

sections of the city. Furthermore, in order to make the disinfection efficient, not only the room which the tuberculous individual has occupied should be disinfected, but all rooms in the tenement in which the patient has passed some of his time should be subjected to the same disinfection. In New York City not only the ordinary disinfection is required, but renovation; the wall paper is removed and the walls are recalcimined or whitewashed and the painted woodwork scrubbed with a solution of hot soda; all hangings, bedding, mattresses, etc., are disinfected with steam. In the same city no tenement is permitted to be occupied again, which has previously been occupied by a tuberculous patient, until it has been disinfected to the satisfaction of the board of health, and until this is done a notice is attached to such a tenement prohibiting its occupancy. In order to control tuberculosis in the tenement, where it is most prevalent, we must have the knowledge of its existence, by notification, and in this the board of health is dependent upon the physician, and the more faithfully he reports his cases the more efficiently the board of health can do its part in disinfection. The dispensaries, hospitals and particularly the visiting nurse can render valuable aid in this respect, and are so doing; knowledge of all the cases which occur in the congested districts of a city and thorough disinfection and renovation of the room or rooms where a case has existed are two essential conditions for the control and prevention of the disease.

DR. A. C. GETCHELL, of Worcester: We have heard of what is done in Boston. It may be interesting to discuss what is done in smaller communities. It may be said, in a general way, the smaller the town the less efficient is the board of health. Let me speak of the situation in Worcester. The board of health, while requiring registration of tuberculosis patients according to the law, makes no special effort to enforce it. But in that place sputum examinations are made free by the board of health and a positive examination constitutes registration. One other point. Many death returns of tuberculosis patients are not returned as such, sometimes because an accurate diagnosis has not been made and sometimes a different cause is assigned, such as bronchitis, in order to meet insurance requirements. In such cases the board of health evidently would make no disinfection of the premises, even if it were the practice in other cases. Just here the tuberculosis nurse is of great value. In Worcester, where there is such a nurse, she is in regular attendance at the two special tuberculosis clinics and visits the homes of all the applicants at these clinics. She also visits all the patients of private physicians whom she is asked to visit. She keeps in close touch with these patients, and if they remove to another place or die she sees to it that the board of health is notified and the premises are disinfected, which the board of health is ready and willing to do.

In many smaller communities where there is not a tuberculosis nurse there is a visiting nurse,

employed by charitable associations. Through the instrumentality of these nurses I think disinfection of premises after death may be made much more general than it is at present.

DR. F. T. HYDE, of Weston: I happen to belong to the rural district, Weston, and I merely want to speak of some of the work we have been doing. Since 1903 all cases have been required to be reported, and I think there has been no case since 1903 that has not been reported to the board of health, and we have not found any objection to the reporting of cases; also all houses are thoroughly disinfected after death or after the removal of the patient, and not alone the room, but the entire house. Again, we recognize the need of disinfecting library books that had been brought from the library and used by the tuberculous patient. We have made a point of finding all the books and seeing that they were thoroughly disinfected before going back to the library, and also the school books, and in one or two cases where the children were known to be tuberculous, they have been denied the privilege of a public school, tuberculosis being one of the diseases now classed as "dangerous to the public health."

STATE SANITARY SUPERVISION.*

BY HERBERT C. EMERSON, M.D., SPRINGFIELD, MASS.

At the first meeting of the State Board of Health, held at the State House in Boston, Sept. 15, 1869, the senior member, Dr. Henry I. Bowditch, gave an address remarkable for its clear insight and deep convictions concerning state obligations toward the public health. In discussing the duties that might be assumed, and matters that should be investigated by the state in relation to the preservation of the public health, he says, "The authorities of a state are bound to take care of the public health . . . in order that each citizen may not only have as long a life as nature would give him, but likewise as healthy a life as possible." The duty of the state thus expressed by Dr. Bowditch has been generously assumed by successive legislatures which have enacted laws relative to public hygiene, and this feeling of responsibility is still further expressed in the comprehensive powers and duties assigned to the State Board of Health.

