# Health Supervision of American Public Schools.

by

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Presented in part fulfillment of the

Requirements for the degree of

Master of Arts

and

approved by

Professor W. W. Phelan

JULY

1913

## Preface.

Health work in schools has had a wonderful development in the last dozen or fifteen years. It has developed from various hygienic movements which have been correlated into a comparatively new science, best known today as Educational Hygiene. The scope of this science is very broad and covers the five divisions of medical supervision, physical education, school sanitation, the teaching of hygiene, and the hygiene of instruction.

My purpose is to discuss the more prominent phases of medical supervision. In doing this I have relied chiefly upon school reports, reports of surveys, and educational bulletins, supplemented by educational periodicals, and by various treatises lately compiled upon the subject of educational hygiene, and upon sundry other sources, a list of which is attached as an appendix to the thesis.

I shall try to tell how medical inspection

originated, how prevalent health conditions make the work necessary, what methods experience indicates as advisable in initiating a system of medical supervision for an American city, how readily to adapt such suggestions for use in a town or village community, and how to initiate a system suitable for a rural community.

Along with these discussions is included a brief statement of the principal features of the systems maintained in seven American cities in which there are varying degrees in development of the service.

The subjects of the school nurse and of open-air schools have seemed of such importance as to necessitate separate chapters treating of each.

No claim is made of having fully treated the subject of medical supervision of schools. I merely hope to state clearly the most salient facts and practical principles involved in this

most helpful, necessary and ever-broadening service.

F. W. W.

# Health Supervision in American Public Schools.

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## Chapter I.

### The Historical Beginnings of Medical Inspection of Schools.

Ancient Grecian education, in striving to develop ideal citizens, emphasized the harmonious development of the body of the child by means of gymnastic and military exercises. The Athenians especially aimed to develop a beautiful mind in a beautiful body. They sought to produce health, harmony, symmetry and grace in both mind and body. Since that age there has been no adequate national system of physical education.

Until within the last few years the study of hygiene for schools has been confined to a few advanced thinkers and educators. In England the first of these were Roger Ascham, Richard Mulcaster and John Locke. In France the necessity for teaching temperance and hygiene had been earlier discovered by Rabelais and Montaigne.

Later on when Comenius planned an educational system he made school hygiene an important

part of it. He planned to secure large, airy school-rooms and pleasant play-grounds and tried to have physical training regarded as a necessary part of education.

John Locke, the celebrated philosopher, was the founder of school hygiene in the true sense of the term. IN A practical way he combined the duties of physician and teacher. He was also a psychologist endowed with considerable knowledge of the growth and development of the child's mind and with practical insight into its mental processes.

Among the educators of the eighteenth century Rousseau was eminent chiefly as a theorist, yet by his accurate observation of child life he was able to lay the foundation of one branch of school hygiene.

Basedow also studied the physical and educational needs of children and his work has endured as a base for all systems of physical

education. His ideas had influence on the teaching of Pestalozzi, Herbart and Froebel.

Those more enlightened members of the medical profession who interested themselves in schools have been of especial aid in developing school hygiene. Peter Frank of Austria was the first of these. HE interested himself in the school sanitation and subject of school fittings, and suggested a complete system of medical police.

NExt came Peter Hendrick Ling of Sweden who organized a scientific system of physical training which the government of Sweden adopted in 1813. They established at Stockholm a Central Gymnastic Institution which was under his supervision and control. Ling devoted his life to training a generation of teachers in this special line. As a result of these new ideas of hygienic training, medical men were attached to the staff of some of the Swedish secondary schools as early as 1830. Statutes passed later fully prescribed their duties. (1863)

In Germany, Dr. Karl Lorinser made a careful study of the hygienic condition of the schools and, in 1836, published his findings in a pamphlet wherein he blamed the prevailing educational system for the deterioration of the children's health.

In France, Dr. Seguin published a book on school hygiene in 1842.

Dr. Cohn of Breslau, who had been an army surgeon during the Prussian war of 1866, having noticed much defective vision among the German soldiers, was led thereby to turn his attention to the schools of Breslau. He examined the eyesight of 10,000 school-children there and published the result in a report which attracted wide attention.

As a result medical inspection of schools was advocated in 1869 by Virchow and was discussed during the same year in the Scientific Congress at Innsbruck. Dr. Cohn later drew up a scheme of duties for school-physicians which was

first considered at the International Congress of Hygiene at Geneva in 1883.

In England nothing at all was done up until 1870. The general attitude of the people was one of indifference or opposition to the new ideas for improving the health in the schools. As an instance, the British Factory Act of 1802 was designed to protect the health and morals of apprentices in mills and factories. After its passage both manufacturers and parents petitioned against the enforcement of the law.

In 1875 Prof. Bowditch, of Harvard University, recorded the measurements of height and weight of 35,000 school-children in Boston. The result showed surprising differences for children of the same age.

In 1881 Hertel of Copenhagen began an extensive inquiry into the conditions of school life. The next year, he reported that, of 16,000 children examined in both primary and secondary schools, 39% were unhealthy.

In 1884 a Royal Swedish Commission was appointed to investigate health condition in the schools. On behalf of this Commission, Prof. Axel Key examined 18,000 children in several countries and published a report upon the growth and development of boys and girls at different age periods. He discovered that approximately 35% of the children were suffering from chronic physical defects such as anaemia, headache, and short-sight.

In England, in 1888, a Committee of the British Medical Association was appointed for the scientific study of the mental and physical conditions of child life. In 1892 Dr. Francis Warner published a full report of the examination of 50,000 school-children in 106 schools; and later, in conjunction with Dr. Shuttleworth and Dr. Beach, issued another report upon 50,000 more children. The result was to arouse general interest in the whole subject of school-hygiene. In fact, Dr. Warner laid the foundation of the

science of child study.

As a result of the interest thus aroused progressive English schoolboards, taking a wide view of the general powers conferred upon them by the Elementary Education Act of 1870, began to appoint medical advisers as "necessary officers" under the authority of that act. In 1891, a medical officer was appointed by the schoolboard for London. Two years later Dr. Kerr was appointed at Bradford. He seems to have been the first medical man to enter the schools daily as a school doctor, and to study all problems of school hygiene, working in conjunction with the teachers in the interests of the children.

The "Blind and Deaf" act of 1893 and the "Defective and Epileptic" act of 1899, made statutory provision for the appointment of medical officers for schools. Especially since the Education Act of 1902 have medical officers been appointed for various purposes---some to give lectures in hygiene to the teachers, some to

examine children with defective vision, others to examine mentally defective children and children alleged to be physically unfit to attend school, and others to report upon the sanitary condition of school premises. However nearly all these appointments were held in conjunction with other officers, and were insufficiently paid.

In 1905, twenty "part-time" medical inspectors were appointed in London, and to each was assigned one of the metropolitan school areas. The greater portion of their time was occupied with the inspection of physically and mentally defective children in the schools and the examination of children with defective vision. At the same time they gave advice to the teachers concerning the general hygiene of the schools and of the children. In addition, a staff of thirty-two nurses, under a lady superintendent, was employed for the routine examination of all children with respect to verminous and parasitic con-

ditions and to contagious skin diseases.

The Educational Bill of 1906 contained a permission clause empowering local school authorities to make provision for health inspection. A year later such inspection was made obligatory upon the local education authorities (Act of 1907).

In Sweden as far back as 1832 the lessons in the schools were diminished in the interest of health, and since then they have been twice diminished in Germany for the same reason.

France, as early as 1833, issued regulations concerning medical inspection which were chiefly concerned with the sanitary condition of the school-houses. In 1842, the city of Paris passed an act requiring the schools to be inspected by physicians.

Leipzig and Dresden were the first cities in Germany to have medical inspection. The beginning was made in 1867 by looking after contagious diseases, but it was not until 1889 that

a system of true medical examination was established.

The movement spread rapidly and was taken up by city after city. Wiesbaden was the first German city to make a test examination of all pupils. An unusually high percentage of defects was revealed, of which the pupils, the teacher, and the parents were wholly ignorant. It became quite evident that a medical examination of at least all children entering school was of the utmost importance, so, as a result a system of regular examinations was established.

The provisions of the Wiesbaden plan are: systematic examination of heart, lungs, throat, spine, skin, and the higher sense organs (and in the case of boys also examination for hernia). The findings are entered upon a report blank, which accompanies the child from grade to grade in his chool life. Twice a year the teacher records the height and weight of individual pupils. Wherever it is deemed necessary the

school physician takes chest measurements. Those children that seem to require a doctor's care have that fact plainly noted on their cards and report at regular intervals to the school physician. All pupils must be carefully re-examined in their third, fifth, and eighth school years. The school physician must give advice to the teacher with reference to the child and, where there are cases of defects requiring medical attention, the parents of the child are notified. It is not the duty of the school physician to give treatment. The system also provides for careful service for the detection of contagious diseases and for the inspection of school buildings and surroundings.

Thus the chief characteristic of this method is in a strong emphasis upon the hygiene of the school child, without in any way neglecting the hygiene of the school building. This Wiesbaden method of school inspection was, in 1898, generally adopted throughout Germany.

After various scientific congresses (1869 1883, etc.) school physicians were appointed in different cities of Sweden, Austria-Hungary, France, Egypt, Belgium, and Holland, as well as in Japan, Chile, Argentina, Switzerland, Russia, Roumania, Servia, Germany, England and the United States.

In Switzerland, the national government took charge of the system. IN England, medical inspection became nation-wide on January 1, 1908.

The Japanese system was established in 1898, the Minister of Education having ordered the selection of salaried school physicians for all public schools. Frederick J. Haskin, writing of the work there in 1898, says: "The Japanese system of medical inspection extends over the whole empire and reaches the most remote rural community. Thus the Japanese department of education is able to tell how many children are in the schools of the empire, how many

are robust, medium, or weak, how many have defective eyes, and what diseases are most prevalent at different ages of shcool life. In short, they know the exact condition of all the school-children in the nation."

Since 1888 Moscow has had school physicians whose duty it is to examine all pupils once a year and make reports of the results. Since 1895 six physicians have been in charge of health matters in the 72 elementary schools, and since 1888 two female physicians have been employed at the girls' high school. Besides their other duties these doctors are required to treat poor sick pupils free of charge, to vaccinate and re-vaccinate, and to manage affairs in case of epidemics.

The system established in the Argentine Republic has been credited with being one of the most complete and efficient in existance. It provides for the vaccination of school children, examination of the sanitary condition of school

buildings, the visiting of sick children in their homes, the prevention of contagious diseases, the delivering of regular scientific lectures, and the giving of free medical advice to teachers as well as to pupils.

Even Africa has felt the influence of the movement, for in Cairo, Egypt, a salaried school physician and two salaried assistants have been employed since 1883, having the supervision of 5,000 pupils.

The first regular system of medical inspection in the United States seems to have been at Boston in 1894. In 1892 an appropriation was made for the purpose of detecting contagious diseases, but it was two years later before school physicians were secured. Then fifty physicians were appointed.

In New York, the Sanitary Superintendent, Dr. Edson, appointed Dr. Morse as medical inspector of schools in 1892. So it is probable that Dr. Morse was the first medical inspector

of schools in the United States. In 1897 the New York Board of Health appointed 134 medical inspectors for public schools. Dr. Blauvelt was made chief inspector at an annual salary of $2,500.00. Chicago began the good work in 1895, and Philadelphia in 1898.

By 1910, some nine or ten states had passed special laws regarding medical inspection in the schools. The Connecticut legislature in 1889 passed a law providing for the testing of eyesight in all the public schools of the state. This required that the superintendent, principal, or teacher should test the eyes of the school-children during the fall months and should send a written report of the results to the parents. The material necessary for this inspection was furnished by the State Board of Education. The boards were authorized to employ competent physicians as medical inspectors. The next year Vermont passed a similar law.

In 1906, the Massachusetts legislature

passed a law providing for a system of medical inspection over the entire state. This law is mandatory in its provisions and requires each town and city to establish and maintain a system with competent physicians for the detection of contagious diseases. Examinations are also to be conducted annually by the physicians for the detection of non-contagious diseases and physical defects.

About this time the state boards of health of New York, Utah, and California conducted examinations of the eyesight and hearing of students without waiting for any special enactment on the subject.

