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1907

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George Blumer

*Compulsory Vaccination, Antivaccination,
and Organized Vaccination.*

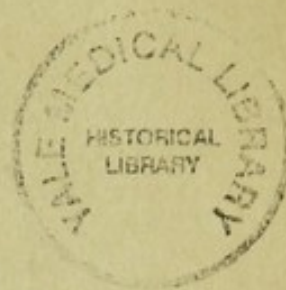
BY

GEORGE DOCK, M.D.,

PROFESSOR OF MEDICINE IN THE UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN.

FROM THE
AMERICAN JOURNAL OF THE MEDICAL SCIENCES,
FEBRUARY, 1907.

VACCINATION
Pamphlet

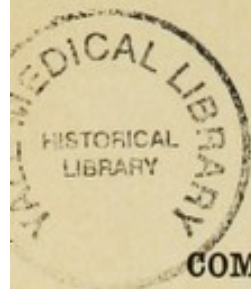


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COMPULSORY VACCINATION, ANTIVACCINATION, AND ORGANIZED VACCINATION.

BY GEORGE DOCK, M.D.,

PROFESSOR OF MEDICINE IN THE UNIVERSITY OF MICHIGAN, ANN ARBOR, MICHIGAN.

THE antivaccination movement in the United States is becoming widespread and troublesome. The first suit at law against legalized vaccination was brought in 1890.¹ Since then there have been many, and although the decisions almost unanimously favor the health authorities, litigation seems on the increase.

For the last eight years we have been passing through an epidemic of smallpox, and this showed, in strong colors, the need of more vaccination rather than less. I believe that legal regulation is needed, but I also think, and shall try to show, that our present laws are unsatisfactory in their results. If laws are made, they should be so constructed and enforced as to secure the sanction of public opinion. I need not discuss the fiction that in a republic all laws come from the people. This at least is true, that some kinds of laws cannot be enforced unless they have popular acquiescence. Unpopular health laws affecting the person will find difficulties such as arise in the execution of sumptuary laws, like those regulating the use of tobacco and alcoholic beverages. Even among people with despotic or paternal government, with highly organized civil service and active police, vaccination is sometimes defeated. Mothers suck out the virus from their children's arms with great danger to themselves; older subjects wash out their wounds; dishonest physicians give false certificates; venal officials connive. In our own country some legally qualified practitioners of medicine are opposed to vaccination and give certificates for absurd substitutes, such as variolinum, or diluted smallpox virus, given by the mouth.

What we need, in my opinion, is not statutory compulsion, our first antidote against all evils, from corsets to obnoxious corporations, but an organized and scientific procedure that shall have the confidence and support of a large majority of the people, and shall have no weak spots in any part. Many antivaccinationists are both

¹ Abeel vs. Clark, 84 Cal., 226.

ignorant and fanatic, but more are merely ignorant. If as serious an effort were made to convert them to vaccination as is now made to turn them the other way, I believe, on the basis of some experience, that they would easily submit. Perhaps the most important objectors are quiet but influential people whose opposition has been aroused by some real or fancied injury wrought by the operation, or by the exaggerated or baseless claims of its advocates. A proper method would turn these into active supporters of general vaccination. Medical writers and health officials too often follow a more arbitrary course, as shown by the following extract from a work on therapeutics excellent in most particulars: "After all is said and done, the final decision of the subject [vaccination] rests with the medical profession; for, in the first place, it alone can properly interpret results." Of course, the final decision does not rest with the medical profession. Even if it did, the results should be capable of being understood by any intelligent and unprejudiced mind.

Let me try to show why we need better vaccination, and how it may be secured. We are now in the later stage of a smallpox epidemic that began soon after the Spanish war, and spread over most of the United States. The exact extent and severity cannot be accurately stated. The most complete data are those of the Public Health and Marine Hospital Service, but owing to the method by which they are collected, these are necessarily imperfect. Taking the figures² as given, however, we find the following:

Smallpox Cases and Deaths in the United States.

Years.	Cases.	Deaths.
1899	11,136	553
1900	20,362	819
1901	48,206	1,127
1902	54,014	2,083
1903	40,676	1,448
1904	17,965	709
1905	20,099	354
1906 (first half)	8,542	53

The decline of the epidemic does not mean that the disease is being stamped out finally. It is certain that unless something more is done in the next few years than has been done before, another general epidemic will occur, or numerous local epidemics, just as in the past.

The death-rate has, on the whole, been low, but this also cannot be assumed to be a general or permanent feature. At all times in the history of smallpox mild cases have been observed, and it has been known that a mild case or mild epidemic may give rise to a severe case or a severe epidemic.

