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SCHOOL HYGIENE

A REPORT OF THE FOURTH INTERNATIONAL CONGRESS
OF SCHOOL HYGIENE, HELD AT BUFFALO, N. Y.,
AUGUST 25-30, 1913

By W. CARSON RYAN, JR.



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LETTER OF TRANSMITTAL

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, October 7, 1913.

SIR: The Fourth International Congress of School Hygiene, held at Buffalo, N. Y., August 25-30, was a notable event in the progress of health supervision as a part of public education. Because of its importance, a member of this bureau, W. Carson Ryan, was detailed to attend this conference and prepare a report of it. This report is contained in the accompanying manuscript, in three parts:

- I. An introduction giving a brief summary of the proceedings of the congress.
- II. A summary of some of the most important papers.
- III. Concrete data of the school hygiene movement as shown in the scientific exhibit made under the direction of the congress and in connection with it.

I recommend that this manuscript be published as a bulletin of the Bureau of Education.

Respectfully submitted,

P. P. CLAXTON,
Commissioner.

To the SECRETARY OF THE INTERIOR.

SCHOOL HYGIENE.

PART I. INTRODUCTION.

Public opinion appears to have accepted health supervision as a part of the educational system, presumably on the sound basis of the social purpose of education. Health is, above all, socializing in its influences, since in respect to it the welfare of each individual is in a literal sense the welfare of all. Easy as this realization seems, in practice it has come very slowly, only under stress of public necessity, and even now the belief in school hygiene as a practical function of school work is by no means as well accepted in practice as in theory.

So far as the United States is concerned, therefore, the most important fact in connection with the Fourth International Congress of School Hygiene recently held in Buffalo is that in some sections of the country at least the period of propaganda and experiment is yielding to that of actual result. There are now a number of communities in the United States that have had their school health work organized long enough to be able to give comprehensive reports of actual accomplishment, and these reports were a most valuable feature of the scientific exhibit held in conjunction with the congress, as well as in the sessions of the congress itself.

The two subjects that received most attention at the congress were open-air schools and sex hygiene. On the subject of open-air schools, sentiment was notably extreme. The delegates appeared to accept unqualifiedly the idea that the benefits of fresh air should not be reserved for ailing children alone, but should be conferred upon normal children as well. Statements similar to that of Dr. Knopf, of New York, that "the open-air school must become the rule and the closed room the exception," were frequently made and as frequently applauded. There were additional reports of the comparative physical and mental improvement of children in open-air classes, open-window rooms, and regular rooms; the part played by school feeding in the betterment observed in open-air school children was discussed on the basis of hæmoglobin tests from a recent New York experiment; splendid pictures of open-air school work in many cities were shown; the possibilities of open-air architecture were discussed by school

architects; and the congress adopted a resolution calling on the American Government to follow the lead of Italy and place at the disposal of the various States abandoned battleships for use as floating hospital schools for tuberculous children.¹

The influence of the open-air propaganda was revealed in the reaction that appears to have set in against intricate and expensive systems of ventilation. School architects seem to be less certain than formerly of the necessity of the elaborate ventilating systems that have been typical of modern city school buildings in this country.

Sex hygiene was distinctly the problem that aroused greatest interest at the congress. Not only was the main evening meeting on the subject a large one, but an afternoon section meeting devoted to the question had to be held in the largest hall in Buffalo. Over 2,000 persons listened intently to a discussion that was sensational, not only from the subject matter, but from the prominence of the speakers and the striking differences of opinion expressed. Sentiment appeared hopelessly divided. There was general recognition of what President Porter had termed in his paper "the social emergency." It was felt that something ought to be done toward remedying an intolerable condition; it was even admitted that the policy of silence had been a failure; but on the direct question of actually introducing instruction in sex hygiene into the public schools, there were two diametrically opposed points of view.

On the one side were arrayed those who believe with Dr. Hugh Cabot that teaching control of the sex instinct is the function of the public school; while on the other side are those who insist that, if the subject must be taught at all, it must be broached only in the home; that knowledge of sex details imparted in a school course, or in any other way, is dangerous in that it is "apt to put forward by several years the time of temptation."

It was clear from the discussion that medical men have gone much further on the subject than the public is willing to go with them; the most determined advocates of sex instruction were medical men of the very highest standing. Both sides admitted the urgent need for character training in connection with any instruction that might be given on sex, and several speakers declared that character building must precede any attempt at sex education itself. Nearly all stressed the point that no matter how much knowledge might be needed, knowledge alone would not suffice.

Many of the speakers were intolerant of the attitude of parents on the sex question. There was the usual doubt expressed as to whether children are really as ignorant of sex matters as many parents believe them to be. Several speakers declared emphatically that par-

¹ For the full text of the resolution, see p. 30.

ents of the present generation are incapable of furnishing sex instruction, particularly since they themselves have been wrongly taught. It was felt that before sex instruction can be imparted even in the home, a race of parents must be developed who have been educated in sex hygiene as children in the public schools, and who will therefore be able to give sex knowledge to their children honestly and sympathetically.

The Buffalo meeting may be said to have opened the sex question full and wide, if it was not so opened before. The next few years should see a rapid clearing of the situation through discussion and experiment. A beginning has already been made in Chicago and other cities toward instructing parents by means of lectures, though, as Mrs. Young pointed out, this is not strictly the duty of the public schools; instruction has already been introduced more or less formally into the high schools in some localities through biology and hygiene courses; next will come the further extension of this high-school instruction, but there will be considerable lively debate before the step is taken.

It should be said in passing that as a matter of fact many high-school teachers, by individual counsel and example, already give valuable aid in helping boys and girls over the dangerous age when they are least apt to be aided in the home; but this is entirely personal and unofficial in character. It is when the proposal is made to put such guidance on a formal, official basis that it seems most questionable. It becomes at once apparent that most teachers are even less qualified to give instruction in sex hygiene than most parents, and sex instruction in the hands of incompetents offers but little improvement over the present transmission of knowledge through vulgar channels. Sex hygiene in the hands of qualified physicians, however, assuming that such can be secured to do the work, is far more promising.

It is in the general field of medical inspection that most has been accomplished in American cities in recent years, and of this development the Buffalo congress offered valuable evidence. Starting as a narrow preventive measure, to stop the spread of contagious disease by school children, the medical inspection movement has come to include a broad plan for the supervisory health care of all children, in and out of school. In many cities medical inspection is accepted as an integral part of the community's educational organization.

An important problem in medical inspection is that of control. There has been little conflict of authority in American experience, and there should be none; but there can be a better balancing of the two agencies, health and school, than there has been and a stronger linking together of all the health-promoting forces.

A more fundamental problem is the extension of health supervision to country schools. Here again the rural school is much behind the city school. If medical supervision takes the course of other changes in education, it will proceed from the city to the State, and may eventually reach all the rural districts if State supervision is made effective. Where there is a county organization the task of reaching the hygienic needs of the rural school is by no means impossible; but adequate State support and control are essential if this and other needed improvements are to be made in rural educational facilities. The beginnings of State medical inspection are visible in a few States. Colorado has a State plan that is reported to be working satisfactorily, Pennsylvania sends medical inspectors into remote country districts, and New York has a recent law providing for medical inspection in every school in the State, the results of which will be watched with interest.

The growing realization of the importance of the school nurse in any system of medical inspection received added impetus at the Buffalo meeting. Philadelphia school and health authorities have recently made careful investigations to test the workings of medical inspection with and without the "follow-up" by school nurses. The results showed a real saving in school time and money through nurse service. Not only did the nurse service save the pupils time that would have been lost in returning to school, but in all instances the number of defects corrected increased with nurse service. This is the day of dollar efficiency, and the school system that can show, not a mere temporary saving, but permanent economy of operation in fulfilling community needs, educational or otherwise, is rewarded with public support. The advantages of school-nurse service are particularly susceptible to demonstration by the efficiency method. Furthermore, school-nurse service justifies itself on strictly pedagogical grounds: The work of the school nurse is hygiene instruction of the most direct and practical sort, and therefore belongs in the school's field, quite independently of other considerations.

The development of dental inspection and dental clinics has followed quickly upon that of general medical inspection. In some cities, notably Philadelphia, the dental clinics are now an integral part of the school health organization. Most often, however, the clinic is established by arrangement between the school board and some local organization of dentists interested in the care of children's teeth. This is but one manifestation of an oral hygiene propaganda that has been carried on vigorously both in this country and abroad. In this country the National Mouth Hygiene Association has aroused interest in the care of children's teeth by lectures, moving pictures, experimental clinics, and other means. Members of the dental profession are not exactly in accord, however, as to the course

to be followed in the future, some of them believing that more emphasis should now be placed upon dental practice as represented by proper nutrition and filling, and less upon propaganda.

Another item in the health care of children that received marked attention at Buffalo was that of vision. Care of the eyes is a task that is peculiarly the duty of the school, since school work is usually the chief factor in producing eye defects. The movement for conservation of vision is in line with the modern tendency toward decreased use of the printed page in early education.

It is not quite clear how close the relation of dental clinics to the school health organization is to be. But here again the fact must not be lost sight of that one very definite aim of the dental clinic is instruction; it is to teach the child by the only successful method, that of practical example, the value of caring for the teeth, and inferentially for other parts of the human organism. The clinic is the present-day substitute for the physiology lectures and lessons that failed to teach the former generation of school children.

The question of permanent connection with the school organization enters into another interesting hygienic movement, that of school feeding. The free breakfast and lunch, in the open-air schools, or the "penny luncheon," elsewhere in the school system, is usually justified by its advocates on one or all of the following grounds: (1) Humanitarian—the children need it; one-tenth of the school children suffer from malnutrition; (2) public policy—the pupils do better work when better fed; (3) medical—diet is the first essential in treatment in the open-air schools; (4) economic—the children get more for their money in the school lunchroom than on the street; (5) educational—the children learn valuable lessons in nutritive values.

The first reason, though humanitarian rather than pedagogical, may in some cases be imperative; but the problem goes deeper than the school, and the school ought not to have to solve it. That all the pupils, anemic and well-fed alike, do better work when better fed is again a fact outside of the permanent business of education, though the school may be forced by circumstances to take cognizance of it and make temporary amends for society's neglect of its children. In the open-air schools, school feeding as a purely medical measure, applied without reference to the question of the school's special duty in the matter, should be safely beyond criticism. That the children get more for their money in the school lunch room than outside is a doubtful argument, unless the "more" is clearly understood to mean more in nutrition values; and even in that case it represents a combination of charity and business that is dangerous for argument. There is, however, very real validity to the claim made for school lunches as affording instruction in nutrition. Many school men and

doctors believe that this one point, namely, the teaching of proper diet through school lunches, is of sufficient importance to outweigh all objections that may be raised.

Psychological clinics and the movement for mental classification which they represent formed an important topic at the Buffalo meeting. The progress already made in separating exceptional children in the public schools by means of formal tests and clinical observations is merely an indication of what may be expected when child classification becomes more generally adopted. In view of the fact that the psychological clinic is deliberately scientific in its aims and lacks largely the element of popular appeal inherent in school feeding and dental clinics, for example, the development of the idea has been remarkable. The possibilities of the psychological clinic appeal to the teacher who sees before her every day the problem of the child who is different; to the parent who genuinely desires his handicapped child to have a better chance; and also to the school-efficiency expert, who feels that the quality of the total product of education depends in large measure upon the scientific ascertaining of the individual needs of each child.

As to formal instruction in hygiene, less was heard of it at Buffalo than at any meeting since health teaching became a recognized function of the schools. The emphasis was on doing the thing rather than on any lesson about it. It was felt that children will learn the principles of good health far better by working under sanitary conditions in a sanitary schoolhouse than by reading about hygiene.

Externally the Buffalo congress presented many interesting points. It was the first time the congress had met in the United States, and despite the holding of the fifteenth congress of hygiene and demography in this country less than a year before, the foreign attendance was all that could be desired. Prof. Leo Bürgerstein, of Vienna, was among the distinguished European visitors. Several foreign nations were represented in the scientific exhibit, notably Sweden with a most attractive and instructive booth, in which a bust of Per Ling, father of Swedish gymnastics, occupied the place of honor. Latin-America was particularly well represented at the congress. Two Cuban delegates presented an interesting piece of work in a "health primer" to be used as first reading in the elementary schools. Mexico had a highly creditable exhibit, showing especially the history and results of medical inspection in that country. Uruguay's splendid exhibit unfortunately arrived too late for installation, but her delegates took an active part in the deliberations of the congress. Largely in deference to the Latin-American representatives, Spanish was added to the list of official languages.

The brief summaries of current contributions to the literature of school hygiene, prepared by Dr. Fletcher B. Dyesslar and offered as

an exhibit of the Bureau of Education, formed a new feature that was deemed worthy of a permanent place in subsequent congresses. While they were by no means intended as a complete survey of the field, the thousand or more summaries prepared did cover a very wide range of school hygiene topics and were particularly valuable for the international view they afforded of the school hygiene movement.

More than usual credit attaches to the citizens of Buffalo for the success of the congress. They not only financed the big meeting in the face of difficulties rarely encountered, but they manned the various congress and exhibit committees with able men and women who served only for the honor of it. The city doubtless felt amply repaid not only by the cordial acceptance of its hospitality, but by a definite sense of the assistance rendered to school hygiene work in Buffalo. It is easy to overlook this one real benefit derived from educational meetings—the renewed strength and encouragement they give to the community which entertains them. This quickening of the civic pulse was distinctly noted in Buffalo as a result of the school hygiene congress.

Before adjournment the congress voted to convene again in Brussels, Belgium, in 1915. That the three-year interval hitherto prevailing is to be reduced to two years is in itself a tribute to the growing importance of the school hygiene movement and the wider public appeal it is now making. Americans have a right to be proud of the work Dr. Thomas A. Storey and his associates have done at this important epoch in the school hygiene movement.

In Part II, which follows, selected papers from the congress are presented in abridged form. In a majority of instances they are hardly more than abstracts; for the full text of all the papers the reader is referred to the Proceedings of the Congress. In Part II the purpose has been mainly to show the trend of current opinion by a few more or less representative articles. In Part III, on the other hand, concrete data and results shown in the scientific exhibit are given. The idea has been to select, here and there, for grouping under convenient topics what seemed to be the significant actual attainments in the progress of school hygiene.

PART II.—SELECTIONS FROM PAPERS PRESENTED.

I. GENERAL DISCUSSIONS.

A. SCHOOL HYGIENE AND CHILD LIFE.

SIR JAMES GRANT, Canada.

Few subjects are calling forth wider or more diversified attention at present than hygiene, which aims to make growth more perfect, decay less rapid, and death more remote. It treats of the laws of health in the widest acceptation of the term, and includes a knowledge of the causes of ill health and disease generally, as well as prevention, together with the necessary means of preserving health by strengthening and fortifying the whole system.

Two exceedingly important problems are before us: The consideration of the child outside the school and the consideration of it in the process of education within the school. To accomplish a good and lasting work, care and inspection of a coming generation should include child life at home and in the school. The home stands first in importance, as the fundamental center of society. Two exceedingly interesting and attractive duties of parents originate and must be carried out in the home—first as to the child's food and second as to its education. The home, whether in country or city, is alike in these particulars. All social movements relating to the welfare of our people are rooted in the home, which absorbs all socializing agencies closely connected with the lives of our children.

The food of the school child is second only in importance to that of the infant, and here rests greatly the home responsibility of mothers as to the future of the child at school age. Modern school life is exciting, and food should be such as to quiet and soothe—plain, simple, and nutritious, easily digested and assimilated. Practical instruction to mothers on child diet would serve a good purpose and save many valuable lives. The necessity of a thorough knowledge of the diet of school children is gradually gaining ground, and school authorities are moving more actively in that direction. Tiny brains, phosphorescent and scintillating at every movement, can not be too carefully nourished in the formative process of mental development. Nervous troubles and imperfect digestive conditions are closely associated.

Next in importance to physical development of the child in our schools is the acquirements of knowledge. Mental hygiene and physical hygiene are inseparably associated in the essential balance of mind and body. The educational system of the present day is gradually becoming more cumbersome and complicated, and forms a serious test of strength to young brains in the plastic stage. The mental and physical well-being of youth should advance equally, and one of the most difficult and trying problems is how to build the best brains out of the material at our disposal. Educated evolution is closely associated with the development of mental power. Each brain, like each blade of grass, is single in character and power, and must be studied on its merits to fit it for the varied duties of life. The drawing-out process of education must be conducted with a thorough knowledge of the scientific principles involved to build the best brains of the material at our disposal.

The pliant character of youthful brain tissue in the formative process of thought can not be too carefully guarded. An expert of the highest character, thoroughly informed in physiological and psychological principles, should be at the educational helm to guard life and intellectual endowment. How true is the sentiment of Huxley: "Freshness and vigor of youth must be maintained in mind as well as body."

Careful school inspection is fortunately becoming generally adopted. Ten years ago there was only one medical inspector of a school board school in the whole of Scotland; at present there are not fewer than 105 such scientific experts, and in England and Wales fully 433 inspectors. In Europe, Canada, and the United States this progressive idea is very generally adopted. In Edinburgh an impression is gaining ground that physical culture comes before the humanities, and hygiene is reckoned of greater importance than higher mathematics. Simple and inexpensive school buildings are now advocated in preference to palatial costly stone buildings. Well heated, well lighted, and perfectly ventilated, they will serve every purpose as satisfactorily as the more expensive structures, and they can be razed to the ground should necessity demand.

B. THE STATE'S DUTY IN HEALTH SUPERVISION.

EUGENE H. PORTER, M. D.,

Commissioner of Health, New York State.

The State of New York, with nearly ten millions of people, spends many times more in looking after the health of its cattle than it does for the health of its citizens. In 1900 the health department had \$140,000, which was less than one-half of 1 per cent. of the total

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expense of the State government. At the same time the amount spent for the protection of game, fish, and forests was \$568,595.

We are all familiar with the waste of human life that goes on in our country day by day and year by year. Some of us know that much of this sickness and death is absolutely preventable. We are aware that just now we do not need to know more regarding the prevention of disease, but we do need to apply immediately and without further delay the knowledge that we now possess.

Increasing knowledge has shown the futility of much of the misdirected philanthropy of to-day. If a child is threatened with illiteracy, millions of dollars are forthcoming for its education, but the child that is threatened with preventable disease is told: "Just now nothing can be done; wait until disease has attacked you and you are helpless. Then there is a hospital provided for you and you will be taken there, and an attempt will be made to save your life." What we need to emphasize constantly is that it is not the curing of disease that is important, but the prevention of disease. Where one life may be saved by appropriate treatment a thousand lives may be saved by timely preventive measures.

I believe thoroughly that it is the duty of health authorities to compel all citizens under their jurisdiction to cultivate habits of health, and to punish all who persistently refuse to acquire those habits, so far as the evils of neglect are in any sense a danger and a menace to the community. One of the unlimited educational possibilities of health boards consists in their privilege to point out repeatedly and cumulatively the industrial and community benefits which result from habits of health, and the industrial and community losses which result from habits of unhealthy living.

C. SOME HEALTH NEEDS OF SCHOOL CHILDREN.

JOSEPH LEE, BOSTON.

To the growing child, as to everybody else, a vigorous mental life is the greatest source of health. A good teacher is, accordingly, a first item in sound school hygiene. But in order that a good teacher may really reach the child, she must be given in sufficiently large doses; that is, not divided up among too many children. When we learn to care seriously about our children's health and education, we shall halve the size of classes in our elementary schools. To do so will increase the cost 80 per cent, but the children's lives and health are worth it.

Further, to free the teacher's time, we must have special classes; a special class not only for the blind, the deaf, the tubercular, but for all children requiring special treatment, including the specially bright.

pupils to whom the regular grades act as an intellectual hobble skirt, spoiling their natural gait perhaps for life. These special classes are good for the pupils requiring special treatment, but their greatest benefit is in releasing the teacher's time for the benefit of the normal pupils.

We must have summer schools, because children grow in summer as well as in winter, and should have their mental diet supplied all the year round. The diet must of course be the right one and fitted to the season of the year. The three lower grades should have their afternoons outdoors, not in the schoolroom, partly that they may be free from the demoralizing influence of heavy pressure work, even more that the teacher may have time in the afternoons to take them, two or three at a time, and find out what they really need.

We must look at the home, not as a boarding house, but chiefly for its spiritual contribution to health. When by promiscuous school feeding we break down the responsibility of the home, we have injured the child even in his physical health more than all we can do for him would ever atone.

Finally, school hygiene is race hygiene. Childhood is the time for effective treatment of physical defects, and the school is the one place where every individual can be reached.

D. SOME IMPORTANT FACTORS PREVENTING NORMAL GROWTH AND DEVELOPMENT IN SCHOOL LIFE.

D. P. MACMILLAN,

Director of child study in the public schools, Chicago, Ill.

There are many children who are hygienically handicapped from the beginning of life. First, the chain of heritage is weakened in some links, and, of course, this goes back to unhygienic conditions and influences. Parents for many generations back have not known the first principles of right living, in which, though few have been willfully perverse, many were innocently ignorant. Children come into the world with incipient nervous disorders, which environmental factors early transform into overstimulated or understimulated nervous systems. Again, diseases in early years are found to be associated in the child's life with unhygienic states. Right living, through proper surroundings and teachings, will ultimately make the so-called "inevitable children's diseases" a mere matter of curious history in child hygiene. Further, among these must be classed accidents to the child's health and person, although indeed one advantage is often apparent in that very frequently these at once arrest the attention of parents and guardians to at least remediable and recoverable cases. Any discussion must take into account the desirability of

considering cleanliness of family life, adequate and appropriate clothing for all kinds of activities, as well as purity or impurity of the air breathed in cramped and darkened home quarters; but above all we must begin with diet, rest periods, and educative muscular activity.

Most potent, because it is the most vital, constant, and controllable factor during the periods of infancy and childhood, is the dietary of the child. The food provided may not be sufficient, and this reaches out to social economics; it may not be properly balanced and adapted to growth needs in general or in particular to the needs of the individual child's system; it may be irregularly partaken, and this is dependent to a large degree upon the habits of the home; it may be poorly selected food, cheap, old, decayed, and is very frequently unhygienically cooked. Finally, as so often occurs, the children are not educated to eat properly.

Next to improper food in all its parts as a deterrent of normal growth must be recorded the factor of irregular, inadequate, or disturbed sleep. According to our experience, this does not apply to the poor and needy or the lower section, financially considered, of the fairly comfortable social strata of a metropolitan school population, as frequently as to the children of the comfortable and well to do. With the latter not infrequently late hours, social gatherings, and excessive indulgence through the day cause nervous exhaustions, the injurious effects of which continue to show themselves well along into the adolescent period, and are often wrongly blamed on the school régime. All this indicates the necessity for popular education to reach back into the early and later home life of children, not only indirectly, but directly in some positive ways.

Further, the clean, well-clothed, and properly fed young generation, provided with fresh air and adequate sleep, is still poorly furnished for a life of efficiency if the remaining vital factor affecting normal development is not assured—namely, educative muscular activity. Educators are just awakening to the vital significance of this for our present generation as a hygienic consideration of primal importance, and every physical and mental test and measurement bears out the suspicion of our first inspections and observations. Free and directed plays and games and ordered regular exercise in municipal playgrounds, social centers, and school yards, merely point the need and the way to begin early and adequately to round out the physical and mental hygiene of the child in educative muscular activity.

These factors, which operate as handicaps to normal development in infancy and early childhood, continue their prejudicial influence with cumulative power in school life, and our attention is most often called to their after-effects, such as physical disorders, physical de-

fects and their correlates, mental dullness, incorrigibility, and even juvenile crime. All departures from normal of this character are merely symptoms of these underlying conditions of hygienic living which are outraged, neglected, or inadequately provided for.

Defective eyesight and hearing, difficulties in breathing, hypertrophied tonsils and adenoid tissue, decayed and painful teeth, all noncommunicable defects and contagious diseases of every sort have come to be considered as preventives or deterrents to normal growth and development of school children. Defects of the senses of sight and hearing, to which appeal is largely made in schoolroom activities, are considered by some to be the primary causes of delay or derangement of normal development, and it must be admitted that they delimit the number and quality of sense impressions as well as contribute to the formation of injurious habits in schoolroom arts, especially in younger children, but they are by no means such potent deterrents as the deeper lying derangements, which we may group somewhat roughly as nervous exhaustions and constitutional disorders. In looking over the records of the first 7,200 cases of exceptionals that readily came to hand in our files, it was found that only 8 per cent are schoolroom problems because of defective vision, and a little over 6 per cent of the total number require either special care or training because of defective hearing, whereas over 40 per cent of the total number are nervously depleted, ill-nourished, weakened in power of resistance, uneducated in the fundamental bodily activities of their years, apathetic in voluntary initiative, and lacking in bodily control.

As education has begun once more to come into her own by including bodily features, and all that belong thereto, so hygiene, or the science of well-being, must always be thought of in terms of the mind as well as of the body. And as we ascend in the scale of human values and cultural sensitivity, hygienic education demands the exclusion of all morbidities, self-consciousness, false motives, fears, envies, angers, all emotional neuroses, all disordered attentional habits, all deranged associational processes, every clogged or explosive act of will and inconsistency in thinking, until the best functioning of mind as well as body is the common attainment of our children.

E. NOTES ON THE HEALTH OF SCHOOL CHILDREN.

S. ADOLPHUS KNOPP, M. D.

New York Postgraduate Medical School and Hospital.

The site for a school building should be on elevated ground, and as far as possible removed from traffic, dust, and noise. The building should be sanitary, well-lighted, and attractive outside as well as inside.

The janitor of a public, parochial, or private school should be a practical sanitarian. Daily cleansing or disinfection, when necessary, of classrooms should be obligatory.

The toilet and washing facilities for children should be sanitariously perfect.

The rural school should not be less sanitary, less well equipped, nor less well managed than the public schools of a city.

The more open-air schools we can have, the more outdoor instruction in kindergarten, public schools, and colleges, the greater will be the physical vigor and strength of the pupils.

If we wish effectually to prevent and stamp out tuberculosis in children, the open-air school must become the rule, the indoor classroom the exception.

If there is not ample room for playgrounds and separate open-air classes, the schoolhouse should have a garden, playground, recreation room, and some open-air classes on the roof.

Let us send the child to the open-air, or fresh-air, school before its tonsils or adenoids are enlarged as a result of overwork indoors and fighting off dust and infection.

If the indoor classroom must be used, the temperature and moisture should be properly regulated with the aid of the thermometer and the hygrometer, and the air kept in motion with the aid of a fan. These three devices should be as essential to the equipment of an indoor classroom as is the blackboard.

Practical breathing exercises, judiciously taught, should form a part of the daily curriculum.

Outdoor singing, outdoor recitation, botanical and geological excursions, practical lessons in horticulture or in farming, should be introduced as often as the curriculum will permit.

Inculcate the love for open-air life into the child at school and it will become a fresh-air apostle at home.

So long as we permit child labor in factory, workshop, cannery, field, mine, or home, so long shall we have physically, mentally, and morally defective citizens.

