



Social Assistance

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P. H. Bryce

OPEN AIR SCHOOLS AND PREVENTORIA

BY

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Since the medical inspection of school children has assumed a systematized form and adequate facilities in a number of large centers have been supplied for effective work, we are being placed in a position in some adequate degree to understand the actual physical condition of a large percentage of any population in a definite period of life—that from 5 to 15.

To take one or two illustrative examples, we have the following results of the examination of school children:

Examination in 1906 of 55,338 children in New York public schools:

Bad nutrition.....	3,382
Enlarged anterior glands.....	14,214
Enlarged posterior glands.....	3,047
Chorea.....	738
Heart disease.....	895

Pulmonary disease.....	600
Skin disease.....	989
Deformity of spine.....	485
Chest.....	401
Extremities...	498
Defective vision (objective)	16,394
Defective hearing.....	6,188
Defective teeth.....	18,189
Defective palate.....	628
Hypertrophied tonsils.....	8,347
Posterior adenoids—nasal growths.	5,119
Bad mentality.....	1,210
Requiring medical attention.....	33,351

Examination in 1906-7 of 8,030 children entering Breslau (Ger.)

Boys, 4,076. Girls, 3,954.

	B.	G.
Deformity skeleton.....	13.2	12.3
General constitution diseased..	11.6	16.5
Enlarged glands.....	11.7	11.4
Adenoids.....	9.8	9.9
Defective vision.....	6.8	6.4
Defective hearing.....	2.6	2.8
Defective speech.....	6.1	3.5

To indicate that such examination to be of real statistical value must be conducted with thoroughness we have

the statement in a remarkable paper by Miss M. H. Williams, M.R., Senior Inspector of Schools, Worcester, Eng., in which it is stated that of 200,000 children examined in London (Eng.) schools in 1906 by some of the 25 medical members of the school inspecting staff, not a single case of pulmonary tuberculosis was discovered, while the deaths amongst the children of school age in the same year amounted to 36, and it was estimated that 7605 were suffering from the disease mostly in a latent form. In the same year 4.92 per cent. of all deaths in England were from tuberculosis, while Dr. G. E. Shuttleworth, at a recent Tuberculosis Congress in London, pointed out that in *special schools* in London and other large towns *for defective children*, "the most common causes which incapacitated for attendance at the ordinary schools were tuberculosis, and that of 1056 children attending such schools in London, 486 were suffering from some form of tuberculosis disease, of which there were 105 of hip disease, 180 of spinal disease, 80 of knee-joint disease and 19 of other parts."

Dr. R. W. Phillips of Edinburgh, speak-

ing there recently, said that tuberculosis in school children was alarmingly greater than was generally supposed, and that out of several groups of children selected at random in Edinburgh he had found no fewer than 30 per cent. had undoubted traces of tuberculosis, while of 16,500 cases examined at the Victoria Dispensary for Consumption, he had found 1917 cases were tuberculized children under 15 years of age. Incidentally it may be mentioned that in a group of five Indian boarding schools in Alberta (Canada), the medical officer found evidences of tuberculosis in 86 per cent. of the total pupils.

Remembering that the average mortality from tuberculosis in these several cities from which the statistics have been taken does not vary notably from that in the cities and towns in Canada, it is apparent that the presence of this particular disease may be expected to be found relatively as great when carefully looked for in the schools here as elsewhere. If such be the case, it is evident that to seriously attempt the task of dealing with this disease, especially malnutrition, we

must by every means in our power search out by the most recent and exact diagnostic methods the actual health conditions of every school child, and, if possible, even of those still younger, in order that the earliest and most practical means may be adopted whereby the number of ineffectives in a community may be lessened, who, in every country and every sphere of life, are being prevented by chronic ill-health from doing an adequate life-work.

Not 'till the present day have the medical profession begun to realize that the largest duties and the greatest triumphs of medicine are in the prevention rather than in the cure of disease, and only now do we see the broadest-minded physicians working with the most advanced thinkers and workers in the sociological and charitable fields for the best means whereby the thousands of young children, the victims of hereditary weakness, ignorance, indifference and folly on the part of parents and society can be assisted during the period of childhood toward a healthy and effective adult life.

