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THE SYSTEM OF PUBLIC VACCINATION  
IN ENGLAND.

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EXTRACTS FROM PRIVY COUNCIL REPORTS
RELATING TO THE SYSTEM OF PUBLIC
VACCINATION IN ENGLAND.

[From the First Report, 1858.]

II.—AS REGARDS THE NATIONAL VACCINE ESTABLISHMENT
AND THE SUPPLY OF VACCINE LYMPH.

The short period during which the National Vaccine Estab-
lishment has been subject to the supervision of the Privy Council has to it been one of special importance; for within
this time its directors have found themselves obliged, with
your Lordships' sanction and assistance, to begin an essential
change in what, for 50 years, had been the uniform practice of
the institution.

National
supply of
vaccine lymph.

It may be convenient to your Lordships that, before describ-
ing the nature of this change, I give an outline of the objects,
constitution, and recent history of the establishment.

The original "object of establishing the National Vaccine
" Institution (as declared in Parliament in 1808, by those
" who promoted its first institution) was to forward the
" general adoption of vaccination throughout the empire,
" by giving to the practice the public countenance and
" support of Government. To most persons of intelligence
" the results of experience, both at home and abroad, appeared,
" even at that time, decisive of the great advantages of
" vaccination; but whether or no it were infallible, as a
" preventive of small-pox, was a question still involved in
" uncertainty. In order, therefore, to ascertain with precision
" the facts by which those doubts might be dispelled, to
" conduct such investigations under the eye of the public,
" and to insure accuracy to the publication of the results
" when ascertained, it was proposed that all cases of reputed
" failure should be referred to the Board. The Board were

"also to organize and set in action a central institution, for carrying on in London, under their own immediate superintendence, the practice of vaccination, and for distributing vaccine lymph to every part of the empire."* Of these objects there are several with which, in the course of time, it became unnecessary that the National Vaccine Establishment should occupy itself; and for more than twenty years the usefulness of the establishment has been restricted to the very important function of maintaining for general use, and distributing as wanted, a supply of trustworthy vaccine lymph. Its proceedings for this purpose have been directed by a Board, which, in the first eighteen years of its existence (1808-26) was composed of eight medical members; in the next six years (1826-32) of five; and in the following twenty-five years (1833-57) of three,—the president and senior censor of the Royal College of Physicians, and the president of the Royal College of Surgeons. With these eminent functionaries of my profession, I have for the last year, at the desire of Her Majesty's Government, had the honour of being associated in the direction of the establishment.

The proceedings of the Establishment, briefly described, have been these:—Gratuitous vaccination has been performed by it at several special stations in the metropolis; each stationary vaccinator has contributed to the central office as many charges of lymph as he could obtain from subjects vaccinated by him; and the central office has distributed these charges gratuitously to all proper applicants.

Such for many years, on a very extensive scale, has been the action of the National Vaccine Establishment; and last year nearly 234,000 charges of lymph were distributed by the Board among 12,418 applicants. Constantly among the applicants are persons who, except for the existence of a central office, would be at a loss how to obtain what they desire; and application is often made under circumstances of emergency, when small-pox is at hand, and when waste of time would be a serious evil. Evidently, then, it is of essential importance that the sources of supply on which the

* Report from the Select Committee on the Vaccine Board, ordered by the House of Commons to be printed, 28th August 1833.—J.S.

central office depends for its means of meeting the public demand should be placed beyond any probability of failure.

These sources, up to the present year, had consisted exclusively in the special stations of the establishment itself. But of late it had been observed, and the observation was cause for much anxiety, that year by year those stations were becoming less and less resorted to for vaccination, and consequently less and less to be relied on for fulfilling the main object of their existence.

This gradual decline in the number of vaccinations performed by the National Vaccine Establishment depended altogether on causes exterior to the administration: it had resulted from successive changes in the law.

For more than thirty years after the establishment of the National Vaccine Institution, there existed in all England no other legalized local arrangements for public vaccination. Such other gratuitous vaccination as there was, depended on personal goodwill or on the action of charitable institutions. Even an overseer, it was said, was "not bound to take means to procure the poor children of the parish to be vaccinated during the prevalence of small-pox." And under these circumstances, the stations of the Vaccine Establishment existing in the metropolis were an important boon to the public, and were of course considerably resorted to.

Nineteen years ago, the Legislature first provided (3 & 4 Vict. c. 29) that vaccination at the public cost might be claimed of local authorities in every parish of England and Wales; and this enactment was soon followed by a fuller provision (necessary because poor-law guardians and overseers were to be the administrators of the law) that gratuitous vaccination should not place its recipient in the position of persons receiving parochial relief. In 1853 this system received further extension by the passing of the Compulsory Vaccination Act; under which it became an obligation on parents and guardians, that in future all children, their health permitting, should be vaccinated within, at furthest, four months from birth. And although of course it was not in the letter of this law that peculiarly the parochial vaccinations should be increased by it, yet, from accidental circumstances which

I need not now trouble your Lordships to consider, such in effect has been its operation.

These successive Acts of Parliament, in creating and developing the system of parochial vaccination, necessarily reduced the number of applicants at the National Vaccine Establishment. In 1838, the number of vaccinations performed by the establishment amounted to 18,659; during the three years 1850-2, the average annual number was only 10,713; during the three years 1854-6, it had fallen to 8,207; and last year it reached but 6,445.*

It will be obvious to your Lordships that, if the primary object of the National Vaccine Establishment had been to provide public vaccination, there was now no reason why it should continue to exist. But, in fact, its performance of public vaccination had no other meaning or importance than that the establishment might thus be enabled to fulfil what had become its one essential function—the function of maintaining and distributing a supply of authenticated vaccine lymph. And this duty had become of even increased importance; for, with the minute subdivision of vaccination-districts, and with other unfortunate accidents of the new system, it appeared certain that local supplies of lymph would, generally speaking, not be maintained long in an efficient state, and consequently that well-organized central arrangements for the collection and distribution of lymph were absolutely indispensable to the country.

The subject, too, was of somewhat urgent importance; not simply because the National Vaccine Establishment was currently distributing more lymph than in 1838, when its vaccinations were nearly thrice as numerous as of late; but because experience suggested that, in case of any great stimulus being given to public vaccination (such as was given in 1853

* To this reduced number of vaccinations, seventeen different stations in the Metropolis contributed in unequal proportion: two of them together effecting 3,502 vaccinations, or considerably more than half of the total; while the remaining fifteen contributed various numbers, varying respectively from 72 to 373. At some of these fifteen stations vaccination was offered to the public twice, at others three times a week; but from an analysis of their statistics, it appeared that the average number of cases vaccinated at each of them on each vaccinating day was only about $1\frac{1}{2}$.—J.S.

by the Compulsory Vaccination Act, and such as, it was hoped, might be more uniformly given under the Public Health Act, 1858) the average demand for lymph might suddenly rise 50 per cent.—attaining an amount which the Board, with its reduced and inelastic resources, could not undertake to supply.

It therefore became necessary to consider what plan could be adopted to compensate for the advancing diminution of those sources of lymph on which the public had heretofore depended for supply.

Only one course, it appeared, was open. As the original sources of supply were becoming extinct through the competition of the new system of parochial vaccination, so the question arose, whether, in this new system itself, there could not be found a compensation for what was lost. For, generally speaking, it would seem self-evident, that the common supply of lymph in a country ought to be founded on the common provisions for public vaccination; that arrangements for the two purposes are essentially parts of one system; and that sources of lymph-supply disconnected from the national plan of vaccination could hardly be expected to have permanence.

Now, it was certain that at the parochial vaccinating-stations of large towns there must often exist abundant and eligible sources of lymph; but it was equally certain that those stations could not indiscriminately be utilised for the purpose of a national supply.

In the first place, well-frequented stations could alone be thus available. In order to keep up a mere succession of normal vaccine vesicles at any single station, it is requisite that vaccinated subjects returning for eighth-day inspection should habitually be numerous enough for ample selection to be exercised among them as to the taking of lymph; and much more, of course, is this necessary, if the succession is to be so abundant as to furnish an excess of lymph in aid of other vaccinating-stations. England contains dozens of large towns which might reasonably be expected to contain stations of sufficient magnitude for the purpose; but in many of these instances (and important metropolitan parishes are cases in point) the public vaccination is parcelled out among so many

vaccinators, that perhaps not one station can conveniently be looked to for lymph. Again, very strict scrupulousness—almost fastidiousness, in everything which concerns the performance of vaccination and the watching of its results, must be claimed from persons who would supply lymph for the public service; for any mischief herein resulting from slovenly practice may not only be irremediable in some one particular case, but may ramify injurious results among large numbers of sufferers.

Obviously, then, the national supply of lymph could not properly be made even partly contingent on parochial contributions, unless with the understanding that each contributing-station should in the first instance be carefully chosen, with reference both to its resources and to the qualifications of its vaccinator, and should afterwards be vigilantly superintended with reference to its proceedings and results. Subject, however, to these conditions, it appeared not only that this course was admissible, but that in fact no other course in the present state of the law would enable your Lordships to ensure a sufficient supply of lymph for meeting the requirements of the public.

In a report, addressed in 1857 to the President of the then General Board of Health, I had drawn attention to the impending necessity, that some such arrangement should be made; and now, as a member of the National Vaccine Board, I felt it especially my duty to bring before my colleagues (whose solicitude had already* been awakened on the subject) the considerations which I have submitted to your Lordships. Great advantage had been anticipated to the public service from the fact that, through the present constitution and relations of the National Vaccine Board, the Privy Council would have ready means of consulting, in reference to vaccination, with the heads of the two great Colleges of Medicine and Surgery; and, in the present case, that expected advantage

* The President of the College of Physicians, who is President of the Vaccine Board, had already, on the part of the Board, before it came under the direction of the Privy Council, waited upon Her Majesty's Secretary of State for the Home Department, to express the hopes of the Board that Government would take measures to prevent the anticipated scarcity of lymph.—J.S.

was fully realised by the long and careful consideration which my distinguished colleagues gave to the subject. The result of the deliberation was a Minute of the Board, communicated to your Lordships on Nov. 17th; a copy of which minute, as an important proceeding under the Act, is appended (App. No. 2) to this Report.

The minute, after recounting the principal facts which had been under consideration, and specially adverting to the sources of lymph which are to be found at the parochial vaccinating-stations of Manchester, Liverpool, Birmingham, Leeds, Sheffield, Newcastle, and other large towns, made the following conditional proposal:—"that if the Board of the National Vaccine Establishment were satisfied that the public vaccinators of those stations would uniformly exercise proper care in the selection of lymph for transmission, the Board would be prepared to discontinue its own less productive stations, and to recommend the procuring of lymph from parochial vaccinators at the stations referred to."

The Privy Council, with its present regulative and inspectional powers in reference to public vaccination, could give every reasonable security for the fulfilment of the condition here stated as necessary; and the minute having expressed the hopes of the Board that the Lords of the Council would be pleased to direct such inquiries as were needful for the object in view, your Lordships acceded to this request.

