

present. The stomach contents, after a meal, showed the absence of hydrochloric acid, and no bacteria in the smears.

This case, from the history, was clearly one of pernicious anemia of more than one year's standing, which began with severe gastro-intestinal disturbance, while the nervous phenomena occurred much later, were progressive, and reached the stage of spastic paraparesis at the time of her admission to the hospital. During May the patient improved steadily in her general condition, with simple abundant food, iron and arsenic. The blood state at the last examination showed an improvement of 10% in red cells, and 5% in hemoglobin. Nausea and vomiting had ceased entirely, and the patient was able to stand with the aid of a chair and to take a few steps. The spastic condition of ataxia and paresis, while less, was still very marked. The patient is still under observation.

## BIBLIOGRAPHY.

- Lichtheim. Congress f. Inn. Med., 1887.  
 Minnich, W. Inaug. Dissert., Munich, 1891.  
 Minnich, W. Zeitschr. f. klin. Med., 1892, p. 25, vol. xxii; 1893, p. 60.  
 Putnam. Journal of Nervous and Mental Disease, February, 1891.  
 Bastianelli. Bullettino della R. Accademia Medica di Roma Ano, 1896.  
 Putnam and Taylor. Journal of Nervous and Mental Disease, January and February, 1901.  
 Adami, J. G. Chicago Medical Recorder, xix, 157.  
 Nonne, M. Verhandl. Deutsch. Aertze, Wiesbaden, 1887.  
 Nonne, M. Deutsch. Zeit. f. Nervenheilk., Leipzig, 1894-1895.  
 Nonne, W. Loc. cit., 1897, x, 165.  
 Russell, Batten and Collier. Brain, vol. xxiii, Spring, 1900.  
 Dana, C. L. Journal of Nervous and Mental Disease, February, 1901; April, 1901, and January, 1899.  
 Burr, C. W. University Medical Magazine, April, 1895.  
 Minnich, W. Nothnagel, loc. cit., p. 135.  
 Bloch and Hirschfeld. Zeitschr. f. klin. Med., Berlin, 1900, p. 32.  
 Müller. Inaug. Dissert., Berlin, 1895.  
 Williamson. British Medical Journal, Feb. 24, 1891.  
 Schauman and Tallquist. Nothnagel, loc. cit., p. 96.  
 Nothnagel, H. Special Pathology and Therapy, viii, 100.  
 Lloyd, J. H. Journal of Nervous and Mental Disease, 1893.  
 Juliusberger. Arch. f. Psych., Berlin, 1898, xxx, 975.  
 Jacob and Moxter. Deutsch. Med. Woch., 1898, No. 24, p. 152.  
 Tallquist. Octavo volume, Berlin, 1900.  
 Hughes, W. E. Philadelphia Medical Journal, 1901, i, 1207.  
 Clark, J. M. British Medical Journal, 1897, ii, 325.  
 von Voss, G. E. Deutsch. Archiv. f. klin. Med., 1897, lviii, 487.  
 Boedecker and Berger. Centrbl. f. Nervenheilk. u. Psych., Leipzig, 1896; New Fasciculus, vii, 315.  
 Brown, Langdon and Wolffstein. Journal American Medical Association, March 2, 1901, xxxvi, 502.  
 Campbell, A. W. Liverpool Medico-Chirurgical Journal, 1898, xviii, 218.  
 Neusser. Wien. klin. Woch., 1899, xii, 388.  
 Mott, F. W. The Lancet, London, 1900, i, June 23 and 30; ii, July 7 and 14.

## Original Articles.

LEGISLATION WITH REFERENCE TO  
SMALLPOX AND VACCINATION.<sup>1</sup>

BY SAMUEL W. ABBOTT, M.D., NEWTON CENTRE, MASS.

For more than thirty centuries the necessity of requiring mankind, by means of legal enactments, to observe certain rules of health, has been recognized by every civilized government.

This necessity has found expression in those statutes which have had for their object the prevention of disease, and the result has been that those people who have most carefully protected themselves by strict legislation, and who have most rigidly enforced the observance of health laws, have enjoyed the greatest immunity from the ravages of plagues and pestilence; while a neglect of proper precautionary measures has usually resulted in periodical decimation of the population by the scourge of communicable disease.<sup>2</sup>

<sup>1</sup> Read before The Massachusetts Medical Society, June 10, 1902.

<sup>2</sup> Parker and Worthington: The Law of Public Health and Safety.