The view has been advanced that the recent mild type is due to hereditary immunity caused by vaccination of parents. There is

² Public Health Reports.

no proof for this, and it may be a very dangerous idea if followed out. Against it may be said: (1) Vaccination in the United States has not been as widespread as this contention assumes. (2) In some localities where there were severe cases there is no reason to think the parents were relatively or absolutely less protected. So in Cleveland, in 1901, there were 1230 cases of smallpox with 20 deaths, or 1.6 per cent.; in 1902, 1298 cases with 224 deaths, or 17.3 per cent. Vaccination protects the individual, as smallpox does, but the latter does not make immune the children. It is probable that the mild type of the recent epidemic is due to causes partly separate from vaccination and not profitable to discuss at this time.

As the death-rate has been low, the total deaths are hardly enough to give the public much concern on that score. A country that sees its citizens killed off in their best years by typhoid fever without making a move to prevent the disease; that is so indifferent to accidental deaths and homicides in all forms, is not likely to pay much attention to the loss of a few hundred people a year from smallpox. Much more serious to a larger number are the sick. Through these discomfort and inconvenience affect many people, and the mild character of recent smallpox has not greatly lessened the horror traditionally associated with it. It is true that patients in well-managed smallpox hospitals often say they would rather have smallpox than be vaccinated. Many people, especially the ignorant in isolated districts, often have smallpox epidemics without paying particular attention to them. But most people have a fear that is justified by the painful symptoms, dangerous sequels, and high infectiousness of the disease in the unvaccinated. The newspaper account of the treatment of George Francis Train may not have been true, but its publication in journals not of the yellowist kind indicates the general feeling. It also shows how much that is irrational and absurd can be attributed to the medical profession. I have taken the following account from a city paper, where it appeared in double column, with picture, "scare-heads," and display type:

"Make a Row when Disinfected. Stamford, Conn., June 17, 1903. Kicking and shouting and resisting with all his might, 'Citizen' George Francis Train was carried from the smallpox pest-house in Stamford yesterday—and laid in sheets beneath the open sky. Then the physicians made a bath of hot bichloride of mercury, into which the old gentleman was lifted. As soon as his nose was shoved into the bath, Mr. Train burst forth into loud protests against the treatment he had received, bemoaning especially the destruction of the beloved manuscript of his autobiography. Pinned in sheets soaked in bichloride of mercury, he was carried to a closed carriage, in which he was conveyed to the residence of his daughter. The physicians and attendants left immediately."

While this may be overdrawn, we usually see general alarm,

quarantine of suspects, house inspection by ignorant, brutal and sometimes dishonest and dissipated officials. Even in intelligent localities sometimes men of standing guard their neighborhood with shotgun cordons, giving an example of fear and lawlessness worse than pestilence. Wrecking of houses set apart for smallpox patients is a common occurrence. It is not many years since two expressmen were quarantined in Brooklyn because the commissioner of health thought they might become exposed to smallpox or carry it in the course of their business. The disease was prevalent and they refused to be vaccinated. Habeas corpus proceedings were necessary to release the victims from the "unwarranted and extraordinary" situation, to use the words of the judge in the final trial.³

Great expenditure of money is an essential part of the present method. Few places have special hospitals, and still fewer permit smallpox patients to enter general hospitals. Unfit locations, naturally and accurately termed pest-houses, must be obtained at exorbitant cost; special physicians, attendants, guards, and supplies raise the expense still higher.

But perhaps the greatest evil of all is the fact that at such times most of the vaccination has been done, by unfit persons often, on an alarmed and uninstructed public, with inferior and often wretchedly faulty virus. No wonder that some health officers, like the one in Cleveland, in 1902, stop vaccination in sheer terror at its abuses, and, depending upon the baseless hope of disinfection and quarantine without vaccination, invite still worse disasters. Such experiences form the most effective weapon in the scanty arsenal of the anti-vaccinationist, like an old-fashioned blunderbuss, useful only against a rash but undisciplined foe.

But these experiences we cannot escape so long as we adhere to our present method, or lack of method, of managing smallpox and vaccination, and so long as human nature remains as it is. Periods of relative freedom will occur, lasting for a few years, and then, as soon as a sufficiently large unvaccinated population collects, chance infection will start up epidemics, as it has hundreds of times in the past. If there was no other way, if we were as helpless now as we were 200 years ago, or as we are now against cyclones and earthquakes in their peculiar areas, the condition would be bad enough. As it is, we have the lesson of an immense experiment, carried on long enough and on a scale large enough to furnish conclusions of definite value.