Inquiry was accordingly made into the state of public vaccination in Manchester and Liverpool; and, as the practical result of this inquiry, arrangements have since been made under which the largest vaccinating-station of Manchester has become contributory to the lymph-supply of the National Vaccine Establishment. At the station in question, Mr. Evan Thomas, one of the Medical Officers of the Union, performs nearly 1,800 vaccinations in the year; and it is believed that, when the difficulties of a commencement are overcome, some twenty to thirty thousand charges of lymph may annually be furnished from this one source.

In two respects the step which has been taken seems to be of great importance. In the first place, as opening a communication—though hitherto only at one point—between the

National Vaccine Establishment and the staff of parochial vaccinators, it begins to combine as one system the arrangements for public vaccination with the hitherto separate arrangements for the supply of vaccine lymph; and thus to give to the latter arrangements a securer basis than they for many years have had. In the second place, it makes a commencement towards what may hereafter, with much advantage to the public, fill a present want in medical education. For hitherto it has been the case, that neither the ordinary schools of medicine have had means of practically teaching vaccination, nor have any of the public vaccinating-stations been opened as public schools for the purpose. Consequently many a medical student has completed his studies without having had any convenient opportunity of learning to vaccinate; and although the mere manipulation with the lancet scarcely requires special study, yet to know well the results of vaccination, especially to know well and practically the characters of a vesicle from which it is proper to take lymph, does require some little attentive and accurate observation. It has therefore often been wished that some well-frequented vaccinating-stations, situated in those large towns where medical schools exist, could be available for educational purposes. To connect such stations with the National Vaccine Board by making them superintended contributories of lymph (as is now done in the case of Manchester) is a first step towards giving them that special position and guaranteed character which would suggest their being recognized as national schools of vaccination.

[From the Second Report, 1859.]

PROCEEDINGS IN REFERENCE TO PUBLIC VACCINATION.

1. *Regulations issued under the Public Health Act, 1858.*

VACCINATION
regulations
issued under
the Public
Health Act
1858.

The second clause of the Public Health Act, 1858, authorized the Privy Council from time to time to issue regulations "for securing the due qualification of persons thereafter to be contracted with by guardians and overseers of unions and

"parishes in England for the vaccination of persons resident in such unions and parishes, and for securing the efficient performance of vaccination by the persons already or thereafter to be contracted with as aforesaid."

But the law which conferred these powers was in the first instance enacted by Parliament only for a single year; and under this restriction the authority to regulate public vaccination could not be usefully exercised by the Privy Council.

By an Act passed at the end of the last session of Parliament the provisions of the Public Health Act, 1858, were (with exception of the 8th clause) renewed and made permanent; and hereupon the Privy Council proceeded to frame certain regulations, which were issued on December 1st, 1859, and came into effect on the first day of the new year. 1.1.60

Of these regulations, and of other documents connected with them, a copy is hereto appended.

The circumstances to which the regulations were intended to apply, the objects which they aimed at accomplishing, and the collateral arrangements which it was necessary to make before attempting to bring them into effect, require some explanation.

By the first Act of Parliament (3 & 4 Vict., c. 29) it had been provided that vaccination at the public cost might be claimed of local authorities in any parish of England and Wales. By a second Act (necessary because poor-law guardians and overseers were to be the administrators of the first, and the expenses were to be defrayed out of poor rates) it had been provided that gratuitous vaccination should not place its recipient in the position of persons receiving parochial relief. By a third Act (16 & 17 Vict., c. 100) it had been made obligatory on parents and guardians, that every child, its health permitting, should be vaccinated within, at furthest, four months from birth; and penalties had been made recoverable from parents or guardians neglecting to fulfil this obligation. 1853

The local arrangements made for public vaccination under the above-quoted laws have consisted in contracts entered into by the guardians or overseers with certain medical men (almost invariably the parochial medical officers) to the effect

that the latter will severally attend at appointed times and places, either by themselves or legally qualified medical practitioners as their substitutes, and will then and there duly vaccinate every resident person who applies or is brought for the purpose. These arrangements are in force throughout the whole of England and Wales; and the great mass of the population tends to avail itself of them in order to comply with the law which makes infantine vaccination compulsory.

Meanwhile, from time to time strong representations have been made that a considerable share of the current English vaccination had been of an inferior quality. Especially Mr. Marson (who for nearly 25 years has been the resident surgeon of the Small-pox Hospital, and whose opportunities of observation have therefore very greatly exceeded those of any other person in the country) has published conclusive statistics, both as to the very great frequency of sham vaccination, and as to the quantity of fatal small-pox which is due to this cause. He had found that, if vaccinated persons happen to contract small-pox, the mortality among the best vaccinated of the number would be but one-thirtieth part of the mortality among the ill-vaccinated; and yet that the latter comparatively unprotected class had so largely preponderated in his practice, that among 5,347 vaccinated persons whom he had seen suffering with small-pox, only 623 had presented the marks of what he considers thorough vaccination. In a petition on the subject which Mr. Marson addressed to the House of Commons in the summer of 1856, he stated that "the many foreigners admitted in a series of years as patients at the Small-pox Hospital had enabled him to observe that vaccination is, as a rule, much better performed abroad than in England,—that, in fact, it is far less satisfactorily performed in England than in any other country in Europe;" and in explanation of this fact he remarked that "no authorized system of vaccination had been established in England. All persons—medical men, clergymen, amateurs, druggists, old women, midwives, &c.,—are allowed to vaccinate in any way he or she may think proper, and the persons operated on are considered to have been vaccinated." Mr. Marson has published another important statement:—Besides the

terribly large proportion of patients, nominally vaccinated, whose vaccination, because of unskilfulness, has been but of partial effect, there are other cases "of frequent occurrence at the Small-pox Hospital," where patients are in the category of non-vaccinated persons only because bungling operators have failed to vaccinate them;—"with good lymph (he says) and the observance of all proper precautions, an expert vaccinator should not fail in his attempts to vaccinate above once in 150 times. Yet a large number of those who take upon themselves the duty think they do very well if they succeed, however imperfectly, five times out of six, and patients often present themselves with small-pox at the hospital who state they have been cut five, six, eight times, or more, for cow-pox without effect."

Far less precise than Mr. Marson's experience, but in its own way equally deserving of consideration, there had been other evidence tending to throw discredit on the quality of much current English vaccination. Among so-called prejudices against the practice there are some which represent a partial truth; erring, indeed, only in so far as they impute generally to vaccination what ought to be imputed exclusively to the vaccinator. Considerable disturbance of health has often followed—sometimes to a dangerous and even fatal extent, the improper acts of persons pretending to vaccinate. If all vaccinators equally had recognized that vaccination is not a mere easy trick of the fingers, but that precautions and minute care are necessary for its full success,—especially if all had been content to study the natural progress of the vaccine vesicle, and the different qualities of material which it furnishes at successive stages, or under accidental disturbances, of its course; if all had thus known how to select lymph and how to preserve it—had inquired into the healthiness of children proposed for vaccination, and had refrained from vaccinating during unfavourable states of health—had been careful as to the condition of children from whom lymph was to be taken, and (though only out of concession to popular belief) had refused to take lymph from unhealthy subjects, little, very little, would have been heard of "prejudices" against vaccination. These, indeed, where they exist, consti-

tute presumptive evidence that in the prejudiced locality vaccination either is, or within local recollection has been, unskilfully administered. Inquiry in such cases would very probably show, either that nominal vaccination has proved useless as a protection against small-pox, or that it has occasioned unexpected suffering to the patient; and that the origin of the scandal has (in the former case) been one of those sham vaccinations against which Mr. Marson protests, or (in the latter case) some neglect or incompetence relating to the choice or preservation of lymph, or the due preparation of the patient. And as it cannot be gainsaid that in parts of England there exist strong impressions against the value—even against the harmlessness, of vaccination, this fact must be taken as at least to some extent corroborating Mr. Marson's conclusions.

It is not possible to say, with any approach to precision, how much of the bad vaccination in England has been of official performance. Only, as it is certain that a very large excess of all vaccinations performed in England are vaccinations officially performed under contract with parochial authorities, so it is presumable that whatever statement is true of English vaccination generally, is true of parochial vaccination. But at least the doubt was of grave public importance. For surely the negative ought to be demonstrable. The law had provided a specific machinery for public vaccination; it had in effect made the use of this machinery compulsory for at least two-thirds of the population, as well as optional for the remainder; yet hitherto no security had been taken that the vaccination, so universally offered, and so extensively enforced, should be useful, or even harmless, to the recipient. Reproaches were not unreasonably addressed to the Legislature and the Government, that a poor man was compelled, under threats of penalty or imprisonment, to take his child to be vaccinated, and virtually by some particular vaccinator; but that the vaccination which he was thus obliged to accept might, for aught that the law had provided, be good, bad, or indifferent.

Two other considerations gave increased weight to this argument. On the one hand, it was notorious that great

laxity prevailed among parochial vaccinators as to their privilege of acting by deputy; and that often a vaccinator, instead of adhering in this respect to the terms of his contract to act "either by himself or by some fully qualified medical practitioner as his substitute," would permit his duty to be performed by assistants or pupils possessing no legal qualification to practise. On the other hand, it was certain that, in the existing state of the law, a person might be appointed parochial vaccinator who had no sufficient knowledge of vaccination,—in fact, even a person who had never seen a vaccination performed, nor ever observed a vaccine vesicle during its course; for it was a natural consequence of the arrangements of public vaccination in this country, that, generally speaking, our ordinary schools of medicine could have no means of practically teaching vaccination, nor hitherto had any of the public vaccinating-stations been opened as schools for the purpose; and accordingly a medical student might complete his studies, and obtain his diploma or licence for practice, without having had any convenient opportunity of learning to vaccinate. His possession of such opportunities would commonly have been contingent on his residing during his pupilage in the house of some surgeon-apothecary; and in this case the value of his opportunities might, according to circumstances, have been great or little. For the absence of such practical opportunities nothing else could compensate; not because vaccination, as regards the mere manipulation with the lancet, requires much special study; but because to know well the results of vaccination, especially to know well and practically the characters of a vesicle from which it is right to take lymph, requires that cases of vaccination, skilfully performed, should have been attentively observed during their course.

Such were the circumstances under which the Privy Council was called upon to frame regulations "for securing the due qualification of persons to be hereafter contracted with by guardians and overseers of unions and parishes in England for the vaccination of persons resident in such unions and parishes, and for securing the efficient performance of vaccination by the persons already or hereafter to be contracted

"with as aforesaid." And the main objects to be aimed at were evidently these:—

1) that no one should hereafter be admissible as a contractor for vaccination without producing evidence that he had sufficiently studied vaccination;

2) that no one should hereafter be allowed to act as deputy for any present or future contractor without possessing the same qualifications as are required of contractors themselves;

3) that the contractor should be bound in every essential particular to vaccinate with all such precautions as are known to be necessary for fully and safely attaining the desired result.