In 1900, only eight cities of America had any organized health work in schools. By 1908, there were seventy cities outside of the state of Massachusetts which had established for their schools systems of medical inspection. Of these about one-third were under the direction of the board of health, one-half under the board of

education, and the other one-sixth under the supervision of medical societies, of volunteers or of various philanthropic associations. By 1913 over 400 cities had organized departments for the health supervision of school-children, and as Dr. Leonard P. Ayres remarks, "This development is without parallel in the history of education." For instance, no school had ever heard of a school nurse in 1900, for no city in the world then employed one; but by 1911 corps of school nurses had become permanent parts of the educational forces in 76 American cities, and 48 cities were employing staffs of school dentists, while school baths, school feeding of anaemic children, open air schools, special classes for all sorts of exceptional children, and free treatment of defects of poor children, were redeeming truants and incorrigibles, were making the work of the school more practical and more efficient, and were helping untold thousands of children to achieve better, fuller,

happier lives.

## Chapter II.

### Public Health and The American Public School.

"Health is the only real wealth", says Emerson. Health is a fundamental value of life and will always remain so, as it is practically inseparable from life itself. In spite of this truth we are everywhere confronted by the fact that health, including normal physical development, longevity, and splendid bodily resistence, is being only very inadequately achieved by millions of people.

When a third of all the children born with such cost into a civilized community like America die before the age of five, and half are dead before the age of twenty-three, when the average term of life is but thirty-eight years instead of fifty or sixty, and when illness, deformities, and a multitude of physical defects are afflicting the race with an immense and overburdening cost, it would seem that every agency that the state has at its disposal should

be vigorously engaged in preventing these enemies of health and vitality and eliminating them from the world, or at least should be lessening their present destructiveness.

In the place however of such universal and united resistance to a common foe, we find a great private medical profession that lives by the diagnosis and cure of existing ailments, but not primarily for their prevention and final elimination from the world. Outside of China, disease has long been the friend, not the enemy, of physicians, for it has been disease that has brought to them their livelihood. It should today be made the physician's chief mission and means of livelihood to banish from the earth the enemies of health and physical perfection.

This utopian condition is now coming swiftly upon us in the very rapid increase of public agencies for securing health and preventing disease, which are manned by doctors and nurses in

great numbers. Dr. Winslow and others of our most noted public hygienists, prophesy, indeed, the complete or almost complete socialization of health service in the next few decades. Great insurance societies are finding it to their advantage to keep their policy-holders well by periodical examinations, health instruction, nipping incipient ailments, and by sending visiting nurses to those who need their help.

The Postal Life Insurance Company, for instance, urges upon its policy-holders the free service of its Health Department which prepares and distributes timely bulletins on health-preservation and disease-prevention. It also gives advice by correspondence concerning matters of personal hygiene or health-preservation and gives to each policy-holder the privilege of one free medical examination each year so as to detect disease in time to check or cure it, and thus reduce the mortality and make additional savings for the Company and the

policy-holders.

Our governmental health service, in the form of local, state, and national health departments or bureaus, has a far greater motive for disease prevention, but it is, in general, though with many exceptions, exceedingly inadequate and inefficient. However the staffs of these bureaus are now being so increased that preventive medicine is really making fairly rapid progress.

The elimination of unnecessary ill-health depends fundamentally upon the two factors of nature and nurture, of eugenics and hygiene. Ideally, of course, we should all be the offspring of physically and mentally perfect parents. This would be our strongest insurance for the possession of like characteristics. To help in some measure to bring about such a happy state, to eliminate many of our most terrible losses in the way of feeble-mindedness and gross physical imperfections that are inheritable, and to give sound biological ad-

vice to the hygienist working with environment, in order that he may prevent the bringing out of native weaknesses -- these are the objects of many eugenic agencies now springing rapidly into being.

While certain factors in heredity are of the utmost importance to the hygienist, his chief work lies in the control of environment. It is the duty of the state to insure, within reasonable limits, that its children and future citizens shall be well-born; but the duty which, in the immediate present, is far clearer and simpler is that of providing such environmental control of the population, young and old, that disease, premature death, and physical defects may be reduced to a minimum. The public agencies for such health control may be briefly classed as follows:

1. Medical or health supervision of the population.
2. Securing in all ways a sanitary environ-

ment.

3. Medical or health research.

4. Educational control of the population.

The last-mentioned means, educational control of the population, far outweighs in importance all the others. Every agency for bettering health soon discovers and announces that the progress of health measures depends absolutely and finally upon the education of the people, old and young. If laws for health improvement are to be enacted, they must have the support of an enlightened public, both before and after they are passed; if health measures are to be practised they must, through some form of educational effort, be made habit. In short, the most fundamental means of health improvement is through education in the habits, knowledge, ideals, and the physical development which go with socially efficient right living, personal and public. Such education should be-

gin at birth and last throughout life. It can only be partially monopolized by the public education, or schooling, system, although, since it influences individuals in their most plastic and formative period, that of childhood, the public school stands out easily as the greatest single instrument for health promotion possessed by the civilized world.

Educational hygiene, in its widest sense includes all agencies for the promotion of health measures through education. Such are the boards of health, the newspapers, the magazines, the public lecturers of the American Medical Association, the leading insurance companies, the anti-tuberculosis and other societies, and many other active agencies.

In the narrower sense educational hygiene is the name given to all the phases of health promotion work which may be and are undertaken by schools, particularly public schools, for people of all ages, but especially between the

ages of four and twenty-four.

When school physicians and nurses have consultation hours for mothers with babes in arms, when nurses go day after day into the homes to help improve home hygiene, when the schools are used as social centers for the health-education and recreation of the community, when there is health vocational guidance both in and after the school period, then we see something of the broad influence of this new "educational hygiene". The chief phases of this rapidly developing science are medical inspection and supervision, physical education, school sanitation, the teaching of hygiene, and the hygiene of methods of teaching and management.

The death losses to our country are enormous and largely preventable. Professor Fisher, in his book on "National Vitality", estimates that in general about 42% of the deaths of persons in the United States could be reason-

ably prevented or postponed, "if knowledge now existing among well-informed men in the medical profession were actually applied in a reasonable way and to a reasonable extent". Thirty health experts assisted him in making his estimates and these estimates are fairly conservative, being based on present data, counting not at all on the assured advance in preventive medicine.

Some of the leading facts shown by these statistics are as follows:

1. One-fifth of all the children born each year in this country die before they are a year old, about a half million in all. Where the health-agencies are fairly efficient and developed, carefully conducted infant-mortality campaigns have cut this death-rate down to about one-tenth of these proportions.
2. Half of the persons born in our country die before they are twenty-three years old, about half of these deaths occurr-

ing before the age of five.

3. The average age of persons dying is gradually rising, but is still below the age of forty -- being near thirty-eight.

4. Approximately 1,600,000 of our population die each year, making about 670,000 (42%) of reasonably preventable deaths. It is possible to compute the value of a life at various ages, and economists estimate the average value for all ages to be $1,700.00. Thus the economic losses due to these deaths are at least a billion dollars anually. These losses appear principally in the form of cut-off potential earnings. Further factors of loss are the expense of public and private care of the sick and dead.

Moreover about 3,000,000 persons in the United States are constantly seriously ill, thus

causing loss of wages, lowered vitality, and frequently death. These illnesses, now so largely preventable, cause further enormous economic losses, which Prof. Fisher estimates at about another billion dollars per year. It is of course impossible to estimate the losses in happiness, and in the evil effects of breaking up homes, which these illnesses and deaths produce. Furthermore an added loss is sustained from physical defects which prevent or impair efficiency.

Efficient health agencies decrease the number of cases of illness and the proportion of deaths from them. Many city and state boards of health print on their various bulletins these significant words: "Public health is purchasable. Within natural limitations a community can determine its own death-rate."

Of the annual death-loss in the United States over 100,000 are children of elementary and high-school age. It is probable that at

least 60,000 of these deaths are preventable. The economic losses due to the cost of educating for several years in public schools the children who die in this period are of course the source of an immense public waste that is largely preventable.

Illness and physical defects of both teachers and pupils in the public schools, besides producing enormous financial losses, both personal and public, also cause lowered vital efficiency and happiness, and elimination, non-promotion, and retardation at school.

Since 1882, when the bacillus of tuberculosis was discovered, the science of preventive medicine has grown by leaps and bounds. One by one the germs of other diseases have been recognized and described and means of combating them discovered. To protect the child and the community, medical inspection for the detection of infectious and contagious diseases was begun in

the schools of New York City in 1892. Since then the movement has spread rapidly, until now most of our large cities as well as several states, maintain some form of medical inspection, and it now appears that in the course of a few years every community will provide this enlightened and necessary activity and thus the efficiency of our school-system will be correspondingly increased.

State control of health inspection depends upon the fact that a large proportion of the children attending state schools are suffering from preventable and remediable diseases. It matters not for the moment to what extent the home is responsible, nor how far the diseases are aggravated by school life. It is enough that many of the defects are not recognized either by teachers or parents, who alone are in contact with the children. Hence it is clearly a national duty to develop a system and provide means by which these preventable and remediable

defects may be brought to light in order that they may receive treatment to secure their eradication or amelioration.

It is not so important to the state where the health-inspection of its future citizens is made, so long as a careful physical examination is made and all defects and pathological conditions are removed. However, since the children are collected together in state schools for from eight to twelve years of their lives, it becomes a matter of convenience for the state to delegate its responsibility to the education department.

The preservation of a nation and the maintenance of its institutions, as well as its whole future progress, depends upon the education of its future citizens. Hence it is not more than right that the government of a nation should take whatever steps are found necessary to safeguard the national future.

So,long ago, the idea was brought forth

by German educational theorists that the state should take charge of the school systems and should compel all children to attend school. As a result the state began compulsory education in order to secure the general welfare of the country. Since that time compulsory school attendance has become well-nigh universal in civilized countries. Practically all the nations of Europe, many of the states in the United States, and even countries in the Eastern Hemisphere have passed similar acts.

Now, as a large percentage of all children are diseased or defective, it is manifestly unfair to compel those children to attend school who are physically unable to do the school-work required of them. It is just as unfair to the other pupils in the schools to force them to risk their health, and often even their lives, by associating with other children that have various communicable diseases or affections, whether these be serious or

merely annoying. To solve this problem, it is absolutely necessary that medical inspection should go hand-in-hand with compulsory education.

In cases of serious epidemics we have always recognized the fact that parents have the right to insist that the schools must be kept in such condition that their children may attend in safety. Our regard for this right has been shown by excluding from school those exhibiting suspicious symptoms of the disease and sometimes by closing the schools during a severe epidemic. Often we have insisted on vaccination of students and fumigation of buildings.

But for those children with defects of body and mind, there has, until recently, been no provision made for suitable school work for them. The schools have in the past been forced to group the children in large classes without consideration of their physical and mental con-

dition and the courses have been based on an assumed universal mental and physical equality that does not exist. Nowadays, wherever possible, we provide special classes for pupils that are backward, retarded, incorrigible, feeble-minded, tubercular, anaemic, crippled, or super-normal, as well as for truants, stammerers, children of foreign parents, children requiring vocational training, etc.

A few years ago the United States government began to take more active interest in the conservation of children and established the Bureau of Child Welfare to aid in the health movement by studying the present conditions by collecting and collating more complete statistics, and by disseminating information of the conditions as well as of remidies and preventive meadures.

Conditions differ more or less in city and in country, in different countries, and in different parts of the same country. English

inspectors estimate that, of the children in the elementary schools of England, an average of about 80% are suffering with defective teeth, that 50 % are affected with vermin or other parasitic conditions and 20% with defective vision, while over 10% are retarded in their educational programs by physical defects such as anaemia, general debility, and deafness resulting either from adenoid growths or from discharging ears.

Out of about twenty million pupils in the schools of the United States, it is estimated that four hundred thousand have heart disease, one million have some deformity, one million have diseases of the lungs, five million have a defective vision, five million some form of mal-nutrition, six million enlarged tonsils, and adenoids, and over ten million have defective teeth. Some experts claim that 80% of these diseases may be prevented by the proper medical inspection.

