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A REPORT

ON

LAWS, PROVISIONS, AND METHODS

FOR SECURING

GENERAL VACCINATION

THROUGHOUT THE COUNTRY.

BY

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# A REPORT ON LAWS, SANITARY PROVISIONS, AND METHODS FOR SECURING THE BENE- FITS OF GENERAL VACCINATION THROUGH- OUT THE COUNTRY.

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PRESENTED AT THE ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIA-  
TION, IN BALTIMORE, NOVEMBER 11, 1875.

A GREAT master in the science and duties of public health care has said, after studying the experience of all countries in vaccination and the prevention of small-pox, "Surely no principle can be more obvious than this, that if the State professes to vaccinate the people, — above all, if it compels the people to be vaccinated, — it must take every possible security for the excellence of the vaccination which it offers. A local prejudice against vaccination, would, in my judgment, be a reason for inquiring into the skill with which (in the prejudiced locality) vaccination has been administered."<sup>1</sup>

The greatness and value of Dr. Jenner's discovery of the specific preventive of small-pox will never be successfully controverted; but the policy, the methods, and laws of public health governments and local authorities respecting officially-supervised administration of this prophylactic against a dreaded Destroyer will continue to be discussed until science supplants charlatanry, and until the popular knowledge of hygiene shall have superseded ignorance and prejudice. Such discussions will be equally earnest and useful, whether they refer to the obligatory and compulsory, to the gratuitous and regulated, or to the optional methods of administration of this preventive measure; for by the study and experience of each of them we may reasonably expect to find, within proper limits, that each of these methods must be provided for by a system of public health laws worthy an enlightened people. The claim that vaccination is competent to exterminate small-pox, or, at least, wholly to protect the human race from this loathsome contagion, was from the first contested by skeptics, and is even now confronted by the crotchets of illogical and captious men; yet this verdict of science and sound medical opinion has been made up upon the basis of the

<sup>1</sup> *Papers relating to the History and Practice of Vaccination in England.* By John Simon, Medical Officer to the General Board of Health.

experience of millions on millions of facts, and the observations of the best medical minds in the world. Previous to the discovery of this boon, small-pox had for centuries continued to destroy from one tenth to one fourteenth of all who were born ; but when after thirty or forty years' experience of the protective influence of vaccination, the immunity of the vaccinated, and the ready limitation of the pestilential spread of the disease, equaled all that had been promised concerning the vaccine prophylactic, the advocacy of *compulsory* methods, and the most imperative laws for administering them, became occasionally vehement and unreasonable. The experience of all civilized countries during the past seventy years, shows what is found to be practicable and most useful in regard to the interference of the State and local sanitary authorities to secure the vaccination of all children.

It is our purpose, in this report, to submit the conclusions which the best experience and the acknowledged wants of communities give as the basis for the laws, sanitary provisions, and methods by which the largest benefits of vaccination shall be secured throughout our country.

*Official Interference.*—Preliminarily to our examination of the questions relating to vaccination laws, the axiomatic truths concerning the conditions necessary to good vaccination and the exercise of official sanitary interference in respect of it, need to be recited in brief terms ; for while the plainest principles of social and political economy may fully warrant the enactment of whatever laws are requisite to prevent pestilential diseases, the prevention of small-pox is secured only by a kind of interference with the individual, which must first be justified upon the ground that the safety and welfare of mankind demand it ; and, secondly, that the laws and all proceedings under the laws are so applied as to do the individual no harm, and at the same time secure to each person the most complete protection from this contagious pest on account of which such obedience to a sanitary duty is rendered. The following are the most essential conditions in this view of the personal and public interests : —

That the quality of the vaccine lymph shall be absolutely perfect, and that the insuring of this uniform excellence shall not be permitted to be subject to uncertainty or any kind of capricious judgment.

That no barriers of poverty, ignorance, or the inaccessibility of means shall prevent the administration of the vaccination which each child needs.

That every parent and custodian of children, and every other person susceptible to small-pox, and every medical practitioner shall, by timely and adequate provision of the State and local sanitary authorities, be wholly without excuse for failing to have conveniently accessible the needed supply of perfect vaccine virus, and whatever is essential in the nature of information, instruction, and a personal record.