With the establishment of the State Board of Health in 1869, the work of sanitary supervision actually began. Members of the board were deeply impressed with the responsibilities of their new work, and the same spirit of earnestness has characterized all succeeding boards in carrying out the intent of the statutes.

Personal and local interests have been considered with reference to the larger questions of public policy and welfare. New fields of activity have constantly been undertaken, and the investigations of the state have included a wide range of subjects which have a bearing, direct or indirect, upon the public health. Although the state has always kept close watch of the health of towns and cities on the incidence of disease, the

*Read before The Massachusetts Medical Society, June 9, 1908

occurrence of epidemics, questions of public water supplies and proper sewage disposal, and the oversight of food and drug products in accordance with the state laws, there has recently been established a new department of state sanitary supervision which directly affects the health of by far the larger portion of the population of the whole state. Previous to the establishment of the work about to be described, comparatively little attention had been paid to industrial hygiene and the effect of the various industries upon the health of the employees.

In 1871 the legislature requested the State Board of Health to inquire into the employment of minors engaged in all cotton, woolen, silk, flax and jute manufactures within the state and the effect of such employment on the health of minors as well as their mortality. This investigation was carried out by means of a circular of questions sent to six hundred and thirty-six manufacturers. The result of this inquiry furnished data of considerable interest and showed that the subject was one to which too little attention had been paid.

In 1882 a valuable article was published in the annual report of the State Board of Health on "Our Eyes and Our Industries." In 1904 the State Board of Health was ordered by the legislature to investigate the sanitary condition of factories and workshops and other places of employment with respect to all conditions affecting the health of persons employed therein, and one year later this investigation was ordered to be continued. These investigations were made by personal visitation, and the results constitute a most valuable reference work on the existing conditions of industrial hygiene in this state.

In 1907 the legislature passed a bill entitled "An Act to Provide for the Establishment of Health Districts and the Appointment of Inspectors of Health." These inspectors were to be physicians acting under control of the State Board of Health, and in addition to their duties as prescribed by law, they are to perform such other duties as the State Board of Health may direct.

The duties of these inspectors are of a most varied character, and I shall confine myself to a brief consideration of some of their work with special reference to city conditions. Each inspector must be informed as to the general sanitary condition of his district, which means that he must keep in touch with the local boards of health, the morbidity and mortality returns and the occurrence of epidemics.

All this sort of work can be more easily handled in the larger cities, where the local board of health is active, than in the smaller towns, to which the inspector must necessarily devote more time. More important in cities, however, is the work of the inspectors along two lines, namely, the oversight of the sanitary conditions of all factories and workshops, schoolhouses and all public buildings, and the supervision of the health of all minors working in factories.

It is the duty of the inspectors to see to it that the employees of factories and workshops are provided with the proper amount of light and air, and

that the places of work are kept clean and well ventilated. State laws clearly provide for order, decency and cleanliness in every department of manufacturing, and the time has come when the management of a factory must maintain a certain standard of cleanliness and ventilation for the benefit of its dependents as well as keeping up the dividends for the stockholders.

Most manufacturers are now very much alive to the physical welfare and good health of their employees, not only because the state laws require them to exercise common humanity toward them, but because they find it to their own advantage to keep their dependents in good physical condition.

Occasionally a manufacturer objects to so much inspection, which reveals violations of the statutes enacted for the sake of protecting the health of the employees. One such manufacturer recently said that he thought he would be compelled to remove to another state where the laws did not demand such careful oversight of the sanitary conditions of his factory. In this case the actual expense to him to conform to the statutes was but slight, but the idea of being obliged to keep the waterclosets in a clean condition, to provide sputum receptacles and the medical and surgical chest required by law, disturbed him exceedingly.