Dr. Cubberley and Dr. Strayer, two of the

foremost American authorities upon school questions, state, in the reports of the school survey of Butte, Montana, that on the average 60% of school children have defective teeth; 12% are poorly nourished or anaemic; 30% have, or have had, obstructed nasal breathing, or enlarged tonsils; 10% have enlarged cervical glands many of which are tuberculous; 50% have been infected at least once with tuberculosis, many of whom will probably die of the disease; 12% have defective vision serious enough to require correction by glasses; 5% have seriously defective hearing; 2% have organic heart disease; 6% are nervous, or predisposed to some form of nervous disorder; 1% are so mentally backward that their intelligence will never go beyond that which is normal for the twelve-year old child; while from 15 to 20% sleep in a bedroom with no window open; and 50% are not supplied with the kind of food which young children should have if proper growth and mental de-

velopment are to be expected.

It is probable that the above are under, rather than over, estimates.

Even considered merely as an economic problem, it is a waste of time and money to pay a teacher from $60.00 to $100.00 per month to attempt to impart instruction to a child that is physically incapable of absorbing 25% of the instruction provided.

Not only does such a child fail to make progress and hence gravitate inevitably toward failure in life, but, by absorbing an undue proportion of the teacher's time, he retards the progress of other children. Statistical studies have shown that an unduly large proportion of criminals and prostitutes are recruited from this class of defective children.

The number of diseased children found in New York City in less than three years and the results of their examination are shown in the following table:-

Physical Examination of School Children - Performed By The Department of Health in the Borough of Manhattan, 1905-1907.

| Items. | Total | Per Cent |
|---|---|---|
| No. of children examined | 275,641 | 100. |
| No. of children needing treatment | 198,139 | 71.9 |
| Defects found: | | |
| Malnutrition | 16,021 | 5.8 |
| Diseased anterior or posterior cervical glands | 125,555 | 45.5 |
| Chorea | 3,776 | 1.3 |
| Cardiac disease | 3,385 | 1.2 |
| Pulmonary disease | 2,841 | 1. |
| Skin disease | 4,557 | 1.6 |
| Deformity of spine, chest, or extremities | 4,892 | 1.7 |
| Defective vision | 58,494 | 21.2 |
| Defective hearing | 3,540 | 1.2 |
| Obstructed nasal Breathing | 43,613 | 15.8 |
| Defective teeth | 136,146 | 49. |
| Deformed palate | 3,625 | 1.3 |
| Hypertrophied tonsils | 75,431 | 27.4 |
| Posterior nasal growths | 46,631 | 16.9 |
| Defective mentality | 7,090 | 2.5 |

There are two main types of health supervision now found in the schools of the United States. The first is the so-called "medical inspection", which is carried on, often by local physicians who devote a few hours a week to the detection and control of contagious diseases. This represents the usual beginning of health service in the schools. In nearly all cases this is merely an extension of the functions of the local board of health. The cost is very small, averaging in the United States about 13¢ per year for each child. It has been proved beyond question that medical inspection of this type has a great value. Still it is but the primitive type of school medical service, and hence has been superseded in most of the larger and many of the smaller cities of the country by a much more fully developed and perfected system. This second kind of school medical service goes far beyond the mere "medical inspection" in which the work began where the chief aim was to

control contagious diseases. It has for its purpose the "health supervision" of schools in the broadest sense. It aims not only to control contagious diseases, but also to discover every form of physical defectiveness which may exist among the pupils, to bring about, by means of an efficient follow-up service, the correction of as many of these as possible, and to secure in the schools sanitary conditions as well as adequate supervision of all school activities for the purpose of preventing conditions that may lead to ill-health. Defects of teeth, throat, eyes, nose, cervical glands, ears, nutrition, heart, lungs, nervous system, and skeletal development are carefully sought out.

This type of health supervision has such a wide practical scope that it includes or should include, physical training and playground activities, medical control of athletics, physical examinations of candidates for teaching positions, supervision of the school pro-

gram from the point of view of hygiene, the segregation of defective children in special schools (open-air schools, schools for the deaf, blind, crippled, feeble-minded, etc.), home education in matters of hygiene, expert construction and sanitation, besides many lines of work more or less preventative in nature.

The following quotation is from the report of the Commission of educational experts selected to make a survey of the schools of Butte, Montana, of which Commission Dr. Strayer of Columbia University and Dr. Cubberley of Leland Stanford were leading members:

"In a city the control of health supervision should unquestionably be vested in the school-board and not in the board of health. The former method of control has now superseded the latter in more than three-fourths of American cities and is rapidly coming to be a standard requirement.

While it is possible for the work to be

effectively carried on by a board of health, it is extremely unlikely that it will be. The board of health lacks the educational point of view, usually makes the work merely curative rather than preventative, neglects the so-called "minor" forms of defectiveness, makes the school service a side-issue of the public health work, and fails to secure the maximum co-operation from teachers and parents."

New York state in 1913 passed a law authorizing the employment of medical inspectors and school nurses. The enactment of this law was based on the broad ground that, when the state makes the attendance of a child upon instruction compulsory, it is the duty of the state to protect the life and health of such child, not only by requiring sanitary buildings in which he receives instruction, but also by protecting him from the liability of having a disease communicated to him by another pupil.

Commissioner Finegan says that this law

has incorporated in it four fundamental principles which are vital to the most effective and satisfactory operation of a system of medical inspection in public schools. These principles are:

1. That the medical inspection of the children in a public school system is purely a school question and hence a law requiring such inspection should be administered by the school authorities.

2. That a parent possesses the legal right to have such examination of his children as the law may demand made by a physician which such parent selects.

3. That local school authorities should possess the same power and obligations in relation to the employment of physicians, nurses, etc., in providing for the physical necessities of school children that they possess in relation to the employment of teachers, supervisors, superintendents, etc., in providing for the in-

tellectual needs of such children.

4. That penalties should be imposed upon cities and school districts for failure to enforce a medical inspection law on the same basis that penalties for failure to enforce the compulsory attendance laws, fire laws, or other statutes affecting the schools are imposed.

Medical inspection is a school question and hence should be administered by the school authorities. It has been shown by experience that the administration of a system of medical inspection by any other agency will result in a waste of funds, and in the usual embarrassments and conflict of authority brought about by a division of responsibility in the general direction of any one proposition and will therefore result in great inefficiency. It should be clearly understood, therefore, that the medical inspection required in New York state is under the provisions of the Education Law and not of the New York public health law. The enforce-

ment of the law is under the supervision of the school authorities and not of the health authorities. When health officers in towns or villages are employed by boards of education or school district trustees, such health officers are under the general direction of and responsible to the school authorities and not to the health authorities.

Compulsory attendance laws universally recognize the right of a parent to provide in his own way the minimum amount of instruction which the state decrees each child shall receive. A parent can not be compelled to send his child to a public school. He may send him to a private school, or he may employ a private teacher and educate his child at home. This same principle must be applied to the enactment of medical inspection laws. The state may properly require evidence of a child's freedom from disease and of his physical fitness to attend school. No one can question the authority of

the state in this matter, nor its policy in protecting the child's right to receive treatment for defects which are impediments to his proper physical and mental development.

However great the authority of the state to control this matter may be, the parent must first be given the opportunity to provide any required examination and treatment and wilful negligence on the part of the parent in providing these necessary requirements affords sufficient ground for the state to supply them.

In order to secure such active interest as will lead to intelligent and effective activity both parents and teachers must be taught the meaning of vitality. Vitality, must be set forth as the aim of growth, the basis of happiness, the secret of success. School hygiene works for the buoyant, complete child, for physical force expressing itself in mental and moral force, for physical power trained to efficiency. If parents can be made hungry for

their childrens vitality, the battle of school hygiene is half won, only the proper information being needed to effect the desired changes. Without this hunger the information will be little heeded. Let us, then, lead them to realize that health and vitality is purchasable with money, time, and effort.

## Chapter III.

### Initiating A System of Educational Hygiene in an American City.

Such rapid progress has been made in the development of medical supervision of the schools of American cities that the methods, the scope, and the details of its administration are constantly changing, thus making it almost impossible to give an up-to-date account of this service for all American cities. However, a general statement will be given of typical plans of organization and administration of medical inspection and supervision and this will be followed by several summaries condensed from the reports of the school authorities of several cities or of outside survey commissions.

Health work in school needs standardization. A wide variety exists in the methods now in vogue in various American cities for carrying on this work. Other places attempting such organization for the first time should study carefully the experiences of the cities that are already

organized in shcool health matters. School superintendents are not specialists in the field of educational hygiene. Their education generally has been lacking in training along the lines of the physical, rather than of the mental, nature of children, and the larger share of the various health measures have come into the schools because of pressure by organizations and individuals from without the school systems.

The superintendent who desires to secure organized health supervision in his schools, should get some of the best books and pamphlets on the subject and a number of school-health reports, especially from cities or regions of about the same size as his own. United States Bureau of Education Bulletins 555, 528, 648 and No. 50 of 1915 will furnish valuable information. Various publications of the Russell Sage Foundation, and of the University of Chicago Press as well, may also aid. After having informed himself thoroughly, the superintendent must next

interest his teachers.

Give them some of the most vital facts about the subject and lead them to procure good hand-books on school-health to use in reading-circle meetings at the school-building. Arrange for talks by doctors, nurses, principals, superintendents and others, particularly medical specialists. Get each teacher to study carefully the local health situation in her room and lead her to see possibilities for health betterment there.

At the same time the newspapers should be used. The superintendent should talk with the editors over the findings in other cities and the health needs of the local schools and should explain to them what he hopes to accomplish. By quotations from papers, magazines, and books, by stories of the findimgs of the teachers when they begin to make their preliminary surveys, and of the doctors and nurses when they begin their work, and by pictures of conditions from

other places, much interesting material may be used to get the people to thinking along school health lines. Almost no resistance is found to any demand made upon parent or tax-payer if it is plainly shown that compliance will remove obstructions to school progress. Public opinion is not a thing to scorn or to disregard, since among the democratic institutions modification of function generally results from the impact of public sentiment. It is an evident consequence, however, that in a democracy the adoption of new methods must proceed much more slowly than it does in a monarchical form of government. Hence the superintendent must give thoughtful consideration to the prejudices, enthusiasms and social peculiarities of the community. He must study the people that he expects to bring up to a higher standard of personal and public hygiene, at least as carefully as the teacher must study the children she is to educate. It is best that the people should

be led to feel the need of medical supervision. If they can be led to demand and work for this, so much the better.

After the teachers have come to a realization of the importance of more attention to the health problems of the school and of the community they should be shown how to do something to better the conditions.

Dr. Hoag is of the opinion that, with the help of certain detailed suggestions, most teachers can discover 90% of the ailments of school children. This estimate is probably too high and in the Ohio School Survey it was shown that such is the case. However, it has been plainly shown that it is possible for teachers to pick out the most flagrant cases -- the very ones with whom the work should begin.

Therefore, at this point, a school health survey, or census, is strongly advised by Dr. Rapeer, to be made by the teachers, principals, and superintendents, perhaps with some volun-

tary outside assistance. This survey should include: Medical Supervision, School Sanitation, Physical Education, and the Teaching of Hygiene, and perhaps the Hygiene of Methods, or Instruction. Here should be used Dr. Hoag's abbreviated card form of "An Outline For a Health Survey", as given on page 21 of Bulletin 555 of the United States Bureau of Education. It is as follows:

A Teacher's Health Survey of the School Child.