That whatever is ordered or required by the public authorities to be performed in respect of vaccination, the laws should enable and require the same authorities to insure being performed, and should give to the people as well as to the authorities such necessary means of information and instruction as shall suitably prepare them to understand and perform their duties.

In the four conditions that are here stated to be necessary for universal and satisfactory success in vaccination generally, and as a public as well as a private duty, the fact is assumed that the best of vaccine material, the sanctions under which it is supplied for public use, and the kinds of information and instruction which may frequently be required by the people and by local authorities, in order to extend the benefits of vaccination to all who need, will be duly kept in view as essentials to be secured in the operation of adequate laws and methods, and by sanitary authorities which provide incentives and means for general vaccination.

*Laws to provide for and enforce Vaccination.*—Vaccination in the United States hitherto has been chiefly an optional or a charity service. Compulsory and obligatory laws and sanitary ordinances have rarely been carried successfully into operation. In the State of New York, a compulsory statute has for eleven years remained a dead letter in the General Statutes. It was made applicable to every school district in the State, and was left to execute itself. It has not been applied in a town or district, and has the present autumn (1875) been fanned into life in a single small city, only to discover its utter inadequacy, for it reposes in school-boards the duty of providing for and conducting public and mandatory vaccination, and of assessing the cost thereof upon the tax-payers. This contagious pest, which requires public provision for universal vaccination, is indisputably a destroying enemy of mankind, and ever to be kept under the surveillance and control of public health authorities. General vaccination and public provision for its most expert and universal application, is a duty of sanitary government, and rightly subject to any needful regulation by statute, because just so far as it is faithfully applied, vaccination is the preventive of small-pox. Unfortunately for the human family, there are no other pestilential diseases which are proved to be preventable by the operation of a harmless substitute; therefore, all laws and provisions for general vaccination stand alone, and relate solely to the prevention and control of the one loathsome and dreaded contagion of small-pox.

Vaccination being designed solely to *prevent small-pox* and to render its pestilential prevalence impossible, and the actual value and efficiency of vaccination depending directly upon the watchful supervision of the vaccine material, the prevention of errors and impostures, and the maintenance of perfect standards of virus, and of practice in this service,—the proper medical and State authorities are certainly in duty bound to take cognizance of all the conditions necessary to secure perfect vaccination and to control and prevent the prevalence of small-pox.

*Systems of Vaccination.*—These may be termed: The Optional (whether by private or public provision); the Charitable; the Obligatory or Compulsory.

Of the vaccinations under the second and third provisions, it is possible to preserve complete records, adapted to develop the desired knowledge of the whole subject of vaccination; and wherever the public authorities render aid and counsel to those who give or accept the optional kind of vaccinal service, the local sanitary authorities and the individuals so vaccinated

by competent persons of their own or their families' selection should have an authentic record. This plainly indicates the necessity for a system of public registry of vaccination. The registry cannot be made satisfactory or as valuable as it should be, without a system of official inspection of vaccination, and such a system must not be allowed to degenerate into an unskilled service, but must ever be an expert and most painstaking duty. As Mr. Simon has well said, "What has to be administered is not a mechanical matter of routine and registration, but a system which, from beginning to end, and from centre to circumference, requires in all its parts to be vitalized by the *science of medicine*." Let this pithy sentence be the motto for all official and professional workers, under whatever laws and regulations States and communities may adopt concerning public vaccination; and be it remembered that to prevent a dire pestilence — which springs from a contagion that destroys multitudes of precious lives in every country, and disfigures those whom it does not kill — is the sole reason for vaccination; therefore, that the laws and methods to provide for vaccination are simply and emphatically the barriers which entire communities and countries erect against a most dreaded enemy. In none of the States of our country is there a system of faithful registration of the individual vaccinations. A very useful old law relating to the vaccination of school children in the State of Massachusetts was long ago repealed; and the statute in New York requiring the certified and registered vaccination of all pupils in the public schools, has remained a dead letter, except in so far as the sanitary and school authorities, acting together in the cities of New York, Brooklyn, Elmira, and Rochester, have secured a partial compliance with the statute.

