SAVING THE BACKWARD SCHOOL CHILD

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The backward school child, so misunderstood and non-understood, so mistreated and non-treated, so unconsciously and unintentionally encouraged and compelled to grow continually more backward is a comparatively new human product. As a rule, the children of this class have lingered in the lower grades without making the customary advancement. Moreover, they often drop to still lower grades when the causes of their backwardness are not removed, and many show traits of abasement and disgrace which are due not alone to physical or anatomic causes, but are, as a rule, of the nature of deteriorations or non-developments of functional, physical, moral or intellectual characteristics.

These discriminations are fundamental and to be borne in mind if we are to set these children right in school and, more than that, in life. Because, in the young especially, we have still to learn that functional disease precedes and causes structural abnormalism, aberrant physiology degenerates into pathologic anatomy, and curable mental twists, perversities and mal-workings of functionally abnormalized minds harden into insanity and criminality.

Since 1845 a constant series of books and reports of reputable physicians has been appearing, all pointing out that malfunction of the eyes, the most valuable of our sense organs, is a great source of disease, not only of the eyes themselves but of the general system—and especially of the nervous system. Of late, it has been clearly seen that civilization multiplies enormously the causes of eye-strain, and that as a result nervous and mental diseases are rapidly increasing with a frightful growth in the general morbidity rates. Suicide of children and also of adults in all countries is in exact proportion to the number of hours of study per week demanded of school children.

According to a bulletin of 1912, the U. S. Bureau of Education says that 25 per cent., or about five million, of the school children of our country have defective vision, and that about 75 per cent., or about fifteen million, of the school children in this country need attention to-day for physical defects which are prejudicial to health and which are partially or completely remediable.

The school child, degraded, functionally diseased, criminal in the making, is allowed to go on to utter failure mentally and physically, thus finally burdening the community with his permanent invalidism, criminality, expensive support in asylums, etc. What has been wanted all the time is a workmanlike testing the matter out on this, that, and another school child, and, so far as pertains to the eyes, actual relief of eye-strain and following up of results. This, in a small but illuminating way, has at last been done by an oculist of New York City, Dr. William Martin Richards, who was personally commissioned by the school authorities, himself carrying out the refraction work, supplying the spectacles, etc. The patients were the children who were below grade in two public schools, Nos. 4 and 44, Bronx, N. Y.

The clinical experiment was on thirty-eight pupils: thirty-two hyperopic, three myopic and three with mixed defects of the eyes. The old contentions, therefore, are so far illustrated, if not proved; namely, that hyperopia, hyperopic astigmatism and anisometropia are the causes of eye-strain and of myopia.

In twenty-six children the error of refraction was large, i. e., over 0.50 D., and in twelve it was small or less than 0.50 D. Thus the ancient error continuing to-day, but often disproved, that small errors of refraction are negligible, is corrected, the small error being given as one of the causes of non-progress in one-third of the children.

Of all examined only two were wearing glasses, and these two pairs of spectacles were outrageously incorrect, one child having with the old glasses about 20/75 in one eye of normal visual acuteness, and in the other eye less than 20/100. Despite the injuries caused by these glasses the first child was given by correct glasses nearly perfect vision in one eye and in the other about 20/40. The second child's old glasses made her vision (about 5/100) worse than no glasses, and the new ones brought 20/50+.

Of the thirty-eight children only three had approximately normal vision, which does not signify that even these three did not need spectacles. When a cycloplegic was used and the real error of refraction was revealed, it was discovered that they did need them.

For the thirty-five remaining patients, these are the findings, the figures referring to the natural acuteness of vision with both eyes: three had 20/25 or better; seven had about 20/30; nine had 20/40; six had 20/50; four had 20/75; two had 20/100; three had less than 20/100, and one was practically blind. Thus two-thirds of these children, whose occupation was study, had only one-half vision or worse with which to do their work. Not one had been told that he needed glasses! Compare these figures with the visual acuteness brought by correct glasses: in seven it was most perfect, i. e., 20/16; in ten it was 20/20; in seven, 20/25; in four, 20/30; in five, 20/40; in four, 20/50; the child who was practically blind, that is, unable to name any test object whatever, now sees perfectly, apparently. In most of the twenty children with less than normal acuteness of vision, the results of late use of glasses demonstrated that the deterioration of visual acuteness could have been prevented by correct lenses earlier in life. One exception was the case of a child operated on for congenital cataract. Another was that of a child who had a high amblyopia of 20/100. Her small refraction error proved that she made a mistake in her early answers, because after getting low-power lenses she had an acuteness of 20/16.