Name_____ School_____ Grade__

Age_____ Date_____

| | Yes | No |
|---|---|---|
| 1. Have you ever been in a grade more than one year? | | |
| 2. Have you ever had any serious sickness? | | |
| 3. Do you feel stong and well now? | | |
| 4. Do you eat breakfast every day? | | |
| What do you eat for breakfast? | | |
| 5. Do you eat a noon meal every day? | | |
| 6. Do you drink coffee? | | |

7. Do you always have your bedroom window open at night?

8. Have you been to a dentist within a year?

9. Do you have toothache often?

10. Do you own a toothbrush?

11. Do you use your toothbrush every day?

12. Do you have a toothbrush of your own?

13. Do you have much trouble with headache?

14. Can you read writing on the blackboard from your seat?

15. Does the print in your books run together or look dim or crooked?

16. Do your eyes hurt after reading a good while?

17. Do you sometimes see two letters as two lines instead of one?

18. Do you often have earache?

19. Do your ears ever run?

20. Can you always hear the teacher?

21. Do you go to bed by 9 o'clock?

22. Do you go to bed by 10 o'clock?

23. Do you bathe at least once every week?

24. Have you ever been vaccinated?

25. Have you ever had small-pox?

Remarks:-_____

_____

This child has had the following diseases at the age indicated below:

| Name | When | Years Old. |
|---|---|---|
| Chickenpox | | |
| Diphtheria | | |
| Measles | | |
| Tonsilitis | | |
| Mumps | | |
| Scarlet fever | | |
| Whooping cough | | |
| Pneumonia | | |
| Typhoid fever | | |
| Small pox | | |
| Tuberculosis | | |
| Infantile paralysis | | |

_____

Dr. Hoag's Diagnostic Chart for teachers,

given in his "Health Index of Children" and in "Health Work in the Schools" is also valuable for daily use after the survey is over. For vision tests, Snellen test charts may be used, and principals or superintendents may even use the Binet-Simon tests for intelligence for a few selected pupils. After teachers and principals have studied each child from the standpoint of health, the results should be summarized and published.

Then it will be well to secure what-ever voluntary assistance is available from doctors, dentists, occulists, psychologists, and neurologists in order to verify any unusual or serious findings. The parents of children that have been found defective should be tactfully notified and asked to have the teachers findings checked and the ailments, if any, treated and cured by their family physician or by some efficient specialist.

Unusual tact should be used in making this

presentation of the teachers' findings to the parents. Moreover the estimate of the pupils' condition should be very cautious and conservative, in order that only real ailments and defects may be reported and thus the confidence of the parents in the teacher's judgment be increased and assured. To this end, it is still better if the work of the teachers can be confirmed or modified by the voluntary work of specialists before a formal report is made to the parents.

When, in the judgment of the teacher, one or more conditions have been discovered which need attention from the family physician, specialist, or dentist, a notice to such effect should be sent to the parents in about the following form:

Date_____

Notice to Parents or Guardians:

_____appears to the teacher to be in need of attention to_____.

A further examination by your family physician,

dentist, or specialist, is advised.

_____
Principal.

_____
School.

The parent will please sign here and return the notice to the principal.

Notice received_____
Parent.

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Various other forms of notice and also more elaborate forms for survey of pupils' health, etc. may be found given in U. S. Bulletin No. 555, p.18; in Dr. Cornell's "Health and Medical Inspection of School Children", p.61; in Dr. Rapeer's "Educational Hygiene," p.116; and in many reports published in recent years of school surveys in various American cities.

While the scope of the work to be undertaken will necessarily vary in different localities, the following is considered reasonable as a standard of the minimum that should be expected in an American city of from 50 to 150 thou-

sand inhabitants:

1. Frequent inspection of all the children by school nurses for the control of transmissible diseases, with proper regulations for exclusions;

2. A thorough medical examination of each child at least every second school year, for the purpose of detecting chronic defects as well as acute disorders;

3. Annual tests of vision and hearings, either by nurses or teachers;

4. Persistent follow-up work by nurses, in order that parents may be convinced of the necessity of having their childrens' defects attended to;

5. Free medical and dental treatment in a central clinic, for the children of poor or indigent, by a regularly employed school physician and dentist, this to be supplemented by cooperation with local dental and medical societies and with hospitals and dispensaries;

6. Sanitary inspection of school buildings by nurses and physicians;

7. Medical examination of candidates for teaching positions;

8. Open-air school for tuberculous or anaemic children;

9. School lunches for the ill-nourished, furnished gratis to those who can not afford to pay;

10. The education of the home in matters of child hygiene by means of parent teacher associations, distribution of health leaflets, etc; and

11. Publicity work for enlisting the co-operation of the general public.

In order to give proper scope to the work, and in order to insure effective co-operation among its various branches, it is usually advisable to have it under the control of the board of health.

The total cost of such service should be

from 75 cents to $1.00 per year for each school child.

The growth of school health work in the cities of the United States, and other countries as well, is marked by certain well-defined stages.

It always begins in an effort of the board of health to prevent the spread of transmissible diseases in the schools, to eradicate parasites, and to improve the sanitary conditions of the buildings. This work represents the first stage of health supervision, and is usually called "medical inspection."

After this phase of the work has been gotten well in hand, and when the medical inspectors have had more opportunity to observe and study the physical needs of the children, they are brought to a keener realization of the large number of children who have one or more serious physical defects other than a contagious disease. Among the defects, often neglected or unnoticed by intelligent parents and

teachers, are adenoids, enlarged tonsils, visual defects, partial deafness, defective teeth, malnutrition, physical deformities, heart trouble, diseased glands, incipient tuberculosis, etc. While only about 2 or 3 per cent of the school children of a city need to be excluded in any one year because of a contagious disease, about 60 to 75% are always found to have one or more serious defects of the chronic type.

When such conditions are understood and appreciated, the nature and purpose of medical inspection must be differently conceived. In addition to the frequent and hasty inspections for contagion, thorough physical examinations are then instituted, including examinations of heart, lungs, nutrition, teeth, eyes, ears, and throat. Assistant physicians and school nurses in rather large numbers, become necessary in order to meet the extension and increased thoroughness of the work. Since many parents

fail to realize the seriousness of the defects discovered, and disregard the notices sent out by the medical director, it becomes necessary to organize a vigorous follow-up service. In this the well trained and tactful nurse has proved herself indispensable. Because some parents are too poor to pay for the medical and dental treatment recommended, free clinics must be organized and the co-operation of local medical and dental associations, charity organizations, hospitals, and dispensaries must be enlisted. This may be called the second stage in the development of school health work.

A shift of the emphasis to preventive work represents the third stage. The attempt to bring about the cure of defects after they have become well established is praiseworthy, but the task is difficult, and the results are often partial and unsatisfactory. It is more reasonable to exercise such constant and close supervision over the health and physical development of the school children that defects

will be prevented, or else remedied before they have become a menace to healthy growth. When we have arrived at this point of view we find it necessary to have:

1. Increased thoroughness of the examinations in the lower grades;

2. Extension of free medical and dental treatment;

3. The establishment of open-air schools for anaemic and pre-tuberculous children;

4. School feeding;

5. School baths;

6. Special schools for the cure of speech defects;

7. Medical supervision of physical training and athletics;

8. Modifications in the program and discipline of the school in order to guard against fatigue and to prevent injury to neuropathic children;

9. Special classes for the mentally subnormal;

10. Increased attetnion to standards of heating, lighting, and ventilation;

11. Improvement of janitorial service;

12. More practical and effective hygiene teaching;

13. Enlarged playground facilities and play supervision;

14. Systematic enlightenment of the teachers in matters of health;

15. Organized publicity and extension work, designed to improve the hygienic standards of the home.

School health work of this inclusive and preventive nature goes far beyond what has been usually called "medical inspection" and may be fitly termed health and development supervision. Its aim is to organize all the forces and departments of the school, not only for the prevention of diseases, but also for the more positive cultivation of physical efficiency.

It is plain that health work of this broad

scope can not be carried on as a side issue from the office of the board of health because it is so closely interwoven with the every-day educational activities of the school. It must have a responsible head who spends his whole time in directing the work. He must be well trained in preventive medicine, and especially so in child hygiene. Furthermore, he must have the educational viewpoint and the ability and authority to aid in shaping the activities of the school so as to suit the child's physical needs better.

Accordingly it is found necessary in nearly all cases, before health supervision can enter fully into the third stage above described, for the board of education to assume responsibility for the work and control it. In the first stage the work can be handled perfectly by the board of health, and though somewhat less satisfactory, in the second stage also. Very much depends however upon the man behind the

work. In order that he may adequately organize, supervise, and make efficient the miscellaneous instrumentalities and agents with which he must deal, it is necessary that he be a competent educational hygienist.

The average physician is not sufficiently skilled in the treatment of the diseases and ailments of children. Moreover he is not at all familiar with school work and with the various phases of educational hygiene outside of mere medical inspection. The educational hygienist must be either a physician skilled in the field of childrens' diseases and child hygiene and with knowledge of the schools and their problems, or an educator who has had adequate study and experience in the fields of school sanitation, sociology, and all the phases of medical training that may pertain to the medical supervision of schools.

The ordinary medical course is very poor

training for such work, for child and school hygiene is truly a specialty. At Cambridge, England, for many years there has been offered a course leading to the degree of Doctor of Public Health (D.P.H.). This degree is now given at Harvard, at the University of Michigan, and at the University of Wisconsin and is generally received as evidence of the highest specialized training. It is certainly desirable to have a school health officer with this degree, when such a one can be obtained, for school hygiene is after all only one phase of public hygiene.

A community, then, in selecting a school medical officer, should seek a cultured physician with adequate training in his profession, with aptitude in handling school children, with understanding and sympathy for modern pedagogical problems, and with enthusiasm for the work, together with a willingness to supply

any deficiency he may have along special lines. Having employed such a one for full time, the community should make secure the tenure of the position and should insure him an adequate salary for whole-hearted service.

It must be admitted, however, that owing to the recent origin of the work many communities have, as yet, failed to realize what qualities are necessary for a school medical officer. Some communities appoint almost any physician who has a fair standing, without reference to his special training or aptitude. In some places men or women who have had no medical training of any description have been appointed as school health officers.

The reluctance of the authorities to spend money, the uncertain tenure of office, the lack of system and supervision due to the natural ignorance of non-medical school directors besides the lack of standard literature on the subject and the general uncertainty incident to

a new movement, have made the work unattractive to first class men already making a fair living, and have conspired to make the average medical inspector not quite an ideal one.

School health work may be organized in a variety of ways to meet varying conditions. Some of the best plans are the following:

1. Organization with a medical officer and a nurse or nurses.

2. Organization with a school nurse or nurses only.

3. Organization by the employment of a simple non-technical health survey on the part of the teachers only.

In communities where the number of school pupils does not exceed six or eight thousand, it is possible for one well-trained school-physician to give satisfactory service by devoting one-half of his time to the work, provided he has as assistants at least two well-trained nurses who

possess special adaptability to this kind of work.

In places of from eight to twelve thousand school population, Dr. Hoag thinks it best to have one physician to give his entire time and an assistant physician to give half of his time. In addition to these, at least three school nurses should be employed.

For larger cities a fair estimate is an additional half-time medical officer for each six thousand increase in the number of pupils and one additional school nurse on full time for the same number.

For a city of about 60,000 school children, which would mena approximately 300,000 population, the following is indicated as a tentative plan for organization; One chief health director; 1 general medical officer; 1 eye, ear, nose and throat specialist; 1 specialist in mental and nervous diseases and experienced in psychological methods; 1 emergency

physician who also would give instructions in hygiene and first aid; 1 woman physician in charge of high school girls and giving instruction in hygiene.

Such a plan, says Dr. Hoag, would require a central office of several rooms -- one general reception room, one private office for the director, one examining room, and one labratory equipped with medical and psychological apparatus.

A dental and medical clinic should be established, preferably in connection with the schools, but if this seems impossible to arrange, then in connection with some other organization. With such a plan in operation, parents of defective children would have the opportunity of taking their children to the general offices for special examinations. The different specialists would keep office hours on different days of the week and could thus give careful and deliberate attention to such school children

as required it.

From this office cards of admission to the medical or dental clinics could be issued to those entitled to them. One special school nurse should be assigned for duty at the central office. She should keep the records and should assist the physician in charge of the office in the examinations. There should also be one school nurse assigned to each school physician.

Samples of several plans for school health organization which are now in actual operation in various American cities are given in the following chapter.

## Chapter IV.

## Health Supervision in American Cities.

In this chapter is given a brief account of the particular form of organization and the methods successfully employed in health supervision in seven American cities of various sizes and in which the health work is in various stages of development.