The successful registry of the vaccination of all the children born in any State must depend mainly upon the public registration of all births; the system of birth-registry being taken as the basis of the system of notification, instruction, and following up to secure the vaccination of every child. The English, Scotch, Belgian, French, Prussian, Italian, and most others of the European systems of public vaccination, are based thus upon the State system of birth registration. Though these European systems of vaccination and the public registration are spoken of in the United States as being compulsory, they are so only in a comparative degree, while the very best of them are simply instructional and obligatory, the legal proceedings *in the nature of compulsion* being resorted to *only as a last alternative*. This is as it should be, especially if skill and the most perfect qualities in the vaccinal service are not publicly offered in every community; and when such completeness and perfection in this branch of the public health-service shall have been secured in any State by a wisely ordered system of central and local authorities which shall provide only the best vaccination and the most skillful supervision of it, — then the necessity for compulsory proceedings will rarely, if ever, occur. Compulsory judicial action to overcome obstinate resistance to the duty of submitting to vaccination, occurs only as the unfortunate outcome of prejudice, ignorance, or of unreasonable modes of considering the duty of vaccination. Mere prejudice, that has resulted from reported and exaggerated accounts of some accidental evil which has fol-

lowed some careless kind of vaccination, is the chief source of opposition which sanitary authorities have to confront. But such prejudice cannot be overcome by arbitrary compulsion, even in the instances in which the security of a community and the performance of a public duty require a compulsory vaccination of a particular person, or group of persons. Justly does the chief medical officer in England say, "A local prejudice against vaccination would, in my judgment, be a reason for inquiring into the skill with which, in the prejudiced locality, vaccination has been administered." This statesman among sanitary authorities, while acknowledging the importance of obligatory or compulsory laws for vaccination, declares, from the largest experience and responsibility, that, "While the law provides a specific machinery for public vaccination, offering it gratuitously to all persons; and still more, while the use of this very machinery is, in fact, for two-thirds of the people, not optional but compulsory, so long I hold it is a moral obligation on the part of the state, that what it thus invites and compels people to accept, shall be of at least good quality." If vaccination is an unqualified blessing only when skillfully administered, if prejudice and resistance against it are the outcome of faultiness and indiscretion in the application of it; and if the universal and almost unexceptional vaccination of the entire population in any State or city can be secured by means of special expertness and tact of skillful medical and sanitary officers, then a resort to legal prosecutions certainly should be only a *dernier ressort* for overcoming any particular wanton resistance to the law. Experience warrants the conclusion that excepting at the times when small-pox is invading a community, and in the rare instances of wanton recklessness, actual compulsion by legal proceedings, by penalties, etc., may not be expedient, and that even the mandatory language of compulsion is unnecessary; for in the few persons, and the extremely few parents who obstinately resist and scorn the offer of vaccination for themselves or their families, such abnormal and vicious obstinacy is made angrily uncontrollable by the bare assertion of force and authority. Says one of the best interpreters of sanitary authority in the administration of public vaccination, when fully supported by a compulsory law, "kindly consideration for people's feelings, often a little coaxing, sometimes a little authority, always a good deal of discretion, are — if he [the vaccinating physician] is to reach his utmost utility — as necessary to him as his lancet."

The best examples of success in enforcing universal vaccination are presented in those countries which in the largest degree provide instructional and very perfect methods for securing the best quality of lymph, and the most appropriate seasons of the year for general vaccination of infants and others. We need only quote such examples as those given by Scotland, Belgium, Sweden, and Prussia. Not only are ample and well-adapted facilities afforded for the gratuitous vaccination of every child in the realm, but, after notification, instruction, and admonition, the statute begins to be compulsory only after a year has expired. In Sweden, two years are allowed to elapse before compulsory proceedings are enforced; and in Belgium, where compulsion is only indirect by affecting privileges of individuals, and,

recognizing the public as well as personal value of protection given by vaccination ; that kind of indirect compulsion being the most important and practicable, while it is far the most convincing and effective of moral agencies to induce a popular willingness and desire for vaccination among the masses of the people, we should not fail to resort to these indirect means, even if the laws and machinery of the health government were to provide mandatory requirements and prosecuting officers to compel the vaccination of every individual in the State, or in a particular city. Be it understood that in presenting this aspect of public duty, the utility of a compulsory law, with coercive penalties, to be applied by competent sanitary and judicial authority, in exceptional cases, is not brought into doubt. What is here shown, is the fact which all experience teaches, that instructional means, optional, regulated, conditionally gratuitous, and indirectly compulsory measures should be everywhere provided as the chief agencies for procuring the vaccination of the people, and should precede the actual coercion of the duty by fines, penalties, or disabilities. Though it may not be proper for the medical officer of health to define the limits of the domain of sanitary law or the doctrines of State interference with individual privileges, the experience of municipal sanitary officers sustains the principle and the proceedings in the practice of vaccination as herein set forth.