No general standard is laid down in the law as to just what constitutes proper removal of dust and dirt, proper ventilation and cleanliness in a particular factory. The conditions that are found in the best-regulated establishments in the same line of work must serve as the standard for other industries of the same kind. Old buildings, with their small windows and low ceilings, present different conditions from the new, high-posted structures, with sides almost entirely of glass. But the age of the building is no excuse for leaving dirt and cobwebs in the corners, and letting the windows remain so thick with dust that they appear like a new kind of opaque glass. In many factories the custom prevails of washing the windows but once a year, but one usually finds the windows in the superintendent's office are cleaned very much oftener.

In connection with the maintenance of general cleanliness of factories and workshops, the law provides for the establishment of proper toilet facilities for both sexes. Happily most employers realize the importance of these matters to-day, and while reasonable compliance with this law is generally found, the extremes of good and bad conditions are also met with. Inspection of a large number of factories shows that whatever the nature of the business or the character of the employees, these closets can be kept in a clean, decent condition if they receive the attention they deserve.

The proper removal of irritating dust is one of the special objects sought by this inspection, as it constitutes one link in the chain for the suppression of tuberculosis, which I take to be one of the chief objects of the inspection. One of the main sources of harmful dust is from dry grinding on emery wheels. The installation of proper hoods, suction pipes, fans, etc., required by law, is fre-

quently strenuously objected to by the employers. The item of expense is the real cause of objection to these appliances on the part of the managers, while the objection on the part of the employees usually comes from poorly-applied, unwieldy and awkward devices which have been previously used. In these days of piece work, speed is the main object of every workman, and anything that interferes with quick manipulation is objected to and generally thrown aside.

In many woodworking shops and rag-sorting rooms the fine dust is almost all removed, so that rooms are comparatively free from it. In some mills, however, there are no devices for removing dust from the sand-paperying machines, and the air is full of fine flying sawdust. In the paper mills using new and clean rags the problem of dust removal is far easier than in mills using old and dirty rags. The problem of removal of dust and dirt and the furnishing of proper light and ventilation becomes acute in the large factories devoted to the textile industry. This industry employs a larger number of persons than any other in the state. The weave rooms of these mills, under ordinary conditions, are frequently overheated, often contain an excess of moisture, are lighted by artificial light much of the time and insufficiently ventilated. To improve these conditions, which must necessarily affect the health of persons employed therein, is the problem which state supervision may assist in solving.

The oversight of the ventilation and sanitary condition of all schoolhouses and public buildings are included in the duties of the inspectors of health, and frequent inspections will be necessary to determine their condition at various times and seasons.

One of the most common causes of complaint in schoolhouses is the fact that the ventilating systems are so frequently out of order. There is often some trouble with the fans, or with the motor, or in the flues, or with the heating system, so that high temperatures, cold drafts and foul air are frequently met with. Another cause of poor ventilation is the custom of overcrowding schoolrooms far beyond the capacity for which they were originally intended. This is particularly noticeable in the lower grades. It appears to be the idea that large numbers of small children need only the same amount of air which would be furnished to a much smaller number of larger children. This is a wrong inference and should be corrected. The whole question of ventilation is, of course, a complicated one, but so far as the health inspectors are concerned, the danger to health of poor ventilation is to be first considered.

Another important duty connected with the inspection of public buildings has reference to the maintenance of a sufficient number of proper toilet facilities which shall be properly kept. It is to be hoped that nuisances that exist in connection with the waterclosets of railroad stations, theaters and summer resorts may soon be controlled and corrected.

The attention of the state inspectors is continually directed toward the means that may be used

to eliminate the spread of tuberculosis. Not only does the state law prohibit spitting upon the floor of any mill or factory, but now the proprietors of workshops and factories are required to furnish sputum receptacles. Although this involves some little expenditure on the part of the larger corporations, I have generally found that the officers of these corporations realize the necessity of prohibiting promiscuous expectoration and I find that they are usually willing to provide the proper receptacles. It not infrequently happens that the foreman or superintendent with whom this subject is being discussed keeps up a more or less frequent, although unconscious, spitting upon the floor.