This experiment has been made in Germany. The population there is not as large as our own, but large enough for a just comparison. (U. S., 1900, 76,303,387; Germany, 56,006,254.) The German people have no keener interest in private hygiene than our own, and public sanitation, in which they excel us, plays a minor

³ In re Smith et al., N. Y., 146, p. 68, 1895.

part in the prevention of smallpox. The country is surrounded on three sides by neighbors with whom it carries on active intercourse, and all of these other peoples, up to the present time, have been relatively less protected by vaccination. Smallpox has been fairly prevalent in Austria, Russia, and France, less so in Holland, Belgium, and Switzerland, but always more than in Germany. For example, Warsaw in 1900 had more than 350 deaths from smallpox; Austria 999 cases and 143 deaths in the same year. The German vital statistics are kept with great care. It is a lesson in public service to read one of the annual reports of the Imperial Health Office.⁴

Smallpox Cases and Deaths in Germany.

Year.	Cases.	Deaths.
1900	390	48
1901	375	54
1902	114	16
1903	172	19

The tables show that in the same years I have quoted for the United States, Germany had only a fraction of our smallpox morbidity and mortality. The experiment further shows that this difference is not due to lucky chance. Similar favorable conditions have prevailed for the length of a human generation. Before that, from a short time after Jenner's discovery was published, many German states were distinguished alike by widespread and careful vaccination and favorable smallpox statistics; but this was not as perfect as many antivaccination writers assume. In 1870-71 all Europe suffered seriously, but, as an unusual feature of war times, the German army had a smaller proportion of cases, not only than the opposing army, but also less than the civil population at home, of corresponding ages. The only explanation for this was the more perfect vaccination of the military. Soon after the formation of the Empire, in 1874, systematic vaccination and revaccination were required by a carefully prepared law, and since then it has had a freedom from smallpox such as no other country in Europe or America can boast. Moreover, the few cases that do occur can be traced in large part, one-fourth in some years, to persons who had entered the country from a less protected land—railroad laborers from Italy, brickmakers from Hungary, farm hands from Russia. Some can even be traced to our own country, as in 1901, when several cases were due to infection from Utah, carried by delegates to a Mormon Congress! Another large proportion is in infants not yet vaccinated. Vaccination and revaccination are the only possible causes of the difference, for shotgun quarantines are unknown and isolation hospitals hardly ever used for smallpox patients. Some are treated in their homes; some in general hospitals, even in wards

⁴ Taken from the Med.-Stat. Mittheilung a. d. Kais. Gesundheitsamte.

with other patients. The disease rarely spreads beyond the first case. No one in Germany thinks the methods perfect. They are improved from time to time in various ways. Doubtless the future may show a better way of preventing smallpox than the present German method. Hitherto it has not been found. Some other countries have recently imitated it, with unessential modifications, notably France, Japan, Spain, Portugal, Argentine; even Turkey is making an effort, and Brazil would have adopted it but for a close relation between the vaccination project and an unlucky political party.

The two great countries that speak Jenner's language are among the last to adopt a practical and efficient system and also among those most devastated by smallpox.

In the United States the conditions are peculiar and extremely complicated. Many imagine that, owing to the high degree of intelligence of the public, voluntary vaccination is perfectly carried out. If this were so some other explanation than the one I have given for the existence of smallpox epidemics would be necessary. So careful a student of the subject as Voigt, in a recent report, quotes the *Lancet*⁵ to the effect that 90 per cent. of our population is vaccinated and about half revaccinated. I cannot tell how the *Lancet* correspondent got his information. Early in the epidemic I made an examination of several hundred adults from all parts of Michigan and a few from adjacent States, where the vaccination laws are about as good and about as well enforced as the average, and I found only 60 per cent. vaccinated, and of these the majority had scars that were not at all satisfactory. Even public institutions, such as insane asylums, contained many unvaccinated people. In one of the best, out of 50 inmates who got smallpox in a short time, in 1901, only 17 had been vaccinated, "none recently, and with some the scar was barely visible."⁶ Since then there has been much smallpox all over the State and a great deal of wholesale vaccinating, but in 1905 I found one-third of adult hospital patients wholly unvaccinated and almost none with good scars.

Voluntary vaccination can never be depended upon to prevent smallpox epidemics, nor should it be, for it is not done only for the protection of the person vaccinated, but for all. Moreover, the protection of the individual may be imperfect, and the population in general gets good results only when a large proportion of all are most thoroughly protected. It is true that some cities, such as New York and Chicago, have been pretty thoroughly vaccinated for some years past, but the conditions over the country in general are more important, and even lessen the value of the thorough vaccination in a few places.

