tion. In 1872 a law was passed in the Netherlands making admission to a school dependent on a vaccination certificate, but this does not affect the above comparison, because the chief force of the epidemic expended itself there in 1871 and 1872 (rates 4,355 and 1,021). The rate for Belgium in 1871 was over 4,000.

2. When we examine the age classes of those who died, as far as they are available, we find, as we might expect, that where compulsory vaccination existed, the chief mortality was borne by the age class "above 20 years," but where there was no compulsory vaccination the chief mortality was amongst children.

3. One section of the various populations of Germany was only very slightly affected. That section was the German field army, numbering over a million men, though more exposed to the contagion than any other part of the population, for the epidemic raged with the greatest virulence in France. The total small-pox loss of the German field army was only 297. On the other hand, one small garrison town in France lost more than this, namely, 334. Now we know that the German field army was well vaccinated except as to some levies hastily raised, while it has been proved that the French army was very deficiently vaccinated.

4. But perhaps Bavaria, a well-vaccinated country ever since 1807, as far as regards vaccination in infancy, affords us the most valuable lesson of the epidemic, for *England is now where Bavaria then was as regards vaccination*. Thus the whole population of Bavaria had for the most part been vaccinated in infancy, and some had been revaccinated. Therefore nearly all the small-pox attacks occurred in the vaccinated.

In Bavaria: 30,742 were attacked, of whom 29,429 were vaccinated persons.

The English nation seems disinclined to face this great fact, but it has got to be faced. The Bavarians after this—nay, all Germany—saw that once-vaccination was utterly insufficient to prevent severe outbreaks from spreading when once they get a start. "It only showed," said Koch in 1884, "that the vaccination which we formerly had was insufficient, and that it had to be completed by revaccination." The experience of the German army had conclusively proved the necessity and value of revaccination, and an Imperial Vaccination Law was passed in 1874, making vaccination in the second year of life, and also revaccination in the twelfth year of life of all school children, compulsory throughout every nation belonging to the German Bund—Prussia, Bavaria, Saxony, Baden, etc.

GERMAN REVACCINATION LAW OF 1874: RESULTS.

The result is said in a few words—*small-pox epidemics have been abolished altogether in Germany*. The rate is almost nil. The few deaths which occur are due chiefly to importation from Russia and Austria.

German Mortality in 1899.

The reader will see the importance of the following:

In the year 1899 not a single death from small-pox occurred in any large town of the whole German Empire, numbering 54 millions. There were 28 such deaths in all, giving a rate of 0.5. These 28 deaths occurred chiefly nearly the frontiers; and, lastly, *the 28 deaths occurred in 21 separate districts* and yet no local epidemic was started. This is very significant.

ENGLAND SINCE THE EPIDEMIC OF 1871-2.

England in 1871 created a machinery by which to put in force the law of 1867, and trusted to rigorous vaccination of infants at a very early age—3 months. It was left to Boards of Guardians to initiate prosecutions for default, and no attempt was made to instruct the nation. Once-vaccination is utterly insufficient. Local epidemics arose from time to time, while the law was harshly administered when set in force, hence some Boards of Guardians revolted altogether, and their number steadily increased. Then Government in its wisdom had a Royal Commission of gentlemen appointed, who knew nothing about the subject for the most part; very few of them had ever studied the question of vaccination and small-pox. Like true Britons, they almost ignored the experience of other countries, and set to work to get up the subject at first hand for themselves in the most conscientious and painstaking manner. But this took a long time, and while they were at it several severe local epidemics

occurred. Accordingly they sent out medical men to study local epidemics, and then went on with their antiquarian topics, discussing John of Gaddesden and the origin of Jenner's second stock of lymph, and Woodville's variolous cases. At last came the Gloucester epidemic, which shook in their shoes the members of the Royal Commission, and after their seven long years of labour they issued their report, which in its legal phraseology is well known to all. They could not help concluding that revaccination is necessary, but they had not the courage to recommend Parliament to make it the law of the land for all school children, and even surrendered compulsory vaccination in infancy. The German Commission of 1884 consisted of eighteen members, all medical men and expert in the subject, with a lay chairman. Their eight chief conclusions are a model of conciseness.