There was one real difficulty in making regulations for the fulfilment of these objects,—the difficulty, namely, of procuring satisfactory evidence that the candidate for a vaccination-contract or deputyship really had learnt the business which he wished to undertake. The ordinary apparatus of medical diplomas and licences was here inapplicable: for the various licensing corporations in England have neither the habit nor the means of practically inquiring whether their respective candidates have gained a proper knowledge of vaccination; and hitherto, as already stated, there existed no schools where vaccination could be duly learnt, and whence certificates of proficiency could be received. Accordingly, if the intentions of the Legislature were to be fulfilled, it was preliminarily needful that special establishments should be organized, where vaccination could be studied under skilled guidance, and whence candidates, after due instruction or examination, could obtain such certificates of proficiency as would show them qualified to be contracted with (provided they had the necessary professional licences) for the performance of public vaccination.

With these explanations, the following papers, issued by the Privy Council in December last, represent the proceedings now reported on:—first, the Order and appended Instructions, relating to the qualification of contractors, the qualification of deputies of contractors, and the manner in which contracts shall be fulfilled; secondly, the Notification and appended Memorandum, stating the provisions which have been made

for enabling all future candidates to acquire the knowledge of vaccination, and the certificate of such knowledge, which henceforth are necessary for rendering them eligible to be contracted with.

In reference to the Instructions for Vaccinators under Contract, it is satisfactory to state that they were framed after extensive consultation with persons most eminent in the subject; especially that in every particular they were minutely discussed with Mr. Ceely of Aylesbury and Mr. Marson of the Small-pox Hospital, the two highest authorities in this country on all to which the Instructions relate; and that these gentlemen (whose kind assistance is very gratefully acknowledged) concurred in recommending them in their present form. The National Vaccine Board has also, with much care, considered the Instructions, and has adopted them for the purposes of its Establishment.

ORDER.

To the Guardians of the Poor of all Unions and Parishes, to the Churchwardens and Overseers of all Parishes, Townships, and Places in which the Relief to the Poor is not administered by Guardians, in England and Wales, and to all Medical Practitioners.

VACCINATION.
Privy Council
Order to Guardians and Medical Practitioners
in 1859.

WHEREAS by the Public Health Act, 1858, and by an Act since passed to perpetuate the same, it is enacted that the Privy Council may from time to time issue such regulations as they think fit, for securing the due qualification of persons to be thereafter contracted with by Guardians and Overseers of Unions and Parishes in England for the Vaccination of persons resident in such Unions and Parishes, and for securing the efficient performance of Vaccination by the persons already or thereafter to be contracted with as aforesaid;—

Now, therefore, it is hereby ordered, by the Lords and others of Her Majesty's Most Honourable Privy Council (of whom the Vice President of the Committee of the said Privy Council on Education is one) that on and after the first day of January, 1860, the following Regulations shall be in force, viz.:—

1. Except where the Privy Council, for reasons brought to their notice, see fit in particular cases otherwise to allow, no person shall in future be admitted as a Contractor for Vaccination unless he possess the same qualifications as are required by the Orders of the Poor Law Commissioners as qualifications for a District Medical Officer, and produce a special Certificate, given, under such conditions as the Privy Council from time to time fix, by some public Vaccinator whom the Privy Council authorize to act for the purpose, and by whom he has been duly instructed or examined in the practice of Vaccination, and all that relates thereto;—

but the production of this special Certificate on occasion of the contract being made may be dispensed with, if the certificate, or some other which the Privy

Council judge to be of like effect, have been among the certificates or testimonials necessary for obtaining any diploma, licence or degree, which the candidate possesses;—

and also, in respect of persons legally admitted to practise before this regulation comes into effect, the special Certificate may be dispensed with, on condition that the Contract, during one year from its making, continue subject to the approval of the Poor Law Board;—

and all persons now contracted with shall be deemed to be qualified to be again contracted with.

2. Under the same conditions as are appointed for the admission of a Contractor, any person qualified to be a Contractor may, on the Contractor's application, be admitted by the Guardians or Overseers to act as his occasional deputy;—

but, if this admission be not part of the original Contract, it must be notified by indorsement upon the Contract; and at least 15 days before it is intended to take effect, a copy of the proposed indorsement, together with all requisite evidence of the qualification of the person whom it is proposed to admit, must be transmitted to the Poor Law Board.

3. All Vaccinations and Inspections under Contract shall be performed by the Contractor in person, or by some other Contractor of the same Union or Parish acting for him, or by a deputy, duly admitted as above;—

but at any station where the Contractor is authorized (as above) to grant certificates, pupils and other candidates, aged not less than 18 years, may, in his presence and under his direction, take part in vaccinating.

All Vaccinations and Inspections under Contract shall be performed in accordance with the annexed "Instructions for Vaccinators under Contract."

4. Until some new form of Vaccination-Register be duly prescribed, the person who performs any Vaccination under Contract shall, on the day when he performs it, legibly write in his Register (as now provided) the letter R (for Re-vaccination) against the name of every person, adult or adolescent, who, having in early life been successfully vaccinated, is re-vaccinated; and shall also enter in some column, or in the margin of the Register, the source whence the lymph used in the vaccination was obtained;—

thus: the name, or number (if any) in the Register, of the subject from whom the lymph was taken; or "N.V.E.," if the lymph was sent by the National Vaccine Establishment; or the name or description of any other source;—

and where the Vaccination or Inspection is done by a person acting as Deputy for the Contractor, the Deputy shall write the initials of his name in the Register side by side with the entry of the case; viz., in the left margin of the page, if it be a Vaccination which he performs, or in the right margin of the page, if it be an Inspection which he performs.

5. Guardians and Overseers, in their respective Unions and Parishes, shall forthwith take measures to bring the performance of public Vaccination into conformity with these regulations.

INSTRUCTIONS FOR VACCINATORS UNDER CONTRACT.

VACCINATION.
Instructions for
Vaccinators
under Contract
in 1859.

(1.) Except there be immediate danger of small-pox, vaccinate only subjects who are in good health. Satisfy yourself that there is not any eruption behind the ears, or elsewhere on the skin; nor any febrile state; nor any irritation of

the bowels. Under no circumstances vaccinate a subject to whom, from the state or prospect of his health, vaccination is likely to prove injurious. Do not re-vaccinate persons who in infancy have been efficiently vaccinated, unless they be more than 15 years of age, or, if during any immediate danger of small-pox, more than 12 years of age.

(2.) In all ordinary vaccinations, vaccinate by four or five separate punctures, so as to produce four or five separate good-sized vesicles; or, if you vaccinate otherwise than by separate punctures, take care to produce local effects equal to those just mentioned.

(3.) Direct care to be taken for keeping the vesicles uninjured during their progress, and for avoiding afterwards the premature removal of the crusts.

(4.) Register the results of vaccination only after having yourself inspected the cases. Register as "successful" no case of primary vaccination, unless the course of the vesicle have been strictly regular according to the subjoined description A.* and register as "successful" no case of re-vaccination, unless either the regular vaccine vesicle have ensued, or the results have been normally modified according to the subjoined description B.* Or, if in either case you register as "successful" any result which does not agree with the subjoined descriptions, write also the word "irregular" in the column of the register where you record the result.

(5.) Endeavour to maintain in your district such a succession of cases as will enable you uniformly to vaccinate with liquid lymph directly from arm to arm; and do not, under ordinary circumstances, adopt any other method of vaccinating. To provide against emergencies, always have in reserve some stored lymph;—either *dry*, as on thickly-charged ivory points, constantly well protected from damp; or *liquid*, according to the method of Dr. Husband of Edinburgh, in fine, short, uniformly capillary (not bulbed) tubes, hermetically sealed at both extremities. Lymph successfully preserved by either of these methods may be used without definite restriction as to time; but with all stored lymph caution is necessary, lest in time it have become inert, or otherwise unfit for use. If, in order to vaccinate with recent liquid lymph, you convey it from case to case in a vial or in other like manner, without its being hermetically sealed, do not let more than 18 hours, and in very hot weather not more than 12 hours, intervene before it is used.

(6.) Consider yourself strictly responsible for the quality of whatever lymph you use or furnish for vaccination. Take lymph only from subjects who are in good health; especially satisfying yourself that they are free from eruption on the skin. Take it only from well-characterised, uninjured vesicles. Do not take it from cases of re-vaccination. Take it (as may be done in all regular cases on the day week after vaccination) at a time when the vesicles are plump, either just before the formation of the areola, or, at the latest, not more than 24 hours after the areola has begun to form.

(7.) In vaccinating from arm to arm, and still more in proceeding to store lymph, avoid draining any vesicle which you puncture. From such a vesicle as vaccination by puncture commonly produces do not, under ordinary circumstances, take more lymph than will suffice for the immediate vaccination of five subjects, or for the charging of seven ivory points, or for the filling of three capillary tubes; and from larger or smaller vesicles take only in like proportion to their size.

* The references are to "Signs of Successful Vaccination and Re-vaccination" (Gregory revised by Geely and Marson) which form part of the Appendix.—ED.

(8.) Scrupulously observe in your inspections every sign which tests the efficiency and purity of your lymph. Note any case wherein the vaccine vesicle is unduly hastened or otherwise irregular in its development, or wherein any undue local irritation arises; and if similar results ensue in other cases vaccinated with the same lymph, desist at once from employing it.

(9.) If from any cause your supply of lymph ceases, or becomes unsuitable for further use, take immediate measures for obtaining a new supply.

(10.) Keep in good condition the lancets or other instruments which you use for vaccinating, and do not use them for other surgical operations.

N.B.—Supplies of lymph, guaranteed by the National Vaccine Board, are furnished on application to all medical practitioners. Letters of application for this lymph should be addressed "To the Registrar of the National Vaccine Establishment, Privy Council Office, London, S.W."

NOTIFICATION.

Whereas under the provisions of the Public Health Act, 1858, and of an Act since passed to perpetuate the same, the Privy Council have this day issued Regulations "for securing the due qualification of persons to be hereafter contracted with by Guardians and Overseers of Unions and Parishes in England for the Vaccination of persons resident in such Unions and Parishes, and for securing the efficient performance of Vaccination by the persons already or hereafter to be contracted with as aforesaid;" and whereas in these regulations it is, among other things, required, that, on and after the first day of January, 1860, persons to be contracted with for Vaccination, and persons to be allowed to act in their stead, shall, except in certain cases, produce evidence of being duly qualified in all that relates to the practice of Vaccination, *which evidence* must consist in a certificate given, after due instruction or examination, by some public Vaccinator whom the Privy Council authorise to act for the purpose;

Notice is hereby given,—(1) That, subject to Orders of the Privy Council, the public Vaccinators named in a printed list are authorised by the Privy Council to give the required certificates of proficiency in Vaccination to persons whom they have instructed therein, and those whose names are in the printed list in italic letters are also authorised to give such certificates after examination to persons whom they have not themselves instructed.

(2) That from and after the first day of January, 1860, the vaccinating stations, at which these Vaccinators officiate, will be open under conditions set forth in the annexed memorandum, for the purposes of teaching and examination; and,

(3) That from time to time, as additions are made by the Privy Council to the list of persons whom they now authorise to give certificates of proficiency in Vaccination, the names of the other persons thus authorised will be published in the *London Gazette*.

MEMORANDUM of ARRANGEMENTS made in ENGLAND for the PUBLIC TEACHING of VACCINATION, and for the granting of such CERTIFICATES of PROFICIENCY in VACCINATION as will qualify the bearers (if otherwise eligible) to be contracted with by GUARDIANS and OVERSEERS for the PERFORMANCE of the PUBLIC VACCINATION.

