pensable part of the equipment of the board of health, but the efficient office methods used by successful business firms are seldom adopted. The antiquated ledger is too frequently retained where the more elastic and available filing system might be introduced.

The bacteriological laboratory for the diagnosis of communicable diseases and the examination of water and milk is as necessary to the board of health as the hammer and saw are to the carpenter. The local laboratory can save valuable time over the more distant and over-taxed State Laboratory in the diagnosis of diseases. For milk and water examinations it is indispensable. It is safe to say that the municipality that does not have frequent milk analyses made is ignorant of the nature of its milk supply. Experience has shown that dirty milk may come from a beautifully equipped dairy even when regular dairy inspections are made, for it is impossible to visit all dairies frequently enough at milking time to control their methods.

The constant bacterial control of the water supply is one of the most valuable contributions of the local laboratory. Monthly analyses by a State Laboratory may not prevent or even detect the cause of a typhoid fever epidemic due to an infected water supply, as Rockford, Illinois, has learned to her sorrow.

To apply sanitary science to the various needs of a city, the board of health must have a specially trained executive officer or agent. Specialization is the secret of success in the treatment of disease as it is in other applied sciences. This fact has led the Massachusetts Institute of Technology, the Harvard Medical School and other colleges to establish courses in sanitary biology, sanitary chemistry and sanitary engineering to fit men for the position of health officer.

In small cities and towns, it may be difficult to obtain sufficient money to secure a well trained health officer and necessary assistants and to equip and maintain an office and laboratory. While the amount of work to be done is not as great as in a larger community, the need of a good executive and a good laboratory is just as great. An obvious solution of this problem is the co-operation of adjoining municipalities for purposes of sanitation, sharing the expense of salaries and of the one central office and laboratory. Frequently one small city or large town is surrounded by a ring of small towns, the whole forming one community, trading at the same stores, buying milk from the same dealers, attending the same churches and schools and to some extent served by the same water supply. It is obvious that there are many common sources of infection and that duplication in dairy inspection, milk analyses, etc., would be avoided by co-operation. The advantage of this plan over State control is that there will be more local interest in this small organization, directly supported and directly responsible to the little community it serves than in the

case of a general State organization, and that it does not have to wait for the passage of an act by the legislature.

The chief difficulty in the way of coöperative health work is political jealousy. This obstacle is avoided by a plan now being developed by Professors Sedgwick and Phelps of the Massachusetts Institute of Technology, who have organized a staff of trained men prepared to give efficient health protection to any group of towns at actual cost. Being under the wing of an educational institution, the organization is freed from political or commercial affiliations.

This plan is already in operation in a group of towns about Boston, comprising Wellesley, Framingham, Needham, Weston and Belmont. Other towns have accepted part of the service. The organization consists, first of a board of advisory experts, consisting of professors in the department of biology and public health. Each member is a recognized expert in some line of public health work and stands ready to give his advice and assistance when needed. Second, there is a working staff of trained men consisting of a health officer, a bacteriologist, and chemist and a plumbing and sanitary inspector. These men, with their assistants, plan to care for a circle of towns from a central office and laboratory. An automobile and motorcycle and the telephone furnish quick communication with all parts of the district served. It is expected that similar organizations will shortly be brought together from other districts.

This Technology plan of expert public health work for small communities marks an important step in the direction of progress. When it shall have been fully developed by careful trial and study and has been made to conform to practical working conditions, it will undoubtedly mark a distinct advance in modern sanitary science.

OPEN-WINDOW SCHOOLROOMS.*

BY ALLEN G. RICE, M.D., SPRINGFIELD, MASS.,

President Springfield Association for the Prevention of Tuberculosis.

THIS paper is in the nature of a plea for the open-window schoolroom versus the open-air school. The relative hygienic value of the two is obvious; and some time ago the decision on this point was rendered in favor of open-air schools. It is, however, this very possession of superior hygienic value that constitutes, strange as it may seem, the greatest evil of open-air schools; for the accent is wrongly placed on the "open-air" whereas the "school" is deserving of at least equal emphasis. It would seem almost as though open-air schools were looked upon as an end when, as a matter of fact, they are merely a means, and at that a means not necessarily

* Read at the Massachusetts Conference on Tuberculosis, Holyoke, Mass., March 22, 1913.