### I. Salt Lake City.

Health work in the Salt Lake City schools is under the control of the board of health. There is a health commission, aided by one assistant physician and six nurses. The efforts exerted are mainly for the prevention and control of contagious diseases, although recently a good deal has been done to bring about the treatment of adenoids, diseased tonsils, and the more serious eye defects. A nurse visits each school from two to four times per week, spending from one to two minutes in each class room. She walks down the aisles and inspects

the faces and arms of the children for signs of contagious disease. In some schools the heads are inspected for pediculosis. Children that seem to show symptoms of any contagious disease are then subjected to a more careful examination and, if necessary, are ordered excluded. The nurses also issue permits for readmission to pupils that have been previously excluded. Each time before leaving the building the nurse inspects the toilets, etc., looking for any unsanitary conditions. Most of her remaining time is spent in visiting homes and in making arrangements for the free medical treatment of the children of the poor.

Children excluded by a nurse are reported to the assistant physician who visits them in their home to make a further diagnosis. In the high school a good beginning has been made by the supervisor of athletics by examining high school boys for defects of sight, hearing, heart, and posture.

The cost of the above for six nurses and one assistant physician is a little over 25 cents per pupil enrolled, or from one third to one fourth of the cost of a fully adequate system of health supervision.

II. Newark, New Jersey.

An adequate system of medical supervision is provided for the public schools of Newark. It is the duty of all teachers at the opening of school to select from their classes any pupil who appears to be ill or who has been in contact with anyone ill with a contagious or infectious disease. These pupils shall be sent with a form filled out by the teacher to the inspector's room to await examination. The inspectors devote at least two hours each day to their work and visit all schools in their respective districts between the hours of nine and 11:45 A.M., each school day, and so far as possible at the same hour, or as may be directed by the supervisor of medical inspection.

They shall carefully examine each pupil isolated by the principal, teacher, or nurse, and cause to be excluded any individual showing symptoms of any contagious or infectious disease. These pupils excluded may not return to their classes until the inspector has re-examined them and has approved them for re-admission.

Inspectors must also visit each class room once a month or oftener, if necessary, to examine every pupil. A physical examination is made of every new pupil upon enrollment, and, as soon as possible each year, of every pupil in the school. When removable or remedial defects are found, a form is filled out by the inspector, stating the conditions and the treatment required and this report is sent home by the inspector to the parent or guardian. Each inspector must make a daily report to the Supervisor of Medical Inspection.

Lectures to the teachers and pupils are

given by each medical inspector on such subjects and at such times as the Supervisor of Medical Inspection may specify. Inspectors must vaccinate, free of charge, any pupil producing the regular form or permit duly signed by the parent or guardian. The record of the physical and medical examination of each pupil is kept in the school.

Whenever a pupil is excluded from school on account of contagious disease the desk and seat used must be washed with an antiseptic solution, and the books of the pupil destroyed. On each school day the Board of Health notifies the Board of Education of the cases of contagious diseases reported to it during the preceding twenty-four hours.

Nurses and medical inspectors must register the time of their arrival and departure each day in the attendance book in the principal's office. Each nurse must devote her entire time to the school work from 8 A.M. to

5 P.M. each school day, excepting during the noon hour, and from 8 A.M. until noon on Saturdays, and must also serve at other hours if required in special cases. Nurses perform class-room inspection once a month, or oftener if directed by the Supervisor of Medical Inspection. Nurses have entire charge of cases of pediculosis or uncleanliness and in flagrant cases must show the mother how to treat the conditions and encourage persistance. The following diseases are to be treated by the nurse after the diagnosis has been confirmed by the medical inspector of the school which the pupil attends: ringworm, scabies, favus, impetigo, molluscum contagiosum conjunctivitis, infected wounds, contusions, and uncleanliness. Whenever possible, the parents' consent should be first secured. The nurse keeps a careful record of each treatment administered.

Where parents have refused or neglected to comply with the request of the medical in-

spector or have not given a satisfactory reason for not doing so, the nurse must call at the home and urge upon the parent the need for treatment and, if necessary, demonstrate how it should be done. Each nurse must also give to the pupils practical talks on personal hygiene and home hygiene at such times as the Supervisor may specify, but not to interfere with the ordinary routine of the school period. Both nurses and medical inspectors are appointed to serve for one year, beginning on the first day of February.

III. Minneapolis, Minnesota.

The work of medical inspection and physical education is combined in the same department in the Minneapolis schools. The work is maintained by the Board of Education and is highly efficient. The service is carried on by an organization of the following: 1 medical director, 8 assistant medical officers, 26 nurses, 12 instructors in physical training, and 18 play-

ground instructors during the summer months. This department also has supervision over the various special schools that are provided for stammerers, truants, mentally retarded and deficient, the open-air schools and the school gardens. Four schools for mentally deficient children are maintained. During the year 1913-14, 161,505 children were given medical inspection, ---13,402 of which were physical examinations. Of the 13,402 given physical examinations, 8,328 or 61% were found defective. This is a smaller percentage than usual which is due to the fact that many of these same pupils had been examined during the two preceding years -- 3,242 pupils fell into this group -- and many of these latter pupils had already had their defects corrected as a result of previous examinations. The health work already accomplished has been responsible for a steady yearly decrease in the percentage of defects found. The decrease of defects as compared with the preceding year is

as follows: Total percentage defective reduced from 71% to 61%; defective teeth, from 42% to 38%; enlarged glands, from 36% to 32%; hypertrophied tonsils, from 33% to 24%; abnormal adenoid growth, from 24% to 17%; and defective vision, from 16% to 15%. 1,247 pupils were fitted with glasses. 986 of these were new cases, 261 were the replacing of improper lenses. There were 9,408 treatments for teeth defects. 1,099 children have had adenoids removed, 1,052 have had enlarged tonsils removed. 1,470 children have received treatment for defective hearing or discharging ears. Seventeen cases of tuberculosis have been found and put under treatment. The nurses have taken 4,545 children to dispensaries and have made 15,987 visits to homes. The parents have made 1,888 visits to the schools for the purpose of consulting the school physician. During the year 1912-13 the occurrence of pediculosis in the inspected schools was reduced 37%, while during 1913-14

it was reduced 14% more. Contagious disease has been reduced, the children are much cleaner, and, through the nurses, the teachers and principals are brought into much closer touch with the home, so that they get a more intimate knowledge of home impedeiments. The teachers have come to depend very much upon this work, as it relieves them of the responsibility for contagious disease, and because, through it, they increase their hold upon the children. The attitude of the parents toward the work is steadily becoming more cordial, and the number of objections is steadily becoming less.

IV. Rochester, New York.

During 1912-13 Rochester employed twelve physicians and four nurses in the work of medical school inspection. This work is under the jurisdiction of the Chief of the Health Bureau. The effort is made to secure the physical inspection of every school child once each year. The weights and measurements are taken and re-

corded by the teacher upon a card form. Each child's card shows his history, the age and year, grade, class, re-vaccination, diseases during the year, date of examination, height, weight, mentality, conduct, effort, and proficiency. After these data have been taken and recorded by the teacher, the child is referred to the medical school inspector for physical examination. The physician determines by examination and physiological tests the condition of nutrition, of the glandular, nervous, cardiac, pulmonary, and muscular systems, and of the skin. He also examines the eyes, ears, nose, throat and teeth, besides looking for any defects of bodily structure. The results of these examinations he enters on the child's record card. When he excludes a child for contagious disease or other medical reason, he files with the grade teacher a duplicate form, one copy of which is sent to the parents, giving the reasons for exclusion.

When once the school physician has dis-

covered in a child a serious physical defect, the immediate problem is to persuade the parent to have the defect remedied. In Rochester they have found that the school nurse is the most helpful and convincing agent for this purpose. The principals are unanimous in their judgment that the medical inspector without the school nurse accomplishes but little and it is generally agreed that Rochester's supply of school nurses must be increased. There are three free dental clinics for children provided, which have been established and supported by the Rochester Dental Society.

V. Springfield, Illinois.

The Springfield Board of Education employs one nurse with the title of Supervisor of Health. She makes a class-room inspection of the school children to detect any symptoms of contagious disease and during the same visit makes partial physical examinations for the detection of removable defects which might handicap

the child either physically or mentally. Each school room is provided with an emergency medicine cabinet, a set of Snellen test cards, and a card index file for keeping the records of physical examination.

For a city as large as Springfield, having 7,000 school children, the work does not go far enough. It is impossible for one nurse to do thoroughly the amount of work that is being attempted. They should have two or three nurses and one half-time physician. A school dental clinic is maintained at the offices of the board of education where the work is done by 25 local dentists who have volunteered their services. The clinics are held on Tuesday and Friday afternoons and each dentist serves three times a year. A nurse is always present to assist the dentist and the work of the clinic is a distinct success. In dental work especially prevention is better, cheaper and more effective than cure. Arrangements are now being made with

the oculists of the city for an eye-clinic on the same plan.

VI. Milwaukee, Wisconsin.

The board of education maintains the Milwaukee school health department. They employ for full time one medical director, one dental inspector, and five school nurses; and for half-time, ten assistant medical inspectors; one specialist on diseases of the eye, nose, ear, and throat; and one special assistant for psychological and anthropological tests. They maintain a central office where the medical director meets parents, conducts special examinations, and carries on the general office work of the department. There is also a school for crippled children, an outdoor school, four classes for blind children and four centers for the treatment of speech defects. A dental clinic for poor children has recently been added. In each school there is an emergency case containing a stretcher, drugs, and dressings; a

filing case for the doctor's and nurses' records; a supply of blanks for psysical examination; and circulars of instruction for the teachers and principal. Poor children with physical defects are sent to the various city dispensaries. The psychological tests are in constant use and special attention is given to retarded children. The Milwaukee system is thoroughly practical and efficient and is worthy of careful study.

VII. Cleveland, Ohio.

Health work in the Cleveland public schools is on a higher plane than in most other cities. The chief medical inspector is also an assistant superintendent of schools and is responsible both to the superintendent and to the business department of the board of education. This divided responsibility is not a good feature and should be changed. The scope of the work includes inspection for contagious disease, inspection for physical and mental

defects, follow-up work for the remedying of defects, health instruction, recommendation of children to schools for the physically and mentally handicapped, school lunches, gardens, and play-grounds.

Once during the year each child is given a careful physical examination, and further examinations are made when they are needed. Every day either the physician or nurse reports at each school. A report of any serious defect is made to the parents at once and where the treatment is important the parents are urged to consult with the school doctor concerning the nature of the difficulty and the best means of curing it. The nurse personally follows up these cases, spending a large part of her time in visiting homes, talking with parents, noting conditions under which children live, and making suggestions as to home care.

During the school-year of 1914-15, the doctors and nurses examined 74,725 children;

gave private interviews to 2,547 parents; made 5,675 visits to dispensaries; 10,603 visits to homes; and gave 76,240 treatments and dressing. Besides this, they gave 775 toothbrush drills, and 19,406 individual or class health talks to pupils of the public schools.

Cleveland has 86 school dispensaries, usually well-lighted and well-equipped, and painted in white or in light colors. They usually contain a wash basin with running water, eye charts, a medical cabinet filled with instruments and supplies, two small white enamel tables, several chairs, a waste basket, a covered slop jar of white enamel, wooden tongue depressors, filing boxes, and printed forms. Some of the most necessary medical supplies that are kept constantly on hand for use by the doctor and the nurse are:- adhesive plaster, ammoniated mercurial ointment, boric acid solution, boric acid powder, tincture green soap, peroxide of hydrogen, collodion, zinc oxide

ointment, absorbent cotton, one and two inch bandages, bichloride solution, alcohol, and aromatic spirits of ammonia. In 3⅞ of the elementary schools the buildings are also equipped with shower baths. The dispensaries have proved of the greatest value in making the physical examinations of the children more effective.

Dental clinics are provided in four schools. The board of education furnishes the rooms, but the equipment, dentists, and assistants are provided by the National Mouth Hygiene Association. The clinics are open three forenoons a week and are crowded to their full capacity.

Dr. William Oster, the distinguished English physician, is credited with saying,"If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should say unhesitatingly, defective teeth." The commonest of all physical

defects among school children is decayed teeth. Probably no other single ailment of school children causes so much misery, disease, and mental and physical handicap. Decayed teeth may cause dyspepsia, indigestion, poor nutrition, rheumatism, anaemia, and tuberculosis, and possibly malignant growths of the stomach. These are reasons why Cleveland should steadfastly conmue in the maintenance and development of the dental clinics.