⁵ 1905, ii, 1142.

⁶ An Epidemic of Smallpox at the Michigan Asylum, etc., Arthur MacGugan. *Medical News* December 14, 1901.

The error regarding the extent of efficient vaccination has caused one of the most serious fallacies of antivaccination writers. They do not seem to appreciate the obvious fact that imperfect protection is the result of inefficient vaccination, and they make much of the sickness and death among those supposed to be but not really vaccinated.

There is a prevalent idea, even among many medical men, that vaccination can never be regulated by law in the United States. As a matter of fact, it not only can be, but in many States is the subject of statutes, as I shall show in detail later. The chief cause of misunderstanding comes from ignorance of the fact that vaccination, like other questions of "public safety, health, and morals," comes under police regulations, under the jurisdiction of the separate States; but there is no real obstacle to efficient and even to uniform statutes in every State as soon as people want them. Perhaps some way will be found in time to place so important a matter as vaccination under federal control, either by an extension of the principles of the interstate commerce law or an expansion of the public health service. Central regulation would undoubtedly be an advantage. Taking, however, only the means at present available, we find that States can enact satisfactory vaccination laws if they desire to. "In a free country, where the government is by the people through their chosen representatives, practical legislation admits of no other standard of action (except that based upon common belief), for what the people believe is for the common welfare must be accepted as tending to promote the common welfare, whether it does so in fact or not."⁷ The most important decision up to the present is that handed down by the Supreme Court of the United States, in *Jacobson vs. Mass.*,⁸ affirming the decision of the Supreme Court of Massachusetts.

The law contested was a statute authorizing boards of health to enforce vaccination and revaccination of all inhabitants, and imposing a penalty upon everyone over twenty-one years of age, and not under guardianship, who refused or neglected to comply. In the same statute an exception is made in favor of "children who present a certificate, signed by a registered physician, certifying that they are unfit subjects." The discrimination alleged as to this exception was brushed aside as unessential. The defendant claimed that the statute was in derogation of the rights secured to him by the preamble of the Constitution and the Fourteenth amendment. The court made short work of both claims. "Personal liberty," it said, "is not invaded when the State subjects (one) to fine and imprisonment for neglecting or refusing to submit to vaccination." It denied "that a competent vaccination law is unreasonable, arbitrary, and oppressive, and therefore hostile

⁷ Matter of Viemeister, 179 N. Y. 235, 72 N. E. 97. Am. State Rep., vol. 103, p. 863.

⁸ 26 Sup. Ct. Rep., 358.

to the inherent right of every freeman to care for his own body and health in such a way as to him seems best. But the liberty secured by the Constitution of the United States to every person within its jurisdiction does not import an absolute right in each person to be, at all times and in all circumstances, wholly freed from restraints. There are manifold restraints to which every person is necessarily subject for the common good. On any other basis organized society could not exist with safety to its members. Society based on the rule that each one is a law unto himself would soon be confronted with disorder and anarchy."

No objection should be possible against the principles expressed in the above, and in any event the decision is likely to influence strongly all future questions touching the constitutionality of vaccination laws.

An acute legal writer⁹ has recently drawn some far-reaching conclusions from decisions in cases involving vaccination laws that deserve careful attention from physicians. He shows that a uniform course of decisions establish the fact that it is a valid exercise of the power of police regulations to require vaccination as a condition precedent to the right to attend school. "The natural question arises: Have these decisions paved the way for future declarations in favor of the right of the Legislature to order compulsory vaccination of all persons—adults as well as children? Any requirement of law," continues the editor, "to be sustained as a valid exercise of police power must be a reasonable requirement." The courts have been guarded in expressing an opinion as to the preventive power of vaccination. Their decisions are usually based upon "common opinion," "the present state of medical knowledge," or "common belief." "The efficacy of vaccination is regarded by the courts not as an established fact." "But if a mere popular belief is sufficient to uphold a police regulation for one purpose, why not for another? If vaccination is a reasonable requirement as a condition precedent to the right to attend school, why is it not also a reasonable requirement as a condition precedent to the right to live in a community? In other words, if the legislature can say that no child can attend school unless he has been vaccinated, why can it not also say that no person shall reside within certain corporate limits unless he shall have been vaccinated?" This view, in fact, was upheld in a case in Georgia.¹⁰ As regards school attendance, this is not merely a right or a privilege. In many States it is compulsory. So it was decided in *Matter of Walters*,¹¹ that "inasmuch as attendance at school is compulsory and vaccination requisite as a right to attend school, vaccination is compulsory." As the editorial in question also says, "Courts under certain circumstances must uphold compulsory vaccination, even though

⁹ Law Notes, December, 1904, p. 405.