The *British Medical Journal*, commenting on the fact already quoted, that no

cases of pulmonary tuberculosis were found in the elementary London schools, states that in France a large number of children, *ranging from two years to the end of school age, are received into sanatoriums for children, either predisposed or suffering acutely from tuberculosis, and it is in the highest degree improbable that the true conditions here differ essentially from that existing in France, and a careful inquiry into the matter would be of the very greatest interest.*

Table by Hamburger-Sluka, showing the results of post-mortems of children dying of various diseases:

Author.	Age of Children.	Number of Post-mortems.	Number of Tuberculosis.	Tuberculosis per cent.
Muller	0.15	500	209	48
Baginsky		805	144	18
Orth	0.15	418	47	11
Nageli	0.15	88	15	17
Bierhardt	0.15	190	72	40
Ancell	0.15	154	42	24
Hamburger- Sluka	0.14	401	160	40

These authors state that of 100 children dying in a Vienna hospital, 40 had tuberculosis recognizable by microscopic examination (or obvious to the eye).

Some statistics have shown over 90 per cent. of children who were said to have been tuberculized at some time or other, and give support in large measure to Prof. Behring's assertion that "the bacilli which gain access to the alimentary tract in infancy constitute the important ætiological factor in the production of the tuberculous infection which leads to consumption."

Most interesting statistics have been given to show that in England at least from 5 to 15, when the life of the boy is active and outdoors, compared with that of the girl, the death rate in the boys is as 100 to 150 in girls; but, on the other hand, after the boy is set to work and subject in towns to the direct effects of urbanization, the stress of life soon reverses the rate of death. It is therefore abundantly evident that the existence of latent tuberculosis is the dominating factor in the conditions in children which we term delicate, ill-nourished, neurasthenic,

anæmic and so on, and that it is the most essential in the interests of the children that the probable, almost certain, cause of their ill-health to be realized with a view to its diagnosis and treatment. In 150 successive investigations of families in Chicago by Dr. Senn, where one was consumptive, it was found that over 25 per cent. of the other members of the families were infected.

Professor Grancher, Paris, France, has said:

“To wait for the presence of bacilli is to do an immense injury to the patient, to render incurable, or very difficult of cure, a tuberculous infection which would have been curable at an earlier stage.”

To show the great advantages of early treatment, a single, most interesting example is given from recently-published results of the Postoffice Sanatorium Society of Great Britain in its second annual report.

Table showing in percentages the results of treatment in each class of tuberculized persons:

Class I—Early stage; one lobe of lung affected.

Class II—Moderately advanced; two lobes affected.

Class III—Advanced; three lobes or more affected.

Of 80 cases who had received complete treatment, 33 were early cases; 25 were moderately advanced; 22 were advanced.

Class	Ar- rested	Im- proved	Unim- proved	Died
I....	78½	12¼	3¼	0
II....	48	32	20	0
III....	4½	54½	36	4⅛

By circular to members the advantage of early sanatorium treatment was pointed out with most gratifying results. As we may very properly conclude from all that has been said, some form of tubercular disease is not only frequently present, but lasting from childhood. It fortunately leads to recovery in the majority of cases under favorable circumstances. Dr. Cole, the New York specialist, has stated that he never has taken a skiagraph of any person whose lungs could be declared to be absolutely free from evidence of tubercles having been present at some time.

Accepting the most reliable French and English statistics that 15 per cent. at least of all children of school age are tuberculized; that bronchitis in persons under 30 years is usually tubercular; that diseases of the bones, of the joints and of the glands are practically all tubercular, and that constantly catching cold, frequent headaches, general lassitude and morning lack of appetite in children are most commonly due to latent tuberculosis, no care can be too great whereby to ensure by the most competent and careful examination a knowledge of the actual health condition of every child in any way brought under official supervision, whether in school or through sanitary visitors, in order that steps may be taken to place the child in such circumstances as are most likely to ensure his gradual upbuilding and development to a healthy adolescence.

From the statistics given, from the conclusions arrived at by those whose long and wide experience entitles them to speak, and from the common knowledge of the prevailing social conditions under which the children of especially mod-

ern urban communities necessarily live, it is plain that to seriously attempt the task of lessening the evils, which have been so fully illustrated, involves some scheme so comprehensive, some action so energetic and persistent, and judgement so intelligent and matured as to deter any one who is not fully conscious of his duty to the insistent cry of the diseased and poor.

I. *Provident Dispensaries.*— Apart from the constantly increasing number of children whom the family physician visiting in the poorer sections of a city directs to some public or private institution for assistance and treatment, there is no single agency which may be said to so readily and naturally supply first aid to the sick poor as the district dispensary. As in every large modern city there are many sick poor, so there are now in most districts sanitary visitors and nurses, who, discovering cases of sickness, must necessarily have some place to which they can send such for examination and temporary treatment, or where a district physician may be found who will give assistance in the home.

Such work has long been of much value, both directly and educationally, but manifestly it is quite insufficient to in any real sense cope with the conditions already illustrated.