The foregoing extract forms a fitting introductory to the observations which I shall present, relating to the subject of legislation in its relation to smallpox and vaccination. Froude says of legislation in general: "Our human laws are but the copies, more or less imperfect, of the eternal laws, so far as we can read them, and either succeed or promote our welfare, or fail, and bring confusion and disorder, according as the legislator's insight has detected the true principle, or has been distorted by ignorance and selfishness."

In the early history of the Province of Massachusetts, smallpox was the one disease which caused, among the people, the greatest degree of anxiety and alarm. Notwithstanding the sparsely settled condition of the population, its appearance was frequent, spasmodic and alarming. It had a way of swooping down upon the population like a destroying angel at frequent intervals, attacking nearly every man, woman and child who did not already bear upon their own bodies the scars of a previous epidemic.

In 1721, 6,006 persons in Boston were ill with smallpox, or more than half the entire population, and 850 of these died. In 1792, 8,346 had the disease. In this latter epidemic, it is stated that, out of a population of 19,484, 10,655 had already had smallpox, and that only 221 persons escaped having the disease, the remainder having moved out of town.<sup>3</sup>

So virulent did it at times become as to compel the legislature to hold its sessions in some other town.<sup>4</sup>

There can be little wonder, then, that legislatures should have sought relief from this unfortunate condition by enacting such legislation as seemed necessary for the protection of the people. Many of the statutes of Massachusetts, now in existence, bearing upon this subject, date from 1701, 1776, 1792 and 1797, and are the outcome of serious epidemics. Then came the fortunate discovery of vaccination, with further legislation of 1809, and later enactments upon this same subject.

Let us now briefly review the existing legislation of Massachusetts and see what has been accomplished for the protection of the community. How does this legislation affect the management of epidemics of smallpox?

I shall treat the subject under two general heads: Laws relating to Smallpox, and Laws relating to Vaccination.

## SMALLPOX.

(1) *Notification*.—First, and most important, is the law requiring the attending physician to give notice of a case occurring in his practice ("a person whom he is called to visit") *immediately*, to the local board of health. (Revised Laws, Chap. 75, § 50.) This notice must be "in writing, over his own signature"—a mere verbal

<sup>3</sup> Report of State Sanitary Commission of 1850, p. 70.

<sup>4</sup> Loc. cit., p. 64. See also Stone's Life of Sir William Johnson, vol. i.

statement, delivered upon the sidewalk, or over his carriage wheel, is not sufficient in the eye of the law. It may be urged that the young and inexperienced physician, sometimes also older and more experienced men, may not be able at the first, or even at a later visit, to distinguish between smallpox and some other disease; for example, chicken pox or measles. In such cases, where there is even a suspicion of smallpox, it is best to give the community the benefit of the doubt, and to call in an expert who has had a large experience in the diagnosis of smallpox. During epidemic prevalence of smallpox, as at the present time, the presumption in each doubtful case (of its being smallpox) is greater than at other times. The English Notification Law differs from most American statutes upon the subject, in allowing the general practitioner a fee of 2s. 6d. for each legal notice of a case of infectious disease.

(2) The same duty of notification is also incumbent upon the householder (Revised Laws, Chap. 75, § 49), but, except in flagrant cases, it has not been the custom to enforce this law to the same extent as the former, chiefly from the fact that laymen cannot be expected to be as familiar with diagnosis as the trained physician. In all cases, however, of willful concealment, when there can be no doubt as to the knowledge of the householder, it would seem proper to take legal action.

(3) The local board of health is also required to give "immediate information of each case to the school committee." (Revised Laws, Chap. 75, § 51.)

(4) When the local board is informed of the existence of a case of smallpox, it must also, "within twenty-four hours, give notice of the same to the State Board of Health." (Chap. 75, § 52.)

(5) The State Board of Health must then "forthwith transmit a copy of the foregoing notice of the local board to the State Board of Charity." (Chap. 75, § 52.)

Here, then, are five separate kinds of notice required by law in each case of smallpox: (1) By the physician to the local board of health; (2) by the householder to the local board of health; (3) by the local board of health to the local school committee; (4) by the local board of health to the State Board of Health; (5) by the State Board of Health to the State Board of Charity.