The statistics of the local epidemics published in the Royal Commission's report have been repeatedly put before the public, and need not be reproduced here.

This article may fittingly conclude with a very remarkable fact, which shows that revaccination must be made universal, and not left optional if we want to utilize the beneficent protective action of vaccination to the full. The German law of 1874, which imposed vaccination and revaccination on all, made no difference to the German army as regards its vaccination. This army had already enjoyed revaccination ever since 1834 with splendid results. But the new law at once made a great difference in the small-pox mortality of the German army, low as it already was—51 deaths in 30 years (1840-1869)—for it abolished the mortality altogether. There was no death by small-pox in the whole army for twenty years after 1874, with the exception of one in 1884, that of a reservist who had been twice unsuccessfully vaccinated, and there has been one death since. This proves that the protection which an individual acquires by vaccination and revaccination is greatly increased if he is surrounded by an equally protected community; and hence it is *the right and the duty of the State to insist on universal revaccination*. Then there will be no need for expensive isolation procedures, for there will be no more small-pox epidemics. Germany, Italy, Hungary, Roumania, and Japan—all have compulsory revaccination, and this country must follow.

ON THE ADMINISTRATION OF THE LAWS FOR THE PREVENTION OF EPIDEMIC SMALL-POX.

By MRS. GARRETT ANDERSON, M.D.

It is the purpose of this article to explain in some detail how the legislative enactments intended to diminish small-pox in this country are put into effect. Acts of Parliament which have to be obeyed each time a child is born obviously need an elaborate and well-designed legislative machine. Success will depend almost as much upon the nice adjustment of the different parts of the organization for putting the law into practice, and upon the absence of friction between the different bodies concerned in the work, as it does upon the intrinsic merits of the law itself. It may be of use to see how the machine in this case has been constructed, and what connexion and what measure of interdependence exists between its several parts.

We have then to ascertain:

1. The department of Government charged with the duty of putting into effect the various laws intended to prevent epidemic small-pox.

2. The local bodies through which the Central Government Department works.

3. The powers entrusted to the local bodies, the agents they employ, and the measure of supervision exercised over them by the Central Government Department.

The only measures known at present for the prevention of small-pox epidemics are two: to render each person immune to the disease by efficient vaccination and revaccination, and to keep contagion away from such as are not protected by vaccination. It is obvious that the complete exclusion of contagion in crowded and mobile populations is impossible. The most that can be done in this direction is to remove cases of small-pox as they occur, and to reduce in this way the risk

of contagion to others in a limited though still valuable degree. The problem is, therefore, how to get every one in the community efficiently protected from small-pox by vaccination? Or, failing this, how to keep as large a part of the population as possible out of the range of the contagion of small-pox? The administration of the vaccination laws is much the more important part of the duty of the Government so far as regards small-pox. Isolation at its best would be powerless but for the aid of vaccination; even with its aid it is impossible to isolate early enough to prevent all contagion, and it is enormously costly. It is therefore the administration of the vaccination laws which is most worth study.

The Central Authority.

The first three Vaccination Acts—those of 1840, 1853, and 1861—were administered by the Poor-law Board. In 1871 this Board was superseded and replaced by the Local Government Board, which then became the Central Governing Department for Public Health and for the Poor Laws and for all other local government business. Poor-law guardians, county councils, town councils, urban and rural district councils, parish councils, all have to obtain the sanction of the Board before they can borrow money on the security of the rates or make by-laws.

Private Bills in Parliament promoted by municipal corporations and urban or district councils have to be submitted to the Board and exposed to its criticism both in and out of the House of Commons. The Board works by a large staff of inspectors of many kinds and by county and district auditors. The whole of the functions of the Board are vested in its President, but he is permitted to delegate his powers to the Permanent Secretary.