The well-known methods of daily medical inspection of all school children to exclude those afflicted with acute or chronic infectious, general or local diseases, should be supplemented by a thorough physical and mental examination of every pupil by the school physician on admission, and annual or semiannual reexaminations for tuberculosis, heart disease, insidious nervous afflictions, etc. A careful record of the physical and mental condition of the child should be kept and the result of each physical and mental examination recorded. Teachers and all school employees who come in close contact with the children should likewise be examined on admission and submit to periodical examinations.

The tuberculous or predisposed; the mentally defective, delinquent, or backward children should have separate schools, or at least be placed in separate classes.

A goodly number of the seemingly delinquent, defective, and backward children are of syphilitic origin, and before classing them permanently with the defectives a Wassermann test should be applied, and if positive, antisyphilitic treatment should be inaugurated.

The hopelessly feeble-minded and defective child should be rendered sterile before puberty.

Health lessons and simple instructions in the prevention of disease, such as tuberculosis for example, can easily be imparted to even the youngest child.

Lessons in mental alertness, in what to do in hours of danger, such as the event of fire in school or at home, or a panic from whatever cause, and instruction in first aid to the injured, are to my mind as essential as any health lessons.

In case of epidemics of diphtheria preventive injections of anti-toxin should be given to all children exposed. When parents object to this procedure, their children should be excluded from school until the epidemic has ceased.

In case of typhoid epidemics antityphoid vaccination should be used.

Every large community should have a special outdoor or fresh-air classroom for children afflicted with whooping cough.

While all hindrances to the proper physical and mental development of the pupil should be remedied, such as adenoids and enlarged tonsils, polypi, or a deviated septum, defective eyesight, hearing, or defective teeth, orthodontal treatment for the correction of irregular teeth should not be neglected. The same should hold good for the treatment of any remediable unesthetic appearance in the child.

The school curriculum should be so arranged that the mental strain shall not react unfavorably on the physical and moral constitution of the child.

Sanitary fountains furnishing good, cool water should form part of the equipment of every school, and the drinking of plenty of such water should be encouraged.

No public school should be considered well equipped without its swimming tank of running water; no curriculum complete without swimming lessons.

Gymnastics, calisthenics, esthetic and graceful dances, and rational athletics should be taught to the boys and girls at school. These exercises will benefit the child's physique and give it a healthy and happy frame of mind.

No lesson in public school should be longer than three-quarters of an hour.

The teacher should know the value of mental hygiene and realize that there is as great danger in teaching too much as in teaching too little.

The trained psychologist should be one of the most important additions to any modern school. His help will be of inestimable value to teachers, parents, and pupils.

Lessons in embryology and biology, leading to the explanation of sex relation and eugenics, should be given according to the age and understanding of the pupils, and in the higher grades preferably by teachers of the same sex as the pupils.

II. MEDICAL INSPECTION.

A. A WORKING PLAN FOR SECURING MEDICAL INSPECTION.

ALFRED B. MORRILL, Wallingford, Conn.

The problem of securing adequate hygienic conditions in our schools is one of educating the public. This is particularly true of the financial aspect of the problem. In all communities where money must be voted, a campaign of education, not only upon the social and moral aspects of the subject, but upon the financial side as well, must be inaugurated. It must be shown that physical ill health costs money that can be saved by adequate medical inspection. It must be shown by tables of promotion rates, such as Dr. Ayres has worked out, for example, that retarded children mean added expense to the school system; that medical inspection, by lessening the number of preventable retarded cases and bettering the promotion rate, will produce an actual saving in terms of dollars, teachers, school plant, equipment, and children's time.

Medical inspection, therefore, becomes a business proposition. In a typical community with 250 children, for instance, a saving in the promotion rate of 10 per cent, if the children complete the eight grades on time, will be 175 years of schooling, representing an annual saving of \$5,250 at the rate of \$30 per child per year. The school plant needed for the accommodation of the children would be decreased \$17,500.

Here are some facts as to the need of medical inspection and what has been accomplished when adequate medical inspection has been established:

¹ Ayres, L. P. The money cost of repetition versus the money saving through acceleration. *Am. Sch. Bd. Jour.*, Jan., 1912. Also: The effect of promotion rates on school efficiency. *Am. Sch. Bd. Jour.*, May, 1913.

1. In contagious diseases. It can be shown that in places where a thorough system of medical inspection has been established, the number of cases of diphtheria has fallen off two-thirds, and scarlet fever five-sixths.

2. In noncontagious diseases. Medical inspection eliminates a large proportion of the physical defects that have been proved to retard advancement through the grades. The fact to be made clear is that failures of promotion are a large and positive force in increasing the cost of our schools, and that medical inspection will reduce the number of these failures; in other words, medical inspection has a direct bearing upon the reduction of school expense. The initial cost is more than saved from the lowest standpoint of dollars and cents.

Too great emphasis can not be given to the value of a public presentation of the needs and benefits of medical inspection, in written reports or otherwise, before asking money for adequately doing the work. A discussion of the financial aspect of the case appeals to the practical men usually composing the councils which fix the budgets or the communities which decide upon items of expenditure. A plan should be presented, giving an estimate of cost.

Those striving for the introduction of medical inspection should always present a well-thought-out plan. The following is suggested: (a) A daily inspection for contagious diseases; (b) an annual physical examination of each child; (c) a system of following up the parents to see that the children have the proper treatment; (d) team work in cooperation of teachers, janitors, principal, and superintendent, with the physical director, school nurse, and medical inspector in the various phases of school hygiene.

This work should be done by: (1) The room teachers, who make the vision and hearing tests, and can be taught to select children to be referred to the inspector on his daily rounds. These include: Children suspected of illness; children returning after unexpected absence; and those returning after having been excluded. (2) Medical inspectors acting under the general direction of the superintendent of schools or of the director of school hygiene, (a) calling at each school as near the opening of the morning session as possible for the purpose of examining cases referred to them by teachers; (b) once a year examining each pupil and recording the facts on a card for future reference. This could be done at any time in the day, and would take 10 to 15 minutes for each pupil.

Such an examination is fruitless without a system of records and the machinery for following up the cases needing attention. The inspector should diagnose cases, not treat them. The parents must

provide the treatment. Experience has shown that some parents will heed printed notices, but that many require a personal explanation, and that some need to be shown how.

This has led to the introduction of the most indispensable factor, namely, the school nurse. The doctor visits for a few minutes, whereas the nurse devotes her entire time to the work. She is the most important feature of the whole plan. Her duties are briefly these: To aid and advise the teacher in her work and to act in emergency cases until the doctor arrives; to follow up children excluded on account of minor contagious diseases, such as scabies, impetigo, pediculosis, and ringworm; to visit the home and confer with the parent, either showing her how to treat the case or influencing her to put the child under the care of a physician.

The nurse is the most efficient link between the home and the school. Her work is immensely important in its direct results and very far-reaching in its indirect influences.

B. MEDICAL INSPECTION IN ROCHESTER.

GEORGE W. GOLEB, M. D.,

Health Officer, Rochester, N. Y.

In Rochester we have 12 medical school inspectors, 11 men and 1 woman, working under the direction of the Health Bureau, for the physical inspection of 19,381 school children in 36 public schools, an average of 1,615 pupils to each medical inspector. Each inspector is assigned to a district in which he not only has school inspection work, including the vaccination of all unvaccinated children, but also the care of the sick poor, and the insane examinations in his district. He is assigned to from 2 to 4 schools, according to the amount of the additional work in the district, the size of the school, and the number of pupils. In 1912 the work of each medical inspector averaged as follows: Vaccinations, 450; visits to sick poor, 200; office calls to sick poor, 100; maternity cases, 2; insane examinations, 40.

The medical inspector is also called upon to make a weekly sanitary survey of the school, covering heat, lighting, ventilating, and cleanliness; to make a physical inspection of each child during every school year, and to record his findings on a card, so arranged as to follow up the child from grade to grade, and to present a written statement on one card of the physical condition of the child during its entire school life.

C. MEDICAL INSPECTION IN CITIES OF 100,000 OR LESS.

CLINTON P. McCORD, M. D.,

Chief Medical Inspector of Schools, Albany, N. Y.

Medical inspection in our public schools is but the opening wedge for the broader idea of health direction. The term "health director" more accurately designates the functions of the officer who is to play a part, constantly increasing in importance, in our educational systems.

Cities of 100,000 population or less offer the fields where the work of health direction can be systematized in the most ideal fashion. These are the cities that in greatest numbers will introduce medical inspection in the next few years, and as the scope of the work broadens, the system may well be expanded toward the ideal plan of health direction, the beginnings of which we have in Albany.

The health director should be a "full-time," specially trained physician, and should have under his direction a "full-time" medical examiner to direct his energy toward the medical inspection phase of the system, and a corps of school nurses.

The system should be under the board of education, and sufficient appropriation should be made to administer the work in a dignified and scientific manner. The privileges of the family physician must not be disturbed. With the awakening of the general practitioner to his responsibilities will come an increased cooperation with the health director, which is bound to advance the standard of health among children of school age and also may suggest methods of health supervision of children prior to the beginning of school life.

There exist in the public schools five chief highways to health: Medical inspection, school hygiene, personal hygiene, physical training, welfare work. Health direction must take cognizance of them all.

The health director should be the officer to keep the physical needs of the child before the public and the educational authorities. He should act as expert to the board of education on questions of school hygiene and to the superintendent of schools upon medico-pedagogical problems. He should pass upon the physical fitness of candidates for the teaching force and should act as consultant to the director of physical training, director of school lunches, and supervisor of special classes. His office should be made the clearing house for "special case" children, where a properly equipped child-study laboratory and a person skilled in the use of psychological tests may aid in properly classifying these children, after which they may be assigned to the proper schools—open-air schools, open-window classrooms, or schools for the mentally deficient.

D. MEDICAL INSPECTION IN MASSACHUSETTS—CORRELATION OF WORK OF SCHOOL PHYSICIANS AND LOCAL AND STATE HEALTH OFFICERS.

W. C. HANSON, M. D.,

Assistant Secretary, Massachusetts State Board of Health.

In a Massachusetts town with a population of about 10,000 inhabitants, including a school population of about 2,000, two physicians are employed by the school committee as medical inspectors, at a salary of \$150 per year. To supplement the work of the physicians a school nurse is employed at a salary of \$800. Although physicians and nurse are alike responsible to the school committee, they conduct their work in such manner as they deem proper, without any guidance or instructions from the committee. There is, then, no supervision of the work on the part of the school committee. Moreover, neither the physicians nor the nurses are familiar with the work of the local health officials.

The school physician's business is to exclude from the school pupils found to be physically or mentally unfit for work, and those known to have any communicable disease; the local health official's business is to discover the source of infection of any and all cases of communicable disease in the community, within or without the school, and to do all within his power to prevent the spread of infection.

The school physician, so far as he is influenced at all, follows the idea of the school superintendent of carrying out the original course of work that was planned at the beginning of the school year, and does everything that he can to prevent the school's being closed. The local health officer, on the other hand, when there is a case of scarlet fever or diphtheria, acting either with or without the advice of the school physician, closes the school through the power of the board of health to establish quarantine, and often unwisely and unnecessarily causes an interruption of the school curriculum.

Suppose, instead of the school physicians and nurses being in the employ of the school committees and having no official dealings with the board of health, the school and health inspection work is entirely in the hands of the local board of health, what then happens?

In a Massachusetts city with a population of about 104,000, including a school population of about 18,000, there are six school physicians in the employ of the board of health. Two nurses are also employed by the board to follow into the homes many of the children with defects or diseases discovered by the physicians. Each physician and nurse does practically as he or she pleases, visits the school-houses and the homes of the pupils, and submits his or her report at irregular intervals to the board of health. The board has issued no printed or written instructions for the guidance of either physicians or nurses. One physician, for example, may and does take a great

deal of interest in his work, the interest carrying him along in it, even for the small salary of \$200 per year, so that he does for the city far more than he is paid for doing; whereas another physician does his work in an irregular fashion, taking little interest in it, partly because of the small salary, and submitting his reports only when requested, if at all.

But there is one saving thing about the work as conducted in this city—each school physician must report at once to the board of health every case of communicable disease in the school and in the community wherein the school is located, for he acts not only as school physician but as agent to the board of health. He has, however, no idea of correlating the school and health work any more than has the board which employs him.

From what has been said, therefore, it will be inferred that whether the school inspection work is conducted by persons in the employ of the local school committee or the board of health it is not supervised in the great majority of the cities and towns in the Commonwealth. This is a fact.

What is the reason for this lack of definite supervision of the work of school physicians? The answer is, it would seem, the same as applies to all health work: Lack of sufficient interest and appreciation on the part of the public as to the benefits that come from work of this sort if well done, and consequently lack of money to standardize and put the work on a practical basis.

Fundamentally it makes little difference whether school or health officials control the medical inspection of school children. The first essential is a thorough and well-supervised system of school health work on the part of whichever board the local community in question sees fit to appoint. The second essential is a practical correlation of the school and community health work. What is preeminently needed in Massachusetts to-day is the bringing together of the local communities in such a way as to make it impossible for any single community not to know what constitutes, in a place of its size and characteristics, the best practical sort of school-inspection work.

Massachusetts is particularly fortunate in having associated with the State board of health physicians whose chief business it is to assist the local health authorities and to instruct and inform them, if necessary, on matters relating to the prevention of disease. They are, from the nature of their position, their training, and experience, competent to do just that sort of thing which results in bringing together the health authorities of neighboring communities. That was why the Commonwealth wanted their services. Having no autocratic powers over the local authorities, and standing as they do between the municipalities of Massachusetts and the health authorities at the statehouse, they accomplish to-day much in the way of

preventing disease that can not be definitely stated by the words of any written statute.

Into the hands of these men, therefore, whose duties already take them to the cities and the towns, could be put the supervision of the medical school inspection of the State. Just as now they advise with the health officers and boards, investigate conditions and make recommendations, so they could advise with the school physicians, observe their methods and results, and by bringing to them definite experiences of similar communities with similar problems, incite that instinctive desire for high standards which comes so much more surely and vigorously by education than by legislation.

State advisory supervision of school and community health work for the Commonwealth of Massachusetts is in the interest of economy, and is both logical and practical. It will insure local supervision of the medical inspection of schools, regardless of whether that work is controlled by the school committee or the board of health. It will gradually lead to a high and uniform standard of examination of the pupils throughout the Commonwealth; it will preserve local interest and initiative in all health work; it will permit local officials of the school and health boards to have such information in common as each needs, without duplication of work, and it will bring the State educational and health authorities together on a problem that demands combined action in the interest of the public welfare.

III. HYGIENE OF THE SCHOOL BUILDING.

A. THE HYGIENIC CONSTRUCTION OF SCHOOLHOUSES FROM AN ARCHITECT'S STANDPOINT.

W. H. KILHAM, Boston.

So much advance has been made in the general matter of the hygienic construction of schoolhouses that it seems as if the last word must have been said as far as the architects are concerned. No longer is schoolroom air rebreathed by 50 pairs of lungs; the common drinking cup has been replaced by the bubbling stream; dust, once the bugbear of janitors, has fled before the combination of rounded corners and vacuum cleaner; the schoolroom is sunny, well lighted, warmed to a uniform temperature, and, in fact, almost sterilized by the various devices calculated to conserve the health of teachers and pupils. The city schoolhouse of to-day, compared with that of 30 years ago, seems to be almost a perfect structure.

But there is another side. This germ proof, dustless building is also a very costly one. City after city passes large appropriations to provide the most modern schoolhouse that can be built. With

their complicated equipment, the construction of these buildings brings a formidable load on the helpless taxpayer. How many of the requirements of these buildings are fads, and how many are in the class of things really worth while?

About the most important single item of schoolhouse expense, both in construction and maintenance, is that of heating and ventilation. The laws of Massachusetts and many other States provide that no new schoolhouse shall be occupied until after the installation of apparatus capable of delivering at least 30 cubic feet of warmed outside air per minute to each occupant. In a large building this can only be satisfactorily accomplished by providing a ponderous arrangement of boilers, fans, ducts, and uptakes which suck into the building the vivifying air from out of doors, draw it through and over steam coils which rob it not only of every particle of moisture, but also of whatever freshness it ever possessed, then, sometimes after attempting to restore the moisture by a "humidifier" or "air washer," deliver it cooked, devitalized, and sterile to the children, who take it as a substitute for the winds of heaven. This sort of air is the present supply for not only schoolrooms and assembly halls, but even of gymnasiums. The successful working of a "plenum system" as above described depends absolutely on the outside windows being kept closed, as otherwise the air would forsake its prescribed path in each room from the inlet register via 40 pairs of lungs to the outlet and immediately find an exit by the nearest opening.

In my young days I attended a public school which had been built in the year 1874 and was regarded as a model of all that a schoolhouse ought to be, but the subject of ventilation had at that time not been seriously considered by architects. A hot-air register in the floor, with a wooden ventilating duct about a foot square, was then considered a very up-to-date arrangement. When the air of the schoolroom in winter got to an impossible point, our progressive teacher would order a girl to the piano, open all the windows, and put us through a standing series of exercises done to lively music, until refreshed and invigorated we sat down for another go at the books. The pupils of this room had the cobwebs cleared out of their brains by drafts of real outside air, *and there was no expense about it.* To-day a 20-room school building of ordinary plan, costing, say, \$110,000, has to cover 900 more square feet and contain perhaps 40,000 more cubic feet, on account of space devoted to vertical lines of stacks. These stacks, built of brick or other fireproof materials, together with the horizontal ducts, cost perhaps \$10,000. The cost of the plenum system over direct heating apparatus in such a building would be about \$5,000. The extra consumption of coal might be

variously estimated, but probably amounts to not less than 75 or 100 tons per year.

Experiments with open-air classes have perhaps not yet demonstrated that perfection has been attained, but the testimony in general shows that pupils in these rooms make a great advance both mentally and physically. It seems to me that much school work, especially of the kind done in "study hours," could be profitably carried on in rooms built with windows only on one side so as to eliminate drafts, and made to open the entire size of the brick opening, and kept open, the extreme cold in winter possibly being tempered by direct steam coils. Recitations and blackboard work could be conducted in absolutely open rooms on the roof, made with glass sides to close when the wind is too strong.

I am conscious that what I have said may seem weak, reactionary, and absurd to those familiar with the problems of school operation. Under the prevailing laws indirect ventilation to the extent of 30 cubic feet per minute per person is obligatory, and probably rightly so, for in working with open windows the personal element plays perhaps too prominent a part and the difficulty of supervision becomes too great. But if it is possible to give the children invigorating air and incidentally reduce the enormous cost of schoolhouse construction, I believe the matter is worthy of investigation, and the gratitude of parents and taxpayers will await the successful investigator.

B. VENTILATION AND RECIRCULATION.

LESTER H. GULICK, New York, N. Y.

We are now able to account for the prevalent acute dissatisfaction with ventilation. For example, such men as Dr. John W. Brannan and Dr. W. Gilman Thompson are saying that the more perfect the system, the worse the results in the great New York hospitals under their charge. We now see that the trouble does not rest primarily either with the ventilating apparatus nor with its operation. The trouble is that we hygienists have set up false standards. We have said: "Give each pupil 1,800 cubic feet of outdoor unbreathed air per hour." We now know that the important thing is neither the quantity nor the history of the air, but its condition. We have striven for absolute evenness of temperature, although we know well that variation in temperature is a necessary element in vasometer stimulation. We have been extreme in our endeavors to avoid air that has already been used.

The great change in our standards is due to our discovery that the purpose of ventilation is not at all what we had supposed. The air

serves the body in two more or less overlapping groups of ways—one relates to the gaseous exchanges of the body, the other relates primarily to heat control.

In order that the gas exchanges of the body should be perfectly performed, it is necessary that the air be pure, i. e., practically in those proportions usually found in nature.

On the other hand, the heat control of the body is influenced by the condition of the atmosphere in which the body is immersed. This is exceedingly variable, and the problem of ventilation is to bring about the best conditions of air. In other words, ventilation seeks to control the conditions of the atmosphere in which the body is immersed, rather than to control its composition: because its composition is practically stable and needs no attention, while its condition is exceedingly changeable as well as important.

The ideal ventilation for a school building consists in recirculating and properly conditioning its contained air. We have now arrived at such a knowledge of ventilation that it is possible to have indoors and practically all the time those conditions which are found outdoors only when nature is at her best. Man has at last accomplished with reference to the air he breathes and in which he is enveloped what he learned to do years ago with reference to the water he drinks—have it at its best all the time.

C. AIR WASHING AS A MEANS OF OBTAINING CLEAN AIR IN BUILDINGS.

GEORGE C. WHIPPLE and MELVILLE C. WHIPPLE, Harvard University.

Clean air in motion and of proper temperature and humidity is necessary to indoor comfort. City air at the street level is dirty. At higher levels it is cleaner. Air at the fifty-seventh story of the Woolworth Building in New York was found to contain 27,000 particles of dust per cubic foot as compared with nearly ten times as many at the street level. There was a similar decrease in the numbers of bacteria and molds.

If dirty air is taken into a building through a badly located intake, it nullifies the effect of the ventilating system. Where it is impossible to secure a supply of clean air, the purification of the air supply by washing is recommended. This process is like nature's process of atmospheric cleansing by rain. Tests of air washers used in Boston showed them to have an efficiency of about 75 per cent, but that higher efficiencies are possible.

Experiments at the gymnasium of the Y. M. C. A. college in Springfield, Mass., showed the practicability of using air over and over, the air being washed and returned to the rooms. Such air was found to be better than unwashed outside air, but not quite as good.

as outside air after washing. The advantage of recirculation lies in the saving of heat, which at Springfield was found to be upward of 40 per cent during winter weather. This lower cost of heating makes it possible to circulate larger volumes of air and increase indoor comfort. Air washing also removed bacteria, epithelial scales derived from the skin, and odors.

D. THE HYGIENE OF THE JANITOR.

HOMER H. SEERLEY,

President Iowa State Teachers' College, Cedar Falls, Iowa.

The sanitation of the schoolhouse depends upon the school board, the teachers, and the janitor. The janitor is the servant of the public, and as such should be diligent in so conducting his part of the business as to conserve the welfare of the pupils. At the same time, the janitor is helpless in his endeavor unless he is granted the cooperation and the sympathy of the school board and the teachers. Certain preliminaries in construction, in environment, in appreciation of service, and in knowledge of the values of sanitation are essential to give the janitor a reasonable chance for success. Without these necessary conditions the janitor can not maintain satisfactory standards, and will gradually lose his disposition to seek improvement and develop excellence in all kinds of cleanliness.

There must be a sanitary environment for every schoolhouse before there can be a permanence of sanitary conditions in the building itself. Many schoolhouses are so unfortunately located, the streets and the highways approaching them are in such an unfavorable condition as to cleanliness, that it is impossible to pass over them and enter the schoolhouse without producing unhygienic conditions. To better these conditions is the task of the school board.

The work of the janitor consists in keeping the building immaculately clean. This means that dust must be constantly removed from the walls, the floors, and the furniture of the building in its every part. Prevention is always easier than cleaning. Keeping the dirt out of the building is of more helpful importance than removing it after it is in. Janitor housekeeping includes the cleaning of blackboards, the cleaning of floors, and the removal of everything that should not exist under sanitary regulations. Sweeping with brooms is not to be commended as a complete process of securing hygienic conditions, since thereby dust is developed and scattered everywhere to the detriment of all concerned. Methods should be adopted that suppress the stirring of the dust that gets into a room and yet enable what is found there to be removed without undue complications and evils. Possibly the vacuum systems of cleaning

are great improvements on other methods in existence, but it is not likely that these systems can be universally adopted. Besides, the vacuum systems are unable to remove much dirt that adheres to the floor, walls, and furniture. Water remains the most valuable cleansing agency. Wiping floors, furniture, and even walls with clean water and a woolen cloth for a mop gives the most permanent hygienic results. Clean water is better than soapy water or any equivalent preparation, because it leaves no residue and gives a wholesome effect upon the atmosphere of the room. The only commendable use for a broom or a brush is as a preliminary agent, to take up the coarser particles which may have been dropped on the floor by the pupils; wiping with water is the final dependence in completing the work necessary to be done.

It is well known that the educated and the trained representatives of the people do not yet acknowledge and believe that the principles of school hygiene are worth while. Even the scholar is not necessarily a hygienist to any remarkable extent. Intelligence and cleanliness do not necessarily go together. Regard for knowledge and regard for health are not associated factors in civilization. Consequently churches, public buildings, private homes, hotels, and restaurants are generally the most flagrant violators of the simplest laws of hygiene. It is therefore very difficult to get public attention to the necessities of school hygiene. The janitor does not receive the impression that a hygienic schoolhouse is required, and an indifferent public encourages him to be careless, indolent, and even unfavorable. It is possible that laws requiring suitable standards will be of some benefit; it is possible that earnest and interested teachers can be of much influence; but, after all, a higher degree of intelligence and of appreciation for scientific results must be brought to the consciousness of the masses of the people. To-day the States are sending out expert representatives to help the masses of the people to a better kind of agriculture, to a better success in animal industry, to the making of more wealth and prosperity in business; but when it comes to human health, human happiness physically, human progress in caring for human life, but few such experts are employed and but little instruction is given.

E. THE IDEAL SCHOOL SITE.

WILLIAM H. BRAINEED,
Architect, Boston, Mass.

The essential sanitary problems of a school are: To provide a place where instruction may be given with the minimum of fatigue and strain for pupils and teachers, and to provide hygienic conditions for

the necessary accessories, such as corridors, toilets, playrooms and playgrounds.

The question as to how these problems are affected by the site may be discussed under the following heads, arranged as nearly as possible in the order of their importance: (1) Exposure to light; (2) surroundings; (3) space; (4) access; (5) proper conditions of soil. While the arrangement of heads is intended to be in the order of their importance, it may often happen that the advantages to be gained are so great under one of the less important heads, and the difference under the more important head so slight, that a consideration naturally of lesser importance may be the cause of the final selection of the site.

1. *Exposure to light.*—The first purpose of the school is instruction. The first need of instruction rooms is light, for the use of the eyes and apparatus. Light must be in abundance and without glare. Sunlight should reach all instruction rooms, and others so far as possible. Long-continued, hot sunlight is not desirable in classrooms. The desirability of exposure for classrooms is in the following order: Easterly, southerly, westerly. For large buildings a site permitting of the major axis running northeast and southwest is most desirable. Classrooms should have the easterly and southerly exposure; assembly hall and accessories, westerly and northerly exposures. If the site provides sufficient exposure to light, the circulation of air will probably be sufficient.

2. *Surroundings.*—These should enhance, not detract. There should be nothing noisy or noisome. Light and quiet should not be impaired. Beauty has positive hygienic value, by soothing and stimulating the mind.

3. *Space.*—The space must be sufficient to allow of low buildings—generally two stories, and never more than three stories, except in crowded city districts.