Perhaps the most far-reaching results of the state inspectors' work may be expected from their duties relative to the employment of all persons working in factories who are under twenty-one years of age. The inspectors must be personally acquainted with the health of all minors, with the kind of work done by them and with the conditions under which they are employed. Not only their physical condition must be inquired into, but sufficient acquaintance with their home surroundings and family history must be obtained so that tendencies toward any special disease may be watched for from time to time during the visits of the inspector. A physical examination must be made of all minors whose appearance or history suggests the presence of disease, and particularly with reference to a family history of consumption is the physical condition of a minor to be carefully ascertained. In this way incipient cases of tuberculosis may be discovered, with the result that not only may a focus of infection be removed, but the patient may be started on the road to recovery. A minor's unfitness for work or for the particular kind of work he is doing is to be called to the attention of the parents, employers and the State Board of Health.

The number of children who are placed at work as soon as the legal age limit of fourteen years is reached is very considerable, and these children will be closely watched. It is especially important that growing children who must work for their living be accorded as close oversight as possible as to conditions under which they labor, as occupations involving the inhalation of irritating dust and noxious vapors and the use of much artificial light must interfere with the child's development, break down resistance and become the starting point of illness and disease. Particularly is this true of young girls, and if parents and employers do not see the tendencies to ill health and disease in their children, their attention should be brought to these facts.

I have recently seen a girl of seventeen who impressed me as tubercular, although no definite signs were found upon physical examination. She was working in an inside room, poorly heated and ventilated and lighted. Improvements in her surroundings were suggested, which were agreed to by her employers. Before the next visit was made to this factory I ascertained that the girl had left her work and a diagnosis of tuberculosis had

been made by her physician. I recently examined a boy of sixteen who weighed scarcely sixty pounds. He was doing very light work, and though undersized and poorly developed, no actual disease was found at this time. The importance of the inspection of minors becomes more and more apparent as new factories are visited.

In some cities an oversight of clothing made and repaired in tenement houses furnishes a considerable amount of work for the inspectors. This results in not only safeguarding the consumer, but frequently brings to light cases of disease, especially tuberculosis, which otherwise might exist for months without detection.

The time does not seem far distant when the results of state sanitary supervision as developed in Massachusetts shall be productive of a greater degree of healthfulness throughout the state, and a partial accomplishment at least of the dictum of Dr. Bowditch that the state is bound to take care of the public health so that each citizen may live as long and as healthy a life as possible.

DISCUSSION.

DR. A. S. MACKNIGHT, of Fall River: The subject of sanitary inspection, especially the matter of state inspection, including the matter of medical inspection of health, was ably presented and discussed about a year ago by our very able secretary of the State Board of Health, Dr. Harrington, and about the same time Dr. Frank G. Wheatley, senator, read a paper on factory inspection. Our own Dr. Burrell, in his address before the American Medical Association, touched upon some of the qualities which ought to possess the physician, and outlined some of the ways in which physicians, alive to their opportunities in the various communities, might rise to the occasion. I might also say that Dr. William Sidney Thayer touched upon the same thing before the American Medical Association, and pointed out some of the ways in which physicians might be more than mere physicians, mere practitioners; whereby they might rise to the opportunities afforded in their respective communities of being "*sanitarians*," of taking steps for developing certain lines of work which will be for the benefit of those round about, not exactly in the sense of charity, but something akin, along the line of advanced sanitation and a better condition of the public health.

The paper presented to-day by Dr. Emerson deals in a very broad and general way with the question as applied to a "state," and especially as applied to cities; while the paper of Dr. Jones deals more with the "district" community, and has a somewhat rural feature. I might say that a great many things which have been mentioned in both papers are not only actual, but are everyday, experiences in the lives of most of the practitioners, particularly those engaged in board of health work, or who are engaged along sanitary lines. Some of the things which have been mentioned in the paper of Dr. Jones are among the difficulties which we have to meet with day by day.