justified by the end in view. True, for years educational systems sadly neglected the physical welfare of school children, concentrating their efforts upon mental achievements at the expense of bodily health. Not until about a generation ago did the physical well-being of school children arrest tardy attention; with the result that, as time has gone on, more and more stress has been laid on their physical condition, even at the expense of their mental training. The pendulum has swung far beyond the mean, as is often the case in reform movements, until today relatively undue prominence is being given the physical condition of school children. Open-air schools undoubtedly mark the height of excursion to this opposite extreme, and a steady return to more normal levels may be confidently expected. Nevertheless, the experience gained from open-air schools is invaluable, for it has taught lessons that will never be forgotten and has made possible reforms that will never suffer relapse. The sane deduction from this experience is, however, that the hygienic value of open-air schools is not absolutely greater than that of other somewhat similar innovations, but is only relatively so. If, therefore, other procedures provide for school children hygienic surroundings only slightly inferior to those of open-air schools, and at the same time furnish superior advantages in other respects, that work for a better and more equal correlation between the training of mind and body, it is certainly expedient to prefer them. Of all departures tending to better the hygienic environment of school children, open-window rooms approach nearest to open-air schools, and are, therefore, worthy of pertinent consideration.

An open-window schoolroom is one in which, as the name implies, the windows are kept open, possibly injurious draughts diverted by various adjustable window-boards, and the temperature of the room maintained by artificial heat at from fifty to sixty degrees Fahrenheit. Such rooms have passed beyond the experimental stage and statistics are now available which aptly demonstrate their hygienic value. The percentage of attendance, for example, is found to be distinctly higher than in ordinary closed schoolrooms, and only slightly lower than in open-air schools. The improved attendance means that there are fewer absences from such causes as minor ailments, colds, headaches, indigestion, and the like; while a careful perusal of the health records shows that the incidence of measles, chicken-pox, whooping cough, diphtheria, and scarlet-fever is distinctly less. Furthermore, a larger percentage of the pupils in open-window rooms are promoted at the end of the year than is the case among pupils in the closed-window rooms; and when a similar comparison is made between pupils in open-window rooms and open-air schools, the difference in favor of the latter is so small that it is practically negligible.

It is, however, only when the improvement in the general physical condition of open-window

schoolroom children is studied that the great hygienic value of that institution is fully appreciated. Rosy cheeks, bright eyes, animated spirits, absence of uncontrollable restlessness on the one hand and of sleepy dullness on the other—both direct results of vitiated air—are strikingly manifest. Freedom from coughing and snuffling is an equally marked feature. The remarkably healthy general appearance of the pupils is a picture hard to draw, one that must be seen in order to appreciate that it is unexcelled by a similar portrayal of open-air school pupils. A detailed physical examination of open-window school children reveals a notable absence of anemia, fewer adenoids and enlarged tonsils, better teeth, a lessened tendency to glandular enlargement, and better nutrition. Moreover, such statistics as are available reveal some striking instances of gain in weight, and an average gain but slightly less than that obtained in open-air schools.

Such improvement in physical welfare is worthy of careful consideration, and especially so when it is recalled that the only factor responsible is fresh air. The progress noted in open-air schools, on the other hand, is due not to a single factor, but to a combination of several. In the instances, for example, of striking gains in weight among open-air school children, it must not be forgotten that these pupils are given more nutritious food, both in quality as well as in quantity, than they would otherwise obtain.

Open-window schoolrooms, therefore, compare favorably with open-air schools even from a hygienic point of view. From an economic standpoint, they are far superior. In the first place, as regards expense, the initial outlay for an open-air school is necessarily large. Either a ready-made building must be bought or leased, a building so situated as to afford a proper environment and so constructed that it can be easily altered for the purpose—two requisites well-nigh impossible of discovery in a city of any size—or an entirely new building must be erected. In either event, with the present high cost of building material the outlay is considerable. Even if the roof of a convenient schoolhouse can be pressed into service, the construction of a suitable floor and a super-roof is expensive. Furthermore, after a serviceable building is ready for occupancy a large amount of necessary equipment is imperative, such as sitting-out bags, heavy felt boots, blankets; dishes, cooking utensils, and the like, to say nothing of a means and a place to prepare food, and a warm spot in which to serve it.