The author of this report is as earnest an advocate of the obligatory forms of public law and authority respecting vaccination as any sanitary officer or physician can be. But with this confession of personal allegiance to an obligatory form of public health law and official practice in respect of systematic vaccination, including the inspection and record of every child's vaccination, all experience justifies the language of the sanitary statesman, Mr. Simon, "that no principle can be more obvious than this ; that if the State professes to vaccinate the people, above all, if it compels the people to be vaccinated, it must take every possible security for the excellence of the vaccination which it offers." The necessity and best reason for State interference, both for the provision and the enforcement of vaccination, will be found, in most places, to consist in the fact that there is a vast amount of spurious vaccination, and that the interference of the State and of the local sanitary authorities is quite necessary to prevent such deceptive and injurious results. This not only is strictly true, but it is a most momentous truth, important for the people to understand.

The registering, the inspecting, and the certifying of vaccinal results, as found to be well authenticated in every child year by year, and within the first year or two of childhood, in every community and under sanctions of State laws and the most expert medical judgment, must constitute the foundation of a truly compulsory system, if that or any obligatory system is to be rendered successful ; and if a State hesitates to establish a public system of vaccination, all the more is it important that the means of maintaining the perfect standards of, and ready supplies of, vaccinal virus shall be provided by State authority, or an adequate provision for perpetually encouraging the maintenance of the best quality, and an ample supply of vaccinal

lymph. The latter view of the duty of a State has prevailed in Maryland.<sup>1</sup>

In the absence of a State Board of Health in any State, this example of the State of Maryland may be usefully followed; or the Board of Health of the chief city in each State may be required, by statute, to maintain and dispense the standard stock of vaccinal lymph, as the State of New York now requires, or rather permits, the Health Department of the city of New York to do, under special statute.<sup>2</sup>

But this dispensing of perfect vaccine virus is not alone sufficient for securing the chief result which each community ought to secure in regard to public provision in vaccination. If the State has the right to interfere in any way to secure the public benefits of vaccination for the prevention of small-pox, then certainly the same authority should extend to the prevention of imperfect, deceptive, spurious, and injurious kinds of vaccination. Though there may be some exceptions and limitations to the power and means to prevent spurious and imperfect kinds of vaccination, which result chiefly from ignorance and inexperience on the part of the vaccinators, there is ample reason why a State, as well as every community, should wholly prevent midwives, old women, druggists, clergymen, amateurs, and all other persons than the legally qualified physicians and such non-medical men as shall be specially instructed and licensed for this duty, from offering their services as vaccinators. What is called vaccination, is, in a vast number of persons in the United States and the rest of the world, only so in name and not in reality. As Mr. Marson has said concerning vaccination in England, so in the United States: "All persons — amateurs, druggists, old women, midwives, etc. — are allowed to vaccinate in any way they may think proper, and the persons operated on are considered to have been vaccinated." The so-called prejudices against vaccination will continue to hamper the public administration and full benefit of this prevention of small-pox, so long as such faults exist.

Turning now to the question of established systems, how plainly it appears, that however imperative and compulsory the statute or sanitary code may make the duty to vaccinate every child, and revaccinate or test the sufficiency of the vaccinal safeguard in every person in the community, the mode of administering the vaccination laws must be instructional, persuasive, convincing, and in every possible way associated with the idea of self-interest, social and public duty, whether there be penalties and fines awarded by law to the parents, guardians, and persons who obstinately and wantonly refuse to submit to its requirements or not. Experience, in all countries

<sup>1</sup> The State Agent of vaccination, located in Baltimore, Md., has proved the practical utility of the central depot or conservatory of vaccinal material of the highest standard of quality. Almost every town and hamlet in this State has had occasion to procure fresh lymph from that Conservatory.

