORY: Medical (tuberculosis, nervous disease, mother's health). Social (poverty, illiteracy, crime). **PHYSICAL:** Nutrition (size, weight, nutrition). Eye (refractive error, corrected; same, uncorrected; squint, opacities, conjunctivitis; state acuity of vision, each eye, if different). Nose, throat and mouth (tonsils, nasal obstruction, palate, tongue, catarrh). Teeth (irregular, decayed, syphilitic, dirty, lost). Orthopedic (shape of chest, of abdomen, round shoulders, lateral curvature of spine or scoliosis, paralytic contractures, rachitic deformities, any asymmetry or deformity). Peculiar skull, face, ears (circumference measure, shape and size of cranium) (locality, symmetry, size, shape of eyes and ears) (forehead, nose, hair). **MISCELLANEOUS:** Enlarged cervical glands, anæmia, chlorosis, constipation, headache, cleanliness, morality. **NERVOUS:** Facial expression (normal, dull, excited, tense, pleasant, sullen). Temperament (placid, emotional, dull). "Nervous Signs" (ready fatigue, drooping, slouching position, drooping fingers or tremor of extended hand, tenoson, chorea, habit spasm, hysteria, epilepsy, sensitive disposition). **MOTOR CONTROL.** **MENTALITY:** Perception (of color, form, size, number, weight, temperature). **DIAGNOSIS:** Mental grade (and cause); physical condition (and cause); improvability. **RECOMMENDATION:** Medical, social, educational.

Reverse Side of Author's Special Card.

No.	Name									
Grade	Class	190	Address							
Grade	Class	190	Address							
School		190	Teacher							
School		190	Teacher							
Progress	E G F D vD	Date of birth					Age			
Conduct	E G F D vD	Age on entering school					No. years in school			
Attendance	vR R I vi A	School history (Rel)								
Most deficient In										
Best In										
Habits										
			5	4	3	2	1			
Father living	dead	Normal	vG	G	M	SI	D	Deficient	Bkw IH IM II Id	
Mother living	dead	Health	vG	G	F	P	vP	Home Care	vG G F P vP	
Step-father,	Step-mother	Nutrition	F	G	M	P	St	" Culture	vG G F P vP	
Nationality F.		Support	R	W	M	P	vP	" Discipline	vG G F P vP	
" M.		Occupation of provider								
Birthplace	Child works at									
Lives with	Anormality				Asymmetry					
Home Lang.	Trunk									
Older brothers living	dead	Arms								
" sisters	"	Legs								
Younger brothers	"	Hands								
" sisters	"	Feet								
Eye, R.	}	Cranium								
Eye, L.		Forehead								
Defects		Face								
Disease		Ears								
Ear, R.	}	Eyes								
Ear, L.		Nose								
Defects		Lips								
Disease		Palate								
Co-ordination	5 4 3 2 1	Tonsils								
vB Bold Norm Shy vS	Naso-ph'nx									
Am Resp Pass Sull Sur	Mth Breathg									
Sto In Al Nerv vN	Teeth									
vR Refl Norm Imp vI	Tongue									
Stu Will Firm Flex Vac	Voice									
Stammer (Inf)	5 4 3 2 1	Speech								
Stutter	5 4 3 2 1	Diseases								
Filled in by										
Date										
Laboratory of Psychology, University of Pennsylvania. The J. Lewis Crozer Fund.										

Record Card used in Psychology Classes of Dr. Lightner J. Witmer, University of Pennsylvania.

IV. THE INSTRUCTION OF BACKWARD CHILDREN.

Function of Special Classes.

The special classes for backward children, maintained as a part of the public-school system, have two principal functions. First, they act as laboratories for exact study and diagnosis, and subsequently as clearing houses for the ultimate proper disposition of the pupils. Second, the children receive assistance for physical and mental defects according to their individual necessities.

These classes should be maintained strictly for the education of backward children, in order to render effective the energy and labor of their instructors. Therefore, all children sent to such classes should be classified as primarily backward or primarily incorrigible, depending on whether the intellect or the moral sense is lacking. For these two dissimilar groups the best results are obtained by separate instruction, since in the same class-room they are not only retarded, but they react badly upon each other.

A second step is the separation of those of the backward children who are actually feeble-minded and the placing of them in the institutions designed for such perpetually helpless cases.