¹⁰ *Morris vs. Columbus*, 102 Ga. 792.

¹¹ New York, 84 Hun. 457.

forcible vaccination of a person against his will may be technically an assault."

In order properly to understand the present status and especially the imperfections of our vaccination laws, it is necessary to consider some of the enactments in detail.

Many States have no statutes regarding vaccination. In 1905 about twenty were in this condition, including some, *e. g.*, Illinois and Indiana, of great importance in population and geographical position. In such States, as in others, unless there is a statute to the contrary, the health authorities may make their own regulations, within certain limits, with or without special delegation of power for that purpose.

In Arizona (1903) general vaccination is obligatory, but the details to be observed are not prescribed. In Kansas,¹² "In case of smallpox a general and thorough vaccination shall be recommended and insisted upon." In Kentucky¹³ all must be vaccinated, adults and minors; infants within twelve months of birth; persons coming in from other States, "to abide or become citizens," within six months, if not previously vaccinated. In Maine¹⁴ vaccination is obligatory on all inhabitants over two years of age. In Maryland¹⁵ all infants must be vaccinated within twelve months of birth. In Massachusetts¹⁶ vaccination must be carried out in all persons under two years of age, unless excused on certificate of a physician by reason of unfit physical condition. In Mississippi a compulsory vaccination law was enacted in 1900, and the law amended in 1902, but the details are left to the local authorities. In West Virginia (1905) compulsory vaccination may be ordered upon petition of 100 voters of a county, in case of smallpox epidemic.

Revaccination is rarely mentioned, though often ordered indirectly. In some States general vaccination may be carried out in case of threatened danger from smallpox—Georgia, Massachusetts, New Hampshire, North Carolina, Oregon, Tennessee, Vermont, etc.

In Connecticut and Maine employees in paper factories are required to be vaccinated. Employers (in Connecticut) are obliged to "pay to any town all expenses caused it by the sickness of such person with smallpox contracted while so exposed." In Maine revaccination must be repeated in two years and all employees in paper mills must be examined twice a year with reference to the thoroughness of the vaccination.

In Kentucky and North Carolina inmates of charitable institutions and the penitentiary must be vaccinated. In Massachusetts they may be at the option of the board of health, as may also operatives of manufacturing establishments.

In many States vaccination is a prerequisite to admission to the

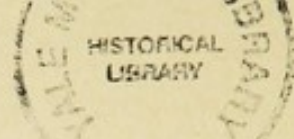
¹² Gen. Stat. 1905, Sec. 3438.

¹⁴ Rev. Stat. 1903, Chap. 18.

¹⁶ Rev. Laws, 1901, p. 682.

¹³ Carroll Stat. 1903, C. 119.

¹⁵ Public General Laws, 1904, p. 1211.



public schools. This is sometimes optional with local health boards, as in Connecticut, Georgia, Maine, New Jersey, Ohio, Oregon, West Virginia, and Wisconsin. In Wisconsin it has been decided that vaccination cannot be required as a condition precedent to the right to attend school.¹⁷

In some States the requirement is mandatory: the District of Columbia, Maryland, Massachusetts (except when excused by reason of unfitness), New Hampshire, New Mexico, New York, Pennsylvania, Rhode Island, South Carolina, and Virginia. In the Indiana school law there is a clause: "No child in good health and free from infection shall be excluded from the schools of Indiana, any law to the contrary notwithstanding." In Illinois¹⁸ it has been decided that directors have no power to compel vaccination in the absence of smallpox. In Connecticut the existence of smallpox is not essential. In Minnesota¹⁹ compulsory vaccination of school children is prohibited, except in case of epidemic, in children not excused by certificate as unfit. In Louisiana (1897) compulsory vaccination is prohibited. In South Dakota²⁰ physical force may not be used in vaccinating. In Utah a law to prevent compulsory vaccination was passed over the governor's veto in 1901. Teachers as well as pupils are required to be vaccinated in Virginia, Wisconsin, and also in New York City. Pupils of private schools are mentioned only in the laws of South Carolina.