An eye clinic is maintained by the Department of Medical Inspection at the Brownell School. When children have their vision tested and are found defective in this respect, the parents are advised of it by note. Then the nurse follows the matter up and if she finds that the parents are unable to pay for an examination by an oculist, she takes the child to the school clinic, after having first obtained the written consent of the parent. There the child receives a thorough and accurate exami-

nation, the eyes being first dilated with homatropin and the error of refraction determined by means of the retinoscope. The proper glasses are ordered for the child and in a few days he is brought back to the clinic and the frames carefully adjusted. The nurse then keeps in close touch with the case, sees that the child wears the glasses, that the frames are straight, and the ~~the~~ symptoms of which the child complained are relieved. In some cases the parents have been opposed to the child's wearing glasses, but usually the nurse has been able to prove to them that the glasses are necessary and so has obtained their consent. Many parents are not able to pay an oculist's fee, but are able and willing to pay a small amount for glasses. It has been shown by experience that, if a charge, no matter how small, is made for the glasses, better care is taken of them and better results are obtained. During 1914-15, in over 75% of the eye-cases treated, the children's symptoms were relieved and their

scholarship improved.

A most unusual form of clinical service has been supplied in several districts of the city. This is providing free hair cuts for pupils at intervals during the school year. It is the result of an arrangement between the school physician and the Cleveland College for Barbers. The children are eager to attend this clinic and as a result show a greatly increased pride in their personal appearance.

There is also a special teacher provided in Cleveland for the purpose of making mental examinations. All surgical cases are referred to family physicians or local hospitals for treatment.

The Cleveland authorities, although they have made notable progress in health work, have as yet failed to conceive it as being an integral part of education. They decided that provision for health in education is a business matter, while provision for education in health

is a teaching matter. In order to co-ordinate the work properly and to carry it on to even more complete development, the Cleveland authorities must realize that all health work in education should be placed under the direction of the city superintendent of schools, who is the city's highest educational official.

Cleveland employs 16 school physicians, 1 oculist, and 27 nurses. It spends $36,000.00 a year on salaries and supplies for the health service. An especially noteworthy feature of the Cleveland system is the standardization of work. Through this standardization the same terms have uniform meanings when used by different members of the staff, and constant standards are employed in detecting and recording defects. This should furnish valuable suggestions to the medical inspection departments of other cities. It is probable that the health work in the Cleveland public schools is unsurpassed by that of any other city in the country.

## Chapter V.

### The Adaptation of Previously Suggested Plans to Conditions in Towns and Villages.

Towns and small cities may initiate health work in their schools and remedy most of the urgent physical handicaps among their school children by some adaptation and modification of the plan suggested in chapter three for initiating such a system in a city.

The teachers can make a fairly extensive health survey, using the forms given or referred to in chapter three. In the upper grades the pupils can render material assistance in a large part of this work. It makes extra work for the teachers, but they ought not shirk their responsibility toward the health conditions of their pupils. Whether a medical officer and nurse are employed or not, does not materially affect the plan, though it is evident that any plan for health supervision will succeed best where specially trained professional workers are available. By employing the survey previously

outlined, no school need wait for the appointment of a medical officer before beginning effective health work. In making this survey a teacher may take her own time, using a month or six weeks, if necessary. Any teacher should be able to do the work in that time without undue exertion or effort. After a pupil's health survey has been made, a notice should be sent to the parents where physical difficulties seem to exist.

Dr. Hoag lists the results of such a survey as follows: First, overcoming most of the prejudice against physical examinations of school children; Second, educating the public in child hygiene and preventive medicine; Third, largely solving the question of expense; Fourth, the discovery of probably 90% of the urgent cases of physical defects; Fifth, decreasing the wear and tear on the teacher; Sixth, increasing the children's health, happiness and efficiency; Seventh; serving as a useful examination for a

medical inspector of schools, so that he may know where to concentrate his attention; Eighth, giving positive information in regard to the kind of hygiene teaching that is most needed.

Unusual or serious findings may be verified by calling in voluntary doctors, dentists, occulists, etc.

In New York state when the population of a town is 5000 or less, the board of education is required to appoint one medical inspector for the district. It is intended that they shall appoint the regular health officer of the town as such inspector, unless it should appear to be for the best interest of the district to employ some other physician.

In many states the state board of health will co-operate heartily with any town that will make an active effort to better their school health conditions. Often the state board of health can secure the services of volunteers

from the state medical and dental associations who will give expert services in medical inspection and sometimes in remedial operations also. This is done without charge for the service other than the necessary traveling expenses of the physician. Such services are offered by Dr. Duke, the Oklahoma State Health Commissioner. A few Oklahoma communities took advantage of this during the past year and many more are planning to do so during the coming school-year of 1916-1917.

It is the duty of the superintendent or principal and of every teacher to see that the school board and the people in their district are informed of what has been done in similar communities along school health lines, and of the vast possibilities for school health betterment that lie in their own community. This education of the patrons concerning the desirability of the work and its paramount necessity for health and safety and for securing

greater efficiency in the schools is the foundation-stone upon which the work should be built.

After the first inspection is made and notices are sent to some of the parents, remember that there will be practically no response to written notices sent to foreign poor. But just as the salesman can produce trade by means of a personal interview where an advertisement will fail, so a social visitor, whether a nurse or not, can produce results where printed notices are ignored. Some sort of follow-up work will be necessary and the superintendent and teachers can, if necessary, become the social visitors and may so tactfully, so pleasantly and so earnestly present the matter as to get the desired results. The superintendent should keep a careful record of the percent of notifications that result in treatment. Thus he will have a fair estimate of the efficiency of his "campaign of education" and will be

spurred to redoubled efforts if the per cent is low.

## Chapter VI.

### Health Work in Rural Schools.

Health work in rural schools presents many practical problems, as the conditions are quite different from those found in large villages and cities. The rural schools are the very places that most need health supervision, but, with only a few exceptions, they are entirely unprovided with any such system. In towns and cities doctors, dentists, and specialists of various kinds are near at hand. In the country such service is more remote and difficult to obtain. Then, too, people in the country have not been taught to seek medical and dental aid and generally do not seek it except in the most serious cases.

Almost one-half of the people of the United States live in rural communities and their welfare is vastly important to the whole nation, because they are engaged largely in the production of the materials which, either raw or manufactured, are the essentials of national

life and progress. Ill health and physical defects on the part of those who produce these materials are not only a loss to the state but a menace to the health of those who use them.

There is a general impression that country children are naturally in more vigorous health than city children. When we make a careful comparisom we find this is not true. This false impression has undoubtedly arisen through having in mind the special type of city children found in the over crowded tenement districts and slums.

Children in the country are more exposed to unfavorable weather conditions than are city childrem. To reach the country school they often have to walk long distances in extreme heat, cold, or wet. In cold weather they are often overheated in the school-room, largely because they usually wear too much clothing indoors, then going suddenly into a freezing outdoor temperature they become chilled on the way

home. Moreover they often sit all day in school with damp clothing or wet feet. Dr. Hoag cites a case that he found one day where the inside temperature of the school-room was exactly 100 degrees higher than the freezing temperature outside. In spite of the hot room many of the boys were wearing sweaters over several layers of other clothing, including from one to several layers of woolen undergarments, -- one boy having six layers of fairly heavy clothing. In a hot room under such conditions the body was of course bathed in perspiration.

It is no wonder then that colds are common among country school children and that many are out of school on account of various kinds of sickness.

In most country schools the sanitary conditions are bad. The school-room and the desks are rarely as clean as they should be and often are very dirty. Washing facilities are usually lacking, and the common drinking cup holds sway.

The outdoor toilets are generally in an unspeakable condition and the source of the water supply is often contaminated. Again the cold lunch, often inadequate, which is almost universal in country schools, undoubtedly has an injurious effect upon the health and strength of many country children.

Contrary to the general impression, children of the rural schools are more in need of medical and dental attention than the children of larger communities. This was found to be true in New York state in comparing their country and city school children. On the average, probably as many eye, ear, adenoid, and tonsil cases exist among country children as among city children. Doubtless this is true also of most other common physical defects.

Besides the factors that have been already mentioned, we might suggest that in the country, food is not usually as well prepared as it is in the city, the available variety is smaller, both houses and schools are less well

ventilated, tuberculosis is not so well understood and the chances for "house infection" are therefore greater, and general sanitation is regularly neglected.

All these are vital matters. The paramount duty of our state and national governments is to give careful study to these problems in order to obtain reliable infofmation, and then to take such steps as will insure that all of the people have the necessary truths brought to their attention in a forcible manner. The schools, especially, should be made a common medium for disseminating this information. The United States government is now developing such a system for the improvement of rural health and sanitary conditions. They are beginning to supply competent lecturers on health and sanitation to talk to the children in the schools, to the people of the whole community and to conventions and assemblies of teachers and others.

Among the educational agencies that have helped to better the rural schools may be mentioned; school-board conventions, teachers' meetings, farmers' institutes, other rural organizations, the school itself, literature on hygiene, training schools for teachers, state boards of health, county superintendents, and state departments of public instruction.

In some of the states insanitary school-buildings may be condemned by state or county authorities. Considerable progress has been made in sanitation in rural schools. This is usually due either to the information and suggestions obtained from school-board conventions, teachers' meetings, community gatherings, etc., or to state laws and regulations governing sanitary conditions. County superintendents have in many instances done excellent work in bringing about improved conditions. Good things are contagious as well as diseases. Where a new, sanitary, up-to-date school-building is

erected, several others of the same type are, as a rule, soon erected in neighboring districts.

In some states the proper sanitation of all school buildings is specifically provided by law. Pennsylvania and Ohio are notable instances of this. In some other states the state board of health is given full authority to make any sanitary regulations it may deem desirable for schools or school buildings, which regulations then have the same force as law.

In Indiana the law contains several series of specific regulations governing school sites, school buildings, lighting and seating, water supply and drinking arrangements, heating and ventilation, blackboards and cloakrooms, water-closets and outhouses.

Some states have enacted laws providing for the cleaning of school-houses, and there are rural localities where the school buildings

are thoroughly cleaned once a month. Maine has a law dealing with the personal cleanliness of the school children. Several other states have similar laws dealing with contagious diseases.

Most rural schools are provided with an antiquated type of unhygienic desks in various states of decrepitude. This is even true of many wealthy communities, for progress depends upon enlightenment in all lines of health work. A noteworthy law in Kentucky provides as follows: "The county superintendent shall condemn any schoolhouse which is dilapidated, unhealthly, or otherwise unfit to be occupied for the purpose of a common school, and any fence or other enclosure of a schoolhouse, when such enclosure is for any reason insufficient for the protection of the house or grounds. He shall condemn all school furniture or apparatus, insufficient in quantity, or not of the required character, and order the same replaced with the proper furniture or apparatus."

Besides these extensive powers he has also the authority to suspend or remove any trustee for neglect of duty.

Over half of the states now prohibit the use of public drinking cups. Boards of health had waged a campaign in behalf of this reform for several years, but no state-wide action was taken until March, 1909, when Kansas became the pioneer in enacting such a law. In several states including Oklahoma open receptacles for drinking-water are not allowed in schools. In Vermont and Oklahoma faucets must be attached to water-tanks in schools.

In the matter of inspection of rural schools, some progress has been made. New Jersey, Massachusetts, and New York require inspection in all schools. In Minnesota, Virginia, and Michigan specialists are employed who must visit all the schools that they can. Utah provides that the teachers must conduct certain physical examinations. Many other states pro-

vide for optional or conditional inspection.

The New Jersey law was enacted in 1903 and is quite complete in its details. The Massachusetts law of 1906 requires the school committee of each town to appoint a school physician for each public school under their control. The school physician must make a prompt examination and diagnosis of all children referred to him, and such further examination of teachers, janitors, and school buildings as in his opinion the protection of the health of the pupils may require. The teachers must give tests of sight and hearing to every child at least once every year. Every pupil must also be examined by the medical inspector at least once a year for other disabilities or defects that may retard school progress. The directoms for these tests are prescribed by the state board of health. They issue a booklet containing suggestions to teachers and school physicians, and furnish

cards, blanks, record books, etc. This law is well enforced in some places, but is practically a nominal affair in others.

In New York medical inspection in all public schools is required by an act of 1913. By this act the state commissioner of education appoints a state medical inspector of schools, and thus the control of the system is vested in the state education department.