In the class for simply backward children, the final step is the division of the suitable pupils into two sub-groups, the truly backward, with inherent brain defect, and the pseudo-backward, made dull by curable physical defects. This, I believe, is the plan adopted in New York City. It may be expressed schematically thus:—



High-grade feeble-minded girls.
Institution cases.

Types of Pupils Admitted to Special Public School Classes.

- | | | |
|--|---|---|
| 1. Backward children | { | Pseudo-backward (simply sensory defects).
Truly backward.
Feeble-minded. (To be sent to some suitable institution as soon as possible.) |
| 2. Children either intellectually bright or intellectually backward, but primarily vicious, incorrigible, truant, or petty criminal. | | |

The advantage, or rather necessity, of convenience, accessibility, and privacy in the location of the classes has been already mentioned.

Personality of the Teacher.

The teacher's personality is the second factor for success in this work. Like the regular-grade teachers in the slum districts, they should be better paid, because of the difficulties they encounter. Because of the diseased and defective minds they are called upon to reach and inspire, their qualifications should be exceptional. In this connection, Dr. Fernald has admirably expressed his views in a recent address before the Public Education Association of Philadelphia:—

“The general supervisor having immediate charge of these special classes “should have no other duties. She should be thoroughly familiar with the recognition and education of backward children. Her field of work should be sharply defined and limited, in order to get the proper perspective.

“She should have all the natural qualifications described above, plus successful experience in teaching back-

ward children, plus executive ability. She should supervise the selection and training of the teachers, the plan of work, and the details of the highly specialized school exercises. . . .”

Further, in regard to the qualifications of the teacher of the special class for backward children:—

“Teachers should be selected with sole regard to their fitness for this difficult work. They should begin the work young, as a rule. They should have robust physical health, a hopeful temperament, great patience, tact, and originality. They must be fond of children, sympathetic and kind, but firm and decisive. The personality of the teacher is the all-important factor.

“A teacher with the above natural qualifications, with kindergarten or normal training, and a little experience in primary work, would be well equipped. Normal training in gymnastic work and the manual occupations would be very helpful. . . . No merely routine teacher can succeed in this work.”

“Each class-room should have a liberal supply of appropriate kindergarten and school material, many attractive models, and apparatus for object-teaching, apparatus for manual training and special sense training, pictures and picture books, and a piano.”

Personally, I am glad to testify to the intelligence and enthusiasm of the New York teachers engaged in this work. I have met about twenty of these young women, and, without exception, they were intensely interested in the problems of their special profession. Many of them possess cameras, and keep private case-books, illustrating the records with photographs of their cases. The real credit, however, is due to the educational authorities of the city of New York, who furnish them pleasant summer-school instruc-



High-grade feeble-minded boys.
Institution cases.

tion and inspiration in training schools for feeble-minded children, and also free winter lectures on subjects pertaining to their work. The time necessary to take up this extra work is wisely credited to the teachers who avail themselves of it.

Methods of Training Backward Children.

These should be medical, physical, and educational in character.

First of all, the general health of the backward child should be carefully supervised. A prize animal receives more attention than does the average child in this respect; and a backward child of the lower social class is usually totally neglected by its ignorant parents. Good food, fresh air, proper sleep, and possibly medical attention are necessary. A healthy circulation nourishes brain and body alike, but, in addition, each of the latter is itself a stimulating vital factor. The general health and that of the mind are interdependent. The vigor or stagnation of one is closely reflected in the other.

Eye-glasses should be provided, enlarged tonsils and adenoid growths removed, decayed teeth filled or extracted, and chronic suppurations, such as discharging ears, given surgical attention. Nasal obstruction from adenoid masses in the nasopharynx very often produces a remarkable condition of poor health and mental dullness, due to the resultant catarrh, dyspepsia, poor respiratory action, narrow, high palate and irregular teeth, and catarrhal deafness. Their removal causes a corresponding general improvement, although round shoulders, flat chest, and a characteristic facial expression frequently remain as permanent deformities. Examples of the latter are seen in the picture showing the group of New York children returned from the

country (*q. v.*). It is unnecessary to say to any thinking person that the removal of adenoids existing in a child with inherent mental weakness will not give the child a new brain. In these cases the existence of the nasal obstruction is a coincidence, not a cause.