There should be open playground space amounting to from 30 to 50 square feet per pupil. Other needs, such as school gardens, athletic fields, etc., should be considered. A southerly sloping hillside is many times desirable. Substitutes for accessory space may be found in adjacent municipal grounds or even in quiet side streets.

4. *Access.*—The site should be central to the district served. This may be a question of transportation rather than geography. The site should not be exposed to the noise and danger of contiguous railroad or street car lines, or main automobile thoroughfares.

5. *Conditions of soil.*—Must provide for a dry building. This is generally more a matter of expense than of actual soil. A well-drained site with, if possible, a sand or gravel subsoil is desirable. In rural and town schools the range of choice is generally sufficient

to provide a suitable location. In older towns and in cities more important considerations may make wise the expenditure necessary to develop a poor site.

IV. OPEN-AIR SCHOOLS.

A. OPEN-AIR SCHOOL ARCHITECTURE.

JOHN H. VAN PELT,
Architect, New York, N. Y.

Unlike the architecture of the ordinary school, where experiment has prescribed the type, open-air schools have not yet been built and tried out. Ferryboats have been adapted to the purpose, open-air schoolrooms have been built or altered from old schoolrooms as minor parts of buildings, roofs covered and uncovered have been used, but the complete school, planned in all its details toward the one end, and of an advanced type, is yet to come.

In describing the ideal conditions to which I think such a school should conform, I have in mind a type slightly less radical than a school entirely out of doors with little more than a roof, but something considerably more open than what has been styled the low-temperature school. In other words, I propose a building so constructed that the air in all parts of rooms where the children remain will be continually replaced by outdoor air that has only sojourned a few seconds within the limits of the building, yet not a building that is entirely without heat.

The ground for such a school should be sandy or gravelly without too much clay, so as to preclude a humid condition in the entering air. It should be protected from the wind by pine, spruce, or other trees suitable for screening; but these trees should not be too close to the building and should not cast a shade upon it. City schools should be so situated that sun will not be cut off from them by adjacent skyscrapers. This is also important, because the high buildings of our later construction cause concentrated air currents that would render work in an open-air school almost impracticable by blowing papers and material about and forcing dust and dirt up and through the school. Exposed conditions, such as Riverside Drive in New York City, would be objectionable, rendering it difficult to protect the schoolrooms from violent storms.

The orientation of the school should be such that sun will enter all classrooms during a part of any day in the year. This is especially important in such rooms as study rooms, where the children sojourn for a protracted period.

Toilets are to be placed so that odors can not reach the open classrooms. An insanitary condition of this kind will become particularly objectionable in warm weather.

It is essential that the plan be so arranged that all classrooms, study rooms, the auditorium, and wherever the children sojourn, shall have ventilation on two or more sides; to fulfill conditions properly, the room should be open on at least two sides that are opposite to each other. An open gallery is advantageous.

General plans may be divided into three classes—the U or H plan, where the wings are about open courts; the T or star plan, where the wings radiate from a center; and the inclosed court plan. The last named is not so good, and all plans should so inclose the courts that the latter are open on at least one side, which is not the north. This is to insure the entrance of the sun into all parts of the court during some part of the day.

I see no objection to a building three stories high above basement, or even higher, if means of ascent can be provided. Open galleries and open staircases are good, provided they are protected from snow and sleet. A great advantage is that children passing between the cold rooms do not undergo a sudden change of temperature. Snow and ice are particularly dangerous in the staircases.

Placing classrooms on the ground floor is objectionable because of the dust and odors from the street and the general impurity of the air.

Overhanging cornices are good, because they afford protection from rain for the open windows, but on the top floor they cast a shadow. A glass cornice, like a marquise, might be extended at the top of the building, or such protection might be constructed over each of the large windows.

The auditorium should be so situated that it can be thrown entirely open. It may be convenient to have it arranged so that it can be closed for special exercises when visitors are present.

Classroom windows must be so arranged that any side from which comes a heavy driving storm or a drifting mist can be closed. In such schools as the Providence school, one of the first open-air schools of the country, hinged windows were tried. They have not been found as advantageous as pivoted sash dividing the window into three parts, the upper half of the lower sash opening in, so that it projects above the head of a full-grown person. Such sash, somewhat inclined to the outside, form a protection from slanting rain, throwing the water out of the building. Double-hung windows are possible, running up into pockets in the head of the window and below the sill of the window above, so as to leave the entire opening free.

They are somewhat difficult to operate and do not afford any protection.

Classrooms may have the floor warmed. This would slightly temper the air and keep the children's feet from becoming cold, tending to dry them if they had not come to school with rubbers. Wood floors are good to walk on, as they are not too hard, and very durable; but rain, snow, and dampness soak into them and are objectionable. Linoleum is good, especially if it can be cemented down. It wears out rather easily and is therefore expensive. Composition floors are somewhat expensive, but come within a possible range of prices.

Coat rooms should be well ventilated, but kept reasonably warmed—about 65° Fahrenheit. This will appear quite warm to the pupils coming from the classrooms and halls, and a higher temperature would be uncomfortable before the smaller children could succeed in adjusting their clothes. It may be suggested that coat rooms could be omitted, in that the children wear about the same clothing in the classroom that they do out of doors. If they have to come to school through snow and storm, their outer wraps should be taken off and dry wraps put on, and I believe it would be better to provide a proper place to keep such wraps, allowing the damp ones to dry.

Furthermore, exceptional cases occur where fragile or anemic children suffer from time to time from the cold; the warmed cloak-room offers an excellent place where their vitality may catch up. Limited space may force wardrobes in the classroom, in which case a warmed room for recuperation should be provided on each floor.

Toilets must necessarily be warmed, as the children have to remove some of their clothes, and in very cold weather plumbing pipes would freeze. A temperature of 60° to 65° is ample. Anything higher than this would be bad. Toilet rooms should be screened to prevent insects from entering through the open windows.

In spite of the fact that such a school is open and a considerable amount of heat lost, the fact that the average temperature of the building is kept so much lower than is ordinarily the case will probably cause a slight saving in coal over the usual type of schoolhouse. Hot-water systems can not be used, owing to the danger that pipes and radiators may freeze. Hot air is useless, as it can not be controlled in such a building. Steam and water vapor are therefore the only possible means of heating, and water vapor is hardly effective enough under the conditions that usually obtain.

The acoustics in such a building play an exceedingly important rôle. In an auditorium, they must receive special study, as the open windows supply the equivalent of total absorption, and, furthermore, allow exterior sounds to penetrate. This would make speaking in the room more dead, and in the noisy quarters of a city, exterior

sounds would become predominant. In the classroom, the question becomes quite important. Where classrooms are opposite each other, across a somewhat narrow court, the sound might be thrown from a wall opposite the windows over to the opposite room. In certain cases, a glass screen could be built in front of the windows, deflecting the travel of the sound to some extent, without permitting light to penetrate the room.

In the matter of light, the general color of the classrooms should be that of the ordinary room, except that it must be kept in mind that too light a wall reflecting a glare from the snow on a winter's day would be trying. As a much larger quantity of light will probably penetrate the rooms than ordinarily enters a classroom having glass areas of only 20 to 25 per cent of the floor area, the walls of the room might advantageously be somewhat darker.

B. VITALIZING SCHOOL CHILDREN.

WALTER W. ROACH, M. D., Philadelphia, Pa.

At the Alexander Dallas Bache School, in September, 1912, we decided to study the effect of low-temperature classroom work on the educational processes of the children. Two groups of normal third-grade pupils were available for the test; one group occupying a room heated and ventilated in the usual manner, and the others, with the consent of their parents, all through the winter in a classroom with the windows wide open. Both groups of children followed the regular school program, and we observed their work carefully.

The windows of the one room were kept constantly down from the top and up from the bottom, and the room was cut off from the regular heating plant of the building. The ordinary desks were removed, and replaced with chair desks which could easily be moved by the pupils themselves to clear the floor space for frequent physical exercises. As cold weather approached the children were provided with woolen sweaters, worsted caps, soft woolen blankets, and knitted woolen gloves. Thus their lower extremities were protected from the cold floor with no disturbance of the circulation.

Week by week, during the fall and winter and spring we weighed and examined these pupils, watched their study and their play, and compared their scholarship with that of the children in the warm-air room. The children from both rooms came from the same kind of homes, so that the test was as fair and as accurate and searching as possible. As might have been expected, we found at the end that the pupils in the open-window room had gained on an average more than twice as much in weight as those in the warm-air room. They kept

wholly free from colds, and were much more regular in attendance than the others.

The experiment was not made primarily to prove that fresh air is good for healthy normal children in school. In these days the gospel of sunshine and pure air is accepted and ought to need little preaching. Many school boards do not, however, practice the doctrine that their members believe in and preach. The average schoolroom is maintained at too high a temperature, and ventilation as a rule is poor.

To conclude: The beneficial effect of open windows on the health and scholastic progress of pupils can be attributed to the following:

Volumes of pure, fresh, cool air roll into the room with none of the vital qualities impaired by artificial handling.

Nature's proper proportion of moisture is mixed with this atmosphere and nature's variation is a beneficial change. Ventilating engineers have made the mistake of trying to establish a norm and sticking to it.

C. RESOLUTIONS ON OPEN-AIR SCHOOLS.

(Adopted by the Fourth International Congress on School Hygiene, Aug. 20, 1913.)

Whereas, Nearly a million tuberculous children or children strongly disposed to tuberculosis are attending our public schools and there is hardly accommodation for 1,500 to receive instruction in the open air, and—

Whereas, The congress is convinced that the open-air school is one of the most powerful agents in the prevention and care of tuberculosis, and it has been further demonstrated that nearly all climatic conditions, providing the air is dust free, lend themselves to the prevention of tuberculosis in the predisposed and the care of the afflicted, and—

Whereas, Statistics show that there are not nearly enough hospital and sanatorium accommodations for adults and children afflicted with pulmonary tuberculosis or children suffering with tuberculous joint or bone disease, and—

Whereas, It has been demonstrated in New York and other cities that discarded vessels lend themselves admirably to transformation into all-year-round hospitals and sanatoria for consumptive adults, sanatoria for children afflicted with joint and other types of tuberculosis, and into open-air schools for tuberculous, anemic, and nervous children; be it—

Resolved, That the Fourth International Congress on School Hygiene petitions the United States Government to place at the disposal of the various States of the Union as many of the discarded battle-

SCHOOL HYGIENE.

ships and cruisers as possible, to be anchored according to their size in rivers or at the seashore, and to be utilized by the respective communities for open-air schools, sanatorium schools, sanatorium schools for children, or hospital-sanatoria for adults; be it further—

Resolved, That the congress expresses its appreciation to the Italian Government of the example it has given by consecrating three of its men-of-war to the combat of tuberculosis; be it further—

Resolved, That this congress expresses the sincere wish that other Governments may follow the example of Italy; and be it finally—

Resolved, That copies of these resolutions be presented to the American and other Governments represented at this congress.

V. ORAL HYGIENE.

A. OBJECTS OF THE NATIONAL MOUTH HYGIENE ASSOCIATION.

W. G. EBESOLE,

Secretary-Treasurer, Cleveland, Ohio.

First. To teach the importance of healthy mouths to the health, strength, and beauty of the individual.

Second. To teach methods which will change the conditions in the public schools so that danger to both teachers and pupils from disease will be no greater than that outside the schoolroom. To endeavor to have the public thoroughly appreciate the value of the service rendered by the public-school teachers of the land, to create a sentiment for the paying of salaries commensurate with the service rendered and the risks assumed by them.

Third. To teach how to properly care for the mouth, including advice as to the use of tooth pastes, powders, and brushes.

Fourth. To teach the people the proper kind of food to use and the manner of masticating, so that the teeth may become strong and the mouth healthy.

Fifth. To teach the people to know and understand the value of good dental service and to instruct them how to command it.

Sixth. To teach the public to shun people with diseased or dirty mouths. (One dirty or diseased mouth in a room where all other mouths are clean will fill the air in a few minutes with disease germs that will produce the disease in the others. As proof of this, consider how quickly colds, diphtheria, scarlet fever, measles, and many other diseases are communicated from one person to another.)

Seventh. To encourage the establishment and maintenance of medical and dental clinics to care for worthy, but unfortunate, people.

Eighth. To do these things by an endless-chain system of securing members and coworkers for the National Mouth Hygiene Association, who will not only pledge themselves to employ mouth-hygiene methods personally, but will also pledge themselves to make a faithful effort to secure five others who will become members of the association, making like pledges to follow mouth-hygiene methods and secure other members.

Ninth. To establish junior auxiliaries to the National Mouth Hygiene Association among the school children of the country, for the purpose of arousing their interest in our campaign.

B. METHODS OF SPREADING THE ORAL HYGIENE PROPAGANDA.

GEORGE F. BURDE, *Detroit, Mich.*

Those who plead for universal oral hygiene are practically preaching a new doctrine. The great mass of human beings, those whom it is most necessary to reach, have never heard of it. Nor are they keen for the news. They are already bored to death with all the new preachments that have been thrust upon them during the past few years. The great humanitarian wave that has been rolling larger and larger has touched them again and again, not only to bring them relief, but to urge new efforts and impose new obligations upon them.

It is a matter of education among the high and the low, the wise and the foolish. But education, even of the most superficial kind, is a slow process. How shall we send out the news into the highways and byways? How let the fathers and mothers know that often their children are frail and sickly, because they are ill-nourished, in spite of plenty of food? How show them that malnutrition is directly due to the wrecked teeth, the black ugly stumps, foul and diseased, that might have been white and sound, supplying the means that nature provided for the proper mastication of food and the resultant well-nourished body?

There is much criticism in our day of the press. How much or how little of it is deserved I do not know, but I do know that there is no power so overwhelming, so far-reaching, so swift and penetrating as this power of the press. The papers reach all the people all the time.

To the newspapers I can not give too large a share of the credit for the success of our movement in Detroit and Michigan. Intelligent and sympathetic reports of the efforts being made by some of the dentists to save the children in this regard were given in the news columns; interviews on the need and the best methods of meet-

ing it were used; editorials setting forth the meaning of this special phase of the big humanitarian impulse were printed in all the papers. Moreover, there were the Sunday feature stories, with their striking headlines across the entire page, and illustrated to show graphically how terrible a thing the neglected mouth may become.

I should say that no scheme for spreading the doctrine and extending the practice of oral hygiene was ideal without lectures. Well-delivered, popularly treated, illustrated lectures will carry the message to hundreds who otherwise would be unreached. In Detroit the Federation of Women's Clubs has for years maintained a series of winter lectures given evenings in the schoolhouses, in the social centers and settlements, and in the various clubs organized among the men and women of the working classes. There is such a strong penchant for organization of every sort and kind in our day that it is an easy matter to find groups of people gathered for an evening's diversion. If you can teach them a new lesson pleasantly they will listen. The story of what ruin a neglected mouth may work is not without its dramatic possibilities.

Lectures, inspection of the teeth of school children by dentists, clinics, as made and as well advertised as possible, always with the backing of the press and their cooperation in printing stories—these are the media through which the child may be helped and saved from the tragedy of a wrecked, diseased, and disease-producing mouth.

C. CONTROL OF DENTAL CARIES IN SCHOOL CHILDREN.

P. B. McCULLOUGH.

Chief of the Dental Division, Bureau of Health, Philadelphia, Pa.

The undefined though expressed policy of the oral hygiene propaganda has been to instill into the popular mind the belief that the care of the teeth, such as may be practiced at home, will prevent dental caries.

The futility of this teaching becomes apparent after consideration of the forces instrumental in producing decay. Like other organs, the teeth are a product of the nutritional supply. When this is inadequate the teeth show the effect, and their resultant incomplete development is not remedied by the toothbrush.

Miller proved that the active cause of caries is the acid secretion of microorganisms in the main lactic acid fermentation. More recent investigations tend to show that caries is prevalent when the character of the salivary secretion is favorable for the growth of the acid producing bacteria.

It follows by deduction that the theory of a perfect nutritional balance is fundamentally the secret of prevention of caries. In-

adequate nutriment during the developmental period results in incomplete enamel formation, and after eruption of the teeth the saliva, influenced by the character of the diet, hastens decalcification. The school dental clinic is offered as a definite measure for control midway between adequate nutrition as a municipal problem and oral hygiene as the latter is now preached.

Clinical evidence shows that certain permanent teeth are decayed at 1, 2, and 3 years after eruption, or at 7, 8, and 9 years of age, because these particular teeth are incompletely developed at the time of eruption. In them are minute crevices providing lodgment for the acid-producing bacteria. The first requisite, therefore, is that these natural imperfections shall be artificially repaired, and for this condition the only known remedy is filling.

The first permanent molars are four—two lower and two upper—erupting back of the last temporary molar, which is the fifth tooth from the median line on each side of each jaw. The development of these "sixth year" molars begins at the eighth month of prenatal life; calcification of the enamel is complete at about the fifth year; they erupt, as stated, at 6 years; while the roots attain their full growth in the tenth year. Not only is the development of these teeth influenced by maternal environment before birth, but their subsequent development occurs during that period of infancy and early childhood when mortality is greatest. Since inferior food is supplied to both infants and children in city districts, development is bound to be extremely poor. It is not surprising, therefore, that after tabulating examinations which we have made of 9,953 children of elementary school age, we find 23,325 first permanent molars lost or decayed, or that of these four teeth nearly three to a child are decayed.

Man is most susceptible to dental caries during that period of life compassed by the elementary school age. It is therefore during this time that dental service is of greatest value. The first permanent molars require this service two to one of all the other permanent teeth combined. Simple cavities in these teeth can be filled in from 15 minutes to 1 hour; cavities involving the pulp in these teeth require about 2 hours to a tooth with visits covering several days.

We assume at the outset to be responsible for the control of dental caries in every child examined, with the single proviso that the patient make the number of visits required, in order that a discharge may signify that all the work indicated by the first examination has been completed. Patients are discharged for from six months to one year.

The task of obtaining control of caries is not nearly so formidable as it may seem. Twenty dentists can obtain control of dental caries in 100,000 school children in five years. This statement is based upon

the number of patients treated and the number of operations actually performed in one year in our dispensaries. It is misleading in this respect, namely, that the number of discharges does not equal the number of new patients recorded. It does, however, indicate what can be done. It also makes patent this fact, that to claim control that can be attested means that in each year the discharges must approximately equal the number of examinations made, and that the policy must provide for the enforced attendance of the child until discharged.

As for brushing the teeth, we insist upon it as a sanitary measure, as we would the bath, but we do not share the general belief that the toothbrush will prevent dental caries.

Next to adequate nutrition, mastication is the greatest developmental agent. Mastication is also the greatest cleansing agent and only sound teeth will be used. Children's teeth need only to be properly filled and made regular, and even green stain will disappear with this treatment and proper diet.

VI. CONSERVATION OF VISION.

A. SIGHT SAVING AND BRAIN BUILDING.

F. PARK LEWIS, M. D., Buffalo, N. Y.

It is an accepted fact, recognized by ophthalmologists everywhere, that changes occur in the eyes of children during the period of their school life, of which the most prominent symptom is a steadily progressive development of nearsightedness. As definitely formulated by the late Prof. Dufour: (1) In all schools the number of shortsighted pupils increases from class to class. (2) The average degree of shortsightedness increases from class to class. (3) The number of shortsighted pupils increases with the increase in school demands.

This form of myopia is dependent upon a relaxation of the tissues which give form to the eyeball, resulting in a gradual stretching of the globe itself. It is not dependent upon constitutional weakness; neither is it due to bad sanitary environment. It is not merely an abnormal phase of development which is fortuitous in its manifestation. It is a logical sequence of conditions which may be recognized and controlled. Its beginnings are, primarily at least, due to congenital astigmatism and the consequent strain upon the accommodation of the eye in the effort to see. Its development is still further encouraged by the hours of constant daily application in reading and writing at that period in life when the tissues are plastic and easily molded.

There are two obvious and logical remedies: (1) Relieve the excessive focal strain of the astigmatism or other abnormal refractive condition by suitable glasses. (2) Conduct school studies in such a way that close work on books or with pencil and pen is abandoned or reduced to such limited references as would seem to be absolutely necessary.

We are destroying the eyes of a large number of school children by the burden of continuous near work to which they are subjected. At the first appearance of beginning shortsightedness these children should be segregated from the others in special classes in which they are taught without books. Measures may be employed for such children in which the building up of the brain, the training of the mind in clear, accurate, and quick thinking, the government of the will, and the development of all of those faculties which we consider to constitute the education of the individual can be accomplished at least as effectively, as rapidly, and as certainly with a far less dependence upon the printed page than has heretofore been considered necessary. In other words, let us have more thinking and fewer books.

B. SCHOOL LIGHTING.

JAMES KERR, M. D., London, England.

Ocular experience is the only final test of illumination. Eye-strain is due to fatigue from overwork or glare. The eye adapts itself to brightness by varying its sensitiveness. Primary glare is due to physical effects on the retina, secondary glare to difficulty in adaptation. One-third of our elementary school children have such defective visual acuity that better illumination is necessary than for normal eyes.

Advances in photometry have made measurement of illumination convenient. Relative photometry in terms of outer daylight is the best for school work. The minimum for any school place should be raised to double Colin's demand of 10-meter candles. Javal's measurement of sky visible from any place is facilitated by solid angle gauges. The effects of reflection from walls are of importance; cross lighting and top lighting are also advantageous; but accessory illuminating devices require caution.

Artificial lighting for each school place should be not less than 2-foot candles. Blackboards require 60 per cent more. Glare must be guarded against. There should be indirect lighting, soft and shadowless, for halls, semi-indirect and local direct for fine work. The use of gas and electricity is not likely to be decided on hygienic grounds alone.

C. DEFECTIVE VISION FROM THE ECONOMIC STANDPOINT.

LEWIS C. WESSELS, M. D.,
Bureau of Health, Philadelphia, Pa.

In Philadelphia each pupil costs about \$35 per year to teach. Under normal conditions a pupil 14 years old should reach the eighth grade at a cost to the State of \$280. If on account of defective vision the child only reaches the fourth grade in that time it has still cost the State \$280, but with only \$140 worth of result, a loss to the State of \$140. The loss to the child is considerably more, because at the age of 14 it is likely to be put to work, poorly equipped for the struggle for existence, its earning power curtailed for the want of an education, so that it can contribute but little toward its own support, that of its family, or that of the State. So again the State loses, and all for the want of suitable glasses. While it is quite easy for the medical inspector or teacher to detect defective vision, the recommendation for glasses can not always be carried out on account of poverty or ignorance. These cases can procure free treatment at the dispensaries, but they are too poor or too indifferent to buy the glasses prescribed, and so they continue to struggle along greatly handicapped and fall behind on account of their eyes.

The department of public health and charities has solved this problem in Philadelphia by establishing a division of ophthalmology under the bureau of health, where poor children can be refracted and furnished with glasses free. We are now refracting nearly 2,500 cases a year. If we save each one of these children but one year during its entire school life there will be an annual saving of over \$87,000, not counting the child's time and its increased efficiency. So the furnishing of free glasses to school children is not a charity *per se*, but is a duty and an economic problem. Many children have come to the dispensary wearing glasses bought from some refracting optician or from a 5 or 10 cent store. These glasses were not only unsuitable, but they were positively injurious to the child's eyes.

Few children remain in school after the age of 14, the legal age at which children are permitted to work. This fact emphasizes the necessity of examining the eyes of children in the kindergarten and the first grades. Municipalities should establish their own eye dispensaries for the refracting and the furnishing of glasses free to poor pupils at least. This is an economic problem rather than a charity, as it reduces the cost of education and at the same time increases the efficiency of both the pupil and the teacher.

VII. SCHOOL FEEDING.

A. HISTORY AND PRESENT STATUS OF THE MOVEMENT.

LOUISE STEVENS BRYANT, University of Pennsylvania.

The school-feeding movement is a part of the larger provision for the child's physical needs, which has grown out of the realization of the dependence of mental progress on bodily condition. It includes first the study of the child's nutritional condition, and then the practical question of providing food at school. As a rule, the term is narrowed to include the provision of warm meals, either breakfast or lunch, at a small sum covering the cost of the food, and its preparation and service.

Considered externally, the movement is quite old, as its beginning antedated compulsory education in Germany, and was associated with the first constructive attempt on the part of municipalities to meet the social needs growing out of the industrial revolution at the end of the eighteenth century.

In the main, the workers in the school-lunch movement in America are convinced that if the school is to assume responsibility for the feeding of the children, it must be because of the conviction that warm, nourishing meals, served at cost, are a benefit to 100 per cent and are not merely temporary remedies for acute distress among the 10 per cent that are acutely undernourished.

Five years ago there were four cities with lunch experiments under way in the elementary schools. There are now something over 70 cities with lunches in the regular elementary schools. In nearly all of these the school board assumes at least part of the responsibility. In an increasing number it assumes entire responsibility. Lunches are provided as a regular part of the equipment in nearly all the open-air schools, which are now open in over 100 cities, while the high-school lunch is provided as a matter of course.

Wherever the school feeding movement develops, two things happen: First, in all countries, school feeding—begun by private philanthropy as a relief measure, or by a semiofficial attempt to encourage school attendance, or in some cases to make it possible—becomes gradually recognized, first by municipalities and then by States, as a legitimate extension of the principle of compulsory education; second, as soon as the State begins to take part in the provision of food for its children the meals lose the character of relief measures and become factors in education, with the double result that the suitability of the dietaries is considered with far more care than before, and the hygienic and esthetic aspects of the service receive attention.

The greatest need of the school-lunch movement is not propaganda—it is going forward with its own momentum. What is needed is the development of technique in medical examinations and in dietetic plans; the application of the principles of efficiency to the administrative system; and finally the constant extension of scientific experimentation in this field, which affords an unrivaled opportunity for the development of the science of nutrition.

B. THE NUTRITION OF SCHOOL CHILDREN.

IBA S. WILE, New York, N. Y.

If we approach the problem of school lunches and medical inspection with a consciousness that they are interdependent and cooperating to secure the same end, we shall better appreciate their educational importance. Both are designed to act in a preventive and curative way in all phases of physical and mental health. Medical inspection seeks in part to eliminate contagious diseases from the public schools, while school lunches aim to increase the resistance of children to contagious diseases. Medical inspection seeks out physical and mental defects; school lunches aim to prevent or relieve physical or mental defects. The common ground of school lunches and medical inspection might well be said to be the prevention, determination, and relief of malnutrition. During the early years of school life nutrition may suffer, owing to incorrect adjustments to school life. A late and hurried breakfast or a rush to school without any food, followed later by a bolted lunch, may be manifested in loss of weight and supervening pallor.