Local Authorities.

The year after the creation of the Local Government Board measures were taken to devolve local business upon local authorities. In 1872 England and Wales (excluding the metropolis) were divided into urban and rural sanitary districts, each of which was under the jurisdiction of its own sanitary authority. Urban districts included all boroughs and existing "Improvement Act districts." Rural districts were Poor-law unions or such parts of them as were not included in an urban district. In 1875 a comprehensive Act (38 and 39 Victoria, c. 55) was passed consolidating the law as it then existed and repealing nineteen Acts which had been passed since 1848. The Act of 1875 left the scheme of Public Health Law in the general form settled in 1872, and this form still remains. The Local Government Act, 1894 (56 and 57 Vict.) completely altered the constitution of the bodies entrusted with the administration of the laws affecting public health and the mode of their election. It gave additional powers and duties to the new bodies it created, but it did not take away the powers previously entrusted to their predecessors. In the place of the Boards of Health, Boards of Guardians, and Improvement Commissioners (elected by voters possessing a voting power varying with their property qualification), District Councils, elected by ballot by the ratepayers, were substituted. Boundaries were also readjusted, so that a district should not extend into two counties. From 1875 Boards of Guardians had been the rural sanitary authorities, but from 1894 the urban and rural district councils have been in charge of all matters affecting public health with the exception of vaccination, which remains in the hands of the guardians. The Rural District Council is a body corporate distinct from the guardians of the poor, though to a great extent the same persons are members of both bodies. The rural district councillors are elected by ballot, and a certain number of members of the Council are chosen to carry out the duties of guardians, instead of their being, as before, elected as guardians and becoming then *ex-officio* members of the sanitary authority. Since 1894 guardians have been free to elect their chairman and vice-chairman and to go beyond their own body for them. The guardians are therefore members of the rural district council (with in addition a chairman and vice-chairman), who have been selected to administer the relief of the poor, and who are not supposed to possess any special acquaintance with the requirements of sanitary science.

The sanitary authority in urban districts, other than boroughs, is the urban district council. Both urban and rural

district councils are obliged to appoint a medical officer of health to carry on their sanitary work and to advise them generally upon all questions affecting public health; they are also obliged to have one or more inspectors of nuisances. The urban and rural district councils have to deal with all epidemics of infectious disease, including small-pox, to provide hospitals when necessary and to meet the cost of isolation.

The sanitary authority for county boroughs, and non-county boroughs, is the municipal corporation for each borough, which exercises all the powers of the Public Health Acts, and which has in some respects (for example, the power to promote Bills in Parliament), even more extensive authority than a county council.

Owing to the fact that vaccination is not controlled by the sanitary authority of each district, rural or urban, the medical officer of health has no official influence in regard to vaccination. He is the adviser of the district council but not of the guardians, with whom rests all responsibility as to carrying into effect the vaccination law. The guardians are bound to appoint a vaccination officer. It is his duty to notify to parents, at the proper time, that the law directs all children to be vaccinated, and to prosecute parents who for no sufficient reason disregard the law. The vaccination officer is paid partly by two small fees (3d. for each child on the register of births, 9d. for each child placed on the register as having been successfully vaccinated), but also by a salary from the guardians. In the not very rare case of the guardians having been elected to defy the law and to let vaccination lapse without the parent being punished, the vaccination officer's duty is to prosecute defaulters, even though this may be against the express instruction of his employers, the guardians, and it is also necessary for him to throw upon his employers all the costs arising out of his non-compliance with their wishes. It is the duty of the guardians to overlook the work of the vaccination officer and to keep him up to the mark. It may, however, be their wish to make his action as futile as possible, in which case their supervision does not promote his activity.