The first four are sanitary measures intended for the protection of the public health, and the fifth is for the protection of the public treasury. Each of these forms of notice applies with equal force to other dangerous diseases as well as to smallpox.<sup>5</sup>

<sup>5</sup> The English law has a certain degree of elasticity by allowing local option, by which a district may include, for the purposes of notification, certain other infectious diseases of minor importance not embraced in the general act, such, for example, as measles and whooping cough. The German law (1893) requires notification of cases and deaths of Asiatic cholera, typhus, yellow fever, plague and smallpox, and of cases only of typhoid fever, diphtheria, croup, recurrent fever, dysentery and scarlet fever. (Hime, Practical Guide to the Public Health Acts, 1901, p. 156.)

What is the next provision of the law, the case having been properly notified?

(6) If circumstances require it, the patient may be removed from his dwelling by the board of health "within the limits of the town." (Revised Laws, Chap. 75, § 86.)

(7) The board of health is required "to provide a hospital or place of reception, and such nurses and other assistance and necessities as is judged best for his accommodation and for the safety of the inhabitants." (Revised Laws, Chap. 75, § 42.)

If the patient lives in a spacious house, with large apartments, and especially if the house is in an isolated position, there can be no objection to his being treated in his own dwelling, provided that the health of the community is not likely to be endangered thereby. In a densely settled locality, and in small and crowded tenements, however, the public safety demands removal to a hospital. It is quite plain, moreover, that such conveyances should be used and such precautions taken in the removal as shall also least endanger the community.

The following decisions will be found useful for reference in connection with this law:

Springfield vs. Worcester, 2 Cushing, 52.

Spring vs. Hyde Park, 137 Mass., 554.

Brown vs. Murdock, 140 Mass., 314.

Hersey vs. Chapin, 162 Mass., 176.

The following rules for the guidance of local boards of health in dealing with cases of disease dangerous to the public health may be deduced from the foregoing decisions:

In case it is desired to isolate the sick person, he should be removed to a hospital to be provided by the board, except in the case where he cannot be so removed without danger to his health.

Even where the condition of the sick person is such that he cannot be removed without danger to his health, the board has no authority to establish the place where the sick person is as a hospital, without the consent of the owner thereof.

In case the board desires to provide a hospital to which to remove such cases, or to establish as a hospital the place where the sick person is, and is unable to hire the building for that purpose, it should procure the issuance of a warrant under Sec. 46, Revised Laws, Chap. 75.

(8) By an old law there is also provision for the retention of the patient where he is, "if he cannot be removed without danger to his health," and the "persons in the neighborhood" may be removed. (Revised Laws, Chap. 75, § 42.)

(9) In addition to the foregoing provisions of the statutes, there are still remaining a half-dozen sections relating to smallpox enacted in 1797, providing methods of a more or less clumsy character for removing sick persons, securing infected articles, impressing men to act as guards, etc. The unusual safeguards contained in these laws are provided in order that private property may not be appropriated to public uses without the consent of the owner, except by due process of law prescribed by the statutes.

(10) When a dangerous disease "exists in a town" it becomes the duty of the board of health to "use all possible care to prevent the spreading of the infection, and to give public notice of infected places to travelers by displaying red flags at proper distances, and by all other means which in their judgment shall be most effectual for the common safety." (Revised Laws, Chap. 75, § 43.) This latter clause is sufficiently broad and liberal in its terms to allow all reasonable methods to be employed which the circumstances of each individual case may require. A penalty makes it possible to enforce this law against anyone who willfully interferes with its operation.

(11) *Hospitals*.—Several provisions now exist in the statutes of Massachusetts for the establishment of hospitals either temporary or permanent, for the reception of persons ill with smallpox. The emergency has arisen more urgently in the present epidemic, than ever before, in consequence of the increasing density of the population. These laws date from a period as early as 1701, when towns were authorized to establish and keep themselves constantly provided with such hospitals "subject to the regulations and orders of the board of health." (Revised Laws, Chap. 75, § 35.) A law of 1764, providing that "no such hospital shall be established within 100 rods of an inhabited dwelling-house, situated in an adjoining town, without the consent of such town" (Revised Laws, Chap. 75, § 37), if strictly applied at the present day, would in certain densely settled cities of small area prove a hardship, since it would limit the position of the hospital to a very small space in the centre and populous portions of such city.

By an act of 1870, the use of a building as a hospital may be prevented by a penalty, if "prohibited by the mayor and aldermen or selectmen." (Revised Laws, Chap. 75, § 38.)

A hospital of this character, once being established, "the physician, nurses, attendants, the persons sick therein, and all persons approaching or coming within the limits thereof, and all furniture, and other articles used or brought there, must be subject to such regulations as may be made by the board of health." (Revised Laws, Chap. 75, § 36.)

