

Tuberculosis and the Public Schools

By

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TUBERCULOSIS AND THE PUBLIC SCHOOLS.

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The importance of attacking this problem through the agency of the public schools is indicated by the fact that ten out of eleven of all the children of the United States come under the jurisdiction of the public-school system for approximately seven years of their lives—from seven to fourteen. No other department of our government has so intimate a relation to the whole population as has the public-school system to its children.

The ultimate attitude of society toward such problems as this is not determined primarily by the discussions which occur in the daily press, but by the attitude which is taken and secured by children during the years of their school life. If the work is adequately done during these years, it means a permanent set of convictions and habits which shall guide them both in action and in thought throughout the rest of their lives.

The fact that departments of education are already awakened to both their opportunity and their responsibility with reference to matters of health concerning children, is indicated by an investigation of the most recent reports of the superintendents of schools in the largest cities of the country. In these reports there are extensive, useful, and intelligent discussions of one or another phase of this topic. Among others there should be particularly noted the following:

Baltimore, Md.

78th Annual Report of the Board of School Commissioners, 1906.

Boston, Mass.

Annual report of the Superintendent of Public Schools of the City of Boston, 1907.

Cambridge, Mass.

Annual report of the School Committee, prepared by the Superintendent of Schools, Cambridge, Mass., 1907.

Camden, N. J.

Annual report of the Board of Education, 1906.

Cincinnati, Ohio.

78th Annual Report of the Public Schools of Cincinnati, Ohio, 1907.

- Cleveland, Ohio.
Annual Report of the Superintendent of Schools, Cleveland, Ohio, 1907.
- Fitchburg, Mass.
35th Annual Report of the School Committee of the City of Fitchburg, 1907.
- Harrisburg, Pa.
Annual Report of the Public Schools of Harrisburg, Pa., 1907.
- Los Angeles, Cal.
Annual Report of the Board of Education of the City of Los Angeles, Cal., 1906-07.
- Lowell, Mass.
82d Annual Report of the School Committee of the City of Lowell, and 44th Annual Report of the Superintendent of Public Schools, 1907.
- Newark, N. J.
51st Annual Report of the Board of Education of the City of Newark, N. J., 1907.
- Newton, Mass.
Annual Report of the School Committee of the City of Newton, Mass., 1906.
- New York, N. Y.
9th Annual Report of the City Superintendent of Schools, City of New York, 1907.
- Syracuse, N. Y.
58th and 59th Annual Report of the Department of Public Instruction of the City of Syracuse, 1906-07.

The steps necessary to be taken are four:

1. THE DETECTION OF TUBERCULOSIS AMONG THE PUPILS.

This is part of medical inspection. Up to the present time the data which have been secured on this subject in America are of relatively little value, for the inspection which has been carried on has been for protection from those diseases which are recognized as more immediately contagious, such as measles, scarlet fever, diphtheria, pediculosis, and the like. In a large number of cases the medical inspection has been carried on so rapidly that each child has received but a few seconds' attention. The cases of tuberculosis which are sufficiently advanced to be discovered by relatively rapid examination, without the removal of clothing, are obviously few. For these reasons the data which we now have, as to the extent of tuberculosis among school children, are unreliable and inadequate.

2. THE DETECTION OF TUBERCULOSIS AMONG TEACHERS AND PROSPECTIVE TEACHERS.

A large number of American cities have statutory enactments by which persons having this disease are not allowed to be teachers in the public

schools. This has occurred chiefly in the western States, toward which those having the disease have gone for cure. It depends for its efficacy upon the efficiency of the medical inspection which precedes the license to teach. In some places this is performed with faithfulness and ability, and in others it is not so performed. The presence of tuberculosis among teachers must be regarded as of the utmost danger to the community—of more danger than is the presence of tuberculosis in any other class of persons, for they, even with the utmost care as to the disposal of sputum, will cough in the air, and so expose every pupil in the room to the contagion. Because of the slowness of the development of tubercle bacilli, the danger of infection from this source is not appreciated usually, the child having long since passed from under the jurisdiction of the tuberculous teacher before the results became evident. We have not as yet instituted in America any periodic examination of teachers for the detection of those who are the victims of this disease and their elimination from the ranks. Such examinations have been instituted in other countries, and it seems inevitable and necessary for the protection of the community that they should be carried on in the United States.