The guardians also select public vaccinators, subject to the approval of the Local Government Board, and they agree with them as to the price to be paid for the vaccinations they perform. The public vaccinator receives from the vaccination officer lists of all children who are then at the age to be vaccinated. He contracts with the guardians to vaccinate them at a certain price and under certain conditions. He is paid by the guardians. The public vaccinator, in the poorer parts of London at any rate, ought to be obliged to be ready to vaccinate at stated times. During the present epidemic people who wished to be revaccinated have frequently had great difficulty in getting the public vaccinator of their district to vaccinate them, owing to the want of a fixed time, and possibly also to a difficulty in getting enough lymph.

Both the vaccination officer and the public vaccinator are bound to obey the rules and regulations concerning vaccination laid down by the Local Government Board. Even in places where the guardians are anxious to promote vaccination there are practical disadvantages in the sanitary authority not having the control of vaccination. When a case of small-pox is discovered revaccination of all who have been exposed should be at once ordered. It is the medical officer of health who knows of the case in the first instance, but he has to wait till the guardians can be communicated with and can give the necessary orders to their officials.¹

In the metropolis the London Government Act of 1899 created 29 municipal boroughs, each with mayor, aldermen, and council, which represent the former vestries. The borough council is in each case the sanitary authority, but vaccination is under the care of the guardians.

The second line of defence against epidemics of small-pox consists in removing sources of contagion as soon as the disease is recognized; it is known as the "method of isolation." It is impossible that it should be anything but a very imperfect method. Small-pox is not always a serious illness, especially in once-vaccinated people, and in every epidemic there are many cases that are not recognized early and probably not a few that are never recognized at all. Even very severe cases of confluent small-pox have during the present epidemic been recognized (and given in charge) from

omnibuses, the lifts of the Tube Railway, and similar places, where the risk of their having conveyed infection broadcast is very considerable. Such risks cannot by any amount of administrative zeal be avoided or removed. It is, however, no doubt very desirable, especially in densely crowded localities and houses, to remove each case of small-pox when recognized, and to surround it, at small-pox hospitals, with a cordon of people well protected by efficient vaccination. The duty of doing this has been assigned to the Metropolitan Asylums Board, a body which was created by the Metropolitan Poor Act of 1867. Its managers number 73. Of these, 18 are nominated by the Local Government Board, and the rest are chosen by the Boards of Guardians from among themselves. The Asylums Board is under the immediate control of the Local Government Board, and it is in no way responsible to the borough councils or vestries. It is defined as a "sanitary authority for the prevention of epidemic disease;" it would be more accurate to speak of "the limitation" rather than "the prevention" of such disease. It deals with infectious fevers, small-pox, and diphtheria, and also with defective children and imbeciles. It takes charge of the ambulance service of London. It has under its care twelve large fever hospitals, small-pox hospital ships on river and land, convalescent hospitals, land ambulance stations and wharves, hospitals for imbeciles, etc. Admission into any one of the hospitals under the Asylums Board is not equivalent to receiving parochial relief or alms, although the expenses incurred for the maintenance of such person are paid by the guardians of the Poor-law union from which he is received, and though the guardians are repaid out of the Metropolitan Common Poor Fund.²

The arrangements for removing small-pox and other infectious cases promptly, once they are recognized, are excellent. The failure in the case of small-pox to arrest an epidemic is not due to bad administration, but to the inherent impossibility of doing what is aimed at by means of isolation.

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¹ See Report of the Medical Officer of Health for Liverpool, 1902. ² Public Health (London) Act, 1891, Sect. LXXX (2), (3).

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VACCINATION PROBLEMS FOR PARLIAMENT.

By J. C. McVAIL, M.D.,

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THE Royal Commission on Vaccination recommended in 1896 that one of the principal changes which they suggested in the vaccination law—the passing of the "Conscience Clause"—should be made only experimentally for a period of about five years. That recommendation was accepted by Parliament as regards the whole of the Vaccination Act of 1898, which remains in force only until the end of next year—December 31st, 1903.