One of the most important and noteworthy results of these experiments is not mentioned by Dr. Richards: the cures were made with no reference to or use of myologic or heterophoric theories. One may trust that in future work of the kind, these effects of eye-strain may not again be falsely considered its causes.

The reports from the point of view of the principals, assistants, etc. of the school may be epitomized from their own words as follows:¹

Selection was made from among (1) the worst cases of retarded children falling behind in their present grade; (2) those who had a history of school deficiencies; (3) ungraded children. Use was made of records of tests and records of promotions, to determine problems. Consultations were held by the grade teacher, assistant principal and principal before decision was rendered. In every case the consent of the parent was obtained.

The pupils were in school from four to twelve weeks after the final fitting. A ten weeks' summer vacation interrupted our observations.

1. The data here brought together are from Dr. Richards' own notes and from the official reports of the teachers of the public schools mentioned.

Number of children covered by this report:

Children from regular classes.....	29
Children from ungraded classes.....	11
	40
In Public School 44, Bronx at present.....	8
In Public School 4, Bronx at present.....	23
Discharged (transferred from Public School 44)...	2
Transferred to other schools from Public School 4...	5
Discharged from Public School 4 (over age).....	2
Total.....	40

SUMMARY OF THE RATINGS

The first record was taken in January, 1912, the second was taken in June, 1912. In order to gain uniformity of opinion on the ratings whenever possible, judgment was given in the second record by the same teacher who placed the original standard. This report is unable to deal with four pupils of regular classes and one pupil of an ungraded class, because of their transfer very soon after wearing glasses.

Among twenty-five deficient children from regular classes, nineteen were promoted.

Among nine children from the ungraded classes one was promoted to a regular class.

An examination of the charts will show marked improvement in reading, arithmetic, spelling and penmanship. The very marked improvement in temper, irritability and power of concentration is a significant revelation.

In Public School 4 it would appear that considerably more benefit was derived by the older children than by the younger ones. This may have been due to the fact that our younger pupils received their glasses later than the older ones, and hence there was not so long a period for improvement to show itself.

In the regular classes the number of those receiving specially pronounced benefit in the grammar grades is eight; of those in the primary grades four.

In Public School 44 the children under observation were all in the primary grades, all of whom received promotion. (A detailed study of special cases is enclosed, covering pupils of regular and ungraded classes.)

OBSERVATION OF THE NINE UNGRADED CHILDREN

Two boys, ages 17 and 16, had reached the limit of mental, social, moral and individual growth at about the age of 12. Hence from these nothing could be expected and the teacher reports little or no progress generally.

The remaining seven are of that type which is exceedingly slow to show any improvement; therefore this report, showing growth is very remarkable.

INTELLECTUAL IMPROVEMENT

Arithmetic	2	Oral English	2
Spelling	4	Singing	1
Reading	4		

HABITS: ALL HAVE IMPROVED

Gymnasium	2	Power of sustained mental	
Cleanliness	3	work. (In some cases the	
Attention	3	increase of power here is	
Lateness	1	very great.)	7
Control of facial muscles....	1	Power of concentration.....	2

CHARACTER: ALL HAVE IMPROVED

Self-respect	1	Gain in self-confidence.....	1
Development in responsibility.	1	Temper	1
Development in social instinct	1	Irritability	2

The extraordinary results, markedly pronounced in so many cases, justify the hope that many similar experiments will be made. The benefit derived by these children has been so great and of such a nature as not to be definitely measurable.

The following cases alone (aside from what has been done for the other pupils) has repaid many times the money, time and patience which were spent on this work.

In Public School 4, one boy's life was completely changed. His actions became more controlled and his entire view was altered. From a decided case for discipline he became a boy easily handled. He developed such a sense of responsibility that he was allowed to accept the nomination as head monitor.

He was elected by his schoolmates and was perfectly reliable during his entire office. He showed an amount of school spirit unbelievable, if judged by his previous life.