The second desideratum should be the correction of any existing sensory defects (poor eye-sight has been already mentioned), in order to improve the perceptive faculties, and the exercise of these same faculties by games and tasks requiring the use of sight, hearing, and touch.

The third step is practically simultaneous with the second. It consists in the development of the motor nerves and the will-power by active games, simple exercises, calisthenic drills, and manual-training work.

By the progressive exercise of the primary sensory and motor faculties, the higher ones of attention, memory, reason, and coördination are at the same time brought into play and developed.

With the improvement of the intellect is seen a reciprocal improvement in the body health. The alert mind shows itself by quickness and precision in muscular movements; while in those children of the nervous and irritable type, better self-control is attained by the building up of the nervous system and a corresponding reduction in the irritability. An improved nerve-tone shows itself also by a firm, steady gait and erect carriage, and a general brightening up, due to the use and development of the muscles of facial expression.

The school work proper should be conducted in such a way as to combine the acquirement of knowledge with the constant exercise of the physical senses. The objective method of teaching is the proper one, and indeed is the only successful one. It is by the constant recourse to attractive and bright-colored, concrete illustrations that the teach-

ing of the elementary branches in these special classes differs from that of the ordinary primary-school curriculum. The limit of the capability of truly backward children is about equal to the end of the fourth year of the regular school course. Knowledge is naturally acquired slowly and usually retained with some difficulty, by reason of poor memory. Both for their intrinsic educative value, and for their purpose of fitting the scholars for a useful place in the world, industrial and mechanical occupations gradually supersede the simpler exercises designed purely for manual training.

An interesting article from actual observation, on the conduct of the special school classes of New York City, is given in the *New York Medical Journal* (September 7, 1907), by Dr. C. E. Atwood. It serves to illustrate the principles already emphasized.

Concerning one of the schools for simply backward children, Dr. Atwood writes:—

“One of the best-conducted of the ungraded classes which I visited was in Public School No. 18, on East Fifty-first Street. This was presided over by a teacher who has had the advantage of training in an excellent private school for the feeble-minded. The children are of the lowest grade. The day’s programme, arranged by this teacher, subject to great variation, is somewhat as follows: From 9 to 11.45 A.M., and from 1 to 3 P.M., with appropriate intermissions, the children pursue various tasks calculated to train the senses and to develop them on the motor side. They dust and arrange the room; name objects in picture books, and learn about their attributes; sing songs; listen to a story concerning which they may make observations; study Nature by means of a little garden, where potatoes, peas, lettuce, onions, etc., are planted by the pupils themselves in a rough box; carve simple shapes in wood; select

and match colors; have simple gymnastics; test their smelling and tasting; pursue various games under instruction to aid in self-control and improve in precision of hand, eye, and ear; then there are exercises in drawing on the blackboard, counting with money, brush work with colors, modeling in clay, word pictures, Indian club and dumb-bell exercises, etc., the whole concluding with dancing and marching with piano accompaniment, special attention being given to the attitude, rhythmic body movements, and mannerly deportment.

“The ungraded classes of all the schools make occasional visits to museums, the aquarium, and zoological garden for objective teaching; and to Forest Hills and Bronx Park for field work. Materials from some of the museums are also loaned, so that the objects themselves may be seen and studied.”

Another school designed for the vicious truant and incorrigible class was also visited. It will be noticed from the context that the majority of these children are mentally defective as well as depraved.

“Public School No. 120, on Broome Street, is a school entirely for incorrigible boys. Many are on parole from the courts in care of the principal, and others are sent by principals of other schools as incorrigibles, who would otherwise be either suspended or sent to the Truant School. They are incorrigible on account of either faulty home conditions or defective mentality. In the first class visited there were fifteen; one boy seen had two brothers who are professional thieves; one was defective and degenerate, sixteen years old, with mentality of six. They were mostly street boys with, as the principal expressed it, a superficial brightness. In this class the teacher selects some subject which becomes a centre of interest. At the time of my



High-grade feeble-minded boys.
Institution cases.

visit the subject was "The Farm," and everything that could be drawn on the board, thought of, made, etc., pertaining to a farm, was brought up for discussion and treatment, and at once awakened marked interest. Several were cutting out birds from paper; one was weaving a basket in the shape of a bird's nest. Another had three baskets already made, etc. There is a gymnasium and also a bath in this school, as in the regular public schools. In one class two boys were working in leather. In the shop the lowest-grade boys were doing wood-carving and carpentry.