It is most striking that lunches are now being supplied for curative purposes to crippled, anemic, tubercular, and other subnormal children after the medical inspector has called attention to the physical deterioration of the children. These efforts to better nutrition have been accompanied by a reduction in physical and mental defects, together with a marked advancement in mental and moral progress. It is all well and good to supply abnormal children with food and fresh air, as well as mental pabulum, but it seems more rational to give the same opportunity for the preservation of health to the normal children instead of placing a premium upon ill health. In every community there are many poorly fed children, the inadequacy of whose diet is shown in part in anemia, underweight, enlarged glands, and similar symptoms. Malnutrition is a factor, though, to be sure, not the only one, in the etiology of tuberculosis, adenitis (enlarged glands), anemia, defects in vision, mental defects, chorea (St. Vitus's Dance), protracted convalescence from diseases, and impaired resistance to infections. A second factor in malnutrition to which in-

sufficient attention has been given is the effect of undernourishment before a child's entrance upon school. The relative starvation in protein, lime, iron, calcium, and magnesium during the first five years of life helps to produce the child suffering from malnutrition upon entrance to the public school. The report of the medical inspector, however, will probably class such a child as belonging to the group with such physical defects as enlarged tonsils, anemia, or enlarged glands.

The purpose of school lunches is not to relieve acute hunger, but to relieve chronic underfeeding. Dr. McMillan, of Chicago, found 15.9 per cent kindergarten children physically below par, and estimated that underfeeding was the cause of 11 per cent in kindergartens and 7.8 per cent in other grades. Dr. McKenzie regards one-third of all the school children in Edinburgh as poorly nourished. Dr. Francis Warner and Hack Tuke found 28.5 per cent of London school children suffering from deficient feeding. The New York committee on the physical welfare of school children in 1907 declared 13 per cent of 990 children examined to be suffering from malnutrition, and Dr. Sill in 1909 estimated that 40 per cent of the children in the elementary schools of New York City were poorly nourished. The New York school lunch committee in 1910, in an examination of 2,150 children, adjudged 13 per cent to be marked cases of malnutrition. In Chicago, in 1908, of over 10,000 children examined, 12 per cent were reported as suffering from malnutrition. In Boston, in 1909, underfeeding was found in 16 per cent of over 5,000 children. In Philadelphia 24 per cent of 500 children examined were found to be suffering from underfeeding. In St. Paul, in 1910, 20 per cent of 3,200 children in schools in the poorer districts were reported as manifesting the evidences of marked underfeeding.

Regardless of the primary factor in malnutrition, whether it be due to a deteriorative reaction against an oppressive physical environment, to unhygienic home conditions, or to lack of adequate or sufficient food, no inspection card should be regarded as complete without some notation regarding the state of nutrition. This position is strengthened by the comment of the chief medical inspector of London (1910):

"It is certain that malnutrition and physical defects are closely associated and react upon each other, but it is difficult to determine their exact relation to each child or to say in what degree malnutrition causes the other physical evils. Merely to increase the supply of food would in many cases not solve the complex problem of the individual child, although in many cases lack of food lies at the root of the mischief.

The relation between nutrition and medical inspection is patent. Medical inspection should be so thorough as to indicate not merely

the names of various symptoms and conditions, but should suggest whether or not malnutrition could possibly be an underlying factor. Under such conditions school lunches could serve in a remedial way by raising the standard of nutrition. Frequently medical inspections reveal some children not possessing marked defects, but who are very close to the health-poverty line, and for them school lunches could be instituted for prophylactic purposes. Most civilized countries have already installed the school lunch as a natural and normal part of an educational movement, without laying unnecessary stress upon its value as a health measure. As medical inspections are regarded as advantageous to the school system through the lessening of disease and the improvement of the mental caliber of the children, careful attention to nutrition may supply a valuable means of increasing mental activity and building up the physical health of our school children.

C. TEACHING NUTRITION VALUES THROUGH PENNY LUNCHESES.

MABEL H. KITTRIDGE,

New York School Lunch Committee.

In a list of causes of malnutrition I notice that in England poverty is put first, but it seems to me in this country ignorance comes first, and this ignorance can not be conquered by ladling out a penny's worth of soup and tempting children to buy graham crackers and rice pudding and fruit from a penny table. The general raising of standards will, of necessity, be slow, but are we doing all we can to change the habits of the families of the children who buy luncheons from us? Take, for example, the habit of setting the table at home and having no regular time for meals. This habit among many of our immigrants comes from the confusion of living. The school hour at noon does not fit into the husband's hour off, little children demand food more frequently than their elders, the rooms are small and overcrowded, and after a time it seems too much trouble to set the table.

Every child in our schools should be taught that health is only possible with regular meals; not taught it once, but repeatedly. Every mother, through mothers' meetings or by circulars printed in her own language, should be made to understand that the school lunch is simply one way to make more possible regular hot meals for her children; that we are not feeding her children because of poverty, but because we realize the confusion of conditions that she is obliged to meet; and, incidentally, that if she does not give her child at least 3 cents a day for his lunch she has not done her part.

But even before we get our universally ideal educational system, I believe we who are serving luncheons can do a great deal more than

we are doing. For example, in New York next year we are to serve a noon meal in 17 elementary schools. We estimate that we shall feed 5,000 children a day. If these 5,000 know each day the name of the soup they have eaten and go home and tell their mothers about it, something will have been done. Can not we have on the classroom blackboard the ingredients used in the soup, and, possibly, a short explanation of their food value, showing, for example, the food value of a bean soup over a candied apple, both being the same price, and the latter very popular? It would make the lunch much more interesting, and children do care whether they are strong and big or not. The boy would like to get his money's worth from the penny table. When he saw on the blackboard that the penny he spent to-day for rice pudding gave him four times as much good, growing, running, fighting stuff as the penny he spent yesterday for a sweet cake, it would arouse something in him that would be one step toward better health for that boy.

VIII. SEX HYGIENE.

A. PUBLIC OPINION AND SEX HYGIENE.

CHARLES W. ELIOT, Harvard University.

During my somewhat recent active life I have never seen such a change of public opinion among thoughtful people as has taken place among them within the last 10 years on the subject of sex hygiene, using that term in its broadest sense. The policy of silence on all the functions and relations of sex, whether normal or morbid, was almost universally accepted for centuries by physicians and clergymen, and in family life. In the Protestant denominations of the Christian church the normal processes of procreation and birth were associated with the supposed fall of man and his total depravity. In the Catholic Church the offices of a priest were necessary for the mother and new-born infant by way of purification; and the perversions of the sexual passion were to be dealt with only by the priest in the confessional. The miserable victims of the venereal diseases were excluded from all hospitals and dispensaries, or were treated by compassionate physicians only by stealth. Venereal diseases were regarded exclusively as diseases of sin and shame until their frequent communication to wholly innocent persons had been demonstrated within recent years.

Certain rather recent medical discoveries have contributed to the extraordinary change in public opinion. When blindness was traced to gonorrhoea in the mother, a potent cause of the crowding of blind

asylums was thus brought to light. Insanity and general paresis were in many cases traced back to syphilis, and an explanation was thus given of the increase of insanity in civilized communities. It became known to the medical profession, and later to many unprofessional persons, that the consequences of gonorrhoea were almost as bad as those of syphilis in regard to the infection of innocent persons and the destruction of family happiness. Quite recently a treatment for syphilis has been discovered which has proved satisfactory in many thousands of cases, although the permanence of the cure can not yet be confidently affirmed, and it has been proved that by persistent treatment gonorrhoea can apparently be permanently cured in a large proportion of cases.

In obscure disorders the Wassermann test for syphilis gives the physician, who is trying to make the diagnosis, on the one hand a strong indication of the presence of a serious complication, or on the other of its absence. As a guide to treatment either determination is invaluable. The same test can supply evidence that a cure has been effected. It will also probably furnish in time trustworthy statistics concerning the prevalence of syphilis in the community at large, statistics greatly needed, because the previous guesses and estimates on that subject and the results of some recent applications of the test to considerable numbers of public hospital patients are disquieting.

These medical discoveries raise important ethical questions. Will the fact that syphilis can apparently be cured in many instances increase sexual immorality? Will the fact that a few dissolute men and women escape venereal diseases, and the further fact that there are antiseptic precautions which diminish somewhat the dangers of licentiousness make young men readier to encounter the dangers of sin? These are questions which only experience can fully answer.

Public opinion has been moved strongly toward the subject of sex hygiene, because of the many signs of physical deterioration among the civilized nations, which suffer from the eager rush out of the country into the city, from the factory system, and from alcoholism and the sexual vices. Many thoughtful persons are anxious about the diminishing size of young men at the age of admission to the national armies, the rapid reduction within 50 years of the size of the average family, the common inability of women to nurse their babies, the terrible infant mortality in cities, the alleged increasing number of physically or mentally defective children, and the increasing proportion in civilized communities of persons—young, mature, or old—who are practically unable to earn their livelihood. The humanitarian policies in regard to the treatment of the defective, the incompetent, and the criminal classes seem to tend to increase the burdens carried by the normal and industrious portion of the population, and these burdens react on the vigor and happiness of the

normal people. The increase of liberty for all classes of the community seems to promote the rapid breeding of the defective, irresponsible, and vicious.

The new interest in sex hygiene is not due, however, only to speculations on the durability of modern civilization or on that of the white race. Political philosophers and biologists naturally take a strong interest in these large problems, but the individual young man or woman has a narrower sentiment on this subject, though one quite as intense. The young people have lately heard for the first time what the risks of marriage are; what the physical enemies of happy family life are; how the different standard of chastity for men and women has worked during the slow development of the society now called civilized. With these young people the problem becomes an intensely personal one. "How can I best regulate my own conduct in order to win the normal satisfactions of family life? How can I be protected from the ignorance or sinfulness of associates? In short, how can I steer a safe course through the swirls and tumults of the sexual passion, which seems to be a principal source not only of the normal satisfactions and delights of human life, but also of its worst anxieties and afflictions?" Intelligent fathers and mothers feel a new sort of duty toward their children, the duty of protecting them from vicious allurements and giving them in due time knowledge of good and evil in sex relations. Teachers in public schools see before them a deplorable proportion of children who have bad inheritances, both physical and mental, and who live in bad environments; and, sharing the new freedom in the discussion of social problems, they are eager to be told how they can contribute to the arrest and prevention of these miserable tendencies. Churches are taking a new interest in the questions which arise out of unhappy marriage and easy divorce. Many persons who get a smattering on eugenics are eager for legislation to make marriage conditional on bodily and mental health and to keep in confinement the feeble-minded, the alcoholic, and the insane, not only till they are of age, but till they are incapable of breeding their like. Some knowledge of social hygiene and eugenics has led many persons to advocate hastily prepared legislation as a panacea for evils which terribly afflict modern communities, and yet are very ancient. Such is the genesis and such the immediate outcome of the new and widespread interest in sex hygiene.

The most important question before us is the question, "What forces can now be put in play against the formidable evils which gravely threaten family life, human happiness, civilization in general, and the very life of the race?" Something must be done. Christianity, democracy, and humanitarianism have all failed thus far to cope with these evils which are sapping the vitality of civilized

society. What can be done? It is clear that no one force or agency is to be exclusively relied on. All the uplifting forces of society must be simultaneously enlisted in this cause—state, church, school, college, industrial, and charitable corporations, all productive industries, and both preventive and remedial medicine. The attack must be directed against the three principal causes of the present evil conditions: First, against lust in men; secondly, against the weakness, dependence, mental deficiency, and lack of moral principle of the women who supply the demands of men; thirdly, against the greed and depravity of the wretches who maintain a profitable commerce out of this licentious demand and supply.

The struggle against lust in men must bring into play a variety of defensive agencies, such as full occupation for body and mind, manly sports, ambition and energy in the earning of a livelihood, timely knowledge of the good and the evil in sex relations, temperance in both food and drink, and deliverances from mischievous transmitted beliefs, such as belief in the harmlessness of gonorrhoea or in the necessity of sexual indulgence for the maintenance of health and vigor in men. For the giving of the information which all young men need, a variety of agencies must be utilized. The best source of the information which the young man needs is the parent, the mother in childhood, the father later; but inasmuch as many parents are too ignorant to give this information, it is indispensable that schools, churches, Christian associations, and the various kinds of clubs maintained for good social purposes should all be utilized. The public press, too, or that part of it which has moral purposes and a sense of responsibility, must lend its aid, and the policy of silence must be abandoned in favor of a policy of high-minded and reserved exposition. It must be made impossible for either young men or young women to plead ignorance as their excuse when they fall into moral and physical degradation.

The second attack must be directed against the lack of moral and mental stamina in girls and young women whose inheritances have been low and whose environment has been dull and miserable. Prostitution is voluntarily resorted to by some responsible women whose propensities are naturally bad, but the great majority of prostitutes are physical, mental, or moral defectives in the strict sense of that word. It is to the interest of all such defectives and of society at large that they be first discovered in their families or at school or in the churches or social settlements or in hospitals and infirmaries, and then segregated and confined under wholesome conditions where they can not be seduced to a vile life nor be abandoned even for an hour to their own imperfect self-control. Here is a great service that the public schools can render to society, and here lies a strong argument in favor of the extension of attendance at school beyond the age of 18.

or 14, which is now the limit of school life for a great majority of American children. Family, school, church, and all good social organizations should steadily contend against indolence, love of excitement, self-indulgence, and luxurious tendencies in girls; should prevent the depression or joylessness of extreme poverty; and should provide and cultivate systematically both helpful work and healthful play for all sorts of girls and young women.

The third assault which society should make against licentiousness may be undertaken with prompt decision and with expectation of effecting rapid improvement. This is the assault on commercialized vice. There need be no hesitation in attacking with all the powers of the law the men and women who pander to men by seducing or compelling young women to the horrible existence of the prostitute, owned or leased by a dealer in the gratification of lust, and provide shelter and facilities for the worst of human vices. In that shameful business much intelligence and shrewdness and much capital are employed and much money is made. Some of the money made is freely used to secure immunity, or periods of immunity, from prosecution in the courts. This iniquitous commerce should be put an end to by vigorous action under existing laws. No third party should be allowed to make any profit out of licentiousness. No brokers or commission merchants in vice should be allowed to exist in a civilized community, and no owner of real estate should be allowed to use it himself, or lease it to others, for immoral purposes. But one may say, "The segregation and regulation of brothels are policies which have come down through unnumbered centuries in many nations and under all the great religions of the world. Are we to attempt the uprooting of such ancient policies of toleration and license?" I answer, "Yes; we are;" because those ancient policies have everywhere failed to protect the human race from evils which in the long run will work its destruction. Former generations were not sure of that failure. This generation knows it. Former generations had no adequate means of contending against the diseases which in the human race accompany the perversions and excesses of the sex instincts. We possess these means. Earlier generations had not appropriated the idea of government of the people, for the people, and by the people. For us the interests of the mass override the interests of the individual, particularly when the alleged interests of the individual are corrupting and degrading.

The interest of many thinking people in the subject of eugenics is closely allied to interest in sex hygiene, but zeal for wise breeding is apparently leading to some hasty or ill-considered legislation. The existing legislation to limit selection in marriage is evidence of a wise recognition of the dangers in continuing stocks burdened with inheritable weaknesses, and is so far welcome; but not all the

posed prohibitions can be justified by biological science at its present stage. The educated public have much to learn with regard to the proper mating of persons who have some nervous defect. Such persons should mate with those whose ancestry has no such defect. Although it is undesirable that feeble-minded, epileptic, or insane persons should have children, yet if such a person mates wisely, and the children of such a union again mate wisely, the progeny of the third generation will probably be quite as free from nervous defect as the general population is. Again, the reproduction of the feeble-minded will not necessarily be diminished by laws which prevent them from marrying. Such persons ordinarily have very little self-control, and, if left free, will have children whether married or not. The laws against undesirable marriages need to be revised in most of the American States, and the public needs to be convinced that no such law can eradicate the evil. Nothing but the compulsory seclusion of all defectives under humane housing, training, and labor conditions will accomplish the eugenic object of the community. Laws which provide that candidates for marriage must be free from syphilis or gonorrhoea do good, provided that proper provision be made for the certificate to that effect from a trustworthy physician appointed by the State. The appointment for this duty for an adequate number of physicians by the State boards of health would give a new and important function to these boards. The maintenance of such a staff, furnished with all the means of applying adequate tests in doubtful cases, would be somewhat expensive; but this expense might perhaps be covered in part by a moderate addition to the fee for a marriage license. Each physician would probably require the aid of a man and a woman competent to inquire into the family histories of the applicants for a marriage license.

It is probable that much public instruction will have to be given through newspapers, magazines, lectures, and discussions in men's clubs and women's clubs before sound and effective eugenic legislation can be placed on the statute books. Again, we find that public progress in relation to sex hygiene and eugenics is to be procured chiefly through educational methods. It is therefore of the utmost importance that the processes adopted for diffusing sound knowledge about the normal and the morbid sex relations, the dangers of licentiousness, safe mating with a view to healthy progeny, the prevention of the reproduction of defectives, the destruction of commerce in vice, and the prevention of venereal contagions, should all be carried on plainly, but delicately, without exaggeration or morbid suggestion, without interference with parental rights or religious convictions, and in general in a pure, high-minded, disinterested way. The pioneering part of this work must be done by voluntary associations, as is usual in social reforms; but it should be the constant aim of

these private organizations to enlist gradually the public authorities in this vast undertaking and to transfer to the public treasury as fast as possible the support of all those parts of the work which experience proves to be of sure and permanent public advantage. The pioneering in regard to both research and practical measures will probably continue for many years to be the work of voluntary associations.

B. THE SOCIAL EMERGENCY.

WILLIAM T. FOSTER,
President Reed College, Oregon.

The social emergency that confronts the human race is haunted before us in many unlovely forms and appears in new aspects wherever we scratch beneath the surface. Study the results of human frailty and the possibilities of racial betterment through any avenue of approach, and we meet the fundamental problems of sexual hygiene and morals. Our cities struggle in vain to free their police forces from graft, while the business of prostitution offers such large and easy profits. Students of municipal recreation centers discover such conditions that they regard parks and playgrounds as physical and moral menaces unless under careful and trained supervision.

The home, the church, and the school have reached a small proportion of the human race with adequate sex instruction, while thousands of quack doctors still ply their vicious trade, widely disseminating falsehoods, and preying upon that fatal ignorance of vital matters that we have carefully cultivated in our children under the name of innocence. The juvenile courts bring in their daily records of pitiful cases. The antisaloon workers present sad evidence of the dependence of commercialized prostitution on the liquor traffic. Decent employers of labor cry out against the competition with employers who expect their young women to eke out a living wage by immoral conduct. Honest keepers of hotels and lodging houses protest that it is useless to keep up the fight for decency while disreputable houses under police protection make exorbitant profits. Students of eugenics find sexual immorality the chief hindrance to racial improvement. Turn where we may within any field of legitimate human endeavor and we run counter to this destructive force; we discern new aspects of the social emergency.

In the fact of this social emergency, there are but few who offer no complaint. They are the white slavers, the pimps and the panderers, the imbeciles and feeble-minded among their victims, the keepers of bawdy houses, the "respectable" owners of property used to promote the joint business of drunkenness and prostitution, dealers

in liquor, municipal officers and police who protect vice for a living, fake doctors who thrive on ignorance and spread disease, and newspapers that make such criminal business possible through advertisements accepted at extraordinary rates.

To begin with, there is the history of the question. Many generations have joined in the "conspiracy of silence" in matters pertaining to sex and reproduction. The result is widespread ignorance of matters of the utmost importance to the individual and the race, ignorance of which many good people are proud. During these generations in which the home, the church, and the school have withheld the truth from young people, other agencies have been busy disseminating falsehoods. Having almost no opportunity to hear sex and matrimony discussed with reverence, our young people have almost invariably heard these subjects discussed with vulgarity. Partly as a result of all this has come the general acceptance of the double standard of morality which has bitterly condemned the girl—made her an outcast of society—and excused the boy for the same offense on the specious plea of physiological necessity. With the sanction of this double standard, tacitly accepted by society, the majority of men have grown up in indulgence and have developed habits which are, or which they believe to be, beyond their control. Millions of men who recognize no law in sex life but their own appetites are thus contributed to us by the past. They are factors in the present situation and must be reckoned with.

As a matter of fact the educational phases of social reform are of most immediate importance. Nothing can so profitably occupy the attention of social hygiene societies as the education of the public. If groups of social workers come to serious disagreement on other phases of the present emergency; if the discussion of restricted districts, minimum wage laws, health certificates for marriage, and reporting of disease divides the group into warring camps; all can unite in favor of spreading certain truths as widely as possible; and it is not difficult to agree on at least a few of the many methods which have already proved effective in educational campaigns.

At the outset of our attempt to educate the general public in matters of sex, we face certain factors which govern the scope, time, place, and method of any successful efforts. Failure to give these factors due consideration has brought many attempts to early and unhappy ends, and convinced some people that ignorance is safer than such education.

No aspects are more important than those concerning morals and religion. The restraining fear of disease may and probably will be thrown off by science. Whether education in scientific aspects of the subject will do good or harm in a given case depends on the extent to which moral and religious ideals control the conduct of the indi-

vidual. The inadequacy of mere information in matters of sex is painfully evident. To the knowledge of what is right must be added the will to do the right. All the other aspects of the social emergency treated with superhuman wisdom would still leave the greatest problem unsolved. As moral and religious instruction is the dominant educational need of the present generation, so the moral and religious aspects of sex problems transcend all the others in importance.

These are the most important phases of the social emergency. It is difficult to see them in all their intricate relationships and to realize that in any one approach we touch only one side of a many-sided problem. The great majority of our people see only the superficial aspects or see one particular phase in distorted perspective because that is brought close to them through a special case of misfortune. Even social workers are in danger of narrowness of vision because of devoted service in particular fields. To attempt to deal with sex aspects of school hygiene, as though these problems were distinct from other phases of the social emergency, is to invite failure from the start. The union of the American Federation for Sex Hygiene and the American Vigilance Association is a step in the right direction, for it gives promise of seeing the social emergency clearly and seeing it whole.¹

C. EDUCATION v. PUNISHMENT AS A REMEDY FOR SOCIAL EVILS.

HUGH CABOT, M. D.,

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Boys have, in general, been given no systematic training or instruction in the nature of their sexual make-up. But if the boy's equipment was not cared for by education, it was not neglected by nature. Natural curiosity and intense sexual cravings attend sexual maturity, and its phenomena are often rather terrifying to the uninformed. To fall into error is what might naturally be expected of ignorance facing the unknown. Again, at the period when active growth is over, the young man will not infrequently be driven by his sexual self to an extent almost incompatible with efficient living (of course assuming that he is not married). His instruction is likely to be at the hands of ignorant contemporaries in the form of misstated fact or direct lie.

The girl has been given even less information. Our attitude has been, "Don't ask." Her religious teaching has laid stress upon the sanctity of marriage, but she was not taught what the marriage rela-

¹ The two organizations were amalgamated at the Buffalo meeting.

tion is. Like the boy, she picked up a certain amount of misinformation.

Such was the equipment of the younger generation. It taught asceticism, not chastity, before marriage, and after marriage a licentious sexual life, limited only by its compatibility with human existence. And this standard we proposed to enforce by punishment.

The boy, following his instinct, often became infected with venereal disease. Fearing to go to parents, and lacking money, he fell into the hands of quacks, with resulting complications and uncured and chronic disease. The boy of stronger character adopted asceticism, and, not understanding the storms of his nature, in his turn fell into the hands of the quack, and was drained of money, health, and at times almost of reason.

The girl was denied her natural defense, that of comprehension, and, when the defense of a guarded life was lax or absent, yielded to she knew not what. Pregnancy, abortion, prostitution, venereal disease were among the natural results; the last, if possible, more serious in her than in the boy.

The plan of dealing with the sex question during the past half century has not, I think, met with much success, and the continuance of this method will meet with even less success in the future. The dangers arising from the mismanagement of the sex instinct are increasing. Control by punishment, which has failed in the past, is necessarily doomed to more tragic failure in the future. Punishment dealt out as we have dealt it is concealment, lying; concealment and lying undermine character; and the wonder is not that character is less firm and robust than we desire, but that any firmness or vigor exists at all.

If we are to stand any chance of success, it will be upon a basis of intellectual comprehension and by the deliberate strengthening of the personal defenses of the individual which enable him to guide successfully his own life. Dependence upon an abiding faith, based upon accepted dogma, is not suited to the spirit of the times. Faith has waned; can it be because we have been faithless? We have lied, and the failure of faith is the dividend paid for our untruthfulness.

To secure comprehension, a thing far more fundamental than knowledge, instruction must be given early, must be continuous and progressive. It must teach clearly and honestly the true nature and effects of the sex instinct. Instruction leading to comprehension will require men and women of unusual breadth and strength of character, but I believe that no other form of education is more likely to produce profound and lasting influence upon national character. This teaching must not be in isolated form. We must guard against the ever-present danger of bringing people, old as well as young, to regard sexual morality as different and removed from other forms of

morality. We must so plan our instruction as clearly to relate this form of morality to truth, honor, courage, virility.

Sooner or later we shall come to realize that teaching the comprehension of the sex instinct is the function of the public school, though we are far from such a realization today. We still cling to the idea that this instruction can be given in the home, forgetting that a large proportion of parents are not equipped, either by nature or art, to give this instruction. If we depend upon the home as the source of teaching, that teaching will not be given.

D. POINTS OF ATTACK IN SEX EDUCATION.

THOMAS W. BALLIET, New York University.

As a matter of wise public policy and as a means of accomplishing ultimately the greatest good, sex education should begin where its necessity and practicability are universally recognized and where mistakes during its experimental stage will be much less serious than in the case of such instruction to young children in school.

Accordingly, the first point of attack should be the parent. No one questions the possibility of doing a vast deal of good by enlightening fathers and mothers on this vital subject. Public sentiment is ripe everywhere for this step, and competent persons can be found, usually among the medical profession, to give this instruction. Furthermore, the proper instruction of parents will be the most effective means of creating public sentiment in favor of giving such teaching in proper form to children in the schools.

Another point of attack for which we are ready is the Army and Navy. There is no place where such instruction is more needed, and its necessity and practical value are not seriously questioned by anyone. It should be given entirely at the Government's expense and usually by men who have had medical training; and it should not be given spasmodically, as at present, but systematically and thoroughly, and on a scale large enough to reach every enlisted man.

A third point of attack for which we are ready, and which has already been quite vigorously begun, is sex instruction in the colleges, both for men and women. Such instruction will not only meet the personal needs of students, but will equip those who are to become teachers in elementary and secondary schools to give it to pupils in these schools.

A fourth class of persons to whom sex instruction can now be effectively given are groups of young men and young women in Young Men's Christian Associations, Young Women's Christian Associations, social settlements, and similar organizations.

E. CHARACTER AND THE SEX PROBLEM.

RICHARD J. TIERNY, Woodstock College.

Sex hygiene concerns the eternal destiny of man, the fate of his immortal soul, as well as his temporal interests. It is not merely a pedagogical question. In the last analysis the question concerns the abolition of sexual sin. To this end public teaching of sex hygiene to school children is now advocated.