The stations at present established for educational purposes are all in places where there are recognized medical schools. They are stations where the appointed public vaccinator uniformly attends in person, and where the annual number of vaccinations, as compared with the number of vaccinating days, is sufficiently large to promise that the student during his period of attendance, will, as a rule, always find many cases together for observation. They are stations from which vaccine lymph is furnished for the public service; the Vaccinators in charge of them having, for this purpose, been selected by the National Vaccine Board to be Members of the National Vaccine Establishment.

Memorandum of arrangements in 1859 for granting certificates of proficiency in Vaccination.

The Vaccinator of an educational vaccinating station, during his attendance thereat, will exhibit and explain the course and characters of the vaccine vesicle, will practically teach the best method or methods of performing Vaccination, and of taking lymph for present or future use, will inculcate all precautions which are necessary with regard to the health of subjects proposed for Vaccination, and with regard to the selection and preservation of lymph, and will give all such other instruction as is requisite for the scientific and successful performance of Vaccination and Re-vaccination. During his course of instruction, he will make provision to ensure that always some cases come for inspection on the 10th, as well as on the 8th day; and, for the purpose of showing these cases to his pupils, he will give, on the day appointed for their coming, a second weekly attendance at his station. He will further enable and direct each pupil to see at least six cases of vaccination on at least two other days of their progress, viz., both before the 8th and after the 10th day. In the Teacher's presence, and under his direction, any Pupil, aged not less than 18 years, may take part in vaccinating; but not till he have attended the station on at least two vaccinating-days.

Any person desirous of being admitted as pupil at an educational vaccination-station, shall pay a fee not exceeding one guinea, and thereupon receive a ticket entitling him to attend the public vaccinations of the Teacher. When the Pupil has attended at the station, during the times of vaccination and teaching, for at least six weeks, the Teacher, if satisfied of his proficiency, shall, on receiving back his ticket, but without further payment, give him a certificate in the appointed form.

At stations where the Teacher is also authorized to give certificates of proficiency in vaccination to persons whom he has not himself instructed therein, such persons will, on appointed occasions, be examined by the Teacher, on payment of a fee not exceeding one guinea, and if he find them competent, receive certificates accordingly. In case of failure to pass this examination, the Candidate may be admitted to a second examination on payment of a fee not exceeding half a guinea.

The Certificate of Proficiency will be understood to imply—and therefore the Teacher who signs it will have taken care to ascertain, that the person to whom it is given can skilfully vaccinate, both with liquid lymph (including such as is preserved in capillary tubes) and also from ivory points;—that he can properly

Notice issued in 1859 of arrangements for granting certificates of proficiency in Vaccination.

charge ivory points or capillary tubes with lymph;—that he is aware of the relative advantages of recent and preserved lymph, and of all precautions which are requisite in using the latter;—that, from among vaccinated subjects presented for eighth-day inspection, he can select and give reasons for preferring, those who are fittest to furnish lymph;—that, besides being thoroughly familiar with all local changes which, from first to last, normally ensue on vaccination, he has learnt what causes may accelerate or retard the local changes, or give them undue severity, or otherwise render them irregular;—that he is well-informed as to the constitutional effects of vaccination (including the eruptions which sometimes follow it) and as to the treatment which cases of vaccination, under various circumstances, may require;—that he knows how far the protective influence of vaccination is affected by lapse of time, and how far by the mode in which vaccination is performed—especially by the number or size of vesicles, and knows generally under what circumstances re-vaccination is to be recommended;—finally that he is acquainted with the laws and regulations relative to public vaccination, and understands the local arrangements which are necessary for maintaining a constant supply of lymph.

2. *Proceedings relating to the Supply of Vaccine Lymph.*

The Public Health Act, 1858, requires the Privy Council to direct the application of “any money from time to time provided by Parliament for or towards defraying the expenses of the National Vaccine Establishment, or otherwise providing for the supply of vaccine lymph.” And, apart from this requisition, it is of course indispensable for the efficiency of public vaccination in England, that constant regard should be had to the quality of lymph which is in use at parochial stations.

In the last Annual Report it was stated that proceedings had recently been commenced by the National Vaccine Board for the purpose of putting the national supply of lymph on a securer basis than it then possessed. During the past year these proceedings have continued in accordance with the principles then adverted to. Unproductive metropolitan stations of the Vaccine Establishment have been discontinued; and, in proportion to their discontinuance, new sources of contribution have, after inspection under the Privy Council, been opened at large provincial towns, and at some parochial stations in London. As the changes are still in progress, it may be convenient to defer to some future opportunity an account of the new organization; except in so far as the proceedings may

be gathered from the report of the National Vaccine Board. (Appendix, No. 1.)

Other questions of importance in relation to the national lymph supply have been under consideration during the year.

It is greatly to be desired in a system of public vaccination, that localities should not be too dependent on central assistance; that each vaccinator should, as a rule, be able to maintain in his district such a succession of cases as will enable him habitually to vaccinate with liquid lymph directly from arm to arm; that, against emergencies, he should always have in reserve some stored lymph; and that, under these arrangements, he should but very rarely have occasion to address the Vaccine Board for a supply. But, for the attainment of this object, certain local conditions are necessary; and these conditions have hitherto been very imperfectly realized. The foremost evil has been, that, under an injudicious application of the Vaccination Act of 1853, the performance of public vaccination has been subdivided to an extent which leaves comparatively few vaccinators able to maintain their respective successions of lymph. This evil—not confined to rural districts, where sometimes it could not easily be escaped, but abundantly prevailing in large towns (where no trace of it ought ever to exist) and not least in the metropolis, has been of such magnitude as seriously to endanger the efficiency of vaccination in England. Unfortunately it does not admit of immediate complete cure; but the principles on which it must be dealt with are sufficiently obvious and can easily be made the basis for future arrangements throughout the country. For the attainment of this object it appeared less expedient that the Privy Council (at least at present) should issue a special regulation, than that the Poor Law Board should promote the necessary changes; partly as opportunities arise, by the exercise of its authority over future contracts, and partly by general recommendations addressed to the contracting parties. Accordingly a Memorandum on the subject was communicated by the Privy Council to the Poor Law Board, and of this memorandum a copy is subjoined.

In intimate connexion with the object of these considerations, is that of promoting a better knowledge of the modes in which vaccine lymph may be stored against times of scarcity. And for this object it appeared desirable to inquire into the merits of a method hitherto little practised in England,—the method of preserving lymph, in a liquid state, within fine, short, uniformly capillary (not bulbed) tubes, hermetically sealed at both extremities. This procedure is extensively practised in Edinburgh by Dr. Husband, the Vaccinator of the Public Dispensary, and, on his plan, by other practitioners in Scotland. But it seems that in England some prejudice has existed against it; partly perhaps because it has been confounded with the entirely different plan of storing lymph in bulbed tubes (within which it is liable to decomposition) and partly perhaps because the procedure requires to be conducted with more care than is necessary for the common English procedure of charging ivory points with lymph, which is then to be let dry upon them. The alleged advantages of Dr. Husband's plan (especially where lymph has to be conveyed into hot climates) appeared of so much importance, that the Privy Council ordered inquiry to be made into their reality. This inquiry was conducted by Mr. Ceely, of Aylesbury; whose report on the subject, together with details furnished by Dr. Husband on the particulars of his method, is hereto subjoined.* The advantages of the method (subject, of course, to its being adopted with all necessary precautions) are quite conclusively established. Mr. Ceely saw perfect results obtained by vaccination with specimens of lymph which had been thus preserved in a liquid state for as many as seven years. And with the knowledge thus obtained, it was thought right to introduce into the "Instructions for Vaccinators under Contract" a special mention of Dr. Husband's procedure; so as to give the contractor his choice, whether to preserve lymph by this method, or by the more generally-used method of ivory points.

* [The important reports of Mr. Ceely and Dr. Husband, which, like the many other reports appearing in the Appendices, frequently referred to in these reports, are not reprinted in these volumes.—Ed.]

MEMORANDUM ON THE SUBDIVISION OF PUBLIC VACCINATION, AS AFFECTING THE SUPPLY OF LYMPH.

There is reason to believe that the performance of Public Vaccination in England is disadvantageously affected by its present extreme subdivision. Memorandum of Privy Council in 1859 on the subdivision of Public Vaccination as affecting the supply of Lymph.

For the satisfactory working of a public vaccinating-station, it is requisite that systematically on each vaccinating day two groups of cases should assemble there;—on the one hand infants, who, having been vaccinated on the day-week preceding, are now (as the law requires) brought back for inspection, and are ready to furnish the vaccinator with lymph for his present proceedings;—on the other hand infants brought for Vaccination, who, if now vaccinated, will on the day-week following be brought back for inspection, and then in their turn contribute lymph for the benefit of further applicants. By the coming together of these two groups of cases, the Vaccinator is enabled to vaccinate from arm to arm; a mode of proceeding, which (as a rule) is of great importance to his success.

It is also requisite that each group of cases should not be too restricted in number. The careful Vaccinator does not indifferently vaccinate from the arms of all infants brought back on the eighth day, but exercises selection among them; and facility for this selection cannot be afforded him, unless there be on each vaccinating day an average return of several vaccinated cases. If his share of the local Vaccination be either too small or too much subdivided among different stations and different days, the cases returning to him for eighth day inspection will on many vaccinating days be too few for his purpose. On all such occasions, he must either omit to vaccinate those who apply to him, or (unless he have recourse to less eligible sources) must vaccinate them with preserved lymph, and incur the much greater chances of failure which belong to the usual modes of thus vaccinating.

Ill-frequented vaccinating-stations (stations, that is to say, where the total number of vaccinations, as compared with the number of vaccinating-days, is too small for the local lymph-supply to be continuously and properly maintained) are now a very prominent feature in our system of public Vaccination. And this state of things is one of serious consequence; not only as implying that at present a large proportion of the vaccinations in England are performed under disadvantageous circumstances; but also because, if it continue, the general lymph supply of England can scarcely fail to become insufficient or deteriorated.

The excessive subdivision which leads to this result, arises in various ways. Sometimes, no doubt, the quantity of Vaccination to be performed within one jurisdiction has been divided among too many performers. But still oftener it is the case, that individual Vaccinators have distributed their respective shares of the public duty among too many stations, or too many vaccinating days; and in some cases the Vaccinator develops the inconvenience to its greatest extent by almost or entirely disusing the appointed station, and habitually performing his vaccinations under contract at the several private dwellings of his patients; a mode of proceeding, which in thinly-populated rural districts may be convenient and even necessary, but which in town-districts can never be necessary, and scarcely ever can fail to be disadvantageous.

It cannot be questioned but that Local Authorities, in adopting the arrangements here animadverted on, have been actuated by the very laudable intention

of giving the utmost possible facility to persons desirous of being vaccinated. To any one who has not studied the subject, it naturally appears that the greatest facilities for Vaccination must be given by the largest number of stations, and the largest number of surgical attendances there; whereas in fact (from circumstances which have been here explained) any multiplication of attendances beyond a certain point, can only give spurious facilities for its purpose; and public Vaccination in a district may often be difficult or inefficient, merely because the stations are too numerous or the attendances at them too frequent.