Florida by act of 1915 provided for medical inspection for all communities, except cities of over 5,000 inhabitants where inspection had already been provided by the city board of health. It is under the supervision of the state board of health. County physicians are made school inspectors, and where there is no such physician, the county commissioners are directed to appoint a school physician.

In North Dakota by a 1915 enactment a school board is required to employ a medical

inspector when petitioned by a majority of the persons having children attending the schools of the district.

The new Wyoming law makes it the duty of teachers to examine each pupil for defects of eyes, ears, nose, and throat without coming into physical contact with the child.

One phase of rural school health work which is of immense importance is the securing of sanitary toilet facilities. Many schools have very inadequate toilet facilities and this results in insanitary conditions. In some cases laws providing specific standard requirements for outbuildings have been enacted and have improved conditions greatly. To secure proper and permanent results in this or any other form of school health activity it is necessary to secure the co-operation of teachers, school-officers, parents, and children.

We must keep constantly in mind the fact that progress along school health lines involves

first, a campaign to educate and interest the people in the work, and, second, the active co-operation of the people and of all available agencies and forces in order to secure the most efficient system possible under the local conditions that exist.

To make the greatest success of the campaign for better health in schools, the state department of education and the position of the county superintendent should be strengthened. The same is true in many cases of the state board of health. This strengthening of the state department of education has recently been accomplished in many states -- Iowa, Wisconsin, Alabama, and others.

The state departments of education and of health should always work hand in hand, and there should in all cases be also full co-operation between the local educational authorities and the local health officers. All advice of the health officers should be heed-

ed by the school officials and all of their health orders should be duly enforced.

There are two plans possible by which rural schools may obtain some sort of health supervision: First, the entire responsibility of health supervision may be assumed by the teacher, or ; Second, the county health officers may act as school health officers as a recent law requires in Florida. This later plan is the more desirable one, and county health officers should be carefully choses and paid adequate salaries for full time service. At present the county health officer is always poorly paid and often incompetent. If we expect to secure interested and efficient services we must provide adequate salaries. State aid should be given to such county health officers, just as it is now often given to rural schools.

In many cases the teacher herself will have to do the best she can in establishing

some sort of health supervision. Although she may have no one to help her in the work, she should, herself, be prepared to observe the ordinary defects of school children and to recognize them when found. The normal schools should provide her with the training and information she may need. If she has not had such training in a normal school she should get the necessary information in the best manner possible. County Superintendents should provide suitable study courses and should have competent physicians, specialists, and sanitary experts give lectures and give demonstrations for the teachers. By -- illustrated lectures as typhoid fever, malaria, the fly, the mosquito, smallpox, by hook-worm demonstrations, etc., the basis for preventive work may be laid. In the Minnesota Plan a specialist is employed to visit as many schools of the state as possible, to instruct teachers on school and child hygiene. Michigan and Virginia employ

substantially the same plan. When the teacher is informed as to what she should do and how to do it she should carefully and tactfully inform the parents in her district and then should begin her preliminary survey. Much that was said in Chapter Three as to the first step in initiating a system of medical inspection in a city, can be readily used here in initiating health work in a rural school. Whatever in the city plan is found not applicable for rural work may be readily modified and adapted for use here.

If a school nurse could be secured for full-time work in several adjoining districts, she would be a large factor in securing the right relations between the schools and the homes. She would work under the direction of the local board and would co-operate with the local and county health officers and with the county superintendent.

In Ohio in attempting to standardize health supervision a uniform card for records

has been adopted for use throughout the state. This card is four by six inches, and should be white fof girls, and yellow for boys. It shows the facts in a simple way that can be readily understood and will permit the securing of statistics which could not formerly be obtained.

## Chapter VII.

## The School Nurse.

Medical inspection has rendered the school nurse inevitable. Her value to the work is one feature about which there is no division of opinion. Her services have abundantly demonstrated their utility, and her employment has quite passed the experimental stage.

The first definite record of the work of the school nurse was in England in 1893. There the work was done voluntarily by Miss Amy Hughes, a trained nurse of the Metropolitan Association of Nursing, who was asked by one of the managers of a poor school in the Drury Lane district of London to visit the school and attend to the children's small ailments. Because of the beneficial results shown, a voluntary association, called the London School Nurses Society was formed in 1898. They prepared and issued a circular of information from which the following is quoted: "Probably it will be difficult

to impress on the public the importance of the work to be done, or the necessity for these nurses; but it must be remembered that the sore heel soon becomes poisoned if left to London dirt, and the inflamed eyes often lose all power of seeing simply through neglect. There is no surer way of securing the health of the people than to arrest small ills at the beginning; a nurse can see at a glance whether a child should be sent to a doctor; she can impress cleanliness; she can follow up bad cases to their homes; she can recognize the early symptoms of fevers, and do much to stop the spread of those infectious diseases which so often devastate our schools. It is found that cases of bad eyes and dirty heads are practically stamped out of a school by six months regular visiting; consequently each nurse is able to enlarge the scope of her work as time goes on."

Miss Jane Addams says that, without the use of nurses, the chief result of medical in-

spection is to send the child home where he continues to play in the alley or on the street. She says that medical inspection has been transposed into a successful service by the addition of the visiting nurse. "The medical inspection got the child out of the school and the visiting nurse got the child back. It seems almost foolish to have medical inspection without the visiting nurse."

Dr. Hayward of England says that as medical inspector he found it almost impossible to get adequate information from the children or a knowledge of their home condition. In the crowded primary schools of the city he found everywhere a multiplicity of the conditions that produce and foster illness - dirt, neglect, improper feeding, malnutrition, insufficient clothing, suppurating ears, defective sight, verminous conditions, and so on; but he had no responsible person to whom he could give directions or who could help in examining the children.

His only means of approaching the parents was to send an official notice that such and such a condition required treatment. "My duties began and ended with endless notifications, and there," says he, "it all stopped, as very little notice was taken of them." This has been the experience almost everywhere. In some instances the report slips never reach the parents. Then again they are neglected by the parents either through carelessness, ignorance, indifference, or lack of funds. Without an effective follow-up service conducted by visiting nurses, medical inspection is ineffective.

The New York City authorities found it so and tried their first nurse as an experiment in the fall of 1902. Later on a large corps of nurses was employed. Up until 1908, New York City relied, for securing action on defects, upon postal cards sent to parents of defective children. As a result they were able to secure action in only 6% of the cases where treatment

was recommended. As soon as school nurses were placed in charge of the follow-up work the percentage increased to 84.

The discovery of defects and diseases is of little use if the result is only the entering of the fact on the record card or the exclusion of the child from school. The notice sent to parents telling of the child's condition represents merely wasted effort if the parents fail to understand the meaning of the notification, and the importance of prompt and effective treatment of the case. The addition of nurses to a system of medical inspection means almost exactly the difference between mere diagnosis and cure. In New York the nurses soon reduced the exclusions from school from about 10,000 to about 1,000 per month. In general they prevent from 90 to 95% of the former number of exclusions.

The work of school nursing in New York City now requires 140 nurses, a development far

ahead of any other city and an indication of the future extension of the work.

When a slip is handed to a child at school by the medical inspector, a copy is also given to the nurse. She makes a friendly visit to the home of the child, not with the idea of interfering with the mother's work, but in the spirit of interest to see how the child is progressing. She takes in the situation, and if she sees that the family is not able to secure medical attention, she herself arranges for it. If glasses are needed, she knows of a dispensary which furnishes them free of charge. If there a physical deformity which could be relieved by an operation she, perhaps, can arrange it at the "Children's Free Hospital." If the child is troubled with pediculosis she either tells the mother how to proceed to relieve this condition, or personally does the work.

The best judgment of the most advanced

educational thinkers today approves of the idea that the school board should furnish freely everything that is necessary for the child's health and strength, such as food, clothes, and medical attention, wherever it cannot be furnished by the home. Otherwise it is a waste of money to try to educate the child. Where the relief needed is not provided by the medical inspection department, one of the school nurse's duties will be to find out all the relief agencies in her district, -- clinics, dispensaries, children's hospitals, parent-teacher associations, women's clubs, medical and dental associations, etc., and secure co-operation. If there is no dispensary, she will be the one to find a way and means to establish one. Everything, of course, should be done as far as possible by the municipal authorities, but where they cannot aid in necessary relief work, some influential women in the neighborhood should be induced to unite and have it started.

Beside class room inspections, home visits, and work in the dispensary, clinics, and hospital, the nurse becomes a teacher of hygiene to both teachers and pupils. Tooth-brush drills are carried on regularly and efficiently in the schools by the nurse. Nose-blowing drills are now recognized as a necessary aid to the acquisition of general health habits by the younger children, and the nurse is the one who sees that these are regularly carried on. In the matter of sex hygiene, too, the nurse can give much personal advice and instruction to the older girls.

In visiting the homes, she advises the families as to the value of wholesome food, of proper clothing, of care of the body, of clean surroundings, and of right habits of living. She discovers and reports to the proper authorities over-crowded homes, rooms without light or air, concealed cases of contagious diseases, filthy drains and leaky plumbing. She follows up her report until adequate relief is obtained

from the proper souces.

The school nurse becomes also an ideal sanitary inspector in school, having unusual opportunities for observation because of her room to room visitation. She notes temperature, ventilation, lighting, seating, cleanliness of room, toilets, black boards, and clothes of children.

In special schools for anaemic, tuberculous, crippled, etc., she is an absolute necessity, supervising their diet, sleep, and play, watching carefully their every symptom and constantly advising with parents, teachers, and doctors.

It has been definitely demonstrated that well-trained nurses with special aptitude are able to accomplish useful results even without the regular employment of doctors for medical supervision. This plan has been successfully tried in Alameda, California; Canton, Massachusetts; and a number of towns in Minnesota,

besides towns elsewhere.

A school nurse should be employed as one of the regular school staff. The teachers will co-operate more heartily with one of their own associates, and ultimately all are working for the same result, -- to make the school child a better citizen both physically and mentally.

The successful nurse requires a special training for the work. Such a special course is offered by Teachers College of Columbia University. Besides the general hospital training that an ordinary nurse receives, a school nurse must have training in special hospital wards for eye, ear, nose, and throat, and skin diseases, and then should have a course in district nursing.

The school nurse must be tidy and neat and should have a healthy, pleasant appearance, otherwise she will not gain the confidence of either children or parents. She must becomm a power in the community in which she works. She

must habitually use tact, good sense, and sound judgment with rich and poor alike. She must co-operate with the family physician and know how to avoid hurting his feelings. Above all she must be thorough in her work. One nurse reported ninety-nine visits to one family before she got results.

The work of the school nurse is not alone with those who have defects or disease but very largely with those who are well, for she is the teacher of the parents, the pupils, the teachers, and the family in applied practical hygiene. Among foreign populations she is a powerful force for Americanization. She is a strong factor everywhere in reducing infant mortality. The school nurse is the most efficient link we can possibly have between the school and the home. She has it in her power, not only to remedy the existing conditions which are menaces to right living, but also to open up new avenues of social service.

## Chapter VIII.

## Open - Air Schools.

The open-air school is a result of the increasing attention given to health matters by educators and sociologists. It marks an important mile-stone on the road to universal hygiene in school conditions, for the improvement in children that has been brought about by these schools has done more to get the windows of the regular schools wide open than years of good advice.

The chief medical officer of the Board of Education in London in his report for 1912 makes the following statement; "Open-air education was practiced by the Greeks and Romans, was commended by the Educationalists of the seventeenth and eighteenth centuries -- Locke, Rousseau, Pestalozzi -- and has been attempted in various forms since 1876, when Bion of Zurich, initiated the children's country holiday movement."

The first open-air school in the modern

acceptance of the term was started in 1904 in a beautiful pine forest just outside of Charlottenburg, a suburb of Berlin. It was a rest-recovery school and was intended to provide a means whereby debilitated children might receive sanitorium treatment for tuberculosis and keep up their educational progress at the same time. They devised new methods of instruction for this now famous "Waldschule", and, besides the ordinary school recitations, they included in their school program, gardening, nature study, walks in the forest, five feedings a day, sunbaths, gymnastics in the open air, and a rest period of from one to two hours in length.