"There are nine classes in the school. Most of the pupils have no sense of right and wrong at the start. One, *e.g.*, before coming, had been learning to steal for a living, and thought it no harm. Ages run from ten to fifteen years. Punishment is only by deprivation. Pupils have to earn their privilege by good behavior. The boys are of suitable age for the grammar grades, but are only able to do the lowest primary work. Some learn to count by simple methods. Others put sentences together with separate printed words, each pupil being given a picture as topic.

"The school has been open two years. There are 135 pupils, drawn mostly from two school-districts of the downtown East Side, representing ten schools, each of at least 2000 pupils. Ten or eleven parochial schools send a few, and some boys are picked off the streets. A great many of these incorrigible boys are here fitted for remunerative employment outside. Fifty-one out of a total of about 350 (or one-seventh) have been sent out; all but six have been heard from and are doing well at unskilled labor, *e.g.*, as messenger boys, telegraph boys, and various employments in department stores and down-town business places."

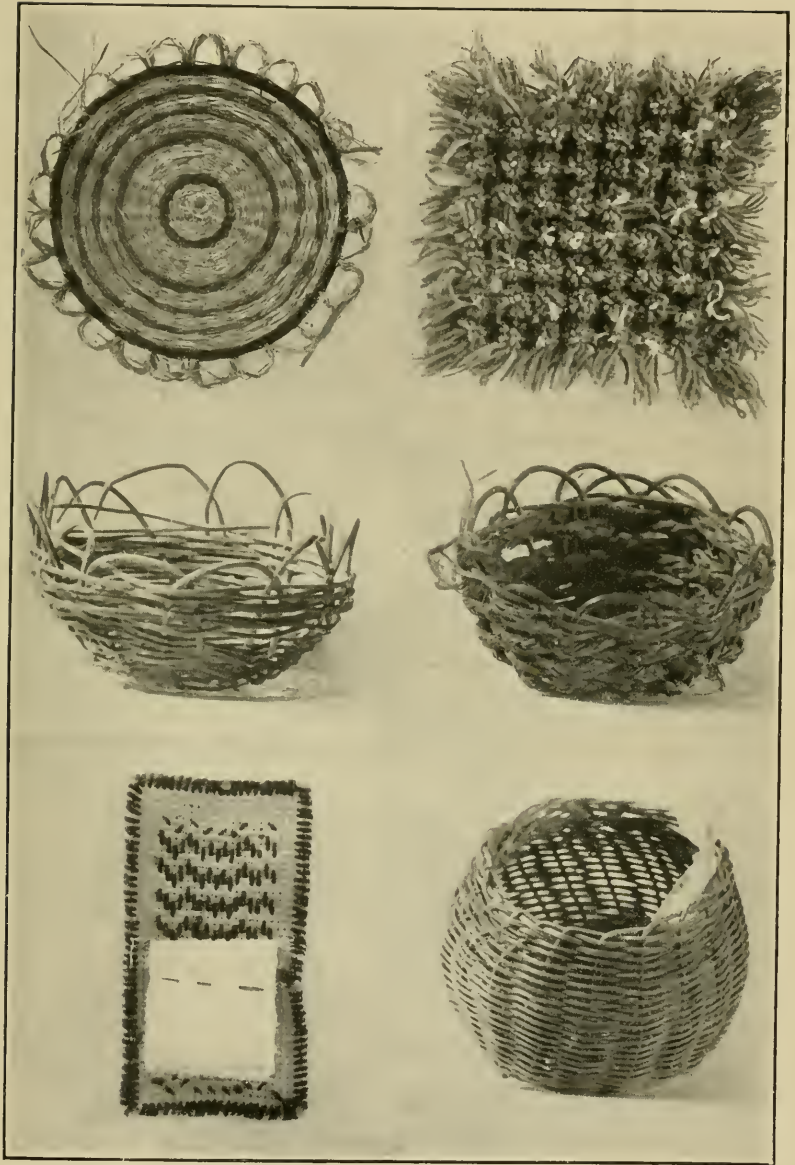
Personally, I have had but one opportunity to inspect the New York City special classes. The school visited is