The inauguration of an open-window schoolroom, on the other hand, entails an insignificant initial expense. Any ordinarily conducted schoolroom can be made an open-window room by simply opening the windows and fitting into the casings cheaply constructed window-boards, so adjusted that they effectually divert any possibly injurious draughts. No other changes are called for. Certain refinements have, however,

been developed, such as cheese cloth tacked across the open sash to keep out rain and snow in inclement weather; more elaborate and nicely adjustable window-boards; and other minor improvements of a similar nature,—all exceedingly inexpensive.

The cost of maintaining an open-air school is even greater than the initial outlay. In the first place, such a school requires the services of a specially trained teacher, and such a teacher commands and receives a commensurate salary. On the other hand, any regular teacher is competent to teach in an open-window schoolroom and is, therefore, undeserving of special compensation. In the second place, an open-air school draws its clientele from a large area, not infrequently from all over a city, instead of from a limited area, a contingency that must at once be met by transportation facilities. While in most instances each pupil must himself meet the expense of his transportation to and from the school, there are cities which furnish free transportation, thereby establishing a bad precedent. In any case, the time required for transportation is a distinct and avoidable economic loss, and some one has to pay the actual cost. An open-window schoolroom, on the other hand, draws its clientele from its usual specified area, and the time and cost of transportation is nil. In the third place, because many of the pupils in an open-air school come from such a distance as to make it physically impossible for them to go home for dinner and return in the time allotted for the noon recess, a mid-day meal has to be furnished. Whether the school supplies gratis a whole meal to each pupil, or whether each pupil brings with him part of his dinner, some preparation of food is required, which further adds to the expense of maintenance. In some instances the teacher, in addition to her work of instruction, acts as cook, but only too often another person is employed in that capacity. This practice of furnishing food to school children free, either in whole or in part, is a very serious matter. The laws of this Commonwealth and of others wisely make it illegal for cities and towns to give meals to school children at public expense; and food so given, although by charitable organizations, is a culpable evasion of the act and breaks the spirit and intent of the law.

There are, however, other economic grounds than that of expense from which open-air schools are prone to assault. In public school education, as in everything else of a public nature, the aim should constantly be to give the most good to the largest number at the least expense. If, therefore, fresh air is good for selected school children it is good for all school children; and it is absurd, inefficient, and poor economy to give it freely to a selected few at a large per capita expense and to refuse it to the remainder. It would seem that the open-air school has become a hobby that is fast being ridden to a fall by certain enthusiasts, who to prove their contentions

point with jealous pride to the wonderful results obtained in less than one per cent. of school children and shut their eyes to the needs of the ninety-nine per cent. The benefits of open-air schools are not for a moment to be decried, but the narrow policy that selfishly ignores the needs of the great majority in order to justify itself is to be condemned. If there could be unlimited open-air schools to accommodate all school children, it might be another affair; but no municipality is so ideally prosperous. Until that millennium arrives it would seem more economical, both as regards immediate and remote results, to spend time, effort, and money equally for all.

From an educational standpoint there are serious objections to open-air schools. They must of necessity be conducted as ungraded schools. Experience and the history of education emphatically prove that more efficient instruction can be given and better results can be obtained in public schools through some method of grading. Therefore, the assertion of open-air school enthusiasts that pupils advance as fast and learn as much in their ungraded schools as in the graded schools, cannot in the long run be true. The instances reported in which this occurs must be exceptional. Open-window school rooms, on the other hand, do not furiously fly in the face of experience, and by retaining some scheme of grading furnish thereby more efficient instruction.

Lastly, from a moral point of view, the open-air school is objectionable. It tends, first of all, to develop a child asymmetrically by over-emphasizing physical training. It leads a child to become unduly conscious of certain bodily defects that in most instances can be corrected by less drastic measures. In many instances it forces a suggestible child to believe that he is a little different from normal in other ways; that his condition demands a little more than is due the ordinary child. He sees that he is fed, clothed, and given time to sleep at some one else's expense; and he comes slowly to regard himself as a special case that must be cared for at public expense. He grows to feel that the world owes him a living and has got to give it to him.

Open-air school enthusiasts maintain that their pupils get more than ordinary mental and physical training in their schools, in that they are taught personal hygiene, household tasks, table manners and the like. Such arguments are vain attempts to bolster up a failing cause by practices that out-socialize socialism. A child cannot be successfully taught body cleanliness by taking him into a finely appointed bathroom, where there are hot and cold water, soap, brushes, and clean towels in abundance. He must be followed into his own home and there be taught to make the best possible uses of the facilities his home possesses. Neither can a child be taught table manners at a noon meal five times a week when in his own home sixteen times a week it is a case of grab and grub. Such ideas are fetishes worshipped by deluded partisans to

the detriment of the child. Instruction so given is rarely permanent and when lasting only serves to make the child ashamed, disgusted, and intolerant of his home.