In 1907, the London County Council established their first school of this kind at Boscall Wood and in 1912 there were about a dozen in England.

Providence, Rhode Island, in 1908 established the first school of the kind in the United States. In 1915 there more than 500 open-

air schools and open-window classes in this country.

As Dr. Rapeer says: "All children must be babies first, and the candidates for the schools must pass through the ignorance and dangers of baby land; while statistics show that being a baby is about the most hazardous pursuit in the world."

We have in this country about 250,000 baby funerals annually of children in their first year. This means about 150 out of every 1,000 babies. Many of those that do not succumb to the many diseases of the first few years, survive only with impaired physique and weakened resistance. Thus our schools are constantly receiving a stream of little people, many of whom are poor material to be worked upon by the school because they are badly nourished, are improperly cared for, and have weakened resistance.

The general tuberculosis crusade has been one of the most important factors in setting the

community at work in this matter. At present tuberculosis is as much an educational and social problem as a medical one. Because of the insidious character of the disease, its inception and early progress is usually unnoticed so that relatively few cases are brought to the doctor's attention until the most favorable time for a cure has passed by.

While the campaign of education that has been so actively waged during the recent years seems to have caused some decrease in the general mortality from turberculosis, the mortality of children seems to be reduced very slightly, or not at all. Today this dread disease kills about as large a proportion of our school children as it did fifty years ago. Between the ages of ten and fifteen, tuberculosis is responsible for many more deaths than scarlet fever, diphtheria, measles, and whooping-cough combined.

Our doctors know today that a majority of

children contract tuberculosis before the end of the common-school period. Most of these, to be sure, recover promptly and without suspicious symptoms. A large minority, however, retain the infection in latent form, and often, after the lapse of years, succumb to it.

Dr. Cubberley says, "Most of the children who will later die of this disease are those whom an examination would show to be already somewhat below par in growth and nutrition. There is no way to reach such children and minister to their physical needs except through the school."

Where the medical inspection is under the board of health, the doctors are more apt to devote their attention to infectious diseases and to overlook anaemia or poor development than when the inspection is under the educational authorities. It is the duty of the school to do everything in its power to stren-

gthen weak bodies and protect them from any manifestations of tuberculosis. It is foolish to delay until the third and last act of the tragedy and then begin futile and expensive operations.

No system of ventilation has yet been devised that will take the place of open-air for weakly, anaemic children. By changing from the hot, kiln-dried, and stagnant air of the average school room to the lower temperature, normal humidity, and perceptible air currents of the open air class, a marked improvement is soon effected in the health of weakly children. Even the best systems of mechanical ventilation too often have a tendency to cause anaemia, headaches, nervousness, and unhealthy conditions of the nose and throat.

Open air schools are not longer experiments. They have proved very beneficial under hard and trying conditions, as, for example, in the winter climate of Chicago and Boston.

Dr. Ayres says: "Open-air schools are for giving to those physically weak such advantages of pure air, good food, and warm sunshine as may enable them to pursue their studies while regaining their physical vigor."

Dr. Cornell says: "The fresh-air school is really a sanitorium. It provides not only free air, but also nourishing food, enforced rest, warm clothing, individual teaching, sympathetic care, and medical attention which corrects eye-strain, adenoids, decayed teeth, and anemia. Naturally the health benefits of the open-air schools are due to other causes as well as the fresh air."

The pupils attending open-air schools in New York, Chicago, Boston, Providence, Cleveland, Oakland, and many other cities have been subjected to the most careful physical examinations. The results show that weakly, ill-nourished children after spending a few months in these schools invariably show enormous gains in

weight, strength, and quality of blood. The system of the open-air school includes a shorter program of study, increased physical activity, warm lunch, followed by one or two hours of sleep or qyiet rest. It also develops mental alertness and freedom from colds.

Often children who are listless, apathetic, and retarded, become interested and attentive, and incorrigible children develop self-control and helpfulness because the spirit of the open-air school is different. There excessive routine and restraint are replaced by freedom, initiative, and co-operation.

Children are only admitted after careful physical and medical examination. Where physical defects are found that can be readily remedied, such as diseased tonsils, adenoids, defective eyes, etc., -- these defects must be rectified before the open-air school will receive the child. As the benefits of the open-air school are so plainly manifest, there are

usually more applicants for admission than it is possible to receive, so there is generally not much difficulty in getting parents to have all removable defects properly treated as a pre-requisite to securing permission to attend the school.

At Rochester, New York, two open-air schools are maintained, -- one for tuberculosis children, and one for anemic children who are not tuberculous. The board of education and the Rochester Public Health Association have joined forces in establishing and maintaining these schools. The board of education furnishes the school equipment and the teachers. The association furnishes tents, food, blankets, soapstones, services of a cook, and transportation to and from school.

All cases applying for admission are examined at the Health Association by the medical director and admitted in order of application. Recommendations are made by the director for

the filling of bad teeth and the correction of anything that would prevent the child from getting the most good out of the school, and no case will be admitted until all instructions have been carried out. This makes necessary a re-examination before the child can be put on the waiting list.

After the first examination, a school nurse visits the home, confers with the parents, and brings back a report on the home and financial conditions. In case the parents are unable to pay a private physician for removing tonsils, etc., the child is admitted as a free patient to the association dispensary and all necessary examinations and operations are secured there.

The nurse also advises the parents as to the necessary home conditions for the child, -- food, sleeping, quarters, open windows, etc. A report card on the home and the history of the case is filled out by the nurse and filed

along with the report of the health association's examination.

When a vacancy occurs, the child is admitted; then the nurse gives him a bath and on the same day takes a record of his weight, height, pulse, temperature, and chest expansion. Then the child is given a more complete physical examination by the physician who has before him all of the previous records and reports on the case. A test for the percentage of hemoglobin is also made at this time and twice each year afterwards.

Once a month every child in the school is carefully examined by the physician. On certain months special attention is given to the eyes, on another to the teeth or to spinal curvatures, and so on. Specialists are called for consultation over selected groups of cases. All recommendations are noted on the chart and followed up the next month. The nurse makes notes of suggestions and confers with the

mothers, if necessary.

In other cities there is often a daily inspection by the physician in charge. In most open-air schools the temperature and pulse are recorded at least once each day. The children are usually weighed on Fridays and Mondays, and sometimes oftener. They generally show a gain during the week and a loss between Friday and Monday.

A weekly warm cleansing bath is ordinarily given at such a school. Often a daily cold shower-bath is provided. The extremely important question of the proper feeding of these children is under the supervision of a skilled dietician. She also instructs the children in cooking, and, to some extent, in household management. Meals are served from one to three times per day. The following menu was provided at Tochester on March 7,1912:-

Breakfast -- Oatmeal with sugar and cream. A glass of milk.

Lunch at 11 o'clock -- A glass of milk.

Dinner -- Pot roast of beef, Mashed potatoes, Corn, Bread and butter, Milk, Baked apples with cream.

Afternoon Lunch -- Cocoa and bread.

The cost of the food for the above four meals prepared for 30 children was 14 cents each per day.

The following list gives the routine program observed at this school:-

| | |
|---|---|
| 8:40 | Prepare for breakfast. |
| 9:00 | Breakfast. |
| 9:30 | Lessons |
| 10:30 | Gymnastics and games |
| 10:50 | Milk |
| 11:00 | Lessons |
| 11;45 | Prepare for dinner |
| 12:00 | Dinner |
| 12:40 | Rest in reclining chairs |
| 2:00 | Fold blankets and chairs |
| 2:10 | Breathing and rythm exercises |

2:20 Playground

2:45 Lessons

3:15 Prepare for dismissal

3:30 Milk and crakers, soup, or cocoa

Dismissal.

In Rochester the children in the open-air schools do not fall back in their studies although they spend less than one half as much time in school work as their companions in the regular schools. Grades, attendance, and percentage of promotion are usually better than in the ordinary class.

There is but one reason against the very extensive adoption of the open-air school. That is its expense. The cost per capita is about $140.00 per year. This is four or five times the per capita cost in the regular school.

The methods of construction have varied greatly. Providence tore out the side of an abandoned school house to make a fresh-air class room. Chicago built light shacks of asbestos

board on the flat roofs of convenient buildings in the tenement district. Mount Clair uses a tent. New York has three condemned ferry boats moored permanently to wharves for her actively tuberculous children, a roof school for the same class, and some roof platforms for anemic but non-tuberculous children. Pittsburg arranged a hospital balcony for such use. Often regular buildings are used by modifying the structure of the windows. Sometimes cheap temporary shacks or portable wooden buildings are erected.

Climate and local conditions must determine the type of building best suited for open-air work in any particular community. Permanent provision has been made for open-air work in the regular school system in several cities. In Boston, New York, and Oakland fresh-air rooms are to be provided in all new buildings to be erected.

In California practically all of the new

buildings are being errected in such a way that they can be thrown entirely open on at least one side. Cleveland has a magnificent new building with the roof specially planned to accomodate four open-air schools. Electric elevators are provided to carry the children to the roof. Recitation-rooms, rest-rooms, kitchen, dining-room, and play-space are all provided on the roof.

Many cities are substituting in their regular school buildings windows hinged to swing either in or up, instead of the old-style windows. These are usually arranged to occupy a much larger portion of the wall-space than before.

A very sensible recent suggestion is to substitute open verandas for the long dark hallways of the ordinary school-house. This would permit of long windows opening on the verandas, which could be thrown open in all favorable weather. The architect claims that such a

building would be much less expensive to construct and far safer in case of fire.

The open-window room is a room in the ordinary school building where an effort is made to approximate to outside air conditions by regulating the supply of heat and by keeping the windows constantly open. In both open-air and open-window schools, various devices to act as wind-breaks and wind-shields are used to keep the air from blowing directly on the children. No heat is ordinarily used in open-air schools, except that in very cold weather soapstone foot-warmers are provided. In many cases there is a warm room in connection where the children may go whenever they wish, but they rarely wish to take advantage of it. The difference in temperature is made up by extra feeding and by extra clothes.

In the Chicago open-air schools the children are furnished with lumbermen's-boots or similar foot-protection, and with sweaters or

Eskimo suits for school-room use.

For each child there should be, besides the boots or felt shoes, an Eskimo suit or other warm loose garments with gloves or mittens, a sleeping-bag, cot, tooth-brush, soapstone, paper napkins, thermometer, and at least one pair of double wool blankets, -- preferably two pairs. Provisions and milk cost from 14 to 25 cents per day for each child. Salaries are the greatest expense.

In addition to desks, blackboards, and the ordinary school furnishings and apparatus, the school must be provided with the necessary equipment for preparing and serving meals and with some sort of locker where the suits and other articles of individual equipment may be kept.

Records show a smaller percentage of contagious diseases among these "out-door" children than among the "indoor" children. There is a uniform record of increase in weight, height,

chest-expansion, and muscular power. The corpuscle-count quickly mounts from three or three and a half million to four or four and a half million per cubic millimeter; and the hemoglobin from 65 or 70% to 80 or 85%, which latter point is not far below normal. Keener appetite, improved nutrition, better color, and more erect carriage are also found. With these physical gains there always comes greater mental alertness and more power of concentration.

At the Horace Mann school of Columbia University a careful comparisom of out-of-door and indoor classes showed that the out-door classes made much greater improvement in English and Arithmetic than the indoor classes did.

Sickly children in the open-air school make as much school progress on a steady program of three hours or less per day as healthy children ordinarily make on a five-hour program. Boston is already placing about five percent of her school children in open-air schools, while

some California cities are going even further in this direction.

The Portland Survey Commission say in their report: "There is a rapidly growing sentiment, bases on sound doctrine, that if open-air schools are good for sick children, they would be better for well children. Why wait until they become anaemic, scrofulous, tuberculosis, or even sluggish, before we give them freedom and fresh-air. Open-air schools have not only proved beneficial for the great majority of children whose physical conditions are below standard, but they have likewise proved that the mental life is quickened and the work of the school is done with more zest and better results."

Schools which accomplish so much for sickly children cannot fail to be of benefit to normal children. The late Dr. Arthur Cabot predicted in 1913 that the time will soon come when all schools will be open-air schools.

Whether this prophesy will prove to be true no one can say, but it is certain that great gain would accrue to our children if larger numbers were taught in the fresh air.

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