By a law enacted last year (Chap. 171 of the Acts of 1901) it was provided that "every city in the Commonwealth shall establish within its limits, and keep itself constantly provided with, one or more isolation hospitals for the reception of persons having smallpox, or any other disease dangerous to the public health." Such hospitals are to be subject to the orders and regulations of the board of health. (Revised Laws, Chap. 75, § 40.)

By further provision the city is liable to a penalty of \$500 if it refuses to provide such a hospital "after having been requested so to do by the State Board of Health." (Chap. 75, § 40.) There are in Massachusetts at the present time about fifty cities and towns, each having over 10,000 inhabitants. By a report of the State

Board of Health of 1899, it appears that about half of these places only had any provisions whatever for the reception of persons ill with smallpox, and of these several were merely old-time "pesthouses," so called, which were inadequate to fulfill the demands of an epidemic of such proportions as the past season has witnessed. This epidemic has stimulated a few more cities to make provisions of this character, but there are still several cities and large towns which are entirely unprovided for such an emergency. The principle of waiting for an epidemic before taking action, is too much like that of waiting till a great conflagration has burned up several houses, before adequate fire apparatus is purchased by a city or town.

In the case of several of the crowded cities and towns of the metropolitan district, having a very small area, an arrangement could be made, such as is permitted in English towns, whereby two or three small contiguous cities or towns might unite in erecting and maintaining a hospital to be used in common by such municipalities.

(12) The only statute in Massachusetts having reference to the treatment of the body of a person who has died of smallpox is that which forbids the transportation of such bodies by railway corporations or others, until these bodies have been "so encased and prepared as to preclude any danger of communicating the disease to others, by its transportation." (Revised Laws, Chap. 78, § 48.)

Stringent laws relating to the methods of conducting funerals and to the transportation of dead bodies or persons who have died of infectious diseases, exist in some states. I am inclined, however, to agree with Dr. Chapin,<sup>6</sup> who says: "The danger to be apprehended from such bodies has been much exaggerated." Such a body, however, having once been placed in its casket or coffin and the lid closed, the coffin should not again be opened for any purpose.

The real danger in public funerals is not so much the corpse lying still in its casket, as the lingering infection transmitted by the living person to the rooms which he has occupied before his death. As a "living dog is better than a dead lion," so one live man, sick with an infectious disease, living and breathing and reproducing the *materies morbi* of such disease, is, under ordinary circumstances, a far greater danger to the community than the dead body of one who has died of the same disease.

The following notes relating to court decisions upon the foregoing topics may be found useful. While some of them relate to laws of other states, many of these laws have been copied from Massachusetts laws, and are of similar character and phraseology.

Indigent sick persons, suffering from infectious diseases, may be sent to a public or private hospital to be treated at the public expense.

State *vs.* New Orleans, 27 La. Ann., 521.

Tucker *vs.* City of Virginia, 4 Nev., 20.

<sup>6</sup> Municipal Hygiene, p. 470.

A person sick with an infectious disease in his own house, or in suitable apartments at a hotel or boarding-house, cannot be removed without his consent, under the authority conferred by a city charter "to abate and remove nuisances."

Brown vs. Utica, 2 Barb., 104.

For further decisions relative to taking possession of houses and furniture without consent of owner, for use as a hospital, etc., see

Spring vs. Hyde Park, 137 Mass., 554.

Brown vs. Murdock, 140 Mass., 314.

Lynde vs. Rockland, 66 Maine, 309.

Health authorities can decide on propriety of removal.

Haverty vs. Bass, 66 Maine, 71.

"In order to carry out the law relating to the isolation of persons suffering with smallpox, and for the protection of the community, it may become necessary to convert private houses into hospitals and make them subject to hospital regulations, to seize and destroy infected articles, and to do many other things, which under ordinary circumstances would be considered a gross outrage upon the rights of persons and property. This is allowed, on the same principle that houses are allowed to be torn down to stop a conflagration. *Salus populi est suprema lex* is the governing law in such cases. When the public health and human life are concerned the law requires the highest degree of care. It will not allow of experiments to see if a less degree of care will not answer." (Parker & Worthington, p. 134.)

Seavey vs. Preble, 64 Maine, 120.

Labrie vs. Manchester, 59 N. H., 120.

Farmington vs. Jones, 36 N. H., 271.

Kennebunk vs. Inhabitants of Alfred, 19 Me., 221.