In the matter of state inspection as applied to the examination of minors (which is a very difficult matter indeed), in the first place it is with great difficulty that one can get the overseers, or the superintendents, to allow the minors time sufficient for an examination. Sometimes it is impossible to examine them in the weave rooms or other departments of a great mill, and it is necessary to have them taken out into the tower, or other quiet place; and even then, if four or five or more come in line (as is very apt to be the case), you meet one who can speak no English whatever; it is very unusual to find an interpreter, and that blocks the line. Consequently, you have five or ten or fifteen waiting round about, with the overseers pushing and nudging this one and that to return to his machine and his work; therefore, the examination is very unsatisfactory so far as the examination of that minor is concerned. This occurs in some departments; it is not true of all.

Again, along the line of sanitary inspection, so far as waterclosets are concerned; sometimes it is a fact that the waterclosets are inadequate in regard to size, entirely too small, and oftentimes close together, so that only a thin partition separates the sexes; that is particularly to be deplored, more especially when we consider the number of minors and the possibilities and dangers to which they may be subjected. Now, while tuberculosis takes up, of course, a great deal of our thought at the present time, and while the inspection and examination of minors is supposed to have a special bearing on the tuberculosis question, this condition as to waterclosets leads, in my belief, to possibilities in other directions, for the prospects of venereal disease are just as much to be considered as tuberculosis, and perhaps more, in factories, etc.

In some mills we find that superintendents are anxious to bring about a different condition of affairs. I have reference now to one mill in which the superintendent has installed 44 waterclosets, at an expense of \$150 each, on the ground that if he provides waterclosets considered standard, they can be kept clean and will require very little repairing and, possibly, he may bring about a better condition regarding his help and, in a general way, regarding cleanliness. In another mill the superintendent has taken the upper half of the sash of his mill windows and changed it, so that it hangs on a swivel and the window swings as a transom might, so that there is better, purer air, better ventilation generally, by 144 windows so changed in that mill.

We find that mill men are specially apt to meet state inspection with remarks something like this: "The state is encroaching upon our work, requiring us to do things we had no idea we should ever be called on to contend with." "Our business is to make cloth and to make dividends, to declare dividends." Nevertheless, deep down in the hearts of these mill men is a broad humanitarian spirit, and if our state inspectors will take the time and trouble to talk with them, they can show them that while they may have the ability

to make cloth and to declare dividends, they are not *sanitarians* nor *physicians*, and that they know very little about these subjects. And I might say in this respect that it is the part of the state inspectors of health not only to inspect and examine, but to educate, not the *treasurer* or the *superintendent*, but the overseers and subordinate help.

Now, to mention another thing. Sometimes we meet an overseer who is in a poor condition of health, who has not been endowed by nature with anything that is robust, or anything that gives promise of long life; who may have a very frail, a very fragile, organism; he is scared almost to death if he finds in his department a case of profuse expectoration, or has reason to believe there is in that very room a tuberculosis case, well advanced. That man, himself, will seek to limit expectoration and will try, as soon as possible, to find some way by which he can improve the condition of that operative or find some one else to take his place.

So that, in different ways, along different lines, it is possible for us to bring about these changes, which in the end mean a better condition of health publicly, not only in the commonwealth generally, but in the mill, and not only there, but with benefit to minors. A great many minors are certainly employed under the age of *fourteen years*, required by the school and state law; they do not think anything about a lie; they are taught to lie; their parental influences are such that they are working at a tender age. I know of a factory where at 4.30 in the afternoon little tots come from school and clamber up three or four flights of stairs to the spinning-room and spend the rest of the day, to 6 o'clock; and I know mill men who permit that condition of affairs. These children have nowhere else to go; there is no place made for them, the door is locked at home and they muster in the street and find their refuge in the mill, from 4.30 to 6 o'clock. These are some of the things which confront us in our inspection work. They are only a few, but they are very important.