Another striking case is that of a boy who was troubled with the worst kind of hallucinations. He made sudden outcries and told strange and horrible stories of what he thought had actually happened. He was exceedingly difficult to get on with. This boy has been made very much happier. This is evident by his facial expression, which could be easily characterized as sweet. To understand fully what this means, it is almost necessary to see this boy. He has been promoted.

A most remarkable case is that of a boy who had a temper that was maniacal. It was absolutely impossible to do anything with him, once he was aroused. He became tense, screamed, bit, kicked; and these attacks sometimes lasted an hour. These awful outbursts occurred every two or three days. He was a source of general annoyance to his classmates and in his lessons did practically nothing. At present the boy is gentlemanly, popular with his schoolmates, respectful to his teachers and shows no indication of temper. He is doing 5A work and his teacher's comment in speaking of him was: "Excellent in every respect."

In Public School 44 one child was as much handicapped as if he were actually blind. He was most unhappy and his facial expression fully indicated his mental state. Now his expression is actually sweet, and whereas previously he had been a nuisance and a problem, he is now a pleasure. He was given a new life.

Another remarkable case demanding special mention is that of a little girl in Public School 44 who, it seemed, would develop into a delinquent of the worst type. She was a truant from school, absolutely indifferent to her work, morally bad, associated with objectionable boys and stayed out late at night. The transformation is wonderful. She comes to school regularly, works hard, appreciates what her teachers have been trying to do for her; and we now feel that we need have no further fear concerning her moral life. Her character is growing to be such that it will be impossible for her to be anything but a respectable member of society. This case alone was worth any amount of energy spent.

One boy admitted to Public School 4 was found to be practically blind. The eyes had no irises and the boy had never seen anything but very vague forms of large masses and then only those placed not more than 2 feet from him. He was laboring under tremendous nervous strain and was suffering greatly. His restlessness was so excessive that he could not be kept in an ordinary classroom and he was placed in the open-air class. The school doctor examined him and said nothing could be done for the boy. The school visitor called at the home and found conditions to be wretched. A charitable society had been caring for the family, and their agents had completely overlooked the condition of this child. The boy was admitted to the school for the blind, but the mother refused to allow him to attend there, because it was so great a distance from his home. She came back to the general public school with him. Dr. Richards' attention was called to this case. The result has been more than wonderful. This boy has been given eyes! He actually sees as does a normal person. When first the glasses were placed on him, and a vase containing flowers met his direct line of vision, the child became highly hysterical. He had never seen anything of that sort before and for him life had just begun. At present the boy is under the supervision of the inspector of the blind.

One girl of 13 had no idea of truth and honesty. She stole, and lied. She gave up all such habits and has developed a sense of honor. She has been promoted.

Another boy of 12 was a hard disciplinary problem; he played truant last term, gained no promotion and showed no improvement. This term there has been no complaint about conduct and no truancy. He is in 5A grade and working satisfactorily.

H. T., aged 12, should have been three classes higher. He was inattentive and indifferent and his conduct was unsatisfactory. His conduct is now improved, he has gained promotion; the change is splendid.

R. A., aged 11, showed steady mental and physical improvement between January and June. Her appearance is greatly changed for the better. The mother feels more interest in her child.

Two brothers showed no improvement in a long list of bad symptoms. At last it was found that they had accidentally changed glasses with each other!

L. S. lost his spectacles immediately after getting them and his parents refused to replace them or allow anyone else to do so. Eyes and general health are in bad condition and growing worse.

M. D., a cripple needing operation, has now been promoted, cares for himself better and has improved self-respect; his carriage, posture, etc., are excellent.

H. S. was almost blind; pains in eyes have now disappeared, but he is far from seeing well. In other respects he is wonderfully better; his former nervousness and irritability have vanished and he is eagerly making up lost time.

J. L. had lost two years of school time and should have been four classes higher. He has been promoted.

L. O.'s headaches have almost disappeared and her general health and work have improved.

Several cases of non-improvement seemed probably due wholly or in part to great amblyopia caused by previous years of uncorrected ametropia, and this, for the short time reported, persisted after correct glasses were worn. Others were as plainly complicated by intercurrent diseases. Exceptionally wretched home-conditions of a number of children were perhaps responsible for the continuance of symptoms.