"Notwithstanding this privilege, it does not appear that a house may be seized and occupied against the will of the owner. The consent of the owner must be obtained to the use and appropriation of his property by the board of health, and provision made for his compensation, by means of a regular contract. Otherwise the property must be appropriated to the use of the board of health by proceedings regularly had for its impressment to the public use, as is provided for in the statutes of several states, accompanied by suitable safeguards in each case."

Lynde vs. Rockland, 66 Maine, 309.

Spring vs. Hyde Park, 137 Mass., 554.

In the matter of disinfection after smallpox the law of this State (Revised Laws, Chap. 75, § 49) states: "Upon the death, recovery or removal of such person, such of the rooms of said house, and such of the articles therein, as, in the opinion of the board of health, have been subjected to infection or contagion, shall be disinfected by the householder, to the satisfaction of the board of health."

Practically this work is done by the board of health, but strict compliance with the law would at least in all such instances make it advisable to give the owner timely notice that such rooms and

articles are to be disinfected within a certain time, and if the owner fails to comply within the specified time, the board is fully justified in doing the work at the householder's expense. (Parker & Worthington, p. 139.)

#### VACCINATION.

In nearly all states, as well as in civilized countries generally, laws exist providing for the vaccination of the population, and particularly for that portion which attends the public schools.

Abeel vs. Clark, 84 Cal., 226.

This requirement, of submission to vaccination, is a constitutional exercise of the police power of the State, which can be sustained as a precautionary measure in the interest of the public health. (Parker & Worthington, p. 139.)

The Massachusetts laws relating to vaccination require:

(1) "A parent or guardian who neglects to cause his child or ward to be vaccinated before the child or ward attains the age of two years, except as provided in Revised Laws, Chap. 75, § 139, shall forfeit \$5.00 for every year during which such neglect continues."

(2) By an act of 1855, the local board of health must "require and enforce the vaccination and revaccination of all the inhabitants," if, in the opinion of the board, it is necessary for the public health and safety. Every person over twenty-one years old, not under guardianship, who refuses or neglects to comply with this requirement, is liable to a penalty (Chap. 75, § 137).

The chief defect in this law, as also in the laws of other states, is that it recognizes a false principle in sanitation. The ideal community, so far as vaccination is concerned, is not that population in which "the public health and safety" requires vaccination at irregular times and seasons, on the eve of, or in the midst of, great epidemics, but a community in which vaccination and revaccination are constantly and uniformly practiced year by year upon all young children and upon older children at the end of a definite period, say, of ten or twelve years. In such a community there are no epidemics of smallpox, because there is no virgin soil in which it can take root and flourish.

A law, then, which only requires vaccination when smallpox is prevailing or is epidemic in the state or district, is defective, and wrong in principle, and a community living under such conditions and with such laws may, as I have already said, be likened to one which waits for a great fire before purchasing its fire apparatus. The only correct sanitary principle in regard to vaccination is that of complete and permanent immunity, and not that of partial and temporary immunity of the people.

(3) By a further provision of the same law (Revised Laws, Chap. 75, § 137), as amended in 1894, the local board of health is required "to provide the inhabitants with free vaccination," if, "in the opinion of said board," the public safety requires it. Here, again, the law, unfortunately,

recognizes a wrong principle of waiting until "in the opinion" of a local board of health "the public safety requires" vaccination. As an illustration of the defective character of this principle during the present epidemic, several instances have occurred in which local boards of health have, unfortunately, been composed (at least partially) of men who were opposed to vaccination. In several instances the presence of one antivaccinationist upon a local board of health has so influenced the action of the board as to result in serious harm to the community, by delaying public vaccination, until the common sense of the community compelled them to act.

Possibly, the framers of such laws recognized this defect, but also recognized the common but often fallacious principle of local self-government, which allows those municipalities which do not act for the common safety of their population to suffer the consequences of such neglect. But, unfortunately, smallpox is a contagious disease, and is not confined to the boundary lines of cities or towns. The neglect of one town or one state may prove also a serious menace to the people of another town or state. Again, the non-voting part of the community, the women and, especially, the unprotected children, may become the victims of the neglect of the voting portion.