The Territory of Hawaii²¹ has a better law than any American State, but it does not go as far as is desirable. It includes such important desiderata as: A special vaccinator in each taxation division (other physicians may vaccinate); at least three convenient places in each school district for the performance of vaccinating; the operator must give notice of the times set for vaccinating and for inspection of results; these times must be at least once in every six months, oftener if required by the board of health; records must be kept and reports made; every child must be taken to the officer within six months of its birth, "or at the earliest opportunity after;" the child must be taken upon the eighth day after the operation so that the officer may ascertain by inspection the result of the operation; the result is to be noted in a book, and in case of successful vaccination a certificate given; if the child is unfit, the vaccinator may postpone the operation and notify the parent or person in charge of the "child to reproduce the same for vaccination at a future time;" there is a fine of five dollars for failure to observe the statute: "No child shall be admitted to any public or private school without producing a certificate of vaccination or showing marks of successful vaccination," under penalty of five dollars on the part of the teacher. Only bovine virus is to be used.

¹⁷ State ex rel. Adams vs. Burdge and others, 95 Wis. 390.

¹⁸ Potts vs. Breen, 167 Ill., May, 1897.

²⁰ 1903, p. 297, Cap. 223, Sec. 1.

¹⁹ 1903, Cap. 299, p. 53C.

²¹ Rev. Laws, 1905.

From the summary I have given it is obvious that there are very great differences in the scope of the laws regarding vaccination in different parts of the Union. This is not due to failure of sufficient constitutional basis for sound laws; nor is it due to public opposition to sound laws. Objections are made not so much to the statutes as to the manner in which they are enforced, or without any definite reason. Kentucky has one of the best laws, but there is no more opposition to it than there is to many weaker laws. Some of the statutes are so worded as to rouse latent or open antagonism even on the part of those who should enforce them. For example, in Maryland (1904) it is permitted to use human virus, "if practicable not more than four removes from the cow," a practice abandoned by all careful vaccinators. The fact that there is a penalty of one hundred to five hundred dollars for using defective virus does not relieve the anachronism of the earlier section. It is the duty (Sec.43) "of every practising physician . . . to vaccinate all children in the circle of his practice which may be presented to him for vaccination, within one year, if such child shall be in a proper condition for such service;" and "all other persons not previously effectually vaccinated who shall request such service from him. Any physician neglecting or refusing so to do shall, on conviction thereof, forfeit and pay for every offense a penalty of five dollars." The advantages to be gained from the law are certainly not enough to warrant such demands.

In West Virginia, in the law of 1899, it was provided that certain agents were to send "genuine vaccine matter" and "directions how to use it," by mail or otherwise to every citizen of the State who applied for it, showing an enviable absence of the anti-movement, and a gross ignorance of the operation and its objects. In 1905 the law was amended, and "local option" vaccination and quarantine permitted in case of smallpox epidemic. "Competent physicians" can be appointed as public vaccinators, but in no case can they receive more than twenty-five cents for a successful vaccination, and no compensation for an unsuccessful vaccination. As "such physicians" have to provide their own virus, they can hardly fall under that part of the antivaccination complaint which alleges the medical profession upholds vaccination on account of the lucrative fees that the operation provides. As the State does not furnish any guarantee of the quality of the virus in the market, the injustice of the law is obvious.

A careful perusal of the statutes gives the impression they were devised without reference to the best methods available. The legal part is usually correct, but the medical part seems to have been overlooked almost uniformly. A surprising lack of care is especially striking in the South Dakota statute of 1903:

"Sec. 1. It shall be unlawful for any board, physician, or person

to compel another by the use of physical force to submit to the operation of vaccination with *smallpox* or other virus.

"Sec. 2. No person shall prevent a child of school age, who furnishes a physician's certificate of successful vaccination with *smallpox virus* within five years, from attending school."

It would be tedious and not profitable to discuss all the weak points in the various laws, and I shall criticise only the general bearings and important special features.

The laws are far too vague and uncertain to give such protection as is needed. It may be thought, and probably was supposed in framing statutes, that the best results could be obtained by making only general laws and leaving details to the officials who have to interpret and enforce them; but it is no more possible in this way to secure good results with vaccination than with other duties of society. We might just as well leave the protection of water supplies to public benevolence, as in fact we often have, with uniformly bad results. What we need is the widest possible application of the most efficient vaccination. Under any arrangement numerous officials are necessary for this. The best results so far have been obtained in certain cities where energetic and capable physicians have devoted themselves to the work. But men of that kind cannot be secured everywhere or always. Some are ignorant; some lukewarm; some opposed to the views or personalities of their superior officers. They may be hampered by red-tape or by lack of support, either financial, moral, or physically, from their superiors. So far as possible, then, accidental causes of failures should be reduced to the minimum by more explicit laws and more care in selecting officials.

The necessary thoroughness cannot be attained without accurate registers, which shall show the true condition of all persons with regard to perfection of vaccination and revaccination. We already have learned the advantages of lists of voters and of school children. It would add much to public order, and much advance the efficiency of vaccination and other sanitary details, to enlarge these lists and to enter various data regarding health and disease.