2. *Tuberculous Dispensaries and Clinics.*—*An outgrowth of the old dispensary.* This, as the name indicates, approaches more nearly the actual needs of the situation by a careful, detailed examination being made by physicians, professedly specialists in lung disease, and upon whose reports some definite action can be taken. In those instances where organized official civic machinery exists, a tuberculized patient is followed to the home by the district visitor, and a detailed report is sent in, enabling definite action to be taken for either home treatment or the removal of a patient to a sanatorium or tuberculosis hospital. Similarly much work may be undertaken by a hospital clinic, largely for medical education purposes, or by a charitable antituberculosis society, which may have control in some semi-official way of a hospital or a sanatorium managed by the association. To the extent to which these

various organizations do good work, to that extent do they supply the needs of the situation, especially for adult patients.

3. *Children's Hospitals.*—These, the most popular of all charities, have long conferred incalculable advantages upon especially that class of tuberculized children demanding operative treatment. How extended the work of some of these charities has become is not generally understood, but their direct and educational advantages cannot be overestimated. In so far as they see patients early, they meet a great need, but they are necessarily not so much preventive as curative in their work, and yet more is required to get closer to the work to be done.

4. *Open-Air Schools for Invalids.*—We have already seen what a notable proportion of school children suffer from vices of malnutrition, and how the closest observers and clinical evidence point to some form of tuberculosis as lying behind probably a majority of all such cases. It is true that by the time school age is reached nearly 50 per cent. of the children born have died already, often 25 per cent. within the first year, usually from tuber-

cular atrophía or marasmus, so called. But at any rate, with compulsory school attendance, some 75 per cent. or more of the children of school age are likely to come under official observation. Yet more necessary, of course, is it that the other 25 per cent. of absentees be investigated, since such are likely to be the very ones most immediately demanding aid and practical attention. Turning for a moment, however, to those who have on examination been found to demand attention, there have begun to be established in recent years in England some special schools for various defective or invalid children, while in Germany, especially, the attempt has been made to educate children lacking in general vitality (mostly tuberculized), while at the same time building up their bodies. For instance, at Charlottenburg a school for the anæmic or invalid children was opened in 1904 in the warm weather, in which pupils would live in the open air, have plenty of food and rest and mild exercise, and where most of the education consists of manual training, drawing, singing and nature study. The

hours of school were reduced by one-half. A pine forest was chosen for the location, and a simple wooden shed was erected where the children could work when it was wet, while portable wooden schools were used for cold and wet weather. Children, when weary, rest and sleep in reclining chairs, rugs and water-proofs being provided. Baths are freely utilized, under the direction of the school physician, and mineral baths for the tuberculized or scrofulous cases. Most go home daily by street car, or are brought in special vans. School begins at 8 o'clock, and on arriving pupils get a bowl of soup, with bread and butter and some fruit; short lessons are given, then a rest after each. In the middle of the forenoon a glass of milk and some bread and butter are given, and while one-half play or are engaged in some manual work, the others are being taught. At noon a meal of soup, mostly vegetables, and bread is given, after which the children rest or sleep for nearly two hours on the reclining chairs. At 3 P. M. classes are again resumed, and at 4 o'clock bread and milk and jam are given, while from 4 to 6 P. M.

the children play or listen to stories, or are otherwise amused, and again given a light supper before going home.

Remarkable results have followed in a great proportion of cases, both in physical strength and in the power of attention, and in brightness and inclination to play and enjoyment. Medical examination has found an average increase of one-half pound per week, and often more. Some 80 per cent. of anæmic children have shown improvement, and 40 per cent. have been pronounced cured, while of scrofulous children, at least as many have improved and some 20 per cent. pronounced cured. Of those with pulmonary tuberculosis, 60 per cent. showed improvement, and 22 per cent. were cured.

The children have increased in their resistance to colds; marked improvement has taken place in those with weak or defective sight, while the strength and tone of the voice have been notably increased. Thus the physical, mental and educational results have all been most marked, and the moral and disciplinary results have been equally satisfactory.

A notable result has been the improvement in teaching methods. Arithmetic has become mensuration by actual use of tape and rule; geography becomes a study in topography, and heaps of sand are turned into relief maps, while trees and flowers are studied in the woods. Equally remarkable results are reported wherever, as in London, the open-air school has been tried.