The inconveniences adverted to are not altogether removable. In rural districts, from obvious and unavoidable causes, it never can be as easy as in populous towns to maintain effective Vaccination at one common centre; and in many of such districts the Medical Officer exercises a wise discretion in vaccinating, as opportunities offer, at the scattered dwellings of his patients. Again in instances where small-pox breaks out among a population which presents considerable illegal arrears of Vaccination, the emergency, while it lasts, requires exceptional arrangements.

Exception being made of these, and perhaps other special cases, it seems certain that the Public Vaccination of England would be greatly improved by judicious consolidation of its present too diffuse arrangements. And to effect this object, it seems desirable that Guardians and Overseers, where there is no special reason to the contrary, should regulate the details of their respective Contracts in uniformity with the following General Rules:—

- (1) that, except at times when there is immediate danger of small-pox, Vaccination be not appointed to be performed at any station oftener than once a week:
- (2) that, except at times when there is immediate danger of small-pox, or for special reason in individual cases, Vaccination in town-districts (unless it be of private patients) be performed only at the Public Station:
- (3) that, as opportunity offers, especially in urban Unions and Parishes, all unnecessary sub-division of public Vaccination among many districts or stations be discontinued; and that in populous towns, unless under special circumstances, sub-division be not made beyond the point where each vaccinating-station will have annually at least 500 applicants for Vaccination.

[From the Third Report, 1860.]

II.—THE WORKING OF THE VACCINATION LAWS, AND OF THE REGULATIONS AND ARRANGEMENTS MADE WITH REGARD TO THEM.

From the preceding section of this Report it will have appeared that proceedings which were taken during 1860 with reference to epidemics of small-pox necessarily threw light on the state of vaccination in the inspected districts; and it will have been seen that, as a rule, the working of the Vaccination Extension Act of 1853 was found to be most unsatisfactory.

But, apart from present epidemics of small-pox, the working of the vaccination-laws needed to be inquired into. For this purpose, and particularly with regard to the observance of those Regulations which, under the Public Health Act, have been made (by order of Privy Council, dated December 1st, 1859) for the improvement of public vaccination, their Lordships have seen fit, in the past year, to direct the commencement of a *systematic inspection*. The commencement was made in Unions where the amount of infantine vaccinations, in comparison with the number of births, appeared to be specially low; and the instructions, which under their Lordships orders I gave for the conduct of the inquiry, were such as I thought might best serve to elicit the various local explanations of this apparent non-compliance with the law.

First, were the facts really as they appeared? Was it the fact, notwithstanding the law that every child (its health permitting) shall be vaccinated within, at farthest, four months from birth,—was it the fact, that Union after Union could be named where the number of infantine vaccinations did not reach a third of the number of births, sometimes not even a sixth or an eighth?

If so, where was the fault? Did the local arrangements not give such facilities as the law requires to be given to persons

II. Vaccination.

Inquiries made in 41 Unions.

willing to have their children vaccinated? Did the local authorities omit to publicly notify these arrangements? Did the local registrar not duly deliver to persons registering births the notice which reminds them of their obligation to have the infant vaccinated? Was the local vaccination-register imperfectly kept, so that the defaults of infantine vaccination could not be readily discovered? Were there, in the local contracts for vaccination, any conditions which would tend to defeat the object of the law? Or, not least, was there in the local style of vaccination, as performed by the contractors, any fault or slovenliness which could create a public prejudice against vaccination?

Such, in substance, were the questions which had to be solved by local inquiry. And, in answer to them, so far as they have yet been answered, I append *in extenso* the report which has been made to me by Dr. Seaton with respect to 152 vaccination districts comprised in the 41 Unions hitherto inspected by him under these instructions. (Appendix, No. IV.)

I have already had occasion to report the conclusion, to which the results of this inquiry have largely contributed, that the present law—"to extend and make compulsory the "practice of vaccination"—is so imperfect, as to be, for its professed objects, almost inoperative. Of course where it appeared, on local investigation, that non-compliance with the law depended simply on the non-compulsiveness of the law, it was impossible to suggest any present mode of conquering the difficulty. But, where it appeared that other causes were at work,—where it appeared that the law, through some defect of plan or execution in the local arrangements for public vaccination, was rendered less operative than it might be, this was pointed out to the local authorities or their officers, and advice was given them how they might best proceed to render their plans and proceedings more conformable to the intentions of the law. It affords me the greatest satisfaction to report, with respect to these communications, that universally the inspection was welcomed as an assistance given by the Privy Council to local authorities in a matter of

much difficulty; and that, even where criticism of local proceedings had to be expressed, every willingness was shown to make the suggested amendments.

As regards the observance of those Regulations of the Privy Council, which were established by their Lordships' Order of December 1, 1859, and came into effect on the first day of 1860, for the improvement of public vaccination, it would be premature on this occasion to say more than that the regulations seem to be operating usefully. It was occasionally found that, in consequence of them, very desirable improvements had already been locally made, sometimes in the manner of vaccinating, sometimes otherwise in the discharge of a contractor's duties. It was evident, however, that the observance of the Regulations would be, perhaps for years, comparatively imperfect, unless their adoption were promoted by the kind of inspection here reported on. For, with regard to detailed arrangements and proceedings (which, after all said and done, must necessarily in great part remain affairs of local discretion) the influence of formal printed regulations can never be more than a miserable substitute for local intelligence, education and zeal. And the great advantage of the inspections which are here reported on,—inspections which their Lordships propose to continue systematically through the other Unions of England, is, that by means of them the spirit and intentions of their Lordships' Order are made clear to those who have to carry the Order into effect; that explanations or reasons are given where they are wanted; and that consideration is directed to points which before have been overlooked.

In illustration of my meaning, I cite a single instance. Among the *Instructions for Vaccinators* is the following direction:—"In all ordinary vaccinations, vaccinate by four "or five separate punctures, so as to produce four or five "separate good sized vesicles; or, if you vaccinate otherwise "than by separate punctures" [for some vaccinators prefer to make long slight scratches, side by side, or intersectingly, instead of punctures] "take care to produce local effects "equal to those just mentioned." Obedience to this instruc-

tion is necessary for conferring on those who are vaccinated the full amount of protection which good vaccination confers. Therefore the inspector was charged always to ascertain whether the direction was obeyed; and, in case of negative finding, he was to bring to the knowledge of the vaccinator certain facts which I have here tabulated. He reports:—

“To most of the vaccinators the conclusive evidence of the superior value of several vesicles derived from the records of the Small-pox Hospital, was unknown. My communication with them enabling me to lay before them the facts collected by Mr. Marson, which I had had printed in a convenient form, and to explain fully the plan of vaccinating pursued with perfect safety at the large stations of the national establishment, it was a great pleasure to me to find that the result of the free and ample consideration and discussion of these points resulted always in the assurance that the mode enjoined in the instructions would henceforth be adopted.”

As regards another clause in the above-mentioned *Instructions*, and as regards some urgent recommendations addressed for the same purpose by their Lordships to local authorities,

STATISTICAL EVIDENCE of the different Degrees in which Persons Vaccinated in different ways will be safe against Death by SMALL-POX, if they should happen in after-life to contract this Disease.

The Table is founded on information given to the Medical Officer of the Privy Council by Mr. Marson, Surgeon of the Small-pox Hospital, as the result of observations made during 25 years in nearly 6,000 cases of post-vaccinal small-pox.

| Cases of Small-pox, classified according to the Vaccination Marks borne by each Patient respectively. | Number of Deaths per Cent. in each Class respectively. |
|---|--|
| 1. Stated to have been vaccinated, but having no cicatrix - - | 21 $\frac{3}{4}$ |
| 2. Having one vaccine cicatrix* | 7 $\frac{1}{3}$ |
| 3. Having two vaccine cicatrices† | 4 $\frac{1}{8}$ |
| 4. Having three vaccine cicatrices | 1 $\frac{3}{4}$ |
| 5. Having four or more vaccine cicatrices - - - - | $\frac{3}{4}$ |
| Unvaccinated - - - - | 35 $\frac{1}{2}$ |

* Among cases in which the one cicatrix was *well marked*, the death-rate was 4 $\frac{1}{2}$. Among cases in which it was *badly marked*, the death-rate was 12.

† Among cases in which the two-cicatrices were *well marked*, the death-rate was 2 $\frac{1}{2}$. Among cases in which they were *badly marked*, it was 7 $\frac{1}{2}$.

the inspector's report contains valuable information. The instruction I refer to is:—“Endeavour to maintain in your district such a succession of cases as will enable you uniformly to vaccinate with liquid lymph directly from arm to arm, and do not, under ordinary circumstances, adopt any other method of vaccinating.” And the recommendations to which I refer are comprised in a memorandum (given, with explanations, in the last annual report) on “the Sub-division of Vaccinating Stations as affecting the Supply of Lymph.” The importance of making such local arrangements as will enable the vaccinator habitually to vaccinate from arm to arm, instead of having recourse to dry lymph, is well illustrated by the following passages of the inspector's report:—“The register of one vaccinator whose common practice it was to use dry lymph, showed 46 failures in 240 vaccinations. Another vaccinator who, during last summer, vaccinated 200 cases, most of them at the people's houses with recent dry lymph on points, but some of them direct from the arm, said that he had had altogether between 20 and 30 failures, not one of which had been in the cases done from the arm; and most vaccinators, without being able to make any numerical statement, spoke of frequent failures with dry lymph. Success, when attained, was in most instances only partial. A vaccinator whose habit it was to insert lymph by puncture in six places, told me he seldom got more than one or two vesicles; another, operating by abrasion in three places, said he got sometimes three, sometimes two, more often one only; and the testimony was very strong and general that a vesicle could not with confidence be looked for from each puncture or insertion of lymph . . . I met with many illustrations of the paramount importance of so conducting vaccination as to secure, as far as possible, the success of the operation. Of the elder children in schools, whom I have enumerated among the unvaccinated, there were many who assured me they had been cut, and some of them more than once, and that it would not take; and they seemed to be under the impression that it would be of no use vaccinating them any more.

" Some of the children marked with small-pox in the schools
 " said also they had been vaccinated, 'but it would not take.'
 " Small pox had been introduced into one village by a child
 " who had been vaccinated three times unsuccessfully. And,
 " on other inquiries, I have met with several cases of death
 " from small-pox in children said to have been vaccinated,
 " but whose vaccination it appears on investigation, had not
 " been successful."

Finally, I have to quote from the inspector's report one large set of facts which will show how much remains to be done for the improvement of English vaccination, and how poorly Jenner's countrymen are protected against small-pox, in comparison with that protection which his discovery might confer on them. The inspector "examined carefully
 " the arms of 12,349 children in various national, parochial
 " and charitable schools, including 397 children in work-
 " houses." The result of this large scrutiny may in round numbers be thus stated:—Of every 12 children examined, 2 would show *no conclusive mark* of having been vaccinated; 3 others would show only such marks as imply *a very imperfect protection* against small-pox; 4 others would have marks which are classed as *passable*; only 3 would be, in the inspector's opinion, *well*, and *very well* protected.