The method of combining vaccination and school attendance is very irrational, and yet in many States it is the main dependence. If vaccination is not done until the child begins school, as the natural tendency is at present, we leave the most highly predisposed part of the population—children under five or six years of age—wholly unprotected. A considerable part of the population may go unprotected even longer, because the children attend parochial or private schools, which in most States do not come under the statute.

The responsibility for the performance and even sometimes the success of vaccination is usually left to the teachers, who have not the proper training, and in most cases have not time to make the necessary examinations.

The laws sometimes require the impossible—*e. g.*, “successful vaccination of all pupils,” Maryland, Pennsylvania; “successful or proper,” Virginia; “successful” or “within one year,” New Mexico; “proper,” Rhode Island.) I do not mean that all people may not be successfully vaccinated. We all know that many vaccinations do fail. Even in Germany the primary success is not better usually than 85 per cent., varying from about 60 to less than 100 per cent. Not a few fail up to three attempts. In a recent news item,²² it is stated that in the autumn of 1906 in Los Angeles, California, “more than 1000 primary vaccinations failed.” “As the result of hot weather and exposure of the virus to high temperature *en route*,” the account goes on to say, but the same exposure *en route* occurs all over the country, overheating in railroad cars being one of the stock excuses of the makers for weak virus.

The result is that a low standard of success is tacitly accepted everywhere, giving brief immunity or none at all. It is encouraged by assertions of makers of vaccine virus, by laws such as the one in West Virginia, and by the indifference to or lack of a careful noting of the results. In many places the patient is never seen by the vaccinator after the operation. And from the standpoint of education it is well that this is so. Notwithstanding all the current criticism of the public schools, in our present stage of development they are better than none at all. But if both education and vaccination are good, how unfortunate that they should be made to appear antagonistic, as they are at present in the public mind!

As a matter of fact, our experiment makes it plain that so theoretically perfect a requirement as we have in our school and health laws is not at all necessary. In Germany most children are vaccinated before they are two years old, and again at twelve. But there are many exceptions at both periods. From illness of various kinds many children are excused; in some, vaccination fails, but a certificate permitting school attendance is given (as it is in some few States in America). A few children remain unvaccinated illegally, or are imperfectly vaccinated and false certificates given. It is easy to see that these failures may in time become a source of great danger. Up to the present they have not been so great a source of danger as our stricter but impossible requirement. It is interesting to see that in Germany the question of compulsory vaccination has been decided in diametrically opposite ways by courts. Some fathers have paid their fines every year, on account of the non-vaccination of their children. Another obtained a decision showing that compulsory vaccination could not be made a condition precedent to attendance at school.²³

²² Medical Record, October 27, 1906, p. 660.

²³ Med.-Stat. Mittheilung a. d. Kais. Gesundheitsamte, Bd. viii, p. 61.

Quite as faulty in its results is the law providing for vaccination in time of epidemic of smallpox. Even when the time is not left, as in West Virginia, to the good-will of the voters, the method has several weak points. Vaccination under the circumstances is too late for many people, as it takes time for the diagnosis to be made and the work of vaccination to be set in motion before a number of people are involved. Many people escape the operation, very often those who need it most. In emergency vaccination there is no consistent attempt at controlling or revising the result; many people who imagine they are well protected with or without scars, acquire the disease sooner or later afterward.

As epidemics often occur in different parts of the country about the same time, there is an excessive demand for vaccination, and inferior vaccine is put on the market, giving imperfect protection and more frequently causing septic infection. Sometimes there are other epidemic diseases at the same time that make operations dangerous—erysipelas, even tetanus. Owing to the haste required to vaccinate large numbers in a short time, those who know better hurry too much, many others who do not know assist in the work—physicians, servants or children, drivers, office-boys, or policemen. Many of the sore arms occur under these circumstances, either from careless operations, bad vaccine, or from operating on people who should have been excused. In the United States Supreme Court case of *Jacobson vs. Massachusetts* it was given out as impossible for unfit people to be vaccinated. It did not seem necessary to have a definite statement in the statute. As a matter of fact, we all know that many unfit people have been vaccinated, sometimes by force, with great brutality, and often with serious or even fatal results. There is no consolation for the parents in such cases to know they can bring suit for assault.