5. *Preventoria*.—The various institutions which have been referred to will each in its place play a part in any serious attempt to deal with the numerous cases where the delicate or actually-diseased child demands treatment. What, of course, is impossible with the various municipal and charitable organizations for attempting to deal with the manifold ills which affect, especially the poorer individuals in our urban populations, is complete co-operation and definiteness of effective applied energy. As the underlying cause of those physical evils, as illustrated, is a chronic disease, the history of whose ravages is as ancient as the records of organized society, and as a knowledge of the nature of its existing

cause does not date back more than a quarter of a century, it is not to be expected that the realization of its prevention and cure and of the means thereof should as yet be otherwise than partial and inadequate. As tuberculosis is essentially a disease of ignorance, it is plain that a knowledge of its possible prevention must spread slowly from the more educated and well-to-do classes before such members of the community, socially and financially, are in a position to take advantage of the means provided for the upbuilding of delicate and diseased children into healthy men and women. To this end, as is seen in orthopædic hospitals, the application of physical-culture methods has been amongst the most logical and successful methods yet attempted. But these, like the children's hospitals, are essentially curative institutions for some curable disease which has already developed itself. What is yet more required is another type of institution, where the children born delicate or have become so after some infantile disease, or who through artificial feeding and lack of fresh air and sunlight or other causes

are ill-nourished anæmic rachitic, in a word, physically defective, may be placed under such conditions and regimen as that the application of the most exact hygienic and developmental methods may produce the highest results.

To this end institutes are beginning to be established which combine the essential elements of a home, a school and a sanatorium.

The term "Preventorium" has been well selected to express the essential idea underlying the end aimed at. There are few families, indeed, in these modern days of artificial urban life, with its high pressure and its excessive demands upon the nervous system of parents, in which there is not to be found one or more of these delicate children, who are a constant care and source of anxiety, and who, in the absence both of a knowledge as to the means to be systematically adopted and the mental and moral discipline and facilities on the part of mothers for carrying them out, are for years the victims of actual ill-health, depending upon faulty nutrition or actual disease, which, should they survive, continues as a state of

chronic ill-health into an ineffective and dependent adult life.

The statistics already given amply indicate the essential conditions demanding systematic attention. The preventorium provides primarily a home in an institution, where the child goes to be guided through months, or it may be years, into health during the growing years, in which the tissue changes are so rapid that even a few months may give a wholly new direction to its physical life. Necessarily it premises a pleasant, dry site for a building, with ample grounds, where fresh air, sunlight and indoor sanitation in the shape of ventilation, lighting, the supply of selected, adequate food, medical examination and direction of the daily life of each individual child, with the oversight of an experienced staff of nurses and teachers, shall be so scientific and complete that every constitutional defect will receive the closest scrutiny, and where the exact methods for its correction will be applied with as much systematic care as the unlimited medical and sanitary facilities which modern science

places at our commands will ensure. Some of these are:

(a) *Fresh Air*.—What even the partial and temporary results of outdoor summer schools for the poor children can accomplish has been illustrated, but it is hardly necessary to remark that for such children to return to the close, ill-ventilated and crowded homes to spend in sleep at least a half of their day, is but a crude and very partial attempt to deal with the problem with necessarily very imperfect results. If oxygen or absolutely free air means life, then it must be to the preventorium, where the child's night is spent in dormitories, where the purest air is automatically supplied, that we must turn if perfect results are to be looked for.

(b) *Baths*.—Following this, the judicious use of baths is an adjunct as easily applicable as the effects are certain.

(c) *Food*.—The meals supplied with milk from cows whose health and management are as much a part of the institution as the bath or ventilation, will be such as will be delicately adjusted to the several needs of the individual.

This is followed by graduated, simple, yet varied physical exercises and culture, which will be directed so as to develop the defective bones and muscles, which gain strength in proportion as their nutrition is improved.

After this comes school, in which the teaching must be so adapted, both as to the time occupied and subjects presented, as to cultivate a mental interest without the intolerable and inextinguishable grinding system which has hitherto constituted the system of education, more aptly described as "white slavery." As seen in the open-air school in Germany, the *rationale* of child education is being beautifully illustrated, and this has just been emphasized by the report of the Boston (Mass.) commission appointed to investigate tuberculosis in school children. The suggestion is made that outdoor schools be utilized for the tubercular cases, and that active cases be placed under the care of some hospital department, which would supply food, clothing, etc., as for any other patient, as is now done in Boston by the Association for the Care of Tuberculosis. The report on Boston schools

further has the following most important paragraph:

“Many trustworthy authorities, notably the French and German, believe that infection with tuberculosis is nearly always acquired in early life; that during childhood the tuberculous focus often remains inactive; that as the child reaches adolescence and is submitted to the confinement and strain of school life, or in adult life meets the strain then put upon him, the lessening of the body resistance is sufficient to permit the organisms to gain the upper hand, and active tuberculosis in some form develops.”