The proposed courses involve two elements, the intellectual and the ethical. The former is detailed; the latter vague and purely naturalistic. The main result aimed at is knowledge. The appeal is to the wrong faculty, the emphasis in the wrong place. Information can not keep a man upright. Knowledge is not moral power. Precaution to avoid disease is not virtue. No marked improvement in morals has followed the bringing to the attention of our college boys the dangers of sexual sin. "Damaged Goods" teaches that knowledge does not protect. William James approaches the same truth when he insists that sensuous images must be combated by ideals that lie beyond the intellect. As it appears to me, the detailed teaching of sex hygiene will even thwart the noble purpose in view.

The imagination of the child is flighty, the will weak. The first sex impulses are psychological. The detailed teaching of sex hygiene makes a strong impression on the imagination. Sinful thoughts, desires, and conversation follow and prelude other crimes which we pass over in silence.

Sex instruction is apt to put forward by some years the time of suggestion and temptation. Safety lies in diverting the attention from sex details. The two great natural protections are modesty (reserve, if you will) and shame, not prudery. They do not spring from dogma and superstition, but are an instinct of nature. Public and frequent discussion of sex details will destroy both. Good intentions will be thus frustrated.

The foundations of chastity are in elemental character training. Sex instruction can not give character; it is not deep and comprehensive enough. Without character, it is as chaff before the wind. The movement, to be successful, must reach to the very elements of character. Failure to form the child's soul does not come from the difficulty of the task, but from its neglect. But such formation alone is sadly inadequate. Life on the highest plane is impossible without God and religion, and chastity belongs to life on the highest plane.

Appeal to religious sentiment in schools has sometimes raised so strong a protest that it has had to be discontinued; will not this happen if it is introduced into sex lectures? And if not introduced, will the lectures not be fruitful of evil? Be convinced that religion

alone will be of lasting benefit in this campaign. God, not hygiene, is the supreme need of the hour.

My convictions are not favorable to your movement in all its details. Neither are they adverse. Eliminate the details of sex hygiene; train character, teach that purity is noble and possible; that vice is vile and carries its own punishment; that marriage is inviolate; that the family is sacred. Teach boys that their bodies are vessels of honor, the habitation of a soul made in the image of God; train them to reverence womanhood and to venerate motherhood. Teach girls reserve, modesty of manner and dress, purity, and self-sacrifice. Carry your campaign further. Purge the press, cleanse the novel, elevate the theater, abolish animal dances, frown on coeducation after the age of puberty. Labor that all men may realize the great obligation of life, which is to know God and do His behests.

F. SOME METHODS OF TEACHING SEX HYGIENE.

LAURA R. GARRETT,
Teacher, New York, N. Y.

Sex hygiene is not a new subject, nor one of which children have never heard. Normal children are curious about sex as about other matters. They should have given them correct ideas and ideals. After correct training they will be less curious and do less talking. It is not sex, but reproduction of life, that is to be taught them, correlated with other vital interests.

What seems like filth in their drawings and remarks can be made clean by giving them plainly and honestly the facts they are ready to understand. They need a good vocabulary to use in seeking information and to dignify their ideas. They need a respectful knowledge of the form and appearance of the body, such as may be had by seeing the whole body of a baby or by the use of the best pictures or statues. The national committee for mental hygiene places sex ignorance as a cause of disordered minds. This is especially true of girls who worry over some mistake of youth, but when properly taught drop the burden and live according to new ideals.

Instructions may be given to groups, preferably of 15 or less.

Boys and girls may be taught together in elementary work. Knowledge as to sex organs and functions is preferably given before adolescence, while the child is still largely unconscious of sex. This training ought to begin in the homes. In some homes the child is told to run away and not talk of such things. In others he hears with brutal frankness what he should know, but without the beauty, higher ethics, and social values. In others he is told plainly, honestly, and beautifully what he is ready for as he develops. This is

as it should be. Mistakes will be made, both of omission and of actual teaching, but they are now being made.

Shall the teaching be done by special teachers or shall all teachers be trained for it? Boys and girls now learn from each other or from older, vilely ignorant people. All teachers know more or less of the subject. All teachers ought to be ready to deal with the physiological and biological facts and with their ethical significance. For older children more specially trained teachers are needed. Parents and teachers can present ideas in connection with nature study, gardening, or out-of-doors tramps as follows:

Cradles, or preparation for parenthood: The protection of the young of plants and animals; seed pods, nests of fishes and birds, holes of rabbits and others; the human mother; the cowbird as an example of neglect.

Motherhood: The ovaries of plants; seeds; the ovaries and "spot of life" in animals; eggs, both deposited in nests and developed within the body; the reproduction of the same kind. The care of pet animals leads up to the facts of human motherhood. The teacher here as everywhere must earnestly and honestly respect the creative power of her own body, if she is to eliminate in her pupils the old filthy notions.

Fatherhood: Both in plants and animal reproduction, the dignity and beauty of fatherhood must be presented. The father's part may be studied in the families of various pet animals. The breeding of poultry and stock teaches about heredity. The value of a well-bred male animal can be shown. The application to human heredity can easily be made.

By such teachings children learn the story of inheritance and the importance of parenthood, and a new message of pride in re-creative power and its proper use may be given to our people.

Away with secrecy, shame, and darkness, and the doctrine of "conceived in sin." Let in honor, respect, and joy in re-creative power, to express joy, beauty, and blessing to the individual and to others.

IX. MENTAL HYGIENE OF THE SCHOOL CHILD.

A. CHILD CLASSIFICATION AND CHILD HYGIENE.

ARNOLD GESSELL, Yale University.

When knowledge is duly classified it becomes scientific. Increasing efficiency in educational economy calls for a more thoroughgoing classification of the raw material and product of our schools—the children.

The primary room is the threshold of the school system; the kindergarten, the vestibule. Through this educational Ellis Island our future citizens pass, and it is a motley stream of incomers. We do not ask them to matriculate; we can not deport; we must accept them as they are—normal, subnormal, atypical. No one can thoughtfully stand in the presence of such a motley assembly without feeling what a misfortune it is to subject all of these children to substantially the same daily and the same annual treatment. Nor can one feel that a periodical medical inspection for medical defects alone meets the situation. From the standpoint of sincere, individualized child hygiene, what is demanded is a thoroughgoing diagnosis of the health and developmental needs of at least every exceptional primary child. The primary school is the port of entry; and it is of strategic importance for child hygiene. Here most of the special types of children may be recognized and registered. This is child classification at source; and it is the first step toward that consecutive, biographical supervision of special children which must become the policy of child hygiene.

Take an ordinary kindergarten and first grade, with a combined enrollment of 100 pupils. Among this number we may expect to find at least one child feeble-minded (unable, say, to draw a man or a house); one child who stutters; two or three who seriously lisp; another extremely anemic; a badly spoiled child; another infantile (babyish, a year or two retarded in mental or moral growth), still another morally weak. There will be one negative child (passive, colorless, physically flabby, mentally inert, uncommunicative, possessed of a feeble kind of imitation); one oversensitive, nervous child (with exaggerated sense of failure, overconscientious, lacking in humor); one superficially precocious child; another distinctly superior (eager, ardent, imaginative, sociable). Without even including a score or more of eye, ear, nose, mouth, and throat defectives, we have at least a dozen children in every 100 at the threshold of our public schools who demand special recognition (classification) and special attention from the standpoint of educational child hygiene. Here at the threshold is the place for timely treatment. For some of these children there is no better disposition than prompt assignment to a special class, the special class method having been put into successful operation for 13 different types of children.

The necessity of improved classification extends to the special classes themselves. Take the classes for the feeble-minded. The desirability of segregating the lower grade cases from the highest is becoming more and more apparent; this segregation will become quite practicable with the development of subnormal centers. A center is a domestic group of classified special classes. The discovery of

the vocational aptitudes of morons is a further part of the task of pedagogical classification.

But of all the special classes the ungraded class (for so-called backward children) stands most in need of inventory. Here are stranded all the driftwood and flotsam which can not float upon the ordinary channels of the elementary school. The consequent diversity of the ungraded class membership is often pathetically picturesque. Here is the roll call for one such class in a large eastern city: Twenty-four boys, 16 girls; nationalities, Norwegian, French, Irish, Armenian, Italian, Austrian, American, Chinese; names range from James Moriarity and Ong Yung to Arcangelo Christiano and Nishan Kalehadorian; ages range from 6 to 18; mentality, from giggling imbecility to ambitious intelligence; morality, from truancy, cigarette smoking, and thieving to good behavior; parentage, noted in special cases, includes a drunken mother, an overindulgent mother, an illegitimate father, an insane father, and, in three instances, gypsies; physical condition, from partial blindness and deafness, and spinal trouble and anemia, to vigorous physical health. Think of the problem before this teacher, who may not even have a working definition of feeble-mindedness in her consciousness to aid her in classification and instruction.

The refinement of child classification and the progress of child hygiene go hand in hand. The time is, of course, coming when all our large municipal school systems, and perhaps county educational systems as well, will have the equivalent of a department of child classification and special classes. In a few cities we already have a working suggestion of the possibilities. Our present classification of children is admittedly imperfect. To improve it we need among other things psycho-medical experts officially part of the school system, resident or semiresident school hygienists, supplementary teacher-nurses, trained teacher-diagnosticians, supplementary and classification classes.

All the world is a clinic. Some day as adults these individuals will be classified by the rigorous tests of actual life. It is the business of the public school to anticipate and perfect the present-day classification of adults, especially that part of the classification administered by courts and charity organizations. Child classification is the basis of child hygiene. But it is more. The primary school may develop into a sociological clearing agency for the discovery and registration of all children who, when adults, may prove socially dependent, defective, or dangerous. Child classification thus becomes a part of the task of social hygiene as well.

B. THE DISTINCTIVE CONTRIBUTION OF THE PSYCHOEDUCATIONAL CLINIC TO THE SCHOOL HYGIENE MOVEMENT.

J. E. W. WALLIN.

University of Pittsburgh.

America has recently developed a new type of school inspection parallel and coordinate with, but entirely different from, dento-medical inspection, namely, the psychoeducational inspection of mentally unusual children. The first so-called psychological clinic was established in the University of Pennsylvania about 17 years ago, but we now have in the United States from 35 to 40 psychological clinics, more or less expertly manned, in the universities, schools, and institutions, besides a large number of dilettantes who test children, but who are neither psychologists nor scientists.

The psychoeducational clinic performs a service for the school child which no other type of clinic is able to perform. Its field is the psychoeducational diagnosis and corrective pedagogical treatment of mentally deviating children. It strives to determine the nature of the pupil's inherent mental strength and the character and causes of his mental and pedagogical variations in order that it may give intelligent advice in regard to the mental hygiene of the child and his proper educational classification and training.

The work of the psychoeducational inspector is not competitive with or duplicative of the work of the medical or dental inspector, but it is entirely correlative and supplementary. No one is fitted for the work of psychoeducational diagnosis and treatment who is not thoroughly grounded in experimental, educational, and clinical psychology, child study, elementary methods, corrective pedagogics, the methods of case-taking, and the rudiments of neurology and psychopathology.

At the free psychoeducational clinic conducted by the University of Pittsburgh, 11 per cent of a certain number of consecutive cases examined were classified as supernormal, 9.9 per cent as retarded, 39.2 per cent as backward, 11.6 per cent as border cases, 17 per cent as feeble-minded, 8.8 per cent as morons, 6.6 per cent as imbeciles, and 0.5 per cent as idiots. The different types included mongols, cretins, paralytics, choreics, epileptics, child prodigies, speech defectives, psychasthenics, Freudian cases, and cases of infectious infantilism, and ataxia without mental impairment. Many of these cases came fallaciously diagnosed. In many cases the parents had been utterly misled as to treatment and prognosis and very many had been educationally neglected in the schools; that is, they had for years been forced to do work which was not suited to their peculiar needs.

The moral is clear: Society must provide the machinery whereby the numerous mentally deviating children in the schools may be

accurately, mentally, and educationally diagnosed and classified. Only thus can we economically and scientifically train "all the children of all the people."

C. MENTAL HYGIENE IN THE SCHOOL.

WILLIAM H. BURNHAM.

Professor of Pedagogy, Clark University.

From the point of view of hygiene it is better to prevent mental disorder by observing the principles of hygiene in the school than to cure mental disease by reeducation in the sanitarium. If education is necessary for the mental health, it is better to give it before rather than after nervous breakdown. As for pedagogy, there is no conflict between a sound doctrine of pedagogical efficiency and the scientific teachings of mental hygiene.

The outcome of the vast number of investigations of the optimum conditions of work and the causes of fatigue during the last 25 years has been to make emphatic the following points: That work, as well as rest, is necessary for the health of the human organism; that both function and relaxation are necessary; that the explosion of energy, as well as the storing of energy, is a condition of health; that by working hard with close concentration some degree of immunity to fatigue may be attained; and, on the other hand, that rest is equally important with the time spent in study. Recent psychological experiments have shown the great improvement in efficiency effected by regard for these principles. Let me recount these somewhat in detail:

Some years ago I had the opportunity to make a brief study of retroactive amnesia, of that class of cases where a shock or the like obliterates the memory for a brief period preceding the accident. Such cases are familiar to everyone, perhaps. From such cases I found evidence that led to the tentative conclusion that the amnesia was due to the fact that the memory was never completely organized. That new impressions may become a part of the permanent store of memory it is necessary that a certain period of time should elapse in order that a process of organization or consolidation may take place. In normal memory these processes of organization are continually going on, and in order that ideas may be permanently remembered, sufficient time must elapse for the organization to be completed. A shock or the like that arrests these processes of organization obliterates the memory.

Bergstrom and others have since found experimental evidence of this process of consolidation. Muller and Pilzecker found that in learning nonsense syllables less was retained if immediately after learning a series the observer was required to concentrate attention

on some other task—a careful observation of a picture or the like—and they assumed that the mental strain of the latter checked the consolidation process necessary for a permanent memory. This result strongly suggests also that interference of association occurred, due to the task requiring attention.

That interference of association is especially likely to occur in the first few minutes after anything has been learned seems to be most strikingly illustrated by these experiments of Muller and Pilzecker. After learning a series of nonsense syllables by the method of paired associates, they gave the observer a task requiring concentration of attention a few seconds after the learning of the original series was completed. Again in another series the task requiring attention was given six minutes after the original series was learned. In the first series there was not time for organization before the distraction was given; hence less was remembered, probably on account of the greater interference of association.

The practical bearing of this is obvious on a moment's reflection. Haste in learning defeats its own end, and a short rest may frequently be distinctly more advantageous than continued work. For the organization of permanent memory, and to avoid confusion, it is especially necessary that suitable periods of rest should occur between the learning of disparate topics. In the schoolroom, for example, from purely pedagogical reasons, not to mention hygiene, it is usually wise to give a rest of 5 or 10 minutes, at least after one recitation or the study of one subject, before taking up a different one. Especially after the learning of a fact or principle of prime importance, a rest of a few minutes to give time for the organization of the memory may be a distinct advantage. The hurry from one topic to another in the ordinary class drill does not usually mean efficiency. The teacher crowds as many points as possible into the recitation, has little time for drill and application, and one minute before the close of the hour assigns the lesson for the next day without explanation or illustration.

From the point of view of hygiene such methods mean interference of association, confusion, and worry. It is not a matter of indifference to health whether five or six hours a day for a long period of school life be spent in hurry, attitudes of nervousness, and confusion, or in developing habits of concentrated attention and orderly association. It is precisely such conditions in the schoolroom and often in the home that have developed the nervous irritability and instability proverbial among Americans. It is the disgrace of the school that its graduates have to be reeducated in the hospital and the sanitarium.

A wise and successful superintendent told me some years ago that he sometimes thought his best teachers were doing the least for their

children, because they were doing too much for them, and gave them little opportunity for self-assertion and self-activity. This is typical of many schools, and so it has come to pass from the point of view of hygiene and these recent experimental studies that often those who teach least instruct the most, and the poorest teachers do the most for the children. The oft quoted and frequently resented words of Kraepelin, that the inattention of children is their salvation, and uninteresting teachers a hygienic necessity, have assumed a new significance. Kraepelin might have added that uninteresting teachers are often a pedagogical necessity, because they alone give children the periods of idleness necessary for the organization of permanent memories and of what may happen to be learned.

The business of the school is supposed to be learning, but learning means the acquisition of new material, its assimilation, its organization as a part of permanent memory. The essential conditions of this process, however, are concentration of attention, orderly association, freedom from hurry and nervousness, mental poise, and an attitude of leisure.

X. ATHLETICS AND HEALTH.

A. EFFECTS OF ATHLETICS UPON HEALTH.

C. F. STOKES, M. D.,

Surgeon-General, United States Navy.

In 1911 the medical records of 625 star or specialized athletes of the classes of 1892 to 1911, inclusive, at the Naval Academy were carefully examined and the results of this investigation published. In 1912 the records of 580 nonathletes of the same classes were examined, not so much in the expectation that the physiological question involved was susceptible of being answered definitely by mathematics alone, as in response to the general request for further information.

The results obtained show that 22 casualties* (retirements and deaths) occurred among the nonathletes as compared with 21 among the athletes. Further, it was found that from those diseases selected, to which athletics have a possible or probable causative relation, there has been but 1 death among nonathletes as compared with 6 among the athletic group. The number still in the service whose medical records show the listed abnormal physical conditions is 187 for nonathletes, as against 198 for athletes. The following conditions or disabilities show an excess amounting to 50 per cent or more among athletes: Arteriosclerosis, valvular disease of the heart, cardiac irregularity, cardiac dilatation, cardiac hypertrophy, gastric disturb-

ances, albuminuria, general poor health, obesity, tuberculosis, and various traumatic lesions as well.

This bare statement of fact shows that in casualties and in the listed abnormal physical conditions the nonathletes and the athletes are about equal, but this is misleading without due consideration of other factors involved. It must be remembered that the athletic group consists of a body of "twice-picked" men, yet, despite the handicap of supposedly better physical material, the casualty list of the athletes about equals that of the nonathletes. Another element in this consideration which must carry great weight is the fact that those who attempted to enter the athletic list and failed are counted among the nonathletes. Further, the records naturally fail to show those whose physical disabilities are of such a character as not to cause their admission to the sick list, yet whose efficiency has been impaired by them. There are many such officers in the service who consult medical officers for cardiac irregularities, obesity, or physical staleness, in other words, for conditions that may be attributed to excessive physical development followed by periods of physical quietude exacted by service conditions. These causes do not become matters of record unless they are of such moment as to render the officers wholly unfit for duty, yet such influences in many instances materially affect the military efficiency of the individual and should be averted, if possible.

It is interesting to note that among the 625 athletes there were 15 individuals who developed hernia and this disability appears to be associated particularly with a football record. This game, though somewhat hazardous as played, is considered dangerous by reason of the disabling after effects that, in my opinion, make it questionable, as a sport to be encouraged, at least where future naval officers are being trained. Long-distance crew or foot racing appears to throw the greatest strain on the organism, since the effort is severe as well as long continued.

It seems reasonable to suppose that the disabilities among the athletic list are largely due to spectacular athleticism among young men who are prone to overtrain or hazard too much and would not have been acquired had the overstraining and overtraining not been indulged in. The prolonged, rigorous course of physical exercises necessary in physical sports is believed to be dangerous in its after effects upon those who indulge in athletic sports sufficiently to excel therein and I wish to emphasize the fact that we ought to look for the after effects of athletics among those who tried to excel and failed; it is here, I am convinced, that we shall find a high degree of damage.

Aside from the injuries produced the test of modern college athletics lies in the question as to whether or not they help the business

or professional man in his after life. Personally, I am convinced that this function is not fulfilled. I feel sure that those who are in a position to judge will agree with me. Not only does the modern method of physical training turn out men who easily fall prey to degenerative changes, but it wholly neglects the bulk of the young men in college life, they (the "nonathletes") being left to gain what physical development their own initiative inspires, unguided and unrecorded. The tendency is to select those already well developed, train them and grind them until the "unfit" are weeded out, and then overtrain the remainder.

I am not arguing for less athletics. In fact, I believe we should have more athletics, but they should be of a character to produce a well-rounded development of all rather than an excessive development of a few who are already well equipped physically. Such physical training should be compulsory, marked upon a basis of standards, and be as much required for graduation as excellence in Greek, Latin, or mathematics. It should produce a supple, agile, all-round, well-developed individual, not a muscle-bound mass of brawn. Clear minds and developed muscles are conducive to prompt, well-directed action in emergency and it is this mental and muscular balance and resulting self-reliance for which one should strive.

B. SCHOOL ATHLETICS FROM A MEDICAL STANDPOINT.

J. W. KIME, M. D., Fort Dodge, Iowa.

There are athletic events, especially those of the track, that are too strenuous for the boy; they are unreasonable, inhuman, brutal. Every track-event race above the 220-yard dash belongs to this class: the quarter-mile, which calls for the highest speed, the last ounce of effort the boy can command from start to finish; the half-mile; the mile race; the two-mile; and everything of this class or kind. These things are not educational, not developmental; they are foolish, injurious, inhuman.

In all these races above the 220, many boys reach the line completely exhausted; every cell and fiber of every tissue in their bodies has been called upon to give its last unit of strength; heart and lungs have been driven to the extreme limit of their endurance; the vessels are at the point of bursting under the mighty pressure of the heart, and frequently these vessels do give way and hemorrhages occur. Many fall across the line and are carried from the field struggling for breath.

Would I abolish athletics? No; but I would make athletics sane. I would not force the boy as I would not drive a horse or abuse a dog. I would make every feature of school athletics fall within the

reach of the boy. I would safeguard it at every point by thorough medical guidance.

I would eliminate all that is harmful, and utilize that which will develop the physical body of every boy and every girl regardless of ability to compete on track or field.

Physical culture and development for all, rather than the pace which kills for the few should be the aim.

C. ATHLETICS FOR ELEMENTARY SCHOOLBOYS IN BOSTON.

EDGAR L. RAUB,

Submaster, John A. Andrews School, Boston, Mass.

In Boston the elementary school sports are under bona fide school organization, under school regulations and school rules. These are untouched by outside interests. No trophies are given, neither cups, medals, nor buttons. Winners of events in the spring meet, and winners of division league schedules in baseball and soccer, receive certificates testifying to the fact. These, like graduation diplomas, bear the signatures of the chairman of the school committee and of the master of the school attended by the winner.

Exclusive authority over school athletics, including the appropriation of money for playground work, has been vested in the Boston school committee by State legislative enactment. The department of school hygiene has from the beginning managed the sports of the boys with hygienic and educational ends in view.

Boston is conservative in the range of athletic sports followed, and while providing for a variety of athletic interests, affording exercises for different groups of muscles, avoids the elaborate program of events followed in some cities. Besides baseball and soccer, the principal games for team play, there are short dashes, the shorter runs, and relay races—classified as track sports; standing broad and running broad jump; running high jump; running hop, step, and jump; and shot put—classified as field sports. There are no long runs, no hurdle races, and no heavy shot.

No boy is allowed to compete in more than one event, relay races not excepted. This provision has a twofold usefulness: It is a preventive hygienic measure primarily, and at the same time it allows the competition of an increased number of boys. No boy is allowed to compete in the meet unless certified by the school physician as being in fit physical condition. At the meet held in June, 1915, there were no accidents and no cases of overexertion among 1,000 entries.

The chief features of the present state of Boston's plan are: Entire separation of school athletics from outside interests; close connection with the regular school work; type of athletic sports chosen; hygienic restrictions upon these; spirit of the training given; type of

men giving instruction—teachers, not simply athletic coaches; and, more than anything else, elaborate precautions taken to safeguard the boy while making ample provisions for his well-balanced physical development, the whole plan operating under special legislative enactment.

XI. THE TEACHING OF HYGIENE.

A. PROBLEMS IN THE TEACHING OF HYGIENE.

LILLIAN M. TOWNE, Boston, Mass.

Historical summary.—The teaching of health in the public schools has been before the people since 1797.

About 1830 the parents of children and the teachers in the schools were urged to cooperate in instructing the children. In 1837 came an investigation which showed that the teachers of Massachusetts needed to be trained in hygiene. From 1850 to 1860 textbook instruction and dogmatic teaching that should make for habit were both advocated.

In 1868 Horace Mann compiled statistics showing the standing of physiology in Massachusetts; and, through his efforts, its teaching was voluntarily extended.

In 1885 physiology and hygiene was made a compulsory study by the laws of the Commonwealth.

Present-day difficulties.—Sanitary conditions in the schools have improved. Medical men have aided; yet the subject is more neglected than it should be. There is textbook teaching, but not enough dogmatic and observational instruction in either elementary or high schools. The normal schools of the United States devote too little attention to this important department of training. For the prospective teacher, help is needed all along the line.

Advances in Boston.—In 1908 a committee of teachers planned a detailed course in physiology and hygiene. This course in 1910 was cut down to minimum essentials.

The board of superintendents adopted the teachers' plan, doubled the time given to the subject, replaced old textbooks with new books, added books for reference and supplementary reading, provided for a "Hygiene teaching exhibit," made possible the purchase of Langworthy's dietary charts for each district, and authorized a course in "Applied physiology and hygiene" for teachers taking promotional examinations. The Boston Physical Education Society devoted a meeting to demonstrations of grade-teaching in physiology and hygiene that interested educators and medical men.

Needs of the future.—1. School authorities and associations must see that health teaching has its proper share of time in the school curriculum. Organized effort alone can accomplish this:

2. There is need for scientific combination of courses in hygiene and in nature study in the elementary grades.

3. This should be followed in the high school by a course in physiology and hygiene, differentiated to meet the needs of pupils entering specific types of vocations.

4. Normal schools must amplify knowledge in subject matter, and must give definite training in teaching method and in hygienic habit applicable to the schoolroom.

5. Teachers in service must be aided to keep in touch with advance in hygienic knowledge through distribution of pamphlets and by illustrated lectures.

There is immediate need of simple charts and models, of slides and apparatus, whereby the teaching of hygienic principles may be made concrete and experimental as in other subjects. A list of reading references for pupils is also needed.

6. If the application of hygienic principles is to have importance for the child, the carrying out of hygienic habits should be made a factor in his advance from grade to grade.

B. PROTECTION OF STUDENT HEALTH IN THE COLLEGE OF THE CITY OF NEW YORK.

By THOMAS A. STONEY, M. D.,
Professor of Hygiene, New York, N. Y.

The protection of student health in the College of the City of New York is accomplished through the organized activities of the department of hygiene and by certain committees appointed by the president of the college. These committees are "The advisory committee on hygiene and sanitation" and "The committee on student lunch-rooms." The professor of hygiene is chairman of each of these committees, both of which are advisory to the president.

There is no dormitory life in this institution. There are, therefore, no problems in dormitory hygiene or sanitation. The students in the collegiate department and the pupils in the preparatory department live at home in the various boroughs of Greater New York. Their home conditions are, therefore, community affairs, and fall under the jurisdiction of the board of health and other divisions of the city government which bear upon community hygiene and sanitation.

The entire organization of the department of hygiene has been developed primarily in the interest of student-health intelligence.

and student-health habits. For the accomplishment of these results, the department has employed carefully planned lecture courses on hygiene, class and personal instruction in health habits, and individual examination and instruction in personal hygiene.