3. THE INSTRUCTION OF PUPILS WITH REFERENCE TO THE FUNDAMENTAL FACTS REGARDING TUBERCULOSIS.

The instruction that should be given to children may be divided into two major headings: that with reference to individual hygiene, and that which relates to social or community hygiene.

The emphasis in this kind of instruction in America has already changed from instruction in physiology as such to instruction in hygiene. The original assumption was that a knowledge of physiology was all that was needed to modify the conduct of the individual so that he would lead a hygienic life. The experience of the last few decades has shown the futility of such hopes. What is needed is such instruction, example, and illustration as shall lead the children to form habits which shall guide them unconsciously into effective living.

The legal requirements of our several States demand that the subject of physiology and hygiene shall be taught during practically all the years of school life. It has been the custom to have series of text-books and syllabuses which cover the whole subject each year, treating it during the early years in simpler outlines, and with the advancing years adding technical details. From the standpoint of pedagogy this is vicious, for it takes from the subject all that freshness which comes from the approach to a new topic, and new sets of facts. Accordingly, in the schools of New York, Cleveland, and a number of other cities, the principle has already been adopted of selecting special points of view for emphasis each year.

During the first three years the instruction is largely by illustration and story, without the use of a text-book. It is therefore exceedingly informal. Beginning with the fourth year, however, we find the syllabus demanding particular attention to good health, as an object in itself. The following paragraph, taken directly from the New York syllabus, is illustrative of the objects:

"Pupils should be taught the value of pure air; the causes of impure air; the methods of purifying the air; the effects of impure air on respiration, nutrition, feelings, and mental power; necessity of cleanliness in and about the school building. They should be taught the necessity of a proper ventilation of rooms; the necessity of an even temperature, of a change of air, and of the avoidance of drafts; the importance of pure air in sleeping-rooms; the value of rest and sleep, and of a change of activity as related to rest."

The difference between this and the formal teaching of physiology to these young children can easily be appreciated. The text-books that are being prepared to meet this new application of the methods of pedagogy are largely composed of references to facts within the child's knowledge and experience, and allow a large amount of experimentation.

In the fifth year the point of view taken is that of accidents and emergencies. Here the chief facts with reference to any specific subject, as, for example, the skin, may be given much as they were in the preceding year, but this time from the standpoint of blisters, burns, scalds, and the like, so that, while the same subject may be covered, it is treated in such a way as to be novel.

In the sixth year discussion is made of hygiene from the standpoint of the community. This, so far as we know, is new as a factor of elementary school instruction. The following paragraphs indicate the relation of this to tuberculosis.

"Attention should be given to matters of civic hygiene; to the city water-supply; to the diseases frequently incurred by taking drinking-water from streams, wells, and springs; to the general policy of cities in reference to water-supply and water distribution; to the sewage system and the disposition of waste by cities; to the danger of defective plumbing; to the fire department, its organization and use; to the need of clean streets; to the work and duties of the street-cleaning department; to the danger from spitting and the law bearing upon this; to the need of sun and air in rooms; and to the building law relating to the hygiene of buildings.

"Pupils should be taught the nature of contagious diseases; the necessity of segregation; the treatment of epidemics and the law bearing upon the subject; the importance of quarantine; the value of hospitals, dispensaries, and ambulances; the work and duties of the Board of Health."

The texts meeting these requirements give illustrations of the effects of the new building laws with reference to light and air in the tenements; illustrations of the kinds of rooms in which tuberculosis is most frequent; the results of overcrowding, and an account of the campaign in New York city which resulted in the reconstruction of our building laws, the Juvenile Street-Cleaning League which was started by Colonel Waring, and other movements which bear directly upon these topics from the standpoint of hygiene. Tuberculosis itself is treated as a special topic, and as one which is vitally related to the children.

In the seventh year emphasis is laid upon the study of the body itself, including the senses and nervous system. Particular point is made of physical training: how people learn to do gymnastic exercises, dance, and the like. The physiology of the subject is given merely in explanation of the facts themselves, which are brought out in dramatic form.

The eighth and closing year is given to the discussion of the nervous system. Inasmuch as it bears no direct relation to tuberculosis, I shall not go further into an elaboration of the subject.