(4) For many years a beneficent law existed in this State as well as in many others, providing that the school committee "shall not allow a child who has not been duly vaccinated to be admitted to or connected with the public schools." The law was absolute, and wherever this provision has existed and has been thoroughly enforced, it has proved to be a helpful aid in protecting the community. But, unfortunately, in consequence of unwise opposition, this law was so amended in 1894 as to admit to school any child who was, in the opinion of a "regular practicing physician," "an unfit subject for vaccination" (Revised Laws, Chap. 75, § 139). The intent of this law was to admit such children as might be temporarily unfit for vaccination, in consequence of some ailment which might possibly make it improper to vaccinate the child for the time being. The serious blunder of enacting such a statute has been illustrated in the experience of the present epidemic, wherein it has appeared that the law has been frequently misapplied, by using it as a means of exemption for *any* child, without regard to its condition of health, on the ground that the certifying physician believed that all children were unfit subjects for vaccination. Worse than this, such certificates became for a time the subject of further abuse, since physicians advertised that they would, for a small fee, send certificates by mail to parties at a distance, without personal examination of the child. This mode of abuse has now been corrected by a law of this year, requiring that the certifying physician "at the time of giving the certificate shall have personally examined the child, and that he is of the opinion that its physical condition is such that its health will be endangered by vaccination." This ex-

emption is in force, according to statutes, "while such condition continues." The law is still defective, since it allows a physician to apply it to any child whom he may consider an unfit subject, and may hence apply it to all children, if he happens to be an opponent of vaccination in general. To remedy this defect, the local board of health, through its medical officer, should have discretionary power to revise the certificate upon similar personal examination.

The direct consequences of this unwise legislation are seen in the present epidemic, wherein it appears that during the twelve months ended Dec. 31, 1901, 64 unvaccinated school children, between the ages of five and fifteen years, had been attacked with smallpox. The records of 1902 have not yet been tabulated, since the year is now but half completed. But an examination of all the records for the past fourteen years shows that during that time 389 children under fifteen years of age had been attacked with smallpox, of whom 66 were vaccinated and 323 were unvaccinated. The most significant fact, however, in regard to these 389 cases is, that out of the 66 vaccinated children there were *no* deaths, and among the 323 unvaccinated children there were 37 deaths, or 11.4% of the whole.

(5) Another statute requires that the "inmates" of all incorporated manufacturing companies, and those of public institutions, shall be vaccinated when the local board of health requires it (Revised Laws, Chap. 75, § 138). As a general rule, the superintendents of public institutions are careful to keep their inmates vaccinated, and, as a consequence, but few cases of smallpox have occurred among them during the present epidemic. Such, however, is not the invariable rule with manufacturing corporations. In several small manufacturing villages in the state, through neglect of this precaution, serious outbreaks have occurred.

The superintendents of the paper mills in Holyoke and in other western towns of the state, where paper is largely made, have been careful in requiring their employees to be vaccinated, so that the serious outbreaks among such persons, which once prevailed in consequence of the handling of infected rags, have, in this epidemic, been notably absent.

In the brief summary which I have here presented, I have only touched upon some of the most important points in the legislation relative to smallpox and vaccination. Other and important questions of a legal character have arisen and may continue to arise in the future. Two points, however, are very clear:

(1) The necessity of sufficient laws in all countries, relative to infectious disease prevention.

(2) The necessity of careful enforcement of such laws. We may choose between two courses. By fulfilling these two conditions, law<sup>1</sup> and its enforcement, the state may be rid of smallpox, with the exception of such single cases as may be imported. On the other hand, in the absence of law,

<sup>1</sup> By the term "law" here, an adequate law requiring the vaccination and revaccination of the entire population above a certain age is intended.

or if existing and not enforced, smallpox will run riot at intervals among the people.

In illustration of this point, I will call your attention to the condition of two countries, which afford examples of careful study :

In England, vaccination laws have existed for nearly a century, but these laws are defective and limited in character, the force of the legislation having been expended upon primary vaccination, to the serious neglect of revaccination. Added to this, opposition to vaccination has been more vigorously agitated there than in any other country in the world. So great was this opposition, that a parliamentary commission spent nearly eight years in considering the subject, and published a report of several thousand pages, the final result of which was the enactment of a blundering amendment, usually known as the "Conscientious Objector" Act, the weakness of which was shown upon the first occasion of a trial at court under this law. (See Hime's "Practical Guide to the Public Health Acts," Appendix, p. 53.)

As a consequence of the opposition prevailing in England, the exemptions from vaccination existing in different cities among children subject to vaccination, have varied from as low as 3.8% in Liverpool and 6.4% in Manchester, to 79.9% in Leicester and 23.9% in London, in recent years ; and what is the result of this wholesale neglect? Smallpox is prevailing in London this year to a greater extent than at any time since the serious outbreak of 1871-1872. From the 1st of last January until now, the new cases of smallpox reported in London have averaged over 300 per week.