<sup>2</sup> The Health Department of the City of New York was authorized and directed by an Act of Legislature (chapter 635, Laws of 1874) to organize a corps of vaccinators and establish a conservatory and dispensary for vaccine lymph or virus under the control of the Bureau of Sanitary Inspection. This Bureau is required to provide for necessary gratuitous vaccination and to collect and preserve pure vaccine lymph for regulated distribution.

where the masses of the people are better vaccinated than in others, as in Sweden, Prussia, Italy, France, Belgium, and especially in Bavaria, Hanover, Frankfort-on-the-Main, and in numerous cities and small states, in which the recognition of the private and public obligations of timely and general attention to vaccination is universal, and the duty is best appreciated and has produced most complete results—shows that the instructional and the indirectly compulsory methods are patiently and exhaustively applied before direct coercion, fines, and disabilities are resorted to. The ultimate necessity and right to resort to the latter extreme measures, is undoubtedly among the useful agencies by which common minds are influenced to adopt the optional method of complying with the duty of vaccination. To undertake, by mere force of law, the compulsory vaccination of every new-born babe, without some conference and reasoning with the parents, and without first providing perfect modes and means for the vaccination of every child in the community and in the State, is not expedient nor entirely practicable. But the reason and self-interests of the people can be aroused and enlightened so as to compel inquiry and secure the spontaneous assent of the judgment. It has been found that in those European countries in which a verified and registered account of every person's vaccination is kept, there is the largest success in applying the laws of compulsion, and still more, of inculcating the consciousness of obligation in regard to vaccination. In Austria, for example, the vaccinating physician patrols his appointed district several times a year, and whoever refuses the officially-approved vaccination which the law requires, is denied every kind of public charity—the vaccinating-officer's certificate being necessary to the public allowance of any aid. Admission to any school, any public service, or office under the government, depends also upon the vaccinator's certificate. In France, we find the same laws in operation; and perfect practice of vaccination, as a branch of public hygiene, is encouraged by prizes and other rewards. Sweden has also brought all the resources of instruction, official inspection, and encouragement and indirect compulsion to bear upon the people, until that country is absolutely secure against small-pox. After two years of patient effort to induce obstinate parents and custodians of children to accept vaccination, if still they object and resist, the magistrates begin to apply fines and penalties. The German States, and particularly the (former) "Free Cities," have completely demonstrated the practicability of the *instructional* and obligatory system thus combined, and they seem to have proved that the greater the predominance of the instructional element, and the more completely that element overshadows and constantly accompanies and explains the compulsory requirements of the public system of vaccination, the larger and more satisfactory will be the results. In England and Wales, under the laws which have gradually reached their compulsory stage, there is continually increasing proof, that the instructional, persuasive, and obligatory provisions of the public laws should be so blended that they shall be administered without arousing prejudice. The Anti-Vaccination Leagues, and the definite resistance to the vaccination laws in Great Britain the past year or two, might have been prevented by blending a larger share of instruction

and persuasion with the authoritative duties of the district vaccinators. Scotland, under the Vaccination Act of 1864, has achieved the greatest success of any portion of the British dominions, in the public and private vaccination of the infant population, for more than ninety-four in every one hundred infants born alive, are successfully vaccinated during the first year of life. Six months of delay from the birth of a child, is allowed by the Scotch statute for the optional, the gratuitous, or any ordinary way of private or public vaccination; but experience has justly induced the government authorities to petition the parliament to reduce the period now permitted for compliance at discretion with the law, from six months to four. This is demanded by the sanitary officers, because about three per cent. of the infants of Scotland fail to be successfully vaccinated. The law of Scotland has produced the most perfect results witnessed in any part of the British dominions, and because of such preëminent success, and of the general fitness of the chief portions of the Scottish Vaccination Act to the wants of our American States, its successful operation is thus particularly mentioned.<sup>1</sup> Yet the fact is noticeable in every country, — and it would be in different States of our own country, — that the best possible adaptation of a system of public vaccination in any one State, may not, in all particulars, be adapted to the laws and methods of sanitary administration in another.