4. THE INSTRUCTION OF PROSPECTIVE TEACHERS WITH REFERENCE TO THE FUNDAMENTAL FACTS AS TO TUBERCULOSIS.

Our daily acts are not predominantly the result of conscious thinking, but are and must be largely automatic. Conduct, then, is the thing at which we should aim, rather than mere intellectual information.

Because the great white plague constitutes at present one of the few remaining general disease perils to mankind, it is necessary that those who are to have charge of the education of children should have in their possession those facts which are needed for daily conduct with reference to these matters. Few of the normal schools in American cities have adequate courses of instruction with reference to matters of health. The reason for this is to be found in the history of the development of American schools. Health has not been regarded as an object of education. Other institutions in the community have been regarded as being responsible for the health of the children. With the reconstruction of society, due to the development of machinery, with the development of a democracy which depends upon the intelligence of all the citizens, the State had to adopt general education, not primarily because of the elevation of the individual, but as a measure of self-protection. These are the fundamental reasons why the State must, through the same agencies, the departments of education, protect itself from those ravages of disease which are dependent upon ignorance with reference to the fundamental facts of life. How to so manage the home organization as to live most effectively, has only recently come to be regarded as one of the basal elements in general education. Therefore as

yet it is not treated as a prominent topic in the curricula of our normal schools or colleges. In practically no normal school is it ranked yet with such sciences as psychology, education, history, and the like.

This changed attitude of the State toward health, expressing itself through the schools, does not mean merely, or mainly, the thrusting of additional burdens with reference to instruction upon the existing force. It means grafting into the service of departments of education experts who are qualified from the educational standpoint, whose rank and power shall be coequal with those who work exclusively from the standpoint of education. Health and education must go hand in hand. This cannot be done by making the subject of health a subdivision of some relatively smaller topic which is not considered as a primary matter with reference to promotions, diplomas, or the granting of licenses. It is a fundamental matter with reference to the protection of the State, and must so appear in the education of those individuals who have to do with the education of our future citizens.

In addition to these, which are direct attacks upon tuberculosis through instruction or detection of tuberculosis, there is the far larger topic to be considered of prevention. The following proposed measures are indirect, but fundamental:

It is a matter of common knowledge that tubercle bacilli are so common that practically all persons are affected. The development or non-development of the disease depends primarily upon one's resistance power. The time may come when the disease has been sufficiently conquered so that this will not be the case, and that infection will be the exception rather than the rule. A great number of autopsies performed in this as well as in other countries, of those who have died from other diseases, show that nearly all persons do have tuberculosis to a greater or less extent. Hence the primary factor to be considered in stamping out the disease is the raising of the level of the general power of resistance; that is, the cultivation of vitality, the power to live, the same power which enables one to resist every agency inimical to life.

The specific measures in the conduct of the school which have a direct bearing upon the prevention of tuberculosis are:

1. *Ventilation*.—Upon this there does not remain much to be said that has not already been adequately said, and adequately carried out in the newer school buildings, conducted by intelligent officers. Two thousand cubic feet of air to each person in an hour is not unusual, but is an actually obtained ideal in practically all of the newer buildings which are being erected in our American cities. This air in most cases is either taken from sources where it is practically dust-free, or it is filtered. The general impression seems to obtain that the ventilation in all school buildings is a matter of

general neglect; that none of the systems which purport to give adequate results really do so. That this is not the fact is indicated by an investigation conducted by my associate, Dr. C. Ward Crampton, who in a number of schools made adequate tests on days in which the wind varied in direction and power, making his tests on all sides of the buildings and under varied conditions. The "pockets" in which the air did not circulate were a negligible quantity, and the work done by the apparatus was genuine and really did ventilate the rooms in the way in which it was supposed to. In spite of this fact, however, in these rooms there was sometimes that odor which indicates lack of ventilation. Where there are thirty, forty, or fifty children, many of whom bathe rarely or never during the winter, many of whom do not change their underwear from one week's end, or one month's end to another, who do not perform the toilet of the mouth, who eat onions, garlic, cabbage, and the like—it is impossible to avoid the odor save by such a storm of air as is impossible and undesirable within the school building. What needs reformation is the conditions of the children or of the family.