Contrast with this the splendid condition of Germany today. That country, with its fifty millions of population, may be likened to a city surrounded with a solid and impenetrable rampart or wall, and a picket line of well-drilled soldiers outside of the wall. This wall and picket line are the well-enforced vaccination laws of the country. The men, women and children are the well-protected army of soldiers. Smallpox may occasionally break through the outer picket line in the shape of some wretched, unvaccinated immigrant from Russia, Austria, Italy, France or Belgium, but the great mass of the well-protected population inside the fortification suffers no damage. This condition was effected by the enactment of a law in 1874, providing for the vaccination of every infant and every pupil in the schools at definite ages. As might be expected, with the existence of such a law, smallpox would gradually become extinct. In the first year only a small part of the population would be vaccinated: (1) Primaries, that is, children under two years of age, and (2) revaccinations, or children in their twelfth year; but the work of each succeeding year would add proportionally to the vaccinated population. This has been the result, and at the present day no cases of smallpox occur in that country which are not imported from neighboring lands, outside the limits of Germany. Such might be the case with any State or nation which adopts a similar course; and if all countries were

to adopt it, smallpox would become a thing of the past. It is sometimes argued that smallpox is a filth disease, and only prevails among filthy people. But Paris and Vienna are as clean as Berlin, and yet these cities are very often visited by smallpox, while Berlin has none.

In one important point our own laws, as well as those of most American states, are defective, and that is in the absence of any definite provision requiring a record of vaccination to be made, at least in the case of all vaccinations performed under public authority. Boards of health often make wholesale vaccinations upon the population of large districts, institutions, schools, the employees of corporations, etc., without even a slight record of the names only of those who have been vaccinated. The laws, or at least the regulations, of other countries are very explicit in this matter, and require not only a record of the date, name, age and sex of each person vaccinated, but also a record of the result of the subsequent inspection, which should always be made at the end of about a week. Such a record is often of very great value in settling disputed cases. To meet this objection, the State Board of Health has furnished to every local board in the State suitable record books for this purpose. These books are modeled upon the forms supplied by the Local Government Board of England to the public vaccinators.

In this paper I have purposely avoided allusion to those vexing questions relating to the economic side of this question which invariably arise in every epidemic of smallpox. I have omitted discussion of this phase of the subject, both for want of time and because the valuable time of a scientific body can be better employed than by the discussion of financial matters, which can quite as well be submitted to the lay members of boards of health.

Those health officers, however, who desire to consult the various statutes and decisions relating to the expenses of caring for smallpox patients, the salaries of attending physicians, nurses, attendants, liability for destruction and injury of houses, furniture, bedding, etc., etc., may find abundant reference in the legal works upon the subject. See Parker and Worthington, Law of Public Health and Safety, and the following Supreme Court decisions :

Spring *vs.* Hyde Park, Mass., 137, 554.  
Brown *vs.* Murdock, 140 Mass., 314.  
Orono *vs.* Peavey, 66 Me., 60.  
Hampden *vs.* Newburgh, 67 Me., 370.  
Farnsworth *vs.* Kalkaska Co., 56 Mich., 640.  
Rae *vs.* Flint, 51 Mich., 526.  
Wilkinson *vs.* Long Rapids, 74 Mich., 63.  
Clinton *vs.* Clinton Co., 61 Iowa, 205.  
Kellog *vs.* St. George, 28 Me., 255.  
Miller *vs.* Somerset, 14 Mass., 396.  
Mitchell *vs.* Cornville, 12 Mass., 333.  
Childs *vs.* Phillips, 46 Me., 408.  
Gill *vs.* Appanoose Co., 68 Iowa, 20.  
McIntire *vs.* Pembroke, 53 N. H., 462.  
Albany *vs.* Wilkinson, 28 N. H., 9.  
Fort Wayne *vs.* Rosenthal, 75 Ind., 156.  
Staples *vs.* Plymouth Co., 62 Iowa, 364.  
Elliott *vs.* Supervisors, 58 Mich., 452.

People vs. Macomb, Co., 3 Mich., 475.  
 Schmidt vs. Stearns Co., 34 Minn., 112.  
 Labrie vs. Manchester, 59 N. H., 120.  
 Farmington vs. Jones, 36 N. H., 271.  
 Kennebunk vs. Alfred, 19 Me., 221.