In 10,000 cases studied at the out-patient department of the Boston Consumptive Hospital, Drs. Floyd and Bowditch have demonstrated that 38 per cent. showed definite pulmonary lesions, and 30 per cent. more gave evidence of tuberculosis in some other part. Sixty-seven per cent. were the children of tubercular parents.

The most valuable, because the most exact and recent work done, and which exactly illustrates the situation, is given by George Carpenter, M.D., M.R.C.P.,

London, physician to the Queen's Hospital for Children and editor of the *British Journal of Children's Diseases*, in a paper before the London Royal Society of Medicine. He states that he was engaged by the local education authorities in a London suburb to examine some hundreds of the school children. The medical examination dealt with those small children who had just entered school and those who were about to leave school, and was carried out and completed December 16, at the end of 1908. He had the complete assistance of another physician, a ward sister of the hospital, a private nurse and the lady health visitor. The children were examined as they would be when brought into a hospital.

The following are items of interest from the examination:

There were 459 presumably healthy children, 249 boys and 210 girls, between 3 and 7 and between 10 and 15. There were 81 who had either hernia or were likely through imperfect development of the tissues to develop one. No less than 234 children displayed weak ankles or flat feet in varying degrees. Over 200

displayed rickety deformities in varying degrees, and no less than 270 had beaded ribs; in a few rickets were pronounced. In 101 children the abdomen was protuberant, and in 7 the abdominal glands were palpable. In 367 children the teeth were decayed, with a total of 1514, or 4 per girl and $4\frac{1}{2}$ per boy. The tonsils were enlarged in 119, and in 129 these were adenoids, the nasopharynx in 34 being completely blocked by growth. There were 21 deaf from catarrh, and in 9 there were ear discharge and perforated drums. In 181 the deep cervical glands were enlarged; in 172 the submaxillary, and in 337 the superficial cervical, and in 252 the inguinal glands were palpable.

Twenty-nine children had bronchitis, one pneumonia and one cirrhosis of one lung and a transposed heart. This last child looked particularly rosy-cheeked and well. Various diseases were present.

Remembering what has been already quoted from Dr. H. K. Williams and what has been stated in the report of the Boston Commission, there seems, with the absolute data here given, no alternative but to conclude that in any average 500

young school children, whether in England, Boston, Ottawa or Toronto, an equal number would show enlarged glands, tonsils, diseased bones, physical defects, scrofulous or rachitic in character, since the annual mortality from tubercular diseases is not greatly different in these several large centers.

The experiences of Dr. Carpenter in defending himself from the attacks of indignant parents and the absolute inability of the school authorities either to believe the correctness of his diagnosis or to comprehend the meaning of the close clinical examination or its necessity, were extremely edifying, and serve to illustrate the kind of reception which any medical officer who does his duty is likely to receive from the ignorant or foolish parent or the pliant and time-serving elected peoples' representative. The situation is illustrated from the report of another English borough medical officer, who sent the mother home with a note, advising her to tell the husband to go to the eye specialist to have Johnny treated for cross-eyes. She returned the next day to say the father refused to take

advice on the ground that he, too, had always a cross-eye, and what was good enough for him was good enough for Johnny. But illustrations more than enough have been given to enable us to understand the immensity of the problem, which lies before every modern community, if it is to seriously attempt to cope with this deep-seated source of personal ill-health, economic loss, social ineffectiveness and natural degeneration, compared with which all other purely physical evils sink into insignificance. Society is beginning to realize the dangers to which it has been subjected and to understand in some slight degree the possibility of protecting itself against the ubiquitous foe. It has been the worm which has blasted her fairest flowers in the bud, and the destroying monster which has boldly entered and slain without mercy the helpless inmates of the tenements of the poor. Every agency, scientific and medical, social and philanthropic, economic and commercial, which within its own sphere, and according to its own methods is advancing not only a knowledge of the cause and the methods

of the spread of tuberculosis and the losses it creates and the lives it sacrifices, but also of the means of protection against attack and the methods of its suppression and cure becomes a force, tending to unify action and promote measures of practical co-operation in the struggle against a foe secret in its operations, yet never ceasing in its attacks upon mankind. From the slum worker to the delegate to a Peace Conference is heard sounded the tocsin which calls every man to arms, which unites all men in a common cause, whose essential bond is the brotherhood of man, whose dominating idea is the intrinsic value of human life, and whose constant aim is the lessening of human misery, and whose highest ideal is the supreme happiness of mankind.

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