2. *Exercise*.—The school system as such cannot, should not, and does not pretend to provide sufficient exercise for the growing child. It does, however, in many cases, and should always, provide sufficient exercise to correct the more or less baneful position induced by the school desk. No two school periods should be allowed to follow each other without at least two minutes of "setting up" exercise between them. This exercise should be done whether it is interesting or not, and should be done in such a way as to thoroughly ventilate the lungs, increase the circulation, and contract the muscles of the back which have been taxed in the sitting position.

3. *Playgrounds and Playtime*.—In the building of schools and the planning of cities, it must be remembered that play has been one of the major activities of all the children in all the world, and that a school-house without a playground which is adequate to provide for all the children that attend the school is as anomalous as a school-house without seats in which the children may do their work. The general exercise which is needed as a fundamental factor in aiding to promote growth must come from play rather than from the formal gymnastic exercises of the school-room. The gymnastic exercises of the school-room have already been indicated under the discussion of the way to correct the effects of the school desk. The playground is a place in which there should be that large activity which is relative to growth and development. Not only space, but time, is needed for this purpose. These playgrounds should be open under suitable supervision after school hours, and in the congested districts suitably lit by night, so that those young persons who work by day may have the opportunity to use them during evening hours. The whole tendency of the times is to seek amusement, rather than play. To sit still and be amused is a pastime

having in itself great danger. It fails to arouse the powers of the individual, fails utterly to arouse that self-activity that is essential to life.

4. *School-buildings which are Free from Dust.*—It may at first appear that the dust which is found in the school-buildings is non-dangerous dust. When we remember, however, that it is composed of dirt brought into the building on the children's shoes, of minute particles which are brought from the homes of the children on their clothing, that it is brought in directly from the streets through the open windows, it is evident that it is to be considered as a direct element of danger, and is not to be breathed.

Singing while dancing or marching is one of the joys of childhood which has its place in education, but where it is carried on under such conditions that a cloud of dust arises by the activity of the children themselves it is not only of doubtful value but should be stopped. The emphasis, however, should be placed on the removal of the dust, rather than on stopping the activity. It is possible to have school-buildings and school-rooms practically without dust. Even old buildings can have their floors so treated as to be relatively dust-free. There is no reason why school-buildings should not be constructed with reference to sanitary principles, as hospitals are—and there is just the same reason for having schools sanitary places as there is that hospitals should be sanitary. Children ought to be able to dance and sing, and to march and sing; but this should not and cannot be done under the ordinary conditions of the ordinary old school-building.

All that has been said so far implies a new attitude of the State toward health. America is as yet a young country. When we remember that at the beginning of the preceding century 96 per cent. of us lived in communities of eight thousand or less; that most of the families performed most of the trades; that the schools were so few and the number of children that attended each one so small as not to be a factor in the community with reference to the spread of contagious disease, we see the reasons why the present attention to matters of health in schools is so relatively new with us.

It is only recently that we have been having congestion in our cities and congestion in our schools. It is only recently that we have begun to appreciate the fact that the State, in order to protect itself, must bear as definite a relation to the health of its children as it does to their education. These two purposes must be administered in the main by a single department of our government, namely, the public school. Hence it is inevitable that there should be established as part and parcel of our departments of education groups of medical experts who shall see not only that the school is conducted without injury to the health of the school children, but that they are a positive factor in raising up for our republic that body of citizens which is not only intelligent, but which has that background of vitality and

power without which education, science, philosophy, and art are relatively valueless.

CONCLUSION.

In this paper I have endeavored to show, in addition to the already generally recognized need of hygienic conditions in the school, together with a wholesome curriculum embracing exercise, play, and the like—

1. That school systems need and are already beginning to assume a new attitude and sense of responsibility for the health of the children. Health being regarded as fundamental to education;

2. That instruction in personal and school hygiene should be given in all normal schools to the same extent as are such major subjects of the curriculum as pedagogy;

3. That all candidates for license to teach in public schools should be required to pass as severe an examination in school and personal hygiene as in any other subject;

4. That all candidates for license to teach in public schools should be required to pass a strict examination for the detection of contagious disease, and also for such disabilities as would render them undesirable as "risks." Such examination should be given periodically, perhaps once in each five years.