The courses in hygiene required of the freshman and sophomore classes in the collegiate department include a series of short lectures running through four terms, graded instruction in physical exercise, and regular inspection in personal hygiene throughout the same period. The individual instruction in hygiene is further accomplished by means of regular medical examinations applied to each individual student at least once each term throughout the first three years in the academic or preparatory department and throughout the first three years in the collegiate department. In all of this instruction emphasis is laid upon the individual. The lectures are organized with distinct reference to the health problems that arise in the daily lives of students living in a great city. The health habits taught are the simple, fundamental habits most essential to physiological efficiency, greater stress being laid upon the needs of the city boy. The individual instruction in personal hygiene is based upon information secured by means of thorough medical examinations of each individual concerned.

The lectures on hygiene are made up of a series of 16 short talks on "The Causes of Disease"; a second series of 16 short talks on "The Carriers of Disease"; a third series on "Our Defenses against Disease"; and a fourth series on "The Nature of Some of Our Common Diseases."

Classroom instruction in health habits is accomplished through four terms of work in the freshman and sophomore years in the exercising hall of the gymnasium. Here are taught habits of physical exercise, habits of personal cleanliness, and habits of community hygiene. The sanitation of the exercising hall, the locker room, and the swimming pool, as well as the objective hygiene of the individual, are emphasized as matters of community importance and each student is taught his obligation to himself and to the community in which he lives in his relation to his fellow students. In this connection it may be noted that the swimming pool serves as a sort of an index to the standard of hygiene maintained by the student community using the pool. If the bacteriological analyses show evidences of human contamination, the fact is brought to the attention of the classes using the pool and the responsibility is placed upon them. With repeated careful instructions concerning the need of thorough bathing before entering the swimming pool; the necessity of washing the private parts; and the importance of keeping all respiratory, bowel, or bladder excretions out of the water in the tank; the subsequent

bacteriological analyses invariably show an improvement in the sanitation of the water.

The medical examinations which form the bases for instructions given the individual students concerning their hygienic needs cover the skin, scalp, eyes, ears, nose, mouth, throat, heart, lungs, abdomen, and genitalia. Wherever it is indicated, chemical and bacteriological examinations are made. The college has recently equipped a departmental laboratory and employed the services of a competent man for the purpose of identifying disease carriers among the students and supplying the department with information upon which it can furnish advice to the individual student concerned. It is planned within the coming year to utilize this laboratory service for the possible detection of typhoid carriers and diphtheria carriers in the student body.

All individual instruction which admits of being followed up is followed up. The individual student concerned is required to report to the department until his case is closed. Failure to report as directed may lose to the student his membership in the institution. The success of this instruction and its follow-up feature is demonstrated by the fact that less than 1 per cent of the cases followed up fail to report as directed. About 96 per cent of them finally secure advice and treatment through their regular family advisors, while less than 4 per cent report to free clinics in the various hospitals of the city.

The characteristic and striking features of the work in this department are, first, its practical application of the laws of hygiene to the needs of the individual; second, its instruction in community hygiene; third, its successful follow-up system in the interest of individual instruction in personal hygiene.

C. SCHOOL HEALTH WORK IN MISSISSIPPI.

SUSIE V. POWELL,

Supervisor of School Improvement Associations, Jackson, Miss.

The Mississippi School Improvement Association is promoting better health conditions principally by the following means:

1. *Special days.*—(a) Clean-up-and-beautify day is observed at the close of the school in the spring, and again at the opening of the school in the fall. These days are observed by at least 2,000 schools and communities with direct benefit. On these days the people "work with their hands" and thus learn by doing. (b) A special health-day program is issued and observed by just as many schools. On this day, in addition to actual work done to improve health con-

ditions, a formal program is given to educate the people in matters pertaining to health.

2. *Correlation.*—Plans, instructions, and suggestions for correlating the regular textbook work with the practical health work are issued to the teachers so as to reinforce the abstract theories with concrete examples. The pupils prepare booklets in which health-improvement material forms the basis of exercises in the regular school branches as follows:

Spelling.—Spell and define words used on the health placard and in the bulletins issued by the State board of health.

Arithmetic.—What is the ratio of window space to floor space in your schoolroom? How many cubic feet of air does your schoolroom contain? How many pupils? If each pupil breathes 10 times in a minute, how long will this air last? What is the surface area of the dipper? If one square inch contains 1,500 disease germs, how many may the surface of the dipper contain?

Compute the cost of a sanitary closet. Find the area of the schoolroom floor and estimate cost of oiling it at \$1 per gallon. Estimate the cost of putting the school in good sanitary condition: Cleaning, disinfecting, prevention of dust, pure water, etc. Compare with average cost of a case of typhoid fever, tuberculosis, pneumonia.

History.—Biblical; London plagues; yellow fever epidemics; vaccination, etc.

Civics.—Rights and duties. Obligations of the community to the individual: To provide clean, comfortable, healthful environment; to provide expert supervision; to isolate those suffering from communicable diseases; to give inspection and instruction to the young on sanitation and hygiene. Obligations of individuals to the community: To refrain from promiscuous spitting; to observe laws of personal cleanliness; to avoid exposing others to communicable diseases; to do one's part in keeping house and premises in good order. Laws on Mississippi statute books relating to health.

Physiology.—Sanitation and hygiene; germ theory; ventilation; lighting; heating; bone structure and necessity for adjustable desk; the eye and necessity for proper lighting; ear, nose, and throat and teeth, with need for inspection and care; the skin and necessity for cleanliness; digestion and proper food (the children's lunches); the lungs, and proper ventilation; the blood and effect of air, light, and other hygienic conditions; bone and muscle structure; exercises in correct posture and physical culture; dangers from spitting.

English.—Classify words on the health placard as nouns, verbs, adjectives, adverbs, prepositions, conjunctions. Make sentences illustrating principles in grammar, regarding any health topic mentioned above. Write a paragraph each on "Danger, sources, and prevention of dust in the schoolroom." Write composition on: "How we observe clean-up-and-beautify day;" "health day;" "How we clean our schoolroom;" "The need for individual drinking cups;" "our water supply;" "The hookworm a greater menace to our State than the typhoid fly;" "Resolved: That we need medical inspection in our public schools."

Geography.—Surface water and ground water; drainage.

Writing.—Copy sentences from health placard. Copy the themes neatly and make into a booklet. Copy the poems about health.

Singing.—Motion songs; breathing exercises.

3. *Addresses on sanitation.*—The local and county school improvement associations have been put in touch with special agents of the

State board of health and other helpful agencies. These men are invited to attend the local and county meetings and make addresses on tuberculosis, typhoid, hookworm, and other preventable diseases. Local physicians and county health officers are also invited to visit schools and make inspections and give instructions.

4. *General improvement.*—Marked improvement is reported in at least 1,500 schools in water supply, ventilation, prevention of dust, lighting, heating, and building and care of outhouses. It is very common to find the floors of rural schools oiled, the furniture and walls cleaned with sanitary dust clothes, outhouses built and kept in good condition, window sashes and shades arranged for ventilation and correct lighting, and the people generally awaking to the importance of better health conditions in the home and school.

D. MUSEUM COOPERATION IN THE TEACHING OF HYGIENE AND SANITATION.

C. E. A. WINSLOW,

American Museum of Natural History, New York, N. Y.

In the hall of public health of the American Museum of Natural History we have now, after three years' work, installed three fairly complete series of exhibits dealing with water supply and public health, with the disposal of city wastes and with bacteria, while a fourth series, illustrating the relation of insects to disease, is well under way.

The relation of insects to disease is a particularly fruitful field for museum work and is the one upon which we are chiefly engaged at the present time. The American Museum already has in its department of invertebrate zoology wonderful enlarged models of mosquitoes, and the department of health has just installed a model of the house fly, enlarged 40 diameters, which took a skilled artist modeler nearly a year to complete. A wide series of facts bearing on the life history of the fly are illustrated, as well as the relation of the fly to disease, the practical methods for its control, and the results achieved thereby. A similar, but more enlarged model of the flea (carrier of bubonic plague) is now under preparation, and we have already installed models, some small and some life-size, dealing with the rats which harbor the plague microbe and from which the flea carries it to man. The opportunity for future development here, and in connection with the mosquitoes of malaria and yellow fever, and a score of other disease carriers, is a tempting one which we hope to develop in the next few years.

This hall is our first opportunity to serve the public schools in the work of health education. The teachers bring their classes to the museum in one of the periods allotted to civic biology, and in an hour with these models and diagram the pupils learn more than they could get from books and lectures in a month.

In addition to the hall, which is open to all the visitors to the museum (numbering 800,000 a year), we arrange special lectures to the school children on the occasion of their visits. It is the policy of the museum to provide lectures (generally illustrated) on any subject within the field for any teacher who may ask it and for any number of pupils, from a score to a thousand. Or, if the teacher prefers to lecture himself, we provide hall, lantern slides, and operator. The larger high schools send their classes twice a year near the end of each term for a talk on water, milk, insect-borne disease, city cleaning, or some other topic which fits into their course.

For some time the American Museum has taken an active part in the nature-study work of the public schools by circulating loan collection of birds, insects, mollusks, sponges, corals, woods, minerals, and the like. At the instance of some of the high-school teachers most active in civic biology, we have applied this same plan to our public-health extension work. Our first attempt was in the form of an album of large photographs dealing with the spread and prevention of communicable diseases.

During the past half year, these albums went to 10 high schools and 22 elementary schools in the city, and were used by 52,610 children. The general method pursued by the teacher is to go over them pretty thoroughly in the higher grades, and then to bring them into the general assembly hall, where a talk is given upon them and where they are often left for inspection for a considerable period. The time for which one of the albums is kept in a school varies from eight weeks to four months, and one distributing agent reports that "once a teacher gets an album, she will not release it until her children have seen it several times, and until the other children in the school have seen it."

All this is, of course, only a beginning of what we hope to do, even for the high schools. We have as yet scarcely touched the great underlying problem of the elementary schools, where it is most vital that a sound basis should be laid for healthy living and where at present (in New York City) 15 minutes a week is the maximum time that can be spared for theoretical instruction in hygiene. We do feel, however, that we have done enough to show that museum methods of instruction may be made of use in the teaching of school hygiene and sanitation.

E. AN EXPERIMENT IN STUDENT CONTROL OF SCHOOL SANITATION AND HYGIENE.

G. W. HUNTER.

De Witt Clinton High School, New York, N. Y.

The great elementary and secondary schools of New York City form excellent experimental ground for much-needed cooperation between pupils, teachers, and civic authorities to obtain safe and sanitary conditions of life during the time that the persons involved are in the school buildings. The city may supply the plant, sanitary and well equipped; it may safeguard the water and food supplies furnished to pupils; and it may send teachers into the work temperamentally and scientifically fitted to do the work of instruction for sane and sanitary living; but if the student body does not cooperate with the teaching staff and the civic helpers outside the school, then the school building and its surroundings will be as hopelessly insanitary as if the message of the individual drinking cup and the individual towel had never been preached.

An attempt to obtain cooperation has been made in the De Witt Clinton High School. This school, one of the largest boys' schools in the United States, is ideal for such an experiment because of its peculiar environment and its cosmopolitan clientele. The building, a splendid example of modern school architecture, is located on the border of one of the most unsavory localities of the city, an area where the gang element in its worst form runs riot, and where race battles are not uncommon even in broad daylight. The streets near by are offensive and ill-kept, the one redeeming feature being the close proximity of the school to two large hospitals. The school building is used day and night throughout practically all the year, housing a great day school, a night school, and a lecture and recreation center. Probably 5,000 persons daily enter its doors. Of the student body, over 75 per cent are foreign born, in most cases the migration having been very recent. Most of the boys, especially the "east-siders," are well behaved and anxious to learn, but have never had an opportunity in their home surroundings to know what real sanitary and hygienic conditions are. Consequently, in spite of watchful teachers and efficient janitorial staff, the halls, rooms, and in particular the stairways and lunch room, often presented an appearance that was far from sanitary.

Each half year in September and again in February, nearly 800 new pupils, fresh from the many schools of the various parts of the city, each with their own standards, enter the portals of the school. It was from these entering classes, aliens, without an idea of what the school and its activities stood for, that we experienced the most

difficulty. No conventions bound them, school traditions were as yet unknown, and the preaching of their teachers and the practical work of their biological and hygiene training had not yet begun to bear fruit. A trail of torn papers, chalk dust, and cast-off luncheon came to follow certain of these first-term classes.

Then came the thought: If these boys are unwittingly the offenders against the decency and self-respect of the school, why not make them sow the first fruits of a propaganda against this lack of consideration of others? Calling together half a dozen of the better element from among the incomers, a plan was evolved, the details of which follow.

Boys in the school for convenience in distribution are grouped in sections of about 35 pupils, each section being assigned to a given home room in charge of a single teacher who acts as their advisor, and to whom they recite in one subject. In this home room the section has most of its study periods; there they discuss the affairs which are solely section matters; and activities of various sorts are organized there. Whatever esprit de corps the section possesses arises in their home room from the fellowship aroused by meeting together in the morning or after school. Here was evidently the place to strike first; so notice was sent out of a meeting to which each first and second term section was asked to send delegates. These delegates became the nucleus of what was later known as the Sanitary Squad of the De Witt Clinton High School.

At this juncture we evoked the aid of Mr. Reuben Simons, of the department of street cleaning. This gentleman had done work of a similar nature among much younger boys in the elementary schools, and knowing boy nature, came forward with the offer of badges, to be used by the squad members as a distinctive mark of authority. Committees were then formed, officers elected, and the work of the organization began. An executive committee, an improvement committee, the duty of which was to suggest improvements in and about the building, a street committee to police the streets during the lunch periods, a hall committee, whose members policed the halls at all hours of the day and brought offenders against law and order to justice, a lunch-room committee, whose onerous task was to "clean up" the lunch room, and finally a social committee, whose business it was to provide the programs for the meetings held every Tuesday afternoon. The officers of the club were a president, vice president, secretary (for there were no dues), and a faculty director. These officers made up an executive council, and in reality directed the interests of the squad in the right directions.

One of the first useful activities of the squad was to draw up and have printed a set of suggested rules of conduct. These printed notices were posted in every room in the school building and on all bulletin boards in the halls and lunch room. These rules were made

large stencils, signs were printed, which were placed in the lunch room and in the halls. These signs reminded the students that the cost of the lunch furnished depended in the long run upon cooperation between school authorities and the student body.

The work of the squad was at first directed toward bettering the conditions in the lunch room, where over 2,500 boys were fed almost every school day. Then, widening their circle of influence, they took charge of the halls and rooms all over the building, and finally the condition of the streets adjacent to the school was taken in hand.

During the recent spring "clean-up" campaign waged by the civic authorities, the boys personally took charge of the distribution of circulars in localities that they could cover. Several large meetings were held to advertise the reasons for this campaign. The last meeting was held in the auditorium of the school and attended by over 1,500 boys. This last meeting was addressed by Dr. MacMillan, the director in charge of the clean-up campaign for the city.

But the work of the squad was by no means all plain sailing. Not all boys who joined the squad proved to be trustworthy, for it was a hard matter for a 13-year-old boy to see the ethics of picking up another fellow's leavings. Sometimes open rebellion on the part of the boys who were required to do clean-up work by squad members made matters rather difficult for the director to untangle. Boys of the upper classes, who were at times careless, like all other young men, resented being asked by a freshman to clean up anything, even if they did cause the trouble. So a "strong-arm squad" came as a natural evolution from work in the lunch room where conditions were unusually trying.

On this squad only large boys with a fair amount of tact were allowed to serve, and it was considered to be an especial honor to attain this position. The usual method of procedure on the part of a squad member who saw a schoolmate throw something on the floor was to ask him to pick it up. If he refused, he would show him his squad badge and again make the request. If this did not bring the required response, the squad member would take the name of the boy and report him to meet the director at the court held every afternoon. Sometimes the getting of the offender's name would be a difficult task and might mean trailing the boy to a recitation room, where a teacher would require the name to be given. Every afternoon in the office of the director court is held. The director occupies the chair, the assistant director acting as the prosecuting attorney. The case is first stated against the reported offender, then he is allowed to make his defense, witnesses are called for the prosecution to rebut any false statements that the prisoner may have made, and finally the director pronounces sentence. This may merely consist

squad to see what they are doing; it will be clean-up work under supervision of a squad member if the culprit is guilty, and it may be in extreme cases a visit from the parents or a week or two in the tardy room, an after-school penal colony which houses the careless or vicious members of the school community.

What is the result of the year's experiment? Can we say that we had a changed school at the end of the year? Yes and no. At the beginning the attitude of the student body was that of a critical, non-sympathetic, and often directly antagonistic body of scoffers. But little by little, as they saw the boys of the squad devotedly working for the common good, unmindful of the gibes of the crowd, a change began to be felt. Older boys, who at first were openly troublesome or who made fun of the squad workers, began to take an active interest and even to appear at meetings. One body of older boys, of their own volition, formed a hygiene club, procured lecturers, and began to cooperate actively with the younger fellows. Best of all, as faculty recognition came and notices of a favorable nature began to make their appearance in the school paper, the student body commenced to wake up to the fact that it was pleasanter to have their surroundings clean. The lunch room, which in former days, after the lunch period, was a disorderly chaos of torn papers, half-eaten fruit, and spattered odds and ends of schoolboy lunches, became really livable, so that after 1,500 boys have finished eating, another relay of like size may be sent to the room almost without touching the room or its contents. The halls and most of the rooms are now kept in fairly good condition, in spite of the occasional dirty or careless boy. But, best of all, is a spirit, a subtle something, that has crept into the school as a whole, which makes the De Witt Clinton student think of the other fellow and his rights, helps him to understand that sacrifice for the right is to be desired, and teaches him the best lesson of the future citizen, that of cooperation with authority for the common good.

F. IMPROVING HYGIENIC CONDITIONS AMONG THE NATIVE SCHOOL CHILDREN OF ALASKA.

WILLIAM HAMILTON,
United States Bureau of Education.

The efforts of the Bureau of Education to safeguard the health of the Alaskan natives include: (1) The maintenance of four small hospitals in important centers of native population; (2) contracts with three hospitals for the treatment of diseased natives; (3) the employment of traveling physicians who devote their entire time to the medical and sanitary work among the natives in their districts;

(4) the employment of nurses who assist the physicians and do exceedingly valuable work for the children in the schoolrooms; and (5) the providing of medical supplies and textbooks to the teachers of the schools throughout Alaska to enable them to treat minor ailments and intelligently to supervise hygienic measures.

In the native villages the teachers and nurses endeavor to establish proper sanitary conditions by inspecting the houses, by insisting upon the proper disposal of garbage, and by giving instruction in sanitary methods of living. Natives are encouraged to replace their filthy huts by neat, well-ventilated houses. Many of the school buildings contain bathtubs and facilities for the proper washing of clothing. In many schools sputum cups and individual drinking cups and towels are provided. The bathing and laundry facilities furnished are usually greatly appreciated.

In some of the native villages the results of the efforts of the teachers and missionaries are evident in the orderly streets and well-built houses containing all the necessary articles of furniture, pictures, and books. The natives in places such as these are self-respecting, thrifty people, and their children are as clean as those in the average village in the States.

In other settlements not reached by civilizing influences the conditions are such as to appall the most enthusiastic social worker. The houses are wretched hovels, constructed of driftwood, crowded together on an ill-smelling beach covered with garbage of all kinds, including discarded articles of clothing, old tin cans, and putrefying offal polluting the air with its horrible odors. In such a village the houses contain but a single room each, very dirty and without ventilation. Into it men, women, and children are herded, a stove and a bed being the only articles of furniture. The bed is usually used as a "catch-all" for a great assortment of articles, the natives preferring to sit, eat, and sleep on the floor.

The establishment of a United States public school in such a village and the advent of a teacher mark the inauguration of a crusade against filth and disease. The methods used in order to establish hygienic conditions among the school children coming from homes such as those just described can best be told in the words of one of the workers:

The clinic work of the school usually commenced with a talk on parasites and the necessity for cleanliness, and this was followed by an inspection of the entire class. Two and sometimes three of the older pupils were selected as assistants. The boys were taken to the clinic room, and after I had clipped each boy's hair my assistants gave him a shampoo with antiseptic soap, dressed his hair with a fine comb, and anointed it with coal oil. Talks upon hygiene were given each day and the worst cases were used as illustrations. After the talk my assistants examined the heads of all the children, and when neces-

sary gave the above-described treatment. The assistants soon learned to do their work quickly and well and seemed much interested in it.

My principal rules were: "Keep clean. Wash your face. Wash your hands. Wash your neck. Wash your ears. Wash your teeth every day. Bathe your whole body with soap and warm water at least once a week." After these rules were well understood, any child who came to school with a dirty face was brought before the class for consideration. The usual verdict was "Scrub 'em good with soap and warm water." After the assistants were through with him the subject was usually a shining example of cleanliness. It was most encouraging to see the results of a little teaching, for after four or five weeks it was a rare occurrence to have a child come to school with dirty hands or face. The children soon developed pride in their personal appearance and would strive to have their few torn clothes at least clean. The desire for cleanliness spread to the homes, and fathers and brothers were frequently brought to school to be put through the clipping and cleaning process.

G. HYGIENE IN THE PHILIPPINE SCHOOLS.

A. J. McLAUGHLIN, M. D.,

United States Public Health Service.

Practical hygiene is taught in the Philippine schools even in the lower grades. In this country we are prone to overlook the enormous influence of school children upon the hygiene of the home. The children of poor, ill-educated parents are often the intermediary through which the simple gospel of hygiene and disease prevention reaches the parents. In the Philippines this is even more true, and in many instances it is only because of the children that the parents carry out the instructions of the health officer.

In combating cholera we were not slow to take advantage of the schools. A cholera circular containing the simple facts of the spread and prevention of cholera was used as a catechism even in the elementary grades. The children recited the answers daily, and in times of actual epidemic this teaching took precedence over all other studies and was supplemented by actual demonstration of hand cleansing and disinfection.

With an epidemic of contagious disease existing, there is a tendency in most communities to close the schools. In the Philippines, on the contrary, it is the policy of the bureau of health to keep the schools open because of their extraordinary value in teaching the precepts of disease prevention.

They were used in cholera epidemics as demonstrating stations where the children were taught how to protect themselves and their parents against cholera. The same principle is used in combating tuberculosis, hookworm, dysentery, and beri-beri. The children are taught how these diseases are contracted and how they may be prevented.

The modern Philippine school building is a model of construction, adapted to the Tropics. There is no heating problem in the Philippines, and as a consequence ventilation is very much simplified. Water supply and sewage disposal are directly under the control of the bureau of health. The pupils are specially trained in the necessity of thorough hand cleansing after using the toilet and before eating. The children have been used also to eliminate the time-honored Filipino custom of eating with the fingers out of one common family dish.

The dense ignorance of sanitary principles and the oriental fatalism of the older generation could not be successfully combated without the aid of the school children. With their aid a very great improvement has been effected.

There is now in Manila a very efficient medical inspection of schools. This is particularly effective because of the splendid facilities of the bureau of health for giving medical treatment. The city is divided into health districts with free dispensaries and hospitals where the school children are treated. In this country the health department can often do no more than recommend treatment. In Manila the child is reported to the bureau of health, and the powers and organization are such that control is easily maintained until the child is returned to school cured. Special attention is paid to the teeth of children, and these are treated in the free dental clinics of the Philippines General Hospital. During the school year ended March 29, 1912, in Manila over 2,400 children were referred to the hospitals and dispensaries of the bureau of health for treatment.

The effect of the teaching and practice of hygiene in the Philippine schools is manifest in the improved physical condition of the pupils, and it is a powerful instrument in the sanitary regeneration of a nation.

XII. MISCELLANEOUS TOPICS.

X. HOW WOMEN'S CLUBS CAN AID THE HYGIENE MOVEMENT.

ELSA DENISON,

Bureau of Municipal Research, New York, N. Y.

The greatest service of women's clubs during the next few years will be to apply everywhere what we already know; to use all the machinery already available in every city and every country; and to carry out definite programs based on the proved experience of other communities.

The cities and towns where there is not adequate medical inspection, examination, and treatment of physical defects, where all school buildings are not properly cleaned, ventilated, heated, lighted, outnumber 10 to 1 the cities and towns where even a beginning has been made.

There is no need for more organizations of women. There is no need for wasting precious time while communities "grow up" to health facts. There is no need for added experimentation about the more important phases of school hygiene, i. e., the physical condition of the children themselves and the environment they go to school in.

May I suggest, therefore, that our "prophecies and promises" for the next few years group themselves under the following four heads:

1. *Use fact-giving machinery.*—Women's clubs will use the machinery already in full swing to avoid being handicapped by lack of facts. Reference agencies like this congress, the United States Bureau of Education, bureaus of municipal research, the Russell Sage Foundation, State and local boards of health, tuberculosis associations, etc., are spending thousands of dollars every year getting facts, making them available, answering questions.

2. *Draw 100 per cent pictures.*—Women's clubs will use the machinery of all organized women, whether in their clubs or in other clubs, to give to their city a 100 per cent picture of school health needs in that city. If an inspecting committee finds one school with unwashed windows and dirty floors, the club machinery will ask, How many more? If 90 out of every 100 children in our schools were found with decaying teeth, club women will ask, How many more? and How can they all be fixed? If a building is found with one open-air room for 20 children and bad air for 980 children in all other rooms, club women will ask, What's the use?

3. *Enlist professional cooperation.*—Women's clubs will use the machinery of their local medical and dental associations and their local groups of business men to secure (a) publicity about health needs not met; (b) preliminary volunteer examinations; (c) financial support by the city.

4. *Solve other health problems.*—Women's clubs will use the machinery of the whole city administration to correct conditions affecting the health of school children or school buildings. Constant watching, reporting to authorities specific bad conditions, following up promised improvements, will be given to the questions of clean streets around school and for play; prompt garbage removal; where drinking water comes from; how milk is analyzed; what cake, candy, soda, and ice cream in shops near schools is made of, etc.

B. THE SCHOOL AND VITAL STATISTICS.

FRANKLIN C. GRAM, M. D.,

Chief of the Bureau of Vital Statistics, Department of Health, Buffalo, N. Y.

At first thought it might seem that the school and vital statistics are antitheses and their points of contact about as opposite as the two poles. The same might have been said about medical school inspection only a few years ago. In an age of progress the dead languages give way to technical education and the philosophy of unknown quantities to manual training. Granting this, you will ask, Where will the study of vital statistics fit into the school curriculum?

It needed no argument to make room for the art of bookkeeping. Even the unintelligent recognized the necessity of a knowledge by which, in his crude way, he might measure his financial loss or gain during a given period. Vital statistics is the bookkeeping of a community. It shows the assets as well as the liabilities. It does more. It forms a permanent record of every individual from the beginning to the end of life.

If we teach our children that certain diseases, such as measles and whooping cough, which have been regarded as blessed essentials of childhood, and which our mothers were wont to invite by contact in order to have them over with as early in life as possible, are not essential but more fatal than dreaded pestilence, then we assist them in retaining a normal constitution and possibly prevent them from filling an early grave.