The very effectual results of the obligatory vaccination laws in Scotland are evident from the fact that small-pox has become nearly extinct in the child-population of that country, and that less than four out of every one

<sup>1</sup> At the end of the year 1873, the tenth of the operation of the Scottish Vaccination Act, Dr. Wm. Robertson, Chief of Statistical Bureau under the Registrar-General, reported the following facts: —

Average annual number of births in Scotland in ten years, ending Jan. 1st, 1874	114,935
Died or removed before vaccination could be enforced under the law . . . . .	12,490
Postponed by medical advice . . . . .	811
Insusceptible from various causes . . . . .	581
Total number whose vaccination should be accounted for, after foregoing explanations . . . . .	101,152
Average annual total successfully vaccinated . . . . .	<b>101,152</b>

The Report states: —

The number of children born in Scotland during the year 1873 was . . . . .	119,810
The number successfully vaccinated was . . . . .	105,177
Operation postponed on medical authority on infants . . . . .	1,113
Number of infants insusceptible . . . . .	364
Number of infants that died before the lapse of the statutory six months . . . . .	10,527
Number of children that moved out of the district before the lapse of the statutory six months . . . . .	2,629

Number of children living to the age without successful vaccination, two and four tenths per cent. of all the infants who survive that age.

The Report states further: "In Scotland there is but little of that unreasonable opposition to the practice of vaccination by which some opinionative men are elsewhere moved. But the greatest enemy to the practice is, in Scotland, the habit of procrastination existing among the lower classes of society. This habit, it is feared, prevents many parents from applying to the vaccinator, till a reminder from the Registrar has been issued, requiring them to have their children vaccinated. Such reminder is not issued till near the close of the sixth month after the registration of a child's birth."

hundred infants which survive six months from birth fail to be well vaccinated. The aggregate experience in the vaccination for the first ten years of the operations of the Scottish system is summarized as follows (in percentage form, after giving the statistics in detail), by Dr. Robertson, the chief of the Statistical Bureau of the Registrar-General's Office, — this summary being based upon 1,251,287 registered births.

	Successfully Vaccinated.	Vaccination postponed.	INSUSCEPTIBLE OF VACCINATION.			Removed from District before Vaccination, or otherwise unaccounted for.	Total Living.
			From Constitutional Insusceptibility.	From having had Small-pox.	From previous Vaccination.		
Ten years ending December, 1874. } Percentage . .	96.184	0.772	0.282	0.051	0.220	2.491	100.00

The postponement of vaccination under medical advice, and no small number of the cases of insusceptibility experienced in the operation of the Scottish system, occur between the fourth and seventh months of infant life. Nearly all of the failures to vaccinate, because of removal of infants, occur in the nomadic class, that most of all should receive the earliest possible benefit of obligatory vaccination. The sanitary authorities, therefore, have very prudently urged upon parliament, the duty of reducing the optional period for vaccination to the limit of the end of the fourth month from birth. Dr. Robertson states that, "The most frequent cause of these postponements is the indisposition of the child in consequence of some of the infantile disorders connected with teething. Now if parents and guardians could be induced to have their children vaccinated before the completion of the fourth month of life, a most fruitful source of postponements would at once be removed. But it is to be feared that, at all events among the poorer classes, there exist habits of procrastination, which induce them too often to take no steps to have their children vaccinated till the last legal moment, and to wait in fact till they receive a statutory reminder from the Registrar, calling attention to the penalties which further delay will occasion. In such circumstances it is believed that no small number of children six months old are presented for vaccination, and in consequence of the presence of some teething-rash or other infantile complaint, are judged not in fit condition to be subjected to the operation of vaccination, and hence tend to swell the list of 'postponements.' It is quite plain that by curtailment of the period during which the vaccination of children is not obligatory, almost all the postponements that are at present due to the disorders connected with teething might be got rid of; and, were it merely in order that postponements should become less frequent, we should be disposed to advocate the period

of four months as the maximum during which a child should be permitted to remain unvaccinated."