2. Educational
 Vaccinating-
 stations.

I have to add, that during the year the educational vaccinating-stations which came into action on the first of January 1860 have been specially inspected. They were found in satisfactory work. A list of them will be found in the Appendix, No. V. And, for particulars relating to their establishment, I refer to my last year's Report.

3. Public
 supply of
 vaccine lymph.

It is not by immediate action of the Privy Council, but by means of a separate Board (that of the National Vaccine Establishment) that the *public supply of vaccine lymph* is maintained and distributed. Yet as, under the Public Health Act, the Privy Council is charged with directing the application of such monies as are for that purpose voted by Parliament, it may be convenient that now, as on former occasions, I should refer to the present state of this important branch of the public sanitary service.

In making my first annual report (that relating to the year 1858) I had occasion to regret the then insecure state of the national supply of vaccine lymph; and I described certain new arrangements which were then being commenced, with a view of putting the supply on a more satisfactory footing. Referring to that report for a detailed account of the then existing circumstances, I need at present only state this as its substance;—that for the maintenance of a supply of vaccine lymph, the public looked to the Board of the National Vaccine Establishment; that this Board depended for lymph exclusively on the vaccinations performed at its own 17 stations in the metropolis; that the number of applicants for vaccination at these stations had been long undergoing a decrease,* in proportion as successive Acts of the legislature had created and developed the parochial system of public vaccination; that, meanwhile the public demands for lymph were increasing;† and that now the Board could no longer guarantee from its own stations the continuance of sufficient means for satisfying such demands. And the arrangement which in 1858 was proposed in order to obviate the threatened scarcity of lymph was, that the Board should enter into correspondence with certain independent vaccinating-stations (parochial and other) and should with due precaution obtain lymph from these

* See the first of the annexed four tables (Appendix) particularly the reductions shown after 1840-1 and after 1853. In 1838 the number of vaccinations performed by the establishment amounted to 18,659; during the three years 1850-2, the average annual number was only 10,713; during the three years 1854-6, it had fallen to 8,207; and in 1858 it reached but 6,445. To this reduced number of vaccinations, 17 different stations in the metropolis contributed in unequal proportion: two of them together effecting 3,502 vaccinations, or considerably more than half of the total; while the remaining 15 contributed various numbers, varying respectively from 72 to 373. At some of these 15 stations vaccination was offered to the public twice, at others, three times a week; but from an analysis of their statistics, it appeared that the average number of cases vaccinated at each of them on each vaccinating day was only about $1\frac{1}{2}$.—J.S.

† Ordinarily the National Vaccine Establishment was distributing about 215,000 charges of lymph; but under the influence of peculiar circumstances, the demand had risen and might rise again to about 320,000—an amount nearly 60 per cent. higher than was supplied in 1838, when the sources of supply (i.e. the vaccinations performed by the establishment) were nearly three times as numerous as in 1858.—J.S.

subsidiary sources. This was the state of things reported on in my first annual report.

In the next report (that relating to the year 1859) I was able to show that considerable progress had been made towards developing this better system. Unproductive metropolitan stations of the Vaccine Establishment had been discontinued; and, in proportion to their discontinuance, new sources of contribution had been opened at large provincial towns and at two parochial stations in London.

On the present occasion I am able, with great satisfaction, to report the well-established success of the new arrangements. During 1860 the National Vaccine Board received two-fifths of its lymph-supply from sources thus recently called into existence. The public supply, instead of depending on fewer than 6,500 vaccinations, is now based on nearly 14,000; and we have the advantage of knowing, not only that the new sources could in case of sudden need furnish much more lymph than they now currently supply, but that, on the same plan as that on which they contribute lymph, other parochial stations might at any moment be brought into correspondence with the National Vaccine Board, and be made instrumental in widening more and more the basis of our national lymph-supply.

Three annexed tables (Appendix) show the successive steps of development of our present organization. The first shows the insecure system of 1858, and the small changes which were in that year effected. The second shows the extensive changes of 1859. The third shows the system at present in operation. And I conjoin to them a fourth table, which shows in a compendious form the previous statistics of the establishment.*

* See Appendix, No. V. The information contained in these four tables was communicated to their Lordships by the Board of the National Vaccine Establishment.—J.S.

[From the Fourth Report, 1861.]

II. PUBLIC VACCINATION.

1. *Inspection of Districts.*

[Here follows an account of the District Inspections during 1861. The four summary reports of the inspectors are referred to. They describe the present state of public vaccination in Devonshire, Cornwall, Shropshire, Staffordshire, Essex, Norfolk and Suffolk, and in parts of Derbyshire, Kent, and Somersetshire.—Ed.]

Although it would be superfluous for me to give here any abstract of the contents of the inspectors' reports, there is one broad fact made apparent by them, which it seems proper to bring forward for particular consideration:—this fact being, that, in an immense majority of the inspected districts, the existing contracts for vaccination were found to be practically worthless.

Extensive
worthlessness
of the present
contracts.

The circumstances under which that result has arisen are as follows:—In 1840, when it was first enacted that vaccination at the public cost might be claimed of guardians and overseers throughout this country, and that guardians and overseers, in order to provide such vaccination for applicants, must, under the direction of the Poor Law Commissioners, contract with medical practitioners to be public vaccinators, the Poor Law Commissioners issued an instructional minute, advising boards of guardians as to arrangements for carrying this Act into effect. Points of special importance which, among others, had to be advised on, were these:—to *what number of performers* shall the new duty in any union be allotted? and *how many public attendances* shall each of them be bound to give for the performance of vaccination? The Poor Law Commissioners, in advising on these points, sought of course to give the utmost possible facility to persons desirous of getting gratuitously vaccinated. They wished "to take away" all pretext from individuals for neglecting to avail themselves of the benefit of the contract," and having special regard to this object, they gave advice which led to a very

minute subdivision of public vaccination. They suggested that, as a general principle, guardians should "make the districts as small, and the number of vaccinators as great as possible;" that the contractor's residence would often be the most convenient station which could be chosen for a district; that, where this was the case, the contractor should give special weekly attendance at a fixed hour, and should further give his services at any reasonable time, on personal application at his residence; that at other stations the number of attendances should "depend on the population who may be considered as likely to resort to each station;" and that the contractor should be at liberty, if he thought fit, to vaccinate persons at their homes, and charge for such vaccinations as though they had been performed at his station or residence. Again, 13 years afterwards, when the Compulsory Vaccination Act of 1853 came into force, the then Poor Law Board drew attention to the same points, and gave advice which tended to a still further subdivision of the public vaccination.

Later experience showed that, in those earliest endeavours to deal with the difficulties of providing a system of public vaccination, one very important consideration had been overlooked. It had been seen that great facilities for vaccination might be given by a large number of stations, and by a large number of surgical attendances:—apparently it had not been seen, or at least had not been insisted on, that multiplication of attendances beyond a certain point defeats the object of attendance, and that public vaccination in a district may often be difficult or inefficient, merely because the stations are too numerous, or the attendances at them too frequent. This consideration, and the consequences resulting from its non-observance, were adverted to in a memorandum, submitted by me to their Lordships in 1859.*

The inspections made during 1861 have brought prominently before their Lordships, as prevailing almost universally in the inspected districts, the evils to which the above passage refers. They almost universally have shown the subdivision

* [See above p. 343.—ED.]

of public vaccination pushed to an extent in which the object of the contract is defeated. They have shown that, as a rule, the attendances contracted for are such as would make habitual good arm-to-arm vaccination rare or impossible,—that often they are several times as numerous as the births in the same district, so that, even if every born child came to the public vaccinating-station, there would have been many fruitless attendances for each one vaccination performed. They have shown the division of districts to be such that the number of infants requiring to be vaccinated within one contractor's province is scarcely ever more than enough—very often far less than enough—to maintain first-rate continuous vaccination at even a single station, with a single weekly attendance; yet, that the contract subdivides this amount of vaccination among several stations, and often binds the contractor to give at each station an amount of attendance which he must at once discover to be fruitless; that under these circumstances the contractor soon comes to disregard a contract which he cannot carry into effect; and that the vaccination of his district is then carried on under no other law than his individual notions of fitness or personal convenience. Details to this effect abound in each inspector's report, and the general result may be very briefly stated:—among 694 vaccination-districts, with regard to which this matter was inquired into, only 64 were found where the contractor professes to follow regularly the plan of public vaccination prescribed by his contract; in at least 458 of the districts the plans of public vaccination prescribed by contract are confessedly quite disregarded; and in 252 of the districts the local registrar of births, in serving upon parents the statutory notice to have children vaccinated, either does not notify any fixed appointments for public vaccination, or notifies different appointments from those which the guardians have contracted for.

It is scarcely requisite to observe, that this extensive and extreme irregularity of public vaccination is fraught with evil consequences. Contracts which ought to regulate accurately the contractor's movements, and to form the basis for all local advertisements as to the performance of public vaccination,

have come to be regarded (except their stipulations for payment) as of no obligatory force. The local arrangements for vaccination are thus practically withdrawn from all superior control; and though in many cases nothing could be worse than the authorized programme,* yet the unauthorized arrangements are by no means always good. Doubtless this cause has been among the influences which have prevented the successful progress of vaccination in England.

Their Lordships have, therefore, brought the subject under consideration of the Poor Law Board, with whom, and not with their Lordships, rests the approval or disapproval of any proposed contract or vaccination.

[Here follow details as to the work of the department in the inspection of Educational Stations and supervision of the supply of Vaccine Lymph which it is not necessary to reprint.—Ed.]

[From the Fifth Report, 1862.]

I. PUBLIC VACCINATION.

1. *Inspections.*

[Here follow details of inspections which it is not necessary to reprint.—Ed.]

State of Public
Vaccination.

Inspection of
school
children.

In the statutes which during the last 23 years have been enacted with a view to the extermination of small-pox in this country, the immediate intentions of the Legislature have been as follows:—

first,—that thoroughly good vaccination, provided at the public expense under proper and well-notified arrangements, should everywhere and gratis be within reach of persons who may choose to avail themselves of it;

second—but of course subject to the above,—that it should be obligatory on parents to have their children vaccinated,

* In one case which came under my notice, the contractor had engaged for habitual attendance at identical times in three different parishes of his district.—J.S.

health permitting, within three calendar months from birth,—not necessarily by the public vaccinator, but, if not by him, then by some other medical practitioner whom the parent may select (and then must himself pay) for the purpose;

third—as machinery for enforcing this obligation,—that the fulfilment or non-fulfilment of the obligation should be ascertainable by reference to local registers kept by the respective registrars of births and deaths,—whom also the law requires to notify to parents the obligation which it has imposed on them; that penalties for non-fulfilment of the obligation should be recoverable by summary proceedings from parents who, after notice, are in default; and that especially boards of guardians in their respective unions and parishes should systematically cause such proceedings to be taken.