One of the unfortunate circumstances connected with sanitary legislation at the present day is the absence of medical men in the legislature. On this account, public health committees must necessarily be composed either wholly or almost wholly of laymen. Medical questions are constantly arising at every session, and it is important that a committee which is called to discuss and present to the legislature many medical and sanitary questions should have at least one medical member. Laymen do not appreciate the value of legislation intended for the prevention of disease so keenly as men who are trained for this special purpose. Hence it is important that this want should be supplied, in order that the efficiency of sanitary legislation may not be impaired.

#### DISCUSSION.

DR. G. A. MILES of Somerville: I would like to speak of one thing to which Dr. Abbott refers, and that is with reference to children getting into our schools unvaccinated, not only by certificates given by physicians, certifying that the child is an unfit subject to be vaccinated, but also those children who have been vaccinated, but no inspection of them afterward to see the effect. Since this outbreak in Somerville I have been surprised to find the number of children in school holding certificates of vaccination, although the operation was entirely unsuccessful. This has brought very forcibly to my mind the great importance of examining every case before a certificate is given, not only to see that the patient is protected, but also that it is being properly cared for and doing well.

DR. S. H. DUNN of Boston: I think for a physician to give a certificate before he knows that the vaccination has taken is both stupid and illegal, and it should be denounced from one end of the land to the other.

### VACCINATION ERUPTIONS.

BY HARVEY P. TOWLE, M.D., BOSTON,

*Assistant to the Physicians for Diseases of the Skin, Boston City Hospital; Assistant to Dermatological Out-Patient Department, Carney Hospital, Boston.*

DURING the past winter I saw several cases of eruptions which occurred during the course of vaccinations and which were apparently the direct result. This led me to look up the literature on the subject of vaccination eruptions. I found surprisingly few references. This scarcity may be accounted for in two ways. Either the eruptions which occur during the course of a vaccination are rare, or the profession has been indifferent to the subject and has not reported what cases it may have had. My belief that both propositions are true is my excuse for presenting the subject.

I found in the literature a difference of opinion as to what should be called a vaccination eruption. Some authors include under this head any eruption which occurs during or even after the course of the vaccinal lesion. Others use the

term for those eruptions only which occur during the course of the vaccinal lesion and which have no other obvious cause than the vaccination. Sobel has defined what I mean by a vaccination eruption so well that I will quote his definition: "We must not confound eruptions pure and simple (in which it may be reasonably assumed that the course of the vaccination has been instrumental in the production and development) with those produced by extraneous infection (which would in all likelihood have occurred without the inoculation of the virus), impetigo contagiosa, erysipelas, abscess, furunculosis, etc. I should reluctantly attribute any generalized eruption to vaccination once the seat of inoculation has become thoroughly healed. So long as the sore remains open, so long as there is a chance for absorption, generalized vaccination rashes may occur." It is in accordance with this definition that I shall consider the subject. I shall not touch upon the eruptions due to extraneous infection nor upon vaccination itself.

Crocker has given a classification of vaccination eruptions modified from one proposed by Morris in an introduction to a discussion on vaccination at the Dermatological Section of the British Medical Association in 1890. Crocker's classification is as follows:

GROUP I. *Eruptions resulting from pure vaccine inoculation.*—(1) Secondary local inoculation of vaccine. (2) Eruptions within the first three days, before the vesicles form, which include urticaria, erythema multiforme, vesicular and bullous eruptions. (3) Eruptions following the development of the vesicle, due to the absorption of the virus, which include (a) morbilliform, scarlatiniform and diffuse erythema, erythema multiforme, vaccine lichen and purpura; (b) generalized vaccinia, vaccine généralisée of French authors; (4) sequelae of vaccination, eczema, psoriasis, urticaria, etc.

GROUP II. *Eruptions due to vaccine virus plus some other virus.*—This group, which deals, according to the definition of vaccination rashes given above, with accidents rather than with true vaccination eruptions, we shall not consider here.

A brief description of some of the classes included under Group I may aid us in the understanding of the cases which follow. The secondary local inoculation of vaccine may be dismissed in very few words. After inoculation with the vaccine virus, according to Jeanselme, there is in all cases a period when one can be reinoculated; that is, a period between the time of inoculation and the time when protection has been attained. This period has been variously estimated at from seven to seventeen days.

The secondary local inoculation may arise, by accident, when the original site is being inoculated, or the fingers of the patient may carry the virus and by scratching reinoculate it. Supernumerary vesicles may develop around the site of the original inoculation, which develop rapidly and mature at the same time as the original vesicle.