Experience has shown that in the absence of a thoroughly efficient system of birth registration, the steady maintenance of an effectual system of public vaccination is simply impracticable. The special want of this essential collateral and essential aid, as a preliminary record and directory in public vaccination, is so obvious in all the United States and Canada, that it should induce a general effort to procure an effectual system of registration of births in every State. The requisite conditions for giving full effect to any good system of public vaccination will not be complete without the faithful registration of every child within sixty days from the birth. Even in the administration of the Scotch Vaccination Law, it has proved seriously at fault in its unreasonable limitation to only the children born in Scotland. The practical import of that limitation may be witnessed in contiguous States and neighboring cities, within which there is great difference of degrees of completeness in the birth-registry, whatever be the system of public vaccination. The cities of Providence and New York vie with each other in the effort to secure the vaccination of all their young children, but Providence has the special advantage of a perfect registration of its newly born, the records for which are gathered in periodically by house-to-house canvassers; and the sanitary system of that city also maintains a central service for gratuitous vaccination every Saturday in the year. Therefore the superintendent of public health is able to know at frequent intervals if any children remain unvaccinated, and as the official certificate of vaccination is required of every school child, the protection against small-pox distinguishes that city. Says one of the medical practitioners — whose notes on the sanitary state of his county will be found in another report in this year's transactions,<sup>1</sup> — "for a period of over forty years small-pox has appeared among us in a clandestine way a number of times, but not in one instance has it been permitted to overreach the first cases, because those initial instances of the contagion were isolated from all unprotected persons, and the household and neighborhood subjected to vaccination and re-vaccination." Thus is demonstrated the benefit of vigilance and vaccination in a populous town. In this instance the scrupulous care of a great physician, whose opinion and decisions have had all the moral force of law and official regulations for forty years, protected an inland village and populous town from small-pox; but now, with the increase of population, and an attendant impossibility to know that all the children are vaccinated, the venerable physician closes a recent letter to this Association appealing for the thorough registration of vital statistics in every State as an essential part of the basis for a public health system. Effectual defense against small-pox will not be permanently maintained in any state or city without the aid of a faithful system of registration of vital statistics.<sup>2</sup>

<sup>1</sup> See *Public Health Papers and Reports*, American Public Health Association, vol. iii., p. 231.

<sup>2</sup> Numerous instances of complete success in preventing small-pox through many successive years, can be quoted, and a single illustration suffices: "In the parish of Mold in

With the desire to give the most practical direction to the information contained in this report, and to incite useful action to promote vaccination throughout the country, we submit the following

CONCLUSIONS.

*First.* — All experience, from Jenner's time until now, proves that vaccination requires skill and carefulness, and demands exact knowledge and practical instruction in the art of its application.

*Second.* — Tact in the instruction and persuasion of the ignorant and prejudiced, the greatest skill in vaccinating, the faithful observation and record of results, the exercise of good judgment concerning the quality and perfectness of the operation and its results, the faithful testing (by Bryce's method or a revaccination) in every case in which the sufficiency of the vaccinal operation may be reasonably doubted, and, finally, the systematic registration of vaccinated infants and all older children in our country, are essential requisites in the system for securing a trustworthy and universal protection against small-pox.

*Third.* — That, inasmuch as even these protective measures cannot be secured in any city or State without the accessory facilities which a State system of registration of births must offer, all experience shows that a judicious system of medical and official notification and instruction to parents, when supervised by competent minds, becomes one of the most effective agencies in securing the timely and cheerful compliance with the duty of vaccinating every infant. The Scottish, English, French, and German laws and official methods for securing vaccination of infants, are complete examples as respects the system of procedure in providing for public vaccination; but the faultiness in the qualities of the vaccinal virus employed, the frequent carelessness of vaccinators, and the want of adequate instruction to parents and the care-takers of children, are great drawbacks upon the success and popularity or acceptableness of obligatory vaccination. These circumstances need not be drawbacks in our American States, if we infuse and vitalize the vaccinal system which shall be adopted with the instruction and inquisitive criticism which the American people are wont to give to matters of public sanitary duty.

*Fourth.* — The encouragement of official supervision of the supply of vaccine lymph, which shall be kept continually under a system of registered observations and testing for the maintenance of the perfection of its attributes, is plainly a duty of the first importance; and wherever a State Board of Health is formed, or a municipal sanitary board is endowed with sufficient authority and means, it should maintain or at least supervise such a

Flintshire, North Wales, the population is greatly exposed to small-pox by constant communication with Liverpool and other places in which that disease always prevails; but the district vaccinator, Dr. Hughes, has made it an invariable rule to permit no infant to remain unvaccinated. In the fourteen years ending Sept. 30, 1867, 7,654 children had been born and vaccinated in that parish; and that faithful vaccinating officer states, that the result is that 'No child born in the Mold district, and alive at the date of the registration of its birth, has died of small-pox during the fourteen years.'" [See original statements in Seaton's *Hand-Book of Vaccination*, p. 259.]

system of vaccinal lymph supply. It is by no means necessary to wait for the organization and development of a complete sanitary system, nor for the perfecting of birth registry, before providing a perfect standard and a public supply of vaccinal lymph.