With regard to the non-accomplishment of these intentions of the Legislature,—it is true that, owing to the utter and universal failure of the intended register of vaccination, the failure of the other parts of the system cannot be quite accurately measured. But, again and again, the inspectors have come upon cases where, quite apart from the register, there was conclusive evidence of extreme local neglect of vaccination. Among the elementary schools which they visited, schools were numerous where the unvaccinated proportion of scholars was from 20 to 30 per cent. of the whole; in more than a few cases it was from 30 to 40 per cent.; in some it was from 40 to 50 per cent.; and in one case (that of Penn in Buckinghamshire) was as high as 55½ per cent. So again among the young inmates of workhouses, though under the very eye of boards of guardians, the inspectors found similar evidence that vaccination was not duly performed;—for among 38 workhouses which Dr. Seaton inspected, there were 8 where the unvaccinated proportion of children ranged from 20 to 38 per cent.;—and among 74 workhouses which Dr. Stevens inspected, there were 20 where the unvaccinated proportion of children was from 20 to 34 per cent. The less exact evidence furnished by the registers of vaccination justifies a conviction that in many cases the local neglect is greater, even very considerably greater, than those discreditable figures

would suggest:—for there are whole unions where there is no reason to suppose that any important number of vaccinations is performed by private practitioners, and where yet the number of vaccinations performed by the public vaccinators does not equal a third of the number of births,—unions, even, where the public vaccinators' vaccinations are as few as 19, 18, 17, 12, and 7 per cent. in proportion to each hundred of births;—and there are instances of districts remaining for long periods, even in one instance, as long as three years, without a single public vaccination being performed.

Evidently, then, the fundamental object of the Legislature—the object of ensuring that every infant (its health permitting) shall be vaccinated within the first few months of life, is very imperfectly attained. And the machinery which the Legislature established for the purpose of enforcing the fulfilment of that object is evidently not operative for its purpose. In explanation of which fact, there are three reasons to be stated;—first, that boards of guardians, except when influenced either by panic of small-pox or by formal remonstrances on the subject, have very rarely done all that they might do, and in many cases have done nothing, to set the machinery in motion;—secondly, that the machinery itself is so imperfect that, even when used with good will, it must be insusceptible of exact working;—and thirdly, that the compulsive provisions of the law (perhaps leniently intended by the Legislature to be ambiguous and feeble, rather than clear and stringent) have in different places been subject to different magisterial interpretations, and have in all places been found insufficient for thoroughly accomplishing their supposed object.

It remains, however, to be observed that imperfect stringency for compulsive purposes is not the only, nor in my opinion the principal, defect of the present law.* The condition which assuredly the Legislature intended to be a condition precedent to any enforceability of vaccination,—the

* It appears, indeed, that the combined efforts of the registrar and public vaccinator, or even extreme diligence of the latter officer alone, may to a great extent, so far as numerical results are concerned, compensate for the insufficient compulsiveness of the law. And if uniformly throughout the country registrars

condition “that thoroughly good vaccination provided at the public expense under proper and well-notified arrangements should everywhere and gratis be within reach of persons who may choose to avail themselves of it,” is hitherto very imperfectly realized. Both with regard to existing local arrangements for gratuitous vaccination, and with regard to the required notification of such arrangements, the public has at present ample reason to complain that the conditions are not fulfilled under which alone a system of compulsory vaccination can be tolerable. Partly through the continuance of faults to which I adverted in my second annual report, as faults which their Lordships' regulations of December 1859 were intended to correct, but still more (as described in my last annual report) through the general ill-devisedness and futility of those contracts which pretend to regulate the duties of vaccinators, it results,—not only that to a very great extent vaccination is given in a most impunctual and irregular way,* often without proper local notification,†—but moreover, that

and public vaccinators had adequate inducements to co-operate, or even if public vaccinators had adequate inducements to give extreme diligence to duties not legally incumbent on them, the local vaccinations might not be in defect. But such inducements are absent.—J.S.

* This result, amply demonstrated by the inspections of former years, was again, in 1862, a matter of constant observation. Of 150 districts in which Dr. Sanderson inquired, there were only 108 where even the existence of contracts was a certainty, and in 70 of these 108 the contracts were entirely disregarded. See also Dr. Seaton's report, p. 52;—Dr. Stevens's, p. 73;—Dr. Buchanan's, p. 110. (Appendix.)—J.S.

† Dr. Buchanan reports that, among the 15 unions which he inspected, “in two unions only were the existing arrangements for public vaccination properly advertised.” See also Dr. Seaton, p. 54, and Dr. Stevens, p. 75. (Appendix.) But the greatest defect in respect of notification is the fact that, under the present system of inoperative contracts, the registrars commonly find themselves without proper means of notifying to parents what are the times and places for public vaccination. For instance, the following is Dr. Sanderson's finding in the 79 registration-districts of the 28 unions which he inspected;—in 32 districts the registrar omitted to notify the times of the public vaccinators' attendances; in 26 districts he notified attendances which the public vaccinators did not give; in 6 districts he correctly notified the attendances given, but they were not the attendances prescribed by the respective vaccinator's contract; only in 6 districts did he notify according to fact attendances which were according to contract. See also, in this respect, Dr. Seaton's report, p. 54;—Dr. Stevens's, p. 75;—and Dr. Buchanan's, p. 111. (Appendix.)—J.S.

thoroughly good gratuitous vaccination is by no means uniformly given by those authorities whom the Legislature has made responsible for giving it.* And under these circumstances it would manifestly be unjust to punish, for non-compliance with the law, parents whose children are not vaccinated.

I have therefore had no alternative but to submit, for their Lordships' consideration, that the laws now in force for the purpose of extirpating small-pox are not likely to accomplish their object, and that the system established by law for the provision of public vaccination works in an unsatisfactory manner.

2. *Supply of Vaccine Lymph.*

Particulars as to the supply and distribution of vaccine lymph during the year 1862, and means for comparing their Lordships' recent proceedings in this respect with the proceedings of previous years, are given in several appended tables. Appendix No. II.

Supply
of Vaccine
Lymph to the
National Estab-
lishment.

Besides seeing to the merely quantitative supply of lymph, their Lordships, during 1862, took special means to satisfy themselves that the lymph which was being supplied under their auspices was lymph of undiminished efficiency. For this purpose, under their Lordships' orders, I requested Mr. Robert Ceely of Aylesbury to inspect all the sources whence lymph is contributed to the National Vaccine Establishment. Mr. Ceely's inspection did not lead him to recommend any change of the present sources of supply. On the contrary, in those stations which (as being most frequented) gave him the

* Very important evidence on this subject is again given in the reports of the present year. Among 127 districts for which Dr. Sanderson reports on the quality of vaccination (as evidenced by the scars observed on the arms of school children examined by him in each district) there were 21 where the proportion of vaccinated children judged by him to have been badly vaccinated ranged from 30 to 62 per cent.;—and there were only 30 districts where, in his judgment, more than half the vaccinated children had got good protection against small-pox. See also Dr. Seaton's report, p. 47;—Dr. Stevens's, p. 66;—and Dr. Buchanan's, p. 113. Some important facts as to the relation which the quality of local vaccination bears to the local vaccinator's method of operating are given by Dr. Seaton at p. 48, Dr. Sanderson at pp. 99–106, and Dr. Buchanan at page 115. (Appendix.)—J.S.

best opportunities of forming conclusions on the subject, he "met with abundant evidence of the perfectly satisfactory character of the lymph there in use." In reporting this judgment of Mr. Ceely's, I cannot over-state the importance which I attach to it. For to Mr. Ceely, more than to any man since Jenner, the medical profession of this country is indebted for its knowledge of the natural history of vaccination. And in my opinion there is no living person on whose testimony the public could more entirely rely as to the quality of the lymph which their Lordships are responsible for distributing.

[Here follow details of inspections of the sources of lymph-supply which it is unnecessary to reprint.—Ed.]

[From the Sixth Report, 1863.]

I. PUBLIC VACCINATION.

1. *District Inspections.*

[Here follow details of inspections which it is not necessary to reprint.—Ed.]

On several former occasions I have written so fully on the very unsatisfactory working of our system of public vaccination, that now (since I have nothing but the same story to tell) I need only refer to the abundant further evidence which the appended reports contain in condemnation of that system and of its working.* But while thus omitting to dwell in detail upon evils which I have already exposed, I would advert, though very briefly, to the result which those evils are producing. Small-pox, instead of being virtually extirpated from among us, is continuing to be a considerably fatal disease. Small-pox, which for eight consecutive years

* See, for instance, of different kinds, in Dr. Seaton's report, the cases of Cardiff, Ross, York, Scarborough, and Hull,—in Dr. Stevens's report the extreme cases shown in his Table D., and in some others of his tables,—in Dr. Sanderson's report, the cases of Axbridge Union, and of the districts of Uley, Swymbridge, Winkleigh, Bideford, Tetbury, and St. Decuman's,—and, as one ample illustration, the account which Drs. Seaton and Buchanan give of the vaccination of London. (Appendix.)—J.S.

Small-pox
mortality in
different
registration
districts in
England.

in the Grand Duchy of Baden, and for 13 consecutive years in the city of Copenhagen, took away not one single life, killed last year in London 2,000 persons. In other parts of England it has been and is constantly proving largely fatal. And probably five-sixths of its victims are children under 10 years of age; who, at least since 1853, under the vaccination law of that year, ought to be effectively vaccinated before they are four months old; but of whom, if they had been thus vaccinated, probably not one would have died of small-pox. There are indeed considerable parts of the country where this scandalous state of things does not

| | | | | | Annual Death-rates by Small-pox, per 100,000 living under 5 Years of Age, in the different Registration Districts of England. |
|------------------------------|---|---|---|---|---|
| In 44 Registration Districts | - | - | - | - | — |
| „ 297 | „ | - | - | - | 1 to 50 |
| „ 131 | „ | - | - | - | 51 to 100 |
| „ 75 | „ | - | - | - | 101 to 150 |
| „ 39 | „ | - | - | - | 151 to 200 |
| „ 24 | „ | - | - | - | 201 to 250 |
| „ 8 | „ | - | - | - | 251 to 300 |
| „ 5 | „ | - | - | - | 301 to 350 |
| „ Shrewsbury | - | - | - | - | 382 |
| „ Northampton | - | - | - | - | 456 |
| „ Plymouth | - | - | - | - | 463 |
| „ Merthyr Tydfil | - | - | - | - | 572 |

N.B.—In 72 of the Registration Districts of England the death-rate from all causes of children under 5 years of age is under 4,000, and in 12 of these is under 3,350.

prevail; and in order to illustrate how wide a range of difference there is in this respect between different jurisdictional areas in England, I will quote some figures from the very important statistical return which has recently, on Mr. Lowe's motion, been laid before Parliament.* The return contains (with other things) a statement of the respective proportions in which death by small-pox occurred during the

* Return of the average annual Proportion of Deaths from specified Causes at specified Ages, in England generally, and in each Registration Division and Registration District of England, during the decennial period 1851-60;—Ordered by the House of Commons to be printed, 5th February 1864;—Sessional Paper,

10 years 1851-60 in the 627 different registration districts of England among children under five years of age. The annexed table gives an abstract of that statement. It shows that in 44 of the 627 districts not even a single child had died of small-pox. But, for the remaining 583 districts, it shows results which gradually rise into the evidence of enormous neglect. Indeed, as we descend the column, we find that at last the local death-rates by small-pox represent considerable proportions of what in healthy districts would be the death-rates from all causes,—becoming, for instance, in Shrewsbury more than a ninth part, in Northampton and Plymouth about an eighth part, and in Merthyr Tydfil not less than a sixth part of such a normal death-rate from all causes.