The reduction of infant mortality has long ceased to be a subject of philanthropy or of public spirited benevolence. It is a recognized duty of the State. The State can do nothing without the cooperation of its citizens, and unless its citizens can be made to understand a condition there can be no cooperation, because it then becomes a matter of law and not of duty.

To a proper study of these things it is essential to have some knowledge of morbidity and mortality conditions. It is necessary to know the number of births in a community in order to compare it with the number of deaths. Vital statistics show at what period of life the lowest and highest mortality rates exist, the causes which produce death at later periods, and this again leads to the study of prevention. Connected with this study is a natural inquiry into the causation of disease, and while such study still presents many obstacles to the untutored mind, yet it is within the range of possibility.

Nor is such study without profit to pupils before they reach high school or college. It is particularly valuable before that stage is reached, because during this period of life many of the contagious diseases occur which cut short a promising career or leave the individual burdened with an infirmity for life.

The study of vital statistics is entitled to a place in schools on the following grounds: (1) It leads to an inquiry into morbidity and mortality conditions of the home locality; (2) it forms a basis for comparison with what such conditions ought to be; (3) it assists in the study of prevention of disease and in the knowledge of public health; (4) it is an essential adjunct to medical school inspection and school nursing; (5) a knowledge of health and disease forms the bulwark of nations; (6) youth is the best period in life for beginning to acquire such knowledge.

C. ACCIDENT PREVENTION AS RELATING TO CHILD WELFARE.

MARCUS A. DOW,

General Safety Agent, New York Central Lines.

Remarkable results have been obtained in the actual reduction of industrial accidents through the education of industrial workers along the lines of safety. In many instances large plants or railroads showing decreases ranging from 10 to 40 per cent in casualties in one year. In a very brief period the plan of systematic education of industrial workers in accident prevention has proved effective and successful. Why should it not be just as successful if applied in schools? The great need for a concerted, well-defined plan of teaching school children "safety," "prudence," and "carefulness" is apparent when the great number of lives sacrificed annually is considered.

The railroads do not begin to furnish all the accidents that result in serious or fatal injury to children and others. The dangers that beset the child in daily life are numerous and varied. Matches and bonfires, the automobile, the street cars, vehicles drawn by horses, and many other things contribute to the huge list of deaths and injuries to children from accident causes.

In New York City alone there were 226 children killed and 479 seriously injured while playing in the city streets during the year 1912. In the States of New York and New Jersey during the same year there were 104 children under 16 years of age killed by being struck or run over by automobiles and 935 injured from the same cause. There were 77 killed and 171 injured by trolley cars and 110 killed and 249 injured by wagons, a total of 351 children under 16 years of age killed and 1,355 injured in one year in only two States of the Union on account of being struck or run over by vehicles while playing upon or crossing public streets or highways.

D. INTESTINAL PARASITES AND THE RURAL SCHOOL.

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Infection by intestinal parasites is world-wide in its distribution. It is most prevalent in the tropical and semitropical countries, where it is a problem of great magnitude. As a factor affecting the life and the health of the people, their physical and mental development, and their material welfare, its importance has not been generally appreciated. In fact, it has not been particularly emphasized by many of our medical colleges and of course not by the physicians they graduated. Yet in the light of the revelations made during the past three or four years by the Rockefeller Sanitary Commission, working in conjunction with boards of health of 11 Southern States, there should be great reform generally in the methods for acquainting both students of medicine and the laity with the essential facts pertaining to this form of infection.

Types of parasites—During the three and one-half years prior to July 1, 1913, the health agencies above referred to made 665,581 microscopic examinations of specimens of feces for parasitic ova for 665,581 persons; of these 329,578 were found to have hookworm infection and were treated. Private physicians have treated and reported 162,305 additional persons, giving, with those treated by the health agencies, a total of 491,883 treated persons. The hookworm is by far the most common and most important of the intestinal parasites. In 326 counties of the South, infection surveys for hookworm disease have been made. Each survey is based on the microscopic examination of a minimum of 200 country children taken at random, ages 6 and 18 years, inclusive. These surveys indicate that in different counties, varying with their geographical location, the hookworm infection ranges from 1 per cent to as high as 80 or 90 per cent of those examined.

In many localities 80 to 100 per cent of the school children have been found to have the disease and to have made only 50 per cent of the progress made by normal healthy children. In other localities entire families heavily infected have had their systems so undermined that they were swept away completely, either directly by hookworm disease or by intercurrent diseases like tuberculosis, pneumonia, or typhoid fever, which easily overwhelm the devitalized bodies of hookworm subjects. Routine examinations for a series of graded schools have shown hookworm infection three times more prevalent in the backward sections than in the advance sections for the various grades.

The school in the rural section affords the greatest medium for the spread of the infection. Suppose we take a certain school district in which by chance no infection exists. Now let the son and daughter of Mr. Smith visit Mr. Jones, who lives in a district where there is much hookworm disease. While there, fruit of some kind is picked up from the ground by the Smiths and eaten, and perhaps in going barefooted "ground itch," the beginning of skin infection, is contracted. The visit over, the Smiths return home. Having no sanitary privy on their premises, the soil around their house is soon polluted, so that one by one the whole Smith family becomes infected in varying degrees of severity. Fall comes, and the neighborhood school opens. The Smith children may by this time be a little pale and puny from the disease, but they start to school. The school may be in a progressive neighborhood; it may be painted and furnished with patent desks, and perhaps it has secured a creditable library. Good heaters have been provided, the light comes from the rear and over the left shoulders of the pupils. Perhaps there is a driven well to supply water, but there will be no individual drinking cups, and this is not the worst of it. No privy has been provided; but why should there be? The pupils, not having one at home, do not think of having one at school, especially since the woods and undergrowth are near the schoolhouse. The girls, by custom, conceal themselves when answering nature's call in the woods on the east side and the boys on the west. The Smith children do not know they are infected. They use the common hiding grounds with the other children. Soon the whole school grounds are so heavily polluted that on damp days every pupil who goes around barefooted will contract "ground itch," and, moreover, those who play ball, marbles, mumble-the-peg, etc., get their hands infected. Facilities for washing the hands are not available; so at lunch time they handle their food with soiled hands which are likely to be contaminated. In this way the pupils at school become infected. In a comparatively short time the premises around the homes of all the school children are polluted, and you have a change which anemia produces coming over the community. Progress of the children in the school is retarded; the daily attendance is poor; the health of the community is below normal; the crops are not so well cultivated; and there is a general backward tendency. The houses are not so well provided for or kept. The whole community is sick and doesn't know it. The economic loss is tremendous. Delay in establishing control of infection spread by such filthy habits is criminal, once the facts are known. The victims are ignorant of the facts. Teaching them is a duty of every informed citizen, board of health, and physician; yet these agencies are not sufficient to reach the masses.

The common schools through the school children can reach practically every home. Hence, an important part of this work should be directed to the teaching of sanitation, dealing particularly with parasitic intestinal infection and other infections spread by soil pollution. The school should be an institution where methods are taught for saving and preserving the child, for making him a healthy educable child, one who will bless the State with the highest type of citizenship. May we not hasten a reform which will make the school a place where the teachings of sanitation are put into practice and not a center for exchanging and spreading all kinds of filth-borne diseases?

PART III. THE SCIENTIFIC EXHIBIT.

CONCRETE DATA OF THE SCHOOL HYGIENE MOVEMENT AS SHOWN IN THE EXHIBIT.

I. MEDICAL INSPECTION.

Boston, Mass.—The division of child hygiene is concerned with the physical welfare of every child in Boston from the time of conception up to the age of 16 years. The work of this division is classified into three subdivisions, as follows: (1) Prenatal and post-natal; (2) medical inspection of schools; (3) physical examination of licensed minors.

Physical examination of school children for the year 1912-13 showed the following results:

Total number of pupils examined.....	121,832
Total number of pupils without defects.....	52,409
Total number of pupils with defects.....	69,333

The defects noted were: Mental deficiency, 391; defective nasal breathing, 9,174; hypertrophied tonsils, 24,720; defective teeth, 60,709; defective palate, 366; cervical glands, 11,370; pulmonary disease—tuberculous 66, nontuberculous 1,165; cardiac disease, 2,796; nervous disease, 303; orthopedic defect—tuberculous 103, nontuberculous 3,154; skin disease, 3,768; rickets, 644; malnutrition, 2,620.

Buffalo, N. Y.—Medical school inspection in Buffalo is divided into four general divisions: (1) Prevention of communicable diseases; (2) detection and removal of physical defects; (3) child psychophysiology; (4) sanitary condition of the school buildings and environments.

The following is a résumé of some of the work:

Report of medical school examiner, year 1912.

	Girls.	Boys.	Total.
Number examined.....	23,263	24,727	47,990
Malnutrition.....	468	392	860
Anemia.....	617	459	1,076
Enlarged glands.....	623	789	1,412
Gopher.....	106	33	139
Nervous diseases.....	116	98	214
Cardiac disease.....	112	111	223
Pulmonary disease.....	74	80	154
Skin disease.....	387	247	634
Defect, orthopedic.....	84	128	212
Rachitic type.....	81	62	143
Defect of vision.....	2,642	1,763	4,405
Other diseases of eye.....	231	210	441
Defect of hearing.....	140	200	340
Discharging ear.....	81	54	135
Defect of nasal breathing.....	723	1,259	1,982
Defect of palate.....	73	58	131
Defect of teeth.....	11,204	12,032	23,236
Hypertrophied tonsils.....	3,239	3,167	6,406
Adenoids.....	233	344	577
Mental cases.....	72	124	196
Treatment advised.....	1,080	1,194	2,274

Cincinnati, Ohio.—The bureau of medical inspection and relief is organized with the following officers: Chief school inspector, with a salary of \$1,800; 16 district physicians, 11 on full time and 5 on part time, to whom a total salary of \$18,275 is paid; 14 school nurses, \$10,920; 1 chief dental inspector, \$1,500; 4 dental operators (part time), \$2,000; 2 clinical assistants, \$1,100; 1 clerk, infectious diseases, \$1,000; 1 clerk, tuberculosis records, \$800; fumigator, \$900; 1 chief medical inspector and assistant health officer, \$2,750. Their functions are: School inspection, medical relief of the poor, surveillance of infectious diseases.

The hours of medical inspection are 12 a. m. 2–3 p. m. Twenty-two public schools and 35 parochial schools, a total of 57, have medical inspection only, without the school nurse. In 43 public schools and 12 parochial, a total of 55 schools, both doctors and nurses are employed. The average number of pupils for each nurse is 2,350.

During the period from September 10, 1912 to June 10, 1913, the school doctor handled the following cases:

Excluded on account of infection disease or contact.....	113
Inspected after 4 days' absence.....	6,831
Examined but not needing treatment.....	13,537
Received for treatment.....	14,679
Total number of examinations of children.....	35,573

In the same period the school nurses' activities were as follows:

Number of cases referred to nurses.....	8,874
Treated by family physician.....	1,985
Treated by clinics and hospitals.....	2,902
Pediculosis and minor cases treated by nurses.....	2,811

Cases refused treatment and pending.....	7,076
School treatments given.....	8,053
Home visits.....	4,731

"The nurse is the connecting link between school and home."

A survey of 36,438 pupils in public schools, April 21 to June 6, 1913, showed:

	Number.	Per cent.
Tuberculous.....	84	0.23
Pre-tuberculous.....	505	1.38
Anemic simply.....	1,030	2.83
Total anemic.....	1,619	4.44
Mentally retarded.....	657	1.80

This is urged as an argument for (1) more open-air schools and low-temperature rooms; (2) new school for mentally deficient children.

Among defects diagnosed by school physician were: Defective vision, 2,135; diseases of the eye, 298. Of these, 1,092, or 44.9 per cent, were corrected by glasses and treatment. Hypertrophied tonsils, 2,692 cases noted, operative, 642; medical, 650, a total of 1,292, or 48 per cent treated. Defective teeth, exclusive of dental inspection, 1,754; cases finished, 1,002, or 57 per cent. Medical and surgical miscellaneous, 1,996; treated, 1,501, or 75 per cent. Children inoculated against smallpox, September 10, 1912, to June 19, 1913, 4,886; of these 97.3 per cent were successful, 52 were unsuccessful, and 76 unknown.

Detroit, Mich.—Results of medical inspection of schools, September, 1912, to June, 1913:

Number of pupils examined.....	95,542
Number of pupils excluded.....	4,752
Number of pupils vaccinated.....	0,406
Number of defects found.....	0,062
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Nurses' visits to homes.....	7,081
Nurses' visits to schools.....	4,103
Nurses' visits to dispensaries.....	482
Total visits.....	11,706
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Attendance at school clinics.....	27,228
Children treated at home.....	252
Children treated at dispensaries.....	1,038
Instruction to mothers.....	5,348

Eight nurses were employed at a total expense of \$4,800, and 33 doctors (\$11,500), or a total cost of \$16,350.

Jacksonville, Fla.—Medical inspection of school children in Jacksonville, Fla., showed that 77.1 per cent of all the children examined were defective in one or more particulars. The following are the

percentages for the various defects: Hypertrophied tonsils, 36.6 per cent; defective vision, 25.8 per cent; enlarged cervical glands, 9.1 per cent; adenoids, positive, 5.2 per cent; nasal breathing, 3.8 per cent; skin diseases, 2.5 per cent; hookworm, positive, 2.3 per cent; malnutrition, 0.83 per cent; anemia, marked, 0.8 per cent; defective hearing, 0.65 per cent; conjunctivitis, 0.2 per cent.

New York, N. Y.—The work of the division of child hygiene is thus outlined:

- (1) Inspection for the determination of infectious diseases;
- (2) inspection and treatment of contagious eye and skin diseases in school;
- (3) examination of pupils for certain physical defects;
- (4) follow-up visit by nurse to home to secure treatment for noncontagious physical defects;
- (5) treatment at clinics for eye, ear, nose, and throat;
- (6) treatment of teeth at dental clinics.

School medical inspection is organized under a director and assistant director for the entire city, with a separate organization for each of the five boroughs in charge of a borough chief inspector. Under each borough chief is a corps of supervising inspectors and supervising nurses, who direct in turn the routine medical inspectors and school nurses. In the year 1912-13 there were 825,664 children in public and parochial schools of New York City under medical inspection. The cost of carrying on the work was \$364,300, or 44 cents per capita. The chief medical inspector for each borough has oversight of the clinics for school children.

Philadelphia, Pa.—The scope of the work of the department of medical inspection of schools is described as follows: (1) Detection and correction of physical defects; (2) detection and exclusion of contagious disease cases; (3) sanitary inspection of school buildings; (4) examination at their homes of absentee children, in order to determine whether such children should be excused from school; (5) the examination of applicants for the position of school janitor; (6) examination of high-school boys entering into athletic contests; (7) a clinic for the examination of mentally deficient children; (8) special medical supervision of three open-air schools; (9) free vaccination of school children. The organization is as follows: (1) Public schools, medical inspection (under bureau of health and board of education); (2) public schools, nurses (board of education and bureau of health); (3) private schools and parochial schools, medical inspection (under bureau of health); (4) eye dispensary for school children, No. 1 (for all school children), under bureau of health; eye dispensary for school children, No. 2 (public school children), bureau of health and board of education; (5) dental dispensary for school children, No. 1, for all school children (under bureau of health); dental dispensary for school children, Nos. 2,

3, 4, for public school children, under bureau of health and board of education.

A general summary of medical inspection in Philadelphia for 1912 shows:

Number of pupils in elementary schools.....	175,905
Number of pupils in high schools.....	11,502
Number of school buildings.....	280
Visits made by supervisors.....	1,355
Visits made by assistant inspectors.....	35,556
Pupils sent to inspectors by teachers.....	98,171
Routine physical examinations.....	114,854
Special examinations (classrooms).....	317,564
Defects recommended for treatment.....	138,002
Proportion of physical defects corrected..... per cent..	45
Exclusions from school.....	7,046
Time lost from school by reason of exclusions, minor contagious diseases only..... days..	4,314
Number of throat cultures taken.....	2,722
Number of throat cultures with positive results.....	418
Vaccinations performed.....	2,312

The following is a table showing physical defects recommended for treatment at two different periods:

Defects.....	Feb.-Dec., 1912.	Jan.-June, 1913.
Eye.....	25,656	10,510
Nose, throat, and mouth.....	37,038	22,946
Ear.....	2,240	1,470
Teeth.....	70,047	40,345
Orthopedic.....	2,049	1,080
Anemia and poor nutrition.....	2,543	1,434
Nervous.....	935	670
Heart.....	367	587
Defective mentality.....	163	188
Skin.....	19,385	10,144
Miscellaneous.....	2,054	2,552
Total.....	142,536	98,662

Republic of Mexico.—Mexico has had medical inspection of schools since 1896. Begun in a small way in that year, it was considerably extended by an act of 1908. Annual salaries and expenses for the work increased from \$2,000 in 1896 to \$52,000 for the year 1912-13. During the same period the number of medical inspectors has increased from 1 during the first three years to 43 in 1913. About 5,500 children are now assigned to each school doctor.

Of diseases found in school children in Mexico City 1908-1912, those of contagious type most frequently found are pediculosis (15 per cent) and ringworm (4½ per cent). In the noncontagious diseases anemia led with 19 per cent; 29 per cent of the children have defective vision, 27 per cent dental caries, and 5½ per cent defective hearing.

II. THE SCHOOL NURSE.

Buffalo, N. Y.—School nurses in 1912 made 1,703 school visits and 2,014 home visits, of which 600 were to contagious and 1,414 to non-contagious cases. Total inspections were 19,411.

Treatment or instruction was given as follows: Pediculosis, 1,364 cases; ringworm, 40; favus, 13; scabies, 184; impetigo, 470; skin, 1,201; eyes, 1,398; ears, 564; vaccinations, 379; miscellaneous, 4,381; dispensary, 43.

Philadelphia, Pa.—The bureau of health of Philadelphia shows the direct value of the school nurse service by comparing conditions with and without nurses. A saving of nearly five days is obtained on every case of contagious disease by means of the school nurse service. The statistics show that the average number of days lost by school children when the schools are without school nurse service is 5.06458. The average number of days lost when the schools have nurse service is found to be 0.34268. Lack of nurse service is therefore responsible for 4.72191 days of preventable loss. Multiplying 4.72191 (preventable) loss (average days) by 10,884 cases of minor contagious diseases handled by school nurses gives 79,725 total days of school time saved to these school pupils through nurse service. The per capita cost of education in Philadelphia is 18½ cents, so that \$9,122.05 is saved to the educational system through this one branch alone of the school nurses' activity. The total cost of school nurse service from February, 1912, to June, 1913, was \$25,760. The nurses were employed in the congested districts of the city.

Another proof of the importance of the school nurse is found in the follow-up results. Irrespective of social grade, more physical defects are corrected with nurse than without. Four groups were studied: In group white, native, social grade A, 43 per cent of defects were corrected with nurse, as compared with 36 per cent when no nurse was employed. In group white, grade B, 50 per cent were corrected with a nurse, and 43 per cent without. In white, grade C, 50 per cent were corrected when a nurse was employed, whereas only 18 per cent were corrected when there was no nurse. In colored, grade C, 63 per cent of defects noted were corrected with the nurse, as against 22 per cent without a nurse.

Rochester, N. Y.—School nurses in Rochester paid 1,269 visits to homes; took 853 cases to dispensaries and hospitals; cared for 1,906 defects; found 306 defects of eyes; 461 of ears, nose, and throat; 273 of teeth; 267 skin diseases; 413 miscellaneous defects.

III. ORAL HYGIENE.

Connecticut.—In Hartford there are free dental clinics for school children supported by the Hartford dental society. In Waterbury there are two dental inspectors, salary \$100, paid by the city. In Bridgeport the city appropriates \$500 for the dental clinic of the Bridgeport dental society. New London has a dental clinic equipped by the board of education and maintained by the New London dental society. Other Connecticut towns report as follows: Stratford—examination by an individual dentist, but no town appropriation; New Britain—examination of the children by the New Britain dental society; Greenwich—clinic established by the United Workers; New Haven—room secured in a school building for a privately supported clinic; Meriden—school children examined by the Meriden dental society, but no appropriation.

Kentucky.—Dental inspection and clinics in 17 communities throughout the State.

New York.—The State department of health is conducting an active oral hygiene campaign by means of elaborate exhibit material, which includes a model clinic.

Pennsylvania.—Thirteen free dental dispensaries are in operation. Besides the 5 in Philadelphia, there are 2 each at Pittsburgh and Wilkes-Barre, and 1 in each of the following cities: Scranton, Philadelphia, Reading, Chester.

Boston, Mass.—The Forsyth Dental Infirmary, Boston's answer to the oral hygiene problem, is to be opened in 1914. Its work will be to care for the mouth conditions of all the children of Greater Boston up to 16 years of age. Attention will be given to adenoids, hair lip, tonsils—in short, the whole subject of mouth, nose, and throat. Follow-up work will be done by the school nurse and social secretary. Patients will be required to return to the infirmary three or four times a year for examination, treatment, and advice. The institution will have facilities for 64 chairs, with room for 44 additional; each chair having a capacity of 12 patients per 8-hour day, or a total capacity of 768 patients daily. There will be a lecture room for public lectures on hygiene and oral prophylaxis.

Cincinnati, Ohio.—Mouth hygiene is supervised in Cincinnati through a cooperative arrangement between the Cincinnati dental society and the board of health. The board of health provides 1 chief dental inspector, 4 dental operators, and 2 clinical assistants. The dental society furnishes 56 dental inspectors and 39 lay volunteers. The number of children examined in different years was: 920 in 1909; 4,594 in 1910; 8,432 in 1911; and 12,060 in 1912.

Operations.	1910. Sept.-Dec.	1911. 10 mos.	1912. 10 mos.	1913. Jan.-July.
Fillings.....	763	2,654	1,789	3,962
Treatments.....	334	1,335	1,455	1,720
Cleanings.....	192	515	476	1,047
Crowns.....	3	10	8	8
Extractions.....	256	790	961	1,555
Total operations.....	1,548	5,214	4,689	8,282
Number of cases.....	210	790	972	1,379

Follow-up work in two typical schools:

<i>First school.</i>		<i>Second school.</i>	
Number inspected.....	864	Number inspected.....	330
No defects.....	74	No defects.....	22
Treated at dental clinic.....	125	Treated at dental clinic.....	90
Treated by family dentist.....	290	Treated by family dentist.....	116
No treatment.....	190	No treatment.....	8
Withdrawn from school.....	53		

Expenses of the free clinic.

	1910. Sept.-Jan.	1911. Sept.-Jan.	1912. Sept.-Jan.	1913. Jan.-July.
Equipment.....	\$518.78	\$10.25	\$13.63	\$341.71
Salaries.....	\$28.00	1,445.00	1,674.00	2,510.82
Supplies.....	74.97	151.00	112.39	283.84
Office.....	77.47	78.50	73.27	46.17
Education.....	93.80	11.40	104.80	5.65

Cleveland, Ohio.—In 1910–11 Cleveland was the scene of the national mouth-hygiene campaign. The National Dental Association supplied equipment for clinics, a trained nurse and finances for the Marion School class. The Ohio State Dental Association paid for the printing and furnished the use of a stereopticon. The Cleveland dental society furnished the examining clinicians and lecturers. Rooms were furnished by the Cleveland board of education, by the library, and by St. Alexis Hospital. The campaign had for its object:

To bring to the attention of the people, by means of dental inspection of an adequate number of children, the universal need of dental service; to show by means of clinics that there is a great demand for dental service by indigent children; to present to the people by means of lectures the great value of mouth hygiene in the general welfare of the child; to show by means of the Marion School class the results possible to be obtained from an ideal method of instruction in the care and use of the mouth, accompanied by the correction of the faulty oral condition.

As a result of this campaign, 20,861 pupils were examined. The mouths of 97 per cent were found faulty. The six clinics were operated for a total of 334 half-days; 372 patients were treated; 2,227 operations were performed; and 49 lectures were delivered at the various school auditoriums to parents of the older grade pupils.

From a school of 840 pupils there were selected 40 children presenting the most faulty oral conditions, 27 of whom acquiesced in the plan, followed instruction, and took the tests. The children were

each given a toothbrush, tooth powder, and a drinking glass. A dental nurse trained them to clean properly the teeth and mouth and visited their homes to see that the instructions were carried out. The children were given special instruction in the use of the mouth in the home and by specimen meals in school. The faulty oral conditions were corrected in the clinics. Psychological tests under an expert demonstrated the mental as well as physical improvement due to remedying bad mouth conditions.

Detroit, Mich.—An appropriation of \$5,000 was allowed for dental inspection and clinics from September 1, 1912 to July 1, 1913. Four dentists examined 50,000 pupils; 12,000 patients were treated in five clinics; and there were 40 lantern-slide lectures in school.

For the year 1913-14, \$8,000 has been appropriated. There will be six inspectors and seven clinics, and twice as many lectures on mouth hygiene as last year.

Los Angeles, Cal.—The board of education has now taken over the dental clinic formerly maintained by the Los Angeles parent-teacher association and the county dental society. During the past year (1912-13) there were two full-time operators; 1,434 patients were treated.

Philadelphia, Pa.—The city maintains a complete system of dental inspection and clinics as a separate division under the bureau of health. The work was organized in the fall of 1910 on a volunteer basis, and remained so for one year, the city supplying the offices in city hall and equipment for three chairs and one nurse. In January, 1912, eight paid dentists were engaged. In February, 1912, the first school branch opened. In December, 1912, four additional assistants and one chief were engaged, and in 1913 two additional school branches were opened. The appropriation for 1913 provides as follows:

Twelve operators, each serving three hours per day, at \$700.....	\$8,400
Equipment for two schools.....	1,200
Maintenance.....	500
Nurse at central office.....	800
Chief of division.....	2,500

The school board at present bears no expense except plumbing and electric current.

The work of one of the clinics from January 1 to June 30, 1913:

	Patients.	Operations.
January.....	757	2,328
February.....	665	2,095
March.....	874	2,185
April.....	945	2,794
May.....	828	2,534
June.....	590	1,790
Total.....	4,459	15,716

Girard College has a department of dental surgery, recently organized, which has for its sole object and aim the care of the teeth of the boys in Girard College. The department is under the care of a dentist in chief, two assistant dentists, and a clerical and mechanical assistant, all of whom are employed full time.

Rochester, N. Y.—A free dental clinic, claimed to be the first in the world, was established in Rochester more than 25 years ago. It was closed after two years for lack of support. The first American school dental dispensary was established in Rochester in 1905 by the Rochester Dental Society. Dental dispensaries are now operated in schools Nos. 26, 12, and 14. In 1912, 2,104 patients were treated, involving 11,137 operations. The total cost was \$2,461.16, or \$1.12 for each child.

Toronto, Canada.—Lee School, of Toronto, claims the distinction of having pupils absolutely without a carious tooth or an unclean mouth. The pupils are all from the Girls' Home, where daily care of the teeth is part of the routine.