*Fifth.* — In the United States, it should be regarded as entirely possible to so frame obligatory laws and regulations for general vaccination that they shall provide for adequate instruction and the best safeguards to secure perfect vaccination. The laws for the purpose, the rules and methods of administration under the laws, even when compulsory, can and should be so ordered as to avoid the needless incitement of ignorant prejudice and wanton opposition.

*Sixth.* — State Boards of Health and the sanitary authorities in each city and town of the respective States may greatly expedite the operation of the laws and regulations for general vaccination, by uniting in efforts to secure ample diffusion of correct knowledge concerning the merits and duty of vaccination among all classes of people, and by providing methods for supplying perfect vaccine virus and an effective system of practical instruction in vaccinating.

*Seventh.* — Regular vaccinating days at intervals of one week are established by all experienced public vaccinators and by the best family physicians, for the duty of inspecting each vesicle and vaccination at the expiration of seven days precisely; the importance of facilities on particular days for fresh lymph and arm-to-arm vaccination with it, as well as the practical relation of habit and regularity in any duty or service which is liable to procrastination or neglect, require that in every city and town, the public health authorities, or the medical profession, shall see to it, that on a designated day and hour and in suitable places, the public vaccination shall be offered. In like manner, medical practitioners, — especially when serving the poor, — may greatly facilitate and insure the best results of the duty they owe to families, by designating one day in the week for replenishing their own stock of vaccinal virus, inspecting every vaccinated person of the previous week, and vaccinating others then requiring it. Vaccinating days and the seventh day inspection must be regarded as essential to the success as well as to the general popularity and universal application of vaccination.

*Eighth.* — Vaccination is so truly within the domain of medical science and practice, that no official and public system, however compulsory it may be, can wholly supersede the duty of family physicians in the vaccination of families of the more intelligent classes; and for this reason and for awakening a scrupulous concern of physicians for the maintenance of perfect means and efficiency in private as well as public vaccination, the official method relating to the subject needs to be adopted to secure mutual efforts on the part of the family practitioners and the sanitary authorities to render the protection against small-pox universal and perfect.

*Ninth.* — All experience in various countries now proves that a state or a nation may justifiably require that in all departments of public employment, in which there is such liability to the contagion and dissemination of small-pox, as would embarrass the public service or injure the people, it should

be an established rule of all official and subordinate service in that department, that each individual shall present certified testimony of vaccination, or the other protection against small-pox.

*Tenth.* — In all schools, colleges, universities, penal and reformatory institutions, asylums, and factories, there should be an established rule, requiring that every individual therein present certified evidence of vaccination, or the other protection against small-pox.<sup>1</sup>

*Eleventh.* — Experience in the best-governed States and cities, altogether confirms the correctness of the principle and practicability of the laws which require that such rules as we have specified under the last two preceding conclusions should be supervised by sanitary authority.

*Twelfth.* — Obligatory vaccination is not in danger of becoming odious to the people, if the law and the practice under it provide for perfect accuracy in the operation itself, for the maintenance and care of perfect standard vaccinal lymph, for the critical observation of results in its application, and for maintaining a system which, as Mr. Simon truly says, "from beginning to end and from centre to circumference requires in all its parts to be vitalized by the science of medicine." In maintaining such a system of obligatory vaccination, the conclusion of Mr. John Stuart Mill, in regard to "the limits of the province of government" aptly applies: that "when a government provides means for fulfilling a certain end, leaving individuals free to avail themselves of different means, there is no infringement of liberty, no irksome or degrading restraint. One of the principal objections to government interference is then absent." The means, the motives, and all needed instructions can so prepare the way for the duty of vaccination that universal obedience to the public laws concerning it will be promptly rendered.

<sup>1</sup> This conclusion has its legitimate corollary, that so far as re-vaccination is important as a means of public security against small-pox, or so far as essential even in schools, it may justly be required. The duty of applying the sanitary rule of vaccination in all the schools of a city and seeming universal approval of it by the people, have been illustrated these past few years in the city of Elmira, N. Y. A medical member of the Board of Education so completely explained the duty and arranged the official part of the service that all difficulties vanished. A Sanitary Inspector of Schools verifies and records the vaccination of the pupils.