The teaching of table manners is important and every child should be taught them, but the home and not the school is the place for such instruction. A very few parents resent this usurpation of their prerogatives by the school; some parents are indifferent; but far too many are only too glad thus to shirk the responsibility that is really theirs. Parents tend to become even further demoralized and perhaps pauperized when experience discloses the lamentable fact that in many instances a free meal constitutes the greatest inducement that influences them to send their child to an open-air school.

It would seem, then, that the open-air school is not the last word. Conceived with but a single object in view, instituted with impulsive enthusiasm, and developed not step by step, but at a single bound, its possible consequences along lines other than hygienic were not foreseen. Moreover, even from a hygienic standpoint, experience with the innovation has brought forth something of a shock, for it has not proved to be the panacea for the physical ills of school children that was confidently hoped for. Certain children have not only failed to derive benefit from it, but have even suffered harm; and its application has had to be restricted. Sober, second thought has disclosed that the failure to regard possible consequences of the innovation along lines other than hygienic has been disastrous for its continuance as a valuable public institution. From an economic standpoint the open-air school is a poor investment; from an educational point of view it is a step backward; and from a moral standpoint it is unwise.

It would seem necessary, therefore, to recede a bit from the perilously advanced position that has been taken, and the next step backward is the open-window schoolroom. Its hygienic value is an accepted fact; economically it demands a minimum expense and affords equal advantages for all; educationally it keeps step with progress; and morally it has nothing to condemn it.

CONTROL OF THE CARELESS AND INCORRIGIBLE CONSUMPTIVE.*

BY C. T. CALLAHAN, ESQ., HOLYOKE.

District Attorney, Western District, Holyoke, Mass.

THE discovery by the medical profession that tuberculosis is a communicable disease and that, to prevent the spread of the scourge, some control of the movements and conduct of persons afflicted with the disease is necessary gives rise to the very important question as to how far the

State may invade the personal liberty of the individual in the attainment of its object. My treatment of the subject, "The Control of the Careless and Incorrigible Consumptive," will be that of a lawyer addressing himself to a consideration of the rights of the public on the one hand and of the patient on the other. Whether tuberculosis is a disease which can be cured, whether the danger of infection is so great as to threaten the whole community, and whether treatment of the disease in isolation may reasonably be expected to exterminate it are questions peculiarly for the determination in the first instance of the medical profession. If we except certain phases of the subject of insanity, it may be said that the law has always given profound respect to medical opinion. Thus, if the doctors should agree that tuberculosis was a communicable disease, menacing to the public health and that it could be appreciably controlled by isolation, their conclusion would be accepted by the courts as a fact of common knowledge and would be a strong element in their consideration of the extent of the powers of the State to suppress the disease.

Assuming the propositions advanced in favor of physical restraint to be established, how far can the State undertake to control the careless and incorrigible consumptive? In the last two centuries society has constantly enlarged its right to restrain persons afflicted with disease as a matter of self-protection. By the common law of England, the only remedy for the suppression of sources of disease was an action for damages or an indictment for nuisance. As medical investigation of public health probed deeper and deeper into the cause of disease, the law responded to the demands of the profession for corrective measures, and the enactment of such legislation has repeatedly raised the question how far the personal rights of the victim may be invaded in the interests of the common good. A few broad considerations lie at the foundation of all consideration and all discussion of the subject. It has always been held that, with birth itself, citizens are endowed with the right to enjoy life, liberty and property. But man has a right to natural freedom only in so far as the exercise of it is not inconsistent with the rights of others. The limitation is clearly stated in the preamble of our own bill of rights: "The body politic. . . is a social compact by which the whole people covenants with each citizen, and each citizen with the whole people, that all shall be governed by certain laws for the common good." In connection with this should be read the constitutional provision creating the right of men to enjoy and defend their lives and liberties, and the article granting full power and authority to the General Court to enact "all manner of wholesome and reasonable orders, laws, statutes, ordinances, directions and instructions. . . as they shall judge to be for the good and welfare of this Commonwealth."

The exercise of the police power thus con-

* Read at the Massachusetts Conference on Tuberculosis, Holyoke, Mass., March 22, 1913.