located at 160 Christie Street, in the East Side slums district. The poverty and overcrowding of tenement life here furnish striking specimens of degraded youthful humanity, many of whom should be in institutions rather than at large on the streets. The class consisted of twenty children, of whom the majority were actually feeble-minded, rather than backward as the term is ordinarily used. Two or three were high-grade imbeciles. Squinting eyes, slouching figures, malformed skulls, limping gaits, and defective speech were everywhere manifest. A remarkable shyness, due, I suppose, to lack of will-power and of self-confidence, was manifested in several. These latter children obstinately hung their heads when talked to, although evidently quite fond of their teacher. Several were very interesting, as, for instance, a case each of cretinism, of hydrocephalus, and of echolalia. A wide, shallow sand-box, possibly six feet long, gave unceasing interest to one of the lower-grade children, whose attention it was impossible to obtain by other devices.

The general grade of intellect and school progress was very low; but notwithstanding this disheartening human material, the class teacher, Miss Leech, had all interested and busy at some light manual work, training the attention and the muscular coördination. In the hall a large book-case full of raffia and sewing work bore testimony to the skill attained in these occupations. An illustration shows some of these actual specimens.

Improvement under such skilled instruction is usually in sharp contrast to the previous condition of apathy, sullen defiance, or pitiful despair. A visit to these classes impresses one first of all with the atmosphere of cheerfulness, optimism, and progress which exists.

Unfortunately, some of the children respond but little,



Specimens of basket and mat work done by pupils of one of the
New York special classes for backward children.

(Loaned by Miss M. H. Leech.)

a lesser number do not improve at all, and in very rare instances mental deterioration may be proceeding in spite of all efforts.

These discouraging cases with the intellectual limit apparent should not distract our attention from the evidence of great improvement in the majority. The classes are established for the backward rather than the feeble-minded and imbecile, and the latter, at least, should be weeded out at once when detected by their failure to progress, and sent to proper institutions.

Evidence of improvement is shown by speech, facial expression, and actions. The motor side, therefore, is the index of progress. The better articulation and use of words, the better ability to play the games, follow the drills, and perform tasks requiring coördination, are infallible signs of improvement in those cases where the regular school studies have been so recently begun that improvement is uncertain.

Mental and Physical Equilibrium to be Sought and Maintained.

Individual instruction and the fitting of the studies to the child's necessities are also most important from the standpoint of the child's future health.

Exercise should be along the broadest lines, and every part of the body and of the nervous system should be called upon for action. A healthy circulation and equilibrium are thus maintained, or at least striven for. It is a well-known physiological fact that persistent exercise of one part, with neglect of another, results in actual decrease in vitality of the latter by distraction of the circulation from it.

Recognizing the lack of spontaneous action in these children, and the defect resulting from disuse, a constant



endeavor should be made to exercise and develop each part in turn, and to subsequently prevent degeneration from the same negative causes.

On the other hand, while increased stimulation of any part increases its power of response to the stimulus, if persisted in too far a diseased condition of irritability may result. This is particularly true in the neurotic, with their functionally weak and unstable nerve centres; in the epileptic, where some focus indicative of previous accident or brain disease often already exists; or in those children who have had meningitis or other inflammatory brain diseases. In these cases over-excitation may cause nervous explosions, resulting in epileptic convulsions, hysterical attacks, or other emotional outbreaks. In cases of feeble mind or of moral imbecility deserving of institution custody, an outbreak of insanity or the sudden commission of crime may result. The first consideration in the care of these children is freedom from nervous strain, the scholastic education of the child being unhesitatingly sacrificed wherever necessary. Short school hours and country life among congenial surroundings constitute the ideal environment.

If this same wise balance between neglect and over-stimulation had been sought after by the parents of these unfortunate children, the majority of the latter would not exist as mute testimony to the violation of Nature's laws.

The disposition of the truly backward children, especially of the low-grade cases among the poor, is a most important subject, which is, however, outside the province of this paper. Most of them possess such mixed powers and weaknesses that they are capable of self-support if given home or institution supervision, but prone, if neglected, to sink to the lowest depths of physical, moral, and mental depravity.

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