Dr. Richards estimates that there are about 78,000 children with defective vision in the public schools of New York and that there is no valid excuse for the failure to prevent this evil in 80 per cent. of all such patients. They are not prevented now, he thinks, because the principles and practice of refraction are not adequately and correctly taught in medical colleges. He believes that in New York there is a divided responsibility in the government of the schools; that a cycloplegic is not used to diagnose the errors of refraction in the 84 per cent. of hyperopic defectives, and that small errors are ignored although they have great influence in determining effort, proficiency and conduct. The result is that the accurate measure of the refractive errors of the school children of the city is impossible, and, moreover, if it were done it would be impossible to get the requisite spectacles made, adjusted and paid for. Lastly, diagnosis and treatment of defects and diseases of other organs than the eyes is not, by any means, at present feasible.

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THE TREATMENT OF GONORRHEAL AND OTHER INFECTIONS WITH DIGES- TIVE BACTERIAL EXTRACTS

PRELIMINARY REPORT

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In THE JOURNAL of Oct. 12, 1912, the production of active and passive immunity to the pneumococcus in the rabbit with an extract of the living microorganisms by an alkaline solution of pancreatin was described,¹ and ten cases of pneumonia were reported in which recovery followed its administration. Since that time, further animal experiments have confirmed these results and recovery has occurred in seven more cases, none of

the patients treated having died. In the greater number of cases the crisis has occurred within twenty-four hours after the first dose of the extract.

With the gonococcus, experiments naturally could not be performed on the lower animals, but the clinical material was more abundant. The results thus far obtained are sufficient, however, to warrant a provisional report. The extract was prepared in the same manner as the pneumococcic. A suspension of the gonococcus was heated to 38 C. (100.4 F.) and to it an equal quantity of a 0.2 per cent. solution of pancreatin (Cudahy) in 2 per cent. sodium bicarbonate at 38 C. was added, kept at that temperature for fifteen minutes and then acidulated with hydrochloric acid to stop the action of the ferment. The mixture was then filtered through a Pasteur filter and was ready to use.

The dose usually given was 5 c.c. administered intramuscularly. Within a few hours in most, but not in all cases, reaction, in the form of chill with elevation of temperature of a few degrees, of short duration, and general malaise ensued. It was often observed that succeeding doses were followed by less reaction and sometimes by none at all, as if immunity had developed. As much as 50 c.c. have been given without especially unpleasant symptoms.

In gonorrhea of the male, both acute and chronic, in a few instances results followed which might be looked on as favorable; but in the majority of cases the effects were not such that a skeptical observer would have been compelled to acknowledge the value of the remedy.

In the female the evidence, although not conclusive, was somewhat stronger. Twenty-four girls confined in St. Catherine's Home, a penal institute, were given twenty-two injections each, administered biweekly, and in eleven of them the gonococci disappeared from the vaginal secretions.

On the other hand, in the municipal clinic the results were rather striking, especially in contrast to the preceding observations.

Of twenty prostitutes treated in the municipal clinic with the gonococcic extract combined with the usual measures, eighteen rapidly recovered, and on their return, as wards of the municipality, for examination twice a week, the continued absence of gonococci has been recorded. Some of the patients have thus been under observation since March, 1912. A patient who did not recover had a urethral gonorrhea. Her general health was poor and the cervix had an old retained suture. On September 19 she was put on the usual treatment until October 18, when 5 c.c. gonococcic extract were injected, the injection being repeated on the 25th. The following day it was noted that the cervix and urethra looked fine, with almost no discharge; but on November 14 the smear was positive. On November 15, 5 c.c. were injected and since then the patient has not returned, having probably left town.

The second patient was three months pregnant when treatment was begun. From May 2 until August 6 she received ten injections, when on three examinations extending to August 19, no gonococci were found; but later they were detected.

Of the others, ten were permanently cured by one injection, six by two, and two by three.

In all of these cases, male and female, local treatment was combined with the administration of the extract, so that the test was not a perfectly fair one; one must always be in doubt as to how much of the effect could be ascribed to the local and how much to the constitu-

1. Hirschfelder, J. O.: The Production of Active and Passive Immunity to the Pneumococcus with a Soluble Vaccine, THE JOURNAL A. M. A., Oct. 12, 1912, p. 1373.