The omission of vaccination in such cases would not be nearly so dangerous as another method, legalized in one of the States, and practised in many—that of not vaccinating people living in sparsely settled regions. Yet these people very often have smallpox affecting patient after patient, often not seen by a physician, but occasionally moving to another place. Several patients have been admitted to the isolation hospital in Ann Arbor, having travelled many miles, sometimes hundreds, with smallpox. How many people exposed on trains, in stations, or in hotels have taken smallpox from such patients I cannot, of course, tell. From one sparsely settled district a woman travelled some distance with the eruptive stage well advanced, attended a wedding, and infected many people who reached almost as many towns before they knew what risks they had run. At least six are supposed to have taken the disease from her. The experience of the hospital follows the universal rule—no student, physician, nurse, or patient has taken the disease from any of the smallpox patients. All of these are vaccinated as carefully as

possible. One case only occurred from infection in the hospital, an orderly who was wrongly supposed to have been recently vaccinated. He was exposed only for a few minutes, while helping to carry a patient on a stretcher. The husband, who carried the other end, and was kept in the smallpox hospital, was vaccinated at once and did not take the disease.

All the faults mentioned depend upon the method of carrying out vaccination, and could be avoided by systematic vaccination and revaccination. Others, just as serious, exist in connection with the material used. Many of the laws were passed before there was any control of vaccine virus, although there was plenty of evidence that it was often faulty and that there was no way for the practising physician to recognize the good or the bad. The high bacterial content, the poor specific power, the insanitary condition of some factories were all known. Fortunately there has been a great improvement in the material since the United States Public Health and Marine Hospital Service took charge of the inspection, but there is room for still further improvement in the potency of the material. From the fact that some of the factories had to be closed on account of their bad condition, and from the misstatements of the makers, it is evident that the control should not be relaxed, but should become closer. At the same time the freshness of the virus should be more closely regulated and the factories distributed with a view to better service.

Perhaps more than anything else we need educated and trained vaccinators, and these should have positions that would enable them to carry out their functions as they should be. To make vaccination compulsory without providing educated vaccinators is as irrational as it would be to make a law requiring railroad companies to take untrained men as train dispatchers or locomotive drivers. I am not aware that this feature of the laws has ever been tested in a court. It cannot be emphasized too often that vaccination to be most successful must be a public matter, not dependent upon the good-will of the individual or the peculiarities of the private physician. In one city often visited by smallpox, I am informed that the public vaccinator refuses to vaccinate those exposed in smallpox houses, on account of a theory he holds regarding the danger of such an operation. In Germany a relatively large proportion of bad results come from the few persons vaccinated privately.

Perhaps a more efficient system of vaccination would cost more than the present method with its high smallpox morbidity. I know of no trustworthy data. For England, Mrs. Garrett Anderson has estimated that thorough vaccination would cost less than the present system. We have not the isolation hospitals that England keeps up at great expense, but I believe that our haphazard system is proportionately more expensive. The German establishment is expensive, because skilled men and the best possible equipment are

obtained. But practically nothing is spent for special hospitals, and very little for quarantine or the indirect expenses we have to meet. Moreover the investigations that come out of the government laboratories of Germany, and the same may be said of those in France and England, more than pay for the best that can be obtained, by adding to our knowledge of vaccine and its effects, and by perfecting the practical details of raising, keeping, and using lymph.

In conclusion I would make the following summary of the vaccination situation:

1. Our present method, varying much in different States and different parts of the same States, makes certain a high ratio of smallpox cases, with an unduly low protection to the individual.

2. There is nothing in the fundamental law of the land to prevent the passage of safe and efficient vaccination laws.

3. Vaccination laws should aim at a widespread protection, by vaccination and revaccination.

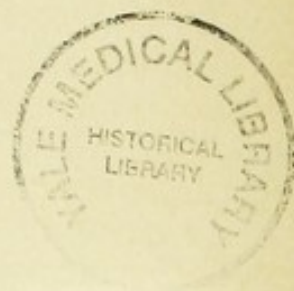
4. Compulsion should not be necessary, and should by no means take the place of safe and certain vaccination. Compulsion should not be practised in case of doubt as to the fitness of the subject by his physical condition or surroundings.

5. The operation should be a matter of permanent record, and a certificate from an authorized official should be proof of the vaccination of each individual.

6. The operators must be trained for their work, familiar with the vaccination laws, and bound to follow them.

7. The manufacture of vaccine must be controlled by competent experts; institutes for furnishing vaccine should be so placed as to make easier the distribution of virus.

8. The operation should be done at fixed times of year, when epidemic diseases are not most prevalent, in places appointed and equipped for the purpose; the subject should be examined after the operation at a time fixed by the regulations, or at once on suspicion of complication. Private vaccination should be permitted only under special conditions and the proper details should be exacted, with revision of the result by a competent health officer.



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