It is not conceivable that when the time comes the Act will simply be allowed to lapse without anything taking its place. It may be re-enacted without alteration, or fresh legislation may be introduced. The latter course is the proper one, and if there is to be fresh legislation it will have to be carried out by Parliament next year, so that between now and then Government—for it may be assumed that any new Act will emanate from Government—will have to consider and mature its proposals to be embodied in a new Bill.

It therefore now behoves the medical profession and the British Medical Association to consider without delay what action should be taken in the way of advising and influencing Government in this matter so important to the public welfare. The purpose of the present article is to direct attention to the principal questions requiring attention.

These overlap and are closely interlaced with each other, but may, perhaps, be most conveniently dealt with in the following order:

1. The local authority for the administration of the Vaccination Acts.
2. Efficiency of vaccination.
3. Public and private vaccination.
4. Calf lymph supply.
5. Revaccination.
6. The Conscience Clause.
7. Small-pox hospital accommodation.

1. *The Local Authority for Administration of the Vaccination Acts.*

There is a general consensus of opinion that Boards of Guardians are not the proper bodies for carrying out the Vaccination Acts. Their other functions have relation only to the Poor Law. Vaccination is essentially a public health measure, and its administration should be in the hands of that local authority which has charge of all other public health measures. This has always been obvious in theory and is becoming more and more obvious in practice. When small-pox breaks out in a locality the sanitary authority has the duty of removing cases to hospital and disinfecting premises and keeping contacts under observation, but to prevent small-pox it is most important that contacts should be immediately vaccinated and that all susceptible individuals in a threatened community should have every public facility for their vaccination or revaccination. At present in order to have this policy given effect to the sanitary authority requires to apply to the Poor-law authority. Clearly there must be some loss of time here, and clearly also the public body not charged with protection of the public health but responsible for the expense of public vaccination may take quite a different view of the urgency and necessity of the case from that taken by the other public body. Various examples have recently been published of the apparent inability of some local Poor-law Boards to grasp the elementary principles of sanitary administration. Being in the habit of dealing only with paupers, they seem to think that acceptance of the services of the public vaccinator is an act which takes undue advantage of the guardians and pauperizes the individual. Hence it is that complaints have been made at meetings of guardians that people able to pay privately have gone to the public vaccinator, and it has even been proposed to advertise the names of those so acting. But, as has been pointed out in the *BRITISH MEDICAL JOURNAL*, a man is no more pauperized by having his family vaccinated out of the public funds than he is by having them educated at a Board School.

One consideration bearing on the transfer of vaccination administration to sanitary authorities remains to be noted. The composition of Boards of Guardians has not infrequently been injuriously affected by elections fought specifically on the question whether the Vaccination Acts should be carried out bona fide, or should, as far as possible, be evaded. A man who is elected simply because he is an antivaccinationist is not likely to be, with regard to the general work of the Board, the best man for the post. It would be deplorable if the general character of local sanitary authorities, whose functions are of so much public importance, came to be lowered through the transference to them of the administration of the Vaccination Acts.

That danger, however, is probably less now than it was before. The present interpretation of the law lays on vaccination officers the duty of taking legal proceedings independently of the views of the guardians on the enforcement of vaccination. Antivaccinationists have attempted to incite Boards of Guardians throughout the country to object to an official paid by them acting independently of them in this matter; but their efforts, which no doubt have had opposition to vaccination as part of their ultimate purpose, have not perhaps met with any great measure of success. At the same time Government certainly ought to endeavour to remove as far as possible everything open to criticism in their dealing with vaccination, and there seems no good reason why such work should not be put into the hands of public prosecutors who would not be either wholly or partly the paid servants of local authorities. Some such reform should be kept in view if the administration of the Vaccination Acts is to be handed over to the sanitary authorities. It need hardly be pointed out here that the whole scope and purpose of prosecutions is closely related to the Conscience Clause, which is considered later on in this article.