Relation of dental hygiene to mental efficiency.—Dr. J. E. W. Wallin has measured with selected test materials the increased mental efficiency of children whose oral defects have been remedied. In memorizing 3-place digits there was an average gain in those under observation of 19 per cent in efficiency; in the spontaneous association test the average efficiency gain was 42 per cent; in adding 1-place digits, 35 per cent; in the antonym test, 129 per cent; and in the test of canceling a's there was an average gain due to dental improvement of 60 per cent.

IV. OPEN-AIR SCHOOLS.

Horace Mann School, New York, N. Y.—Two third-grade classes, as similar as it was possible to have them, were compared for a period of six months. One class was an outdoor class, the other a regular indoor class. The two classes were compared in respect both to physical improvement and mental improvement, with the following results:

Physical Improvement.

	Indoor.	Outdoor.
Average age at beginning of tests.....	8 yrs. 6 mos.....	8 yrs. 4 mos.
Duration of tests.....	6 mos.....	6 mos.
Average gain in—		
Weight.....	1.6 kg. or 3.5 lbs.....	1.7 kg. or 3.7 lbs.
Height.....	2.6 cm. or 1.0 in.....	2.8 cm. or 1.1 in.
Girth of chest.....	1.3 cm. or 0.5 in.....	1.8 cm. or 0.7 in.
Girth of chest expanded.....	1.5 cm. or 0.6 in.....	1.7 cm. or 0.7 in.
Breadth of chest.....	0.9 cm. or 0.37 in.....	0.3 cm. or 0.67 in.
Depth of chest.....	0.0.....	- 0.4 cm. or - 0.13 in.
Lung capacity.....	8.0 cu. in.....	5.9 cu. in.
Strength, right arm.....	1.4 kg. or 3.0 lbs.....	0.8 kg. or 1.7 lbs.
Strength, left arm.....	1.4 kg. or 3.1 lbs.....	2.1 kg. or 4.6 lbs.
Strength, upper back.....	2.0 kg. or 4.4 lbs.....	2.0 kg. or 4.4 lbs.
Strength, chest.....	2.8 kg. or 6.2 lbs.....	3.3 kg. or 7.0 lbs.

Indoor class improved more in four of these measurements. Outdoor class gained more in six of these measurements. Classes gained the same in strength of back. Outdoor class gained more in height, weight, and girth of chest.

Mental improvement.

	Number of pupils.	Average.		Improvement.
		Dec. 12.	May 13.	
<i>In formal English:</i>		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Open air.....	18 in Dec. 12 in May.....	37	57	20
Indoor.....	22 in Dec. 27 in May.....	35	48	13
<i>In arithmetic:</i>				
Open air.....	14 in Dec. 22 in May.....	48	68	20
Indoor.....	28 in Dec. 24 in May.....	60	76	16

Elizabeth McCormick Memorial Fund, Chicago, Ill.—The Elizabeth McCormick Memorial Fund was established in 1908. Its general object is "to improve the condition of child life in the United States." One of the chief special objects is: "To promote, in an experimental way, open-air schools by maintaining in Chicago schools like the Elizabeth McCormick open-air schools, and by standardizing the methods of such schools." The fund gathers information on open-air schools and other child welfare agencies, and disseminates it for the guidance of citizens and legislators. "Open-Air Crusaders" is the title of an attractive report that sums up the open-air work. The exhibit at Buffalo consisted mainly of apparatus for open-air work: Cot, clothing, etc.

Cincinnati, Ohio.—A typical woodland school for pretuberculous and anemic children is maintained by the board of education for children of grades 1-5. The school was established in 1911 on the principle that "education without health is useless." The cost has been 19 cents per pupil per day. Children with tubercle bacilli in sputum are not admitted to this school.

In the regular open-air school the board of health furnishes a nurse and medical director and equipment for 25 pupils. The building cost \$1,266 and the equipment \$600. The average cost for maintenance was \$2.35 per week per child. Temperature, pulse, and respiration are recorded daily at 8 a. m. and 3 p. m. Haemoglobin tests are given upon admission and whenever indicated. The treatment includes a warm cleansing bath and cold showers daily (special cases excepted). It is significant that on Friday the pupils show a marked gain, and on Monday a slight loss. The children are fed inspected milk and crackers morning and afternoon. There is a dinner with a

specified menu for each day, prepared by the domestic science department. The total expense per child for food is 17 cents.

From September 10 to June 6, 1913, the average gain per pupil in weight was 6.2 pounds. Every child gained in weight. Two girls gained 12 pounds 12 ounces, 1 girl 11 pounds 12 ounces, another 10 pounds 12 ounces, and another 9 pounds 10 ounces. The average daily attendance in 1911-12 in the open-air school was 96.9 per cent, as compared with 95.4 per cent in a typical elementary school of the regular type.

Oakland, Cal.—The report of the commission declares: "In each new building there shall be at least one open-air schoolroom that can not be entirely closed. In all new buildings provision shall be made whereby every classroom may be easily transformed into an open-air room."

Chicago, Ill.—There are at present in the Chicago public school system four open-air and six open-window, or low-temperature school-rooms. The open-air rooms are conducted upon roofs with little other than overhead protection, while the open-window rooms are in regular school buildings, with the rooms and conditions adapted to meet the needs of undernourished and tubercular children. In the summer term these children are taught out of doors, in tents erected in the school yard at the various schools.

Other cities.—Cleveland, Buffalo, New York, Newark, N. J., Rochester, and Philadelphia are other cities which have made notable efforts to incorporate the open-air idea into their school system and exhibited some of the results of their experiments at the congress on school hygiene.

V. SCHOOL FEEDING.

History and present status.—The American Home Economics Association shows that the school feeding movement is by no means a new thing. School feeding began in Germany in 1790; France, 1849; Great Britain, 1866; and in the United States in 1895. Seventy-seven cities in this country now maintain school lunches (1912). Lunches are also served regularly in special and open-air classes in a number of cities, among them being Philadelphia (special class); New York (undernourished children); Syracuse (open-air school); Newark (open-air school); Cleveland (fresh-air class); Buffalo, N. Y. (open-air school). The claim is made that 10 per cent of the children in our cities suffer from malnutrition.

In all the school feeding work emphasis is laid upon the increased food value resulting from school lunches supervised by a dietitian. It has been estimated that children in the cities of New York, Chicago, Philadelphia, Boston, St. Louis, Baltimore, Cleveland, and

Pittsburgh spend a total of \$1,554,060 for lunches every year. This amount will buy on the street the equivalent of 81,000,000 calories of food value; while at the school lunch it will purchase 178,000,000 calories. Typical school and street luncheons are compared as follows: School lunch, consisting of cocoa and whipped cream, 3 cents; egg sandwich, 4 cents; banana, 1 cent; four dates, 1 cent; three cookies, 1 cent; gives a total of 700 calories food value for 10 cents; while in the street three crullers and a cup of coffee, costing 10 cents, furnish a food value of only 250 calories.

High-school children in Philadelphia spend \$92,000 for lunches; in St. Louis, \$57,423; in Boston, \$52,721; in Rochester, \$18,760. The cost of kitchen administration for Boston, Mass., and Bradford, England, are contrasted as follows:

Cost of kitchen administration (per cent).

	Food.	Delivery.	Labor.	Rent.	Other expenses.
Boston.....	54.2	4.2	32.4	1.4	7.8
Bradford, England.....	54.0	17.6	18.0	2.2	7.5

Cincinnati, Ohio.—School lunches in Cincinnati are in charge of "The penny lunch association," whose members are made up from the Civic League, the Council of Jewish Women, and the civic department of the Woman's Club. Eleven penny lunchrooms are maintained in congested districts. The kitchen equipment and the pay of the cook are provided by the board of education. "Once started, the penny lunchroom is self-sustaining," according to the Cincinnati experience. A different menu is provided for each day of the week. The benefits as observed in Cincinnati are: The penny lunch improves general health and increases mental efficiency; the child learns to appreciate the value of good food and disseminates the knowledge of selection and preparation of wholesome food in the home. In the Pioneer Penny Lunchroom, established in 1908, 50 penny luncheons are served daily.

Chicago, Ill.—Three penny-lunch centers have been in operation in Chicago since December, 1910. During the school year 1910-11 the entire expense of these luncheons was borne by the board of education, but in November, 1911, the permanent school extension committee of the Women's Clubs undertook their management. A suitable room, with janitor service, one paid attendant, and a complete equipment are provided by the board of education. The school extension committee provides a trained supervisor, who purchases the food, plans the meals, and sees that they are properly cooked and served. At each center volunteers from the various women's clubs assist in serving the luncheons. The following menus

have been served during the past year on successive days: Cocoa, bread, and sirup; vegetable soup, bread, and jam; meat, soup, bread, and sirup; split pea or bean soup, bread, and sirup. Due regard is paid to national tastes or religious requirements.

VI. SEX HYGIENE.

Chicago, Ill.—By resolution of the Chicago board of education:

Specialists in sex hygiene who lecture in simple, yet scientifically correct, language are to be secured to give during the year 1913-14 a course of 8 lectures on sex hygiene in each of the 21 high schools, the pupils to be grouped in reasonable numbers, boys and girls separate; provided that all pupils who bring notes from their parents asking to have them excused shall be excused; that after December, 1913, the lectures be limited to first-year classes in hygiene or biology.

Part of the original resolution also provided for certain sex instruction to children in groups in the middle and upper grades of the elementary schools, but action on this has been deferred, to await the result of the experiment with high-school pupils. The Chicago board has also provided for appropriate sex instruction through paid lecturers to parents of school children.

Plan for sex education.—The Child-welfare Exhibition Committee, showing panels based on the recommendations of the American Federation for Sex Hygiene, outlines the following plan:

Answer honestly when the child of even 3 or 4 years asks, "Where did baby come from?" A true but simple statement about mother and baby if given at this time may keep the child from picking up, when older, false and unclean ideas from street companions.

From 6 to 12 years children can be interested by parent or teacher in nature study. Let children of this age observe the life and reproduction of plants and animals. Their questions are natural. Concealment breeds curiosity. Answer them frankly. Treat sex and reproduction as a natural and pure phase of life. You will receive frankness and confidence in return. Young children's thoughts of sex are pure until their minds have become contaminated. Sex knowledge from pure sources is the best protection against such contamination. At about the age of 12 the child's sex interest becomes more personal and needs not only pure and honest frankness, but also direction toward self-respect, honor, chivalry. The sex instinct thus directed becomes the ally of idealism, altruism, aspiration, religion. Religious and moral training are a profound influence at this age and must help direct the sex instinct. Physical exercise, intellectual interests, and wholesome amusements furnish occupations for mind and body and are at this age wholesome and necessary.¹

¹ For a detailed analysis of the plan of the American Federation of Sex Hygiene, see Bureau of Education bulletin, 1913, No. 18, pp. 38-39.

Veneral disease in Buffalo.—In order to show the need for instruction in sex hygiene, the Buffalo Society of Sanitary and Moral Prophylaxis has collected figures showing the extent of venereal disease in Buffalo: Reported by 123 physicians, 1,113 cases; estimated by 330 others, 2,983; treated by patients, 794; total for November, 4,800; total for year 1911 (estimated), 14,423 cases. There were also direct infections of children under 16 years as follows: Reported by 122 physicians, 85 cases; estimated by 330 others, 178 cases; total, 263.

VII. EXCEPTIONAL CHILDREN.

Psychological clinics.—According to the National Child-welfare Committee, the following States have psychological clinics in connection with universities and normal schools: Washington, California (2), Colorado, Kansas, Minnesota, Iowa, Louisiana, Michigan, Ohio (2), Pennsylvania (2), New York (2), Connecticut, Massachusetts (2).

Three States, Indiana, New York, and Massachusetts, have hospitals where psychological clinics are established. Illinois and Connecticut have such clinics in connection with juvenile courts. In one or more places in the following States the psychological clinics are in connection with the public schools: New York (2); Pennsylvania, Illinois.

Psychological clinics exist in connection with institutions in Minnesota, Illinois, Pennsylvania, New Jersey, New York, and Massachusetts. Ohio has a psychological clinic in connection with a vocational guidance bureau (Cincinnati).

The first psychological clinic was established at the laboratory of psychology, University of Pennsylvania, in 1896.

The resources of a psychological clinic are summed up as follows: Psychologists trained in clinical diagnosis; examining physicians familiar with developmental diagnosis; social-science department for follow-up work and for cooperation with individual homes, schools, hospital, child-welfare agencies and institutions; accurate and complete clinical records; summer classes for observation; hospital schools for cases needing extended observation and care.

The psychological clinic studies each child on the following plan: (1) History—birth, babyhood, childhood, school, disease, parents; (2) physical examination; (3) psychological examination; (4) visit to and report on home; (5) continuing observation, study, diagnosis, treatment as required and as long as required.

School of education, University of Pittsburgh.—The school of education, University of Pittsburgh, undertakes the following activities,

which may be taken as typical of the newer psychological-pedagogical work:

1. Conducts a psychological clinic for the Pittsburgh district, for the examination and classification of backward, feeble-minded, epileptic, insane, speech-defective, sense-deprivative, and precocious individuals.

2. Advises parents, teachers, or attendants as to the proper mental, pedagogical, hygienic, and institutional treatment and disposition of the cases examined.

3. Refers examined cases requiring expert dental or medical treatment to dispensaries and hospitals.

4. Conducts demonstration clinics at teachers' institutes and at national and international congresses.

5. Offers the following courses to teachers, nurses, social workers, mothers, psychologists, and physicians—

(a) Clinical psychology, and the scientific study of mentally exceptional individuals.

(b) The cure and education of the feeble-minded, backward, precocious, etc.

(c) Psycho-educational pathology and educational therapeutics.

(d) Manu-mental and occupational work for the backward, feeble-minded, epileptic, and insane.

6. Prepares expert psychological diagnosticians for schools, universities, institutions, juvenile courts, research foundations, and welfare institutions.

7. Issues frequent publications for distribution among physicians, teachers, and social workers.

8. Supports a technical library of books and periodicals.

Chicago, Ill.—The department of child study and educational research of Chicago has been in active operation since 1898. The department acts as a bureau of investigations of child life and teaching. "Children requiring special care or special training and problem cases are examined by the department and sent to schools, centers, classes, or divisions where they may receive the necessary hygienic treatment and adaptable education."

The following is a table of cases examined from July 1, 1912, to June 30, 1918:

Blind or defective vision.....	189
Deaf or defective hearing.....	108
Crippled.....	68
Truants and incorrigibles (at office).....	49
Truants and incorrigibles (at parental school).....	486
Subnormals.....	401
Defective in speech (persistent cases only).....	79

Tuberculous (not including anemics).....	20
Epileptics (most aggravated cases only).....	21
(Children with constitutional depletion, nervous disorders, or particular physical defects).....	744
Special cases: Unusually bright children, moral delinquents, mental aberrants.....	207
Feeble-minded.....	47
Total number of children examined.....	2,416
Number of reexaminations.....	789
Total examinations.....	3,205

Detroit, Mich.—Of 719 suspected cases examined, 9 were found normal, 354 backward, and 356 mentally defective. The mental defectives were further classified as follows: Moron—high grade 43, middle 100, low 125, a total of 268; imbecile—high grade 38, middle 28, low 19, a total of 85; and idiotic—high 2, middle 1, low 0, a total of 3. The educational recommendations in these 719 cases were: Sent to special rooms, 498; to ungraded rooms, 13; to regular grade rooms, 167; institutional assignment, 41. As to physical defects, 278 had none; 68 showed defective eyes; 13, defective hearing; 164, nasal defects; 129, throat affection; and 265 had defective teeth.

New York, N. Y.—The following is the organization of the work for mentally defective children:

1. Suspected cases are proposed by the school principal, parent, physician, or court official.
2. Two reports are secured: (a) Showing race, nationality, health condition, school history, special tastes, peculiarities, habits, behavior; (b) social-service report, economic status of the family, heredity.
3. Examinations are made by staff physicians and members of the advisory board: Anatomical—the stigmata of degeneration; physiological—disease or defect; psychical—native and acquired ability; developmental history—prenatal, postnatal.
4. Disposition of cases: (a) To hospital, dispensary, or convalescent home; (b) to religious society, religious organization, or Children's Aid Society; (c) educational—to outdoor school, school for deaf, class for blind, vocational school, regrading in regular school, ungraded class.

Vineland (N. J.) Training School.—The Vineland Training School, Vineland, N. J., is a State school which demonstrates the educability of the various grades of feeble-minded children. The school has 344 children who are the wards of the State of New Jersey, 18 private pupils from New Jersey, and 28 private pupils from other States. The central idea of the work is thus expressed:

The true education and training for boys and girls of backward and feeble minds is to teach them what they ought to know and can make use of when they become men and women in years.

VIII. THE SCHOOL BUILDING AND THE JANITOR.

Schoolhouse construction.—According to the Child-welfare Exhibit Committee, only one State has complete regulation by law of schoolhouse construction. The following degrees of regulation are noted: Complete regulation—Ohio; moderate degree of regulation—Utah, South Dakota, North Dakota, Kansas, Louisiana, Indiana, Virginia, Pennsylvania, New York, New Jersey, Connecticut, Rhode Island, Massachusetts, Vermont, Maine; deficient regulations—Washington, California, Arizona, Montana, Colorado, Iowa, Alabama, South Carolina, North Carolina, West Virginia, New Hampshire. The remaining 20 States are entirely without regulations.

School cleaning.—An investigation of the question, "How often do cities in the United States wash their schoolroom floors?" revealed the following: Of 856 investigated, 11 wash them daily; 55 every 2 to 7 days; 243 cities every 2 to 4 weeks; 156 cities every 2 or 3 months; 148 cities, once in 5 months; 82 cities, once a year; 51 cities, never.

Janitor service.—Under the caption, "Health habits educate more than health maxims," the American Academy of Medicine urges the importance of systematic, standardized janitor service. The academy declares that the so-called "school diseases"—anemia, catarrh, and nervous disorders—are invited by dusty, overheated, arid, or stagnant air. "The school housekeeper is responsible for the health of hundreds; the home housekeeper only for a family; why train home housekeepers and not janitors?" asks the academy.

IX. ATHLETICS.

Athletics and "overathleticism."—Doctors Barach, Savage, and Marks, of the Carnegie Institute of Technology, have made a study of the runners in a regular Marathon race (40 kilometers, 24.85 miles) with regard to the effects of the race on the health of the participants. In this race 55 started, 29 finished. The average time was 3 hours 48 minutes; the best time made, 3 hours 14 minutes. The run included 4 hills, of 510 feet, 310 feet, 120 feet, and 190 feet, respectively. A heavy rain delayed the runners. The ages ranged from 18 to 52 years; more than half were under 23. The average height of the 55 contestants was 5 feet 6.4 inches. The average weight was 140 pounds. There was an average underweight from training of 6.4 pounds as compared to normal 3.6 pounds. Previous experience: Of those who had never run before, 5 out of 6 finished; of those who had run once, 9 out of 15 finished; of those with two runs to their credit, 3 out of 8 finished; of those who had

run the race more than twice before, 11 out of 20 finished. Apparently, in Marathon running by this class of athletes, the first race is the best. After they run three times they either quit as failures or continue as survivals of the fittest.

Effects of the race: Blood pressure fell 20 per cent after the finish. The heart-murmur cases showed the greatest fall in pressure. Ten days after the race the blood pressure was lower than before the race. Immediately after the race X-ray examination showed that 11 out of 14 men examined had dilated heart; 2 ran but 11 minutes without dilatation; 1 ran the full distance without dilatation. One week after the race 11 men were examined. In 9 cases the heart was smaller than before the race; in 2 cases hearts were the same as immediately after the race. Diet: Out of 55 entered there were 6 vegetarians, one of whom was disqualified.

From our observation it appears that the athlete most likely to withstand this form of severe exertion is one between 18 and 25 years of age. He will be less than average height, and underweight. He will have a light upper body, a relatively large chest capacity, and well-developed legs. He must have a sound heart, healthy lungs, and a well-developed diaphragm. His training should have continued for nine months or longer. During training he must be temperate in habits and moderate in diet. Our observations show that the greatest injury comes to those who are insufficiently and improperly trained. We are also convinced that the successful running of this race is really beyond the realm of the average amateur athlete.

New York, N. Y.—An elaborate system of supervised sports is a feature of athletics in the elementary schools of New York City. Girls are provided for, as well as boys, the public-schools athletic league having a "girls' branch." The sanctioned athletics for elementary-school girls are: Walking, swimming, folk dancing; relay races—shuttle relay, potato relay, all-up relay, hurdle relay, pass-ball relay, basket-ball throw; team games—end ball, captain ball, basket ball, and punch ball. For high-school girls the list includes also: Ice skating, horseback riding, golf, tennis, general athletics, track and field; indoor baseball, field hockey, basket ball, volley ball, and ring hockey.

The girls' branch of the public-schools athletic league was organized in 1905 with the approval of the board of education. Its announced purpose is to secure for public-school girls sun and outdoor air, wholesome pleasure, recreative exercise. "The lack of these is a menace to their future moral and physical health." The fundamental policies are: (1) Athletics for all girls; (2) athletics within the school and no interschool competition; (3) athletic events in which only teams (not individual girls) take part; (4) athletics chosen and practiced with regard to their suitability for girls, not

merely in imitation of boys' athletics. Methods: (1) Free instruction classes in folk dancing and athletics are conducted for public-school teachers, who in return organize and conduct girls' athletics after school hours; (2) athletic badges and trophies are offered for— (a) interclass competition in team events; (b) completion of prescribed season's record in all-around athletics; (3) the use of all available facilities for outdoor athletics is secured. Results: In the year of organization (1905-6) 328 girls practiced folk dancing and athletics after school, under 38 teachers in 90 schools. In the school year 1911-12, 20,626 girls practiced folk dancing and athletics after school, under 941 teachers in 269 schools.

Public-school boy athletes in New York are classified by weight, not by age, for the following reasons: Anatomic—approximately half the body weight is muscle; physiological—weight is closely correlated with physical age; administrative—it is easier to weigh a boy than to ascertain his correct age; social—every boy gets a fair chance. There are three weight classes: 85 pounds, 115 pounds, and unlimited weight. All boys compete in the jumping events. The longest run for the 85-pound class is 110 yards; for the unlimited weight class, 220 yards. Only heavy-weight boys are allowed to compete in the shot put. To encourage all boys to train in all-around athletics, every boy who attains certain standards of performance is awarded a badge. The New York standards are: For bronze badge, broad jump, 5 feet 9 inches; chinning the bar 4 times; running 60 yards in 8½ seconds. For silver badge: Broad jump, 6 feet 6 inches; chinning the bar six times; running 60 yards in 8 seconds and 100 yards in 14 seconds. "There are 200,000 New York City schoolboys engaged in athletics every year."

X. CHILD LABOR.

Cincinnati, Ohio.—The division of child labor reports 2,366 children granted work certificates in 1911-12. The year before, 2,800 such certificates were granted, and in 1909-10 there were 3,348 work certificates issued. As to the nature of the occupations of children who leave school to go to work, 33 per cent went into factories (20 per cent, shoes); 22.5 per cent, errands; 13.5 per cent, stores; 8.7 per cent, sewing; 6.8 per cent, at home; 1.9 per cent, office; 1.1 per cent, housework; 10.5 per cent, miscellaneous. Of the 2,366 children who began work in 1911-12, 39, or 2.9 per cent, had finished 9 or 10 grades of school; 216, or 15.8 per cent, had finished 8 grades; 296, or 21.7 per cent, had finished 7 grades; 387, or 28.4 per cent, 6 grades; and 425, or 31.2 per cent, 5 grades. These are the figures for public

schools. For parochial schools the figures are: 18, or 1.8 per cent, 9 or 10 grades; 234, or 23.3 per cent, 8 grades; 296, or 29.5 per cent, 7 grades; 247, or 24.6 per cent, 6 grades; 208, or 20.8 per cent, 5 grades. Of the public-school children, 901, or 66.1 per cent, were 14 years old, and the remainder (462), 15 years old. In the parochial schools, 820, or 81.7 per cent, left school at 14, and 183, or 18.3 per cent, were 15. Of those who received work certificates, 1,117 were girls, and 1,249 were boys.

Cincinnati investigations show that retardation is twice as great among working children as among school children. Of children in school, 3.9 per cent are ahead of grade, as compared with only 1.2 per cent of public-school children at work; 66.7 per cent of children in school are normal, as opposed to only 31.5 per cent of public-school children at work; only 29.4 per cent of children in the schools are retarded, as against 67.3 per cent of those public-school children who are at work. "The employment of young children is like the felling of young trees—an outrage upon nature."

Rochester, N. Y.—The child-labor bureau of Rochester reports 2,316 work permits issued in 1912 to children between 14 and 16 years of age. There were refused 996 permits, refusal being based on the following grounds: For defects of eyes, ears, nose, and throat, 126; for defects in teeth, 494; for miscellaneous defects, 59; for under age, 72; for no evidence of age (birth not recorded), 155; for insufficient education, 90.

XI. HYGIENIC DRESS FOR HIGH-SCHOOL GIRLS.

Dr. L. F. Fuld, of New York, exhibited a suggested hygienic costume for high-school girls as follows:

Gymnastic costume: A one-piece slip, without belt or waist, coming over the shoulders with two shoulder straps and buttoning down the front under one of several large box plaits. Worn with a washable guimpé.

Undergarment: A combination undergarment of nainsook, fitted at the hips, bifurcated, and with a very wide flare at the knees. Combines in a single garment all the advantages of a petticoat, closed drawers, open drawers, and corset cover.

Stocking girdle: Not worn on the iliac crests, but so fitted that it crosses the sacrum in the back and slants down on top of the trochanter, buckling over the pubic bones in front. Entire freedom from pressure on organs of body.

XII. PLAYGROUNDS.

Oakland, Cal.—Oakland's playgrounds are managed by a board of playground directors, appointed by the mayor. In 1912 there were 15 playgrounds maintained; 9 playgrounds were supervised; 22 supervisors were employed; and the attendance during June, July, and August was 253,757. For the fiscal year 1911-12 an attendance of 482,486 is reported. There was expended for maintenance during the year \$18,885 and for improvements \$21,605, and the annual average cost of maintenance per person attending playgrounds was computed at 4 cents. The playground activities include: Boy scouts, dramatics, evening entertainments, folk dancing, gardening, industrial work, lectures, pageants, story-telling, singing, baseball, basketball, volley ball, track and field events, manual training, sand box and apparatus, kindergarten games, swimming, summer camps, self-government.

Cincinnati, Ohio.—There are 31 school playgrounds, with apparatus, and 10 after-school playgrounds. From April 14 to October 30, 1912, the attendance was 137,000, and the cost of operation \$2,650, or a cost per pupil of 2 cents. Six playgrounds were open for vacation grounds June 23 to August 31, 1912, and the attendance was 132,000, with a maintenance cost of \$5,650, or 4.2 cents per pupil.

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