Clinical Department.

CHLOROSIS WITH THROMBOSIS OF THE SUBCLAVIAN VEIN: REPORT OF A CASE.

BY EDMUND A. ROGERS, M.D., BOSTON,
Formerly Intern, Carney Hospital, Boston.
(From the Medical Clinic of the Carney Hospital, Dr. Henry A. Christian, Physician-in-Chief.)

UNCOMPLICATED cases of chlorosis are familiar to everybody, and at the present time are of no especial interest. However, cases of chlorosis with venous thrombosis are of interest owing to their comparative infrequency, and thrombosis of certain veins in this condition is quite rare. The most common site of thrombosis in chlorosis is the veins of the leg, while the veins of the forearm and arm are less often involved. Of 51 cases of thrombosis in chlorosis which Schweitzer¹ was able to collect from the literature in 1898, only four

occurred in the vessels of the upper extremity, while 33 were found in the lower extremity and 12 in cerebral sinuses.

Thrombosis of the lower extremities occurs usually in the femoral and iliac veins and almost always there is some extension into the inferior vena cava. Cases of this kind have been reported by Batle,² Lowenberg³ and Huels.⁴ Batle⁵ tells of a young chlorotic girl who was afflicted with a phlebitis of both femoral veins and of the inferior vena cava with consequent enormous enlargement of the veins of the abdomen. Simultaneously there occurred pains in the head, vomiting and coma. Autopsy showed thrombosis of the inferior vena cava, common iliac veins and superior longitudinal sinus.

Koekel⁶ observed for several months an intensely chlorotic girl fourteen years old, who, on account of a serofibrinous pleurisy, was confined to her bed for five weeks. When at the expiration of that time she left her bed, she was suddenly taken with extreme dyspnea and died quickly. Autopsy showed a serofibrinous pleurisy, an embolus in the stem of the pulmonary artery and a thrombus in the inferior vena cava about 5 cm. below the diaphragm.

Weinberger⁷ has reported a case of chlorosis with thrombosis of the inferior vena cava in a girl twenty-one years old. Especially noticeable were marked cyanosis and extreme swelling of the whole lower half of the body to the navel. The abdominal parietes showed symmetrically enlarged veins, dilated to the thickness of a quill. Veins connected with the collateral blood vessels of the lower extremities and the abdominal integument, winding themselves around the ilium in the inguinal region and passing over into the lumbar veins, carried the blood from the lower half of the body to the upper vena cava. There were also dilated veins at the upper portion of the abdomen and thorax establishing communication with the superior vena cava. There was extreme anemia, blood examination showing hemoglobin 12%, red blood corpuscles 1,600,000, white blood corpuscles 12,800. Yet in spite of the severity of this case a complete cure resulted and a final blood examination three months later showed hemoglobin 90%, red blood corpuscles 4,500,000.

The following case of thrombosis of the subclavian vein in a patient with chlorosis was observed by me at the Carney Hospital, and on account of the infrequency with which the condition occurs is here reported with permission of Dr. Henry A. Christian, to whose service at the Carney Hospital the case was admitted.

M. B., single, age eighteen years, a factory girl, was admitted to the medical service of the Carney Hospital, Nov. 13, 1907. Her father died of cancer at the age of fifty-six; otherwise her family history was good. Several years ago she had both scarlet fever and typhoid

² St. Thomas's Hospital Reports, xvii, 49.

³ Cited by Weinberger.

⁴ Cited by Weinberger.

⁵ Loc. cit.

⁶ Ueber Thrombose der Hirsinsinus bei Chlorose. Deut. Arch. klin. Med., 1894, lii, 557.

⁷ Ueber ein Thrombus der Vena Cava Inferior bei schwerer Chlorose. Wien. klin. Wochenschr., 1904, xvii, 64.

¹ Thrombose bei Chlorose. Virch. Arch. für path. Anat., etc., 1898, clii, 337.