With reference to the 2,000 deaths which there were last year in London from small-pox, I would very particularly refer to the report which Drs. Seaton and Buchanan give of the state of the public vaccination, and to the suggestions which they make for a fundamental change of the present system.

2. Supply of Vaccine Lymph.

[Here follow details of the work of the department which it is not necessary to reprint.—ED.]

In connexion with this subject, I advert with interest to some information which Dr. Sanderson, while inspecting the vaccination districts of Gloucestershire and Somersetshire, received from local medical practitioners with respect to the present occasional prevalence of natural cowpox in parts of these counties. He is informed, namely, that that infection is still common in the dairy farms of the Bridgewater level and of the vale of Gloucester,—i.e., in the whole of the level country round Bridgewater bay, between the coast and the Mendip and Qwantock hills, and in the whole pastoral country which, from Gloucester to Thornbury, lies between the Severn and the Cotswold hills, having Berkeley (Jenner's

Cowpox in
Gloucester-
shire and
Somersetshire.

No. 12; and its continuation, No. 12-I., ordered to be printed 4th March 1864. [More particular reference to these important returns, prepared in the General Register Office, will be found below. See last section of Fourth Annual Report.—ED.]

birthplace) in its centre. Dr. Sanderson informs me on the subject as follows:—"From statements made to me by " practitioners in these districts, it appears that cowpox is " usually to be met with in the dairy farms in the months " of April, May, and June. When a dairy is invaded, the " disease not only infects the whole of the stock, but is " very frequently communicated to the milkers—invariably " men; on whom the vesicles are seen on those parts of the " hand which are applied to the teat in the act of milking, " particularly on the grasping surfaces of the thumb and " index finger. The inoculating of lymph directly from the " cow has been practised in several districts with success. " All who have employed such lymph agree in stating that " after the first or second transmission the results obtained " do not differ from those of ordinary vaccination, either in " respect of the progress or character of the vesicle." At the end of Dr. Sanderson's account of his vaccination-inspections will be found his detailed memorandum of the information which he received on the subject.

3. *Educational Vaccinating Stations.*

[Here follow details of inspections which it is not necessary to reprint.—Ed.]

[The **Seventh Report, 1864**, contains an account of local proceedings for public Vaccination which it is not necessary to reprint.—Ed.]

[From the **Eighth Report, 1865.**]

I. VACCINATION.

[The portions relating to district inspections and ordinary supply of lymph are omitted from the reprint.—Ed.]

There were cases where lymph was desired for the purpose of vaccinating horned cattle. Some crude speculations which had been published as to the nature of the prevailing cattle-plague, with still cruder half-promises that vaccination would prove protective against the disease, had, very naturally,

filled the cattle-owners of the country with eagerness to provide the suggested security for their herds; and for a while (beginning towards the end of December) the demand for vaccine lymph was insatiable. As this demand, with the public hopes which created it, continued till after the end of 1865, and indeed did not reach its maximum till about the middle of January in the present year, I perhaps ought not, strictly speaking, to say more of it in this report. But as it would be useless to refer again next year to the subject, I may say that during the early part of January the applications for lymph (among which it was not generally possible to discriminate the applications of cattle-vaccinators) were so numerous as to endanger the solvency of the establishment. In the previous ten years, including periods when human small-pox had been most widely epidemic, the average number of applications in the month of January had been 932, and the highest number had not reached 1,500. But in this January the applications exceeded 3,000; among which only 279 could be discriminated as for veterinary purposes; and on the 18th of the month, when this great demand culminated, the total of the one day's applications were as high as 178. Of course, whenever I learnt from the terms of an application that to vaccinate cattle was the object for which the lymph was wanted, my duty was to consider the applicant's claim as subordinate to that of persons who wanted lymph for human vaccination; and, as the lymph-supply at my disposal was not more than enough to provide for the latter purpose, I felt obliged to refuse lymph to the 279 applicants whom I could discriminate as cattle-vaccinators. There must, however, have been many other hundreds of cases where also the applicant's object was to vaccinate cattle, but where this object, being undeclared in his application, could not be discriminated and made a ground for refusal. Under these circumstances there was great reason to fear that the innumerable inconclusive trials which amateurs were making in all parts of the country as to the value of cattle-vaccination, and the consequent enormous waste of vaccine lymph, would cause such an

Application of cattle vaccinators for lymph.

exhaustion of the national lymph-supplies as must seriously derange human vaccination throughout the United Kingdom. Fortunately, the truth as to the uselessness of the proposed cattle-vaccination became known before that great mischief was produced; and the demand for lymph subsided as rapidly as it had risen. It may be proper for me to add, that, if the scientific observations which were being made under the auspices of the Cattle Commissioners, and otherwise, had justified an opinion that the vaccination of cattle ought to be recommended, special arrangements would have been necessary to supply lymph for that purpose; and that, had the case arisen, I should have submitted to the Lords of the Council suggestions which I had in readiness for such arrangements.

In 1865, as in preceding years, my Lords took special means to satisfy themselves as to the undiminished efficiency of the lymph which is supplied under their direction. Dr. Seaton visited all the stations whence the public lymph-supply is derived, and reported quite satisfactorily of the quality of the lymph which was in use. The list of stations supplying lymph was increased by the addition of one of the parochial stations at Salford. And lymph has also been supplied from an important vaccinating-station at Glasgow.

[Here follow details as to Educational Stations which it is unnecessary to reprint.—ED.]

[From the Ninth Report, 1866.]

GRANTS FOR PUBLIC VACCINATORS.

1. As regards the grant for public vaccinators, Parliament in 1866 commenced experimentally the course of subsidising public vaccination, by empowering the Lords of the Council to distribute among meritorious public vaccinators, on the principle commonly called that of "payment for results," a grant of money voted for this purpose.

The intention of this grant was not to relieve local rates of a part of the costs already chargeable on them for fees to public vaccinators, but to provide, independently of local

System of
gratuities to
public vac-
cinators.

rates, that meritorious public vaccinators should have their earnings by vaccination increased. There had always been a great deal of complaint from the medical profession that public vaccination was not sufficiently paid for. Against this complaint it was argued that guardians had no better means of determining what price to pay for public vaccination than by adopting the minimum price for which duly qualified local practitioners were willing to contract to furnish it; and that, a certain market price for vaccination being thus fixable, practitioners could not reasonably complain of terms which they had voluntarily accepted, nor guardians properly be coerced by legislation into paying an artificial, protective, price for the service. And of course on all sides it would be recognized that, however poor might be the remuneration under contract, the practitioner who had voluntarily made the contract could not plead the poorness of payment as an excuse for imperfectly fulfilling his engagements. Yet, on consideration of the whole case, Parliament, in 1853, had determined that the price to be paid for public vaccination could not, with due regard to national interests, be left an entirely open question between guardians of the poor, on the one hand, and competing members of the medical profession on the other. It had fixed a minimum price of 1s. 6d. (with additional rate for distance) below which it should not be lawful for guardians to pay. But the fixing of this minimum (which in practice guardians were very apt to regard also as their maximum) did not satisfy the medical profession; and always, when consideration was being given to proposals for amending the vaccination laws, question arose whether the provisions of 1853 as to payments for public vaccination could be so changed as to remove that dissatisfaction. It was found, however, that any statutory fixing of a higher minimum rate for vaccination contracts would be strongly resisted on the part of local authorities; and apart from this kind of opposition, doubts were entertained as to the propriety of pressing any further a principle of legislation so evidently exceptional as one which aimed at protecting the medical profession from the ordinary conse-

quences of competition among its own members. On the other hand no sensible person could avoid seeing that the national defences against small-pox might be of a most untrustworthy sort, if the business of seeing to them for each locality were virtually assigned by the guardians to the lowest professional bidder. The mischief of such a system would not lie so much in those extreme cases (which I trust would be as rare as they would be scandalous) where a contractor, poorly paid for prescribed duties, might deem himself free to neglect them: it would consist far more in the very extensive unwillingness, which would be engendered, to incur trouble beyond the letter of the contract. And this kind of feeling, as I endeavoured ten years ago to express, would, in my opinion, be the worst of dangers to public vaccination.* The national utility of public vaccination depends, to a degree which unskilled persons can hardly imagine, on the condition that its local administrators shall work, not merely as competent perfunctory performers of prescribed tasks, but thoroughly with zeal for their work. And in this point of view it becomes an important public object that the scale of payment provided for their service shall be such as they can accept with satisfaction.

My Lords, after considering all the circumstances of the case, determined that the best course for them to take was to ask authority from Parliament to give to public vaccinators, under certain regulations, gratuities in excess of their contract receipts. The contract rate might, they thought, remain as heretofore, to be adjusted between guardians and medical practitioners, subject only to the actual statutory provision of a minimum; and they would assume (as indeed no other assumption is practicable) that the contract rate represents a payment which the contracting medical practitioner deems sufficient for his prescribed duties: but, inasmuch as the thoroughly well-vaccinated state of the population of a place indicates, almost of necessity, that the contractor exerts himself in various ways which lie beyond the definite obligations of his contract—exerts himself with zeal both to optimise the

* Vide History and Practice of Vaccination, p. 294.—J.S.

quality, and also to maximise the quantity, of the local vaccination, therefore my Lords would ask Parliament to allow an annual sum out of which extra remuneration for this zealous work might be awarded under their Lordships' direction.

In the Vaccination Bill of last session, as amended by the Select Committee of the House of Commons to which it was referred, there was a clause which purposed to make permanent provision in the above sense. Its terms were these:—"On reports made to the Lords of Her Majesty's Council with regard to the number and quality of the vaccinations performed in the several vaccination districts of England, or any of them, the said Lords may, from time to time, out of monies provided by Parliament, and under regulations to be approved by the Lords Commissioners of Her Majesty's Treasury, authorize to be paid to any public vaccinators, in addition to the payments received by them from guardians or overseers, gratuities, not exceeding in any case the rate of one shilling for each child whom the vaccinator has successfully vaccinated during the time to which the award of the said Lords of the Council relates." The Vaccination Bill of the Select Committee could not last year become law; but before the end of the session Parliament provisionally accepted the principle of that clause, and voted a sum of 5,000*l.* to enable my Lords to carry it into effect during the remainder of the financial year.* The launching of the new scheme was necessarily delayed for some weeks by the pressure on the office of work arising out of the prevalence of cholera in England; and it is only since the end of 1866 that the intended rate of reporting for the administration of the grant has been reached. For the purposes of the inspection of public vaccination (including the purpose of administering this grant) the whole of England and Wales has been divided into four districts, each with its inspector. Two of the inspectors began from October 1st to

* While this report has been printing, the Vaccination Bill of last year has again been before Parliament, has passed both Houses without any substantial change, and (with the above-quoted provision in it) is at present awaiting the Royal assent.—Aug. 3, 1867.—J.S.

make their recommendations as to gratuities; and a third from December 1st; but the fourth only from the first day of the present year. It is anticipated that each inspector will be able to complete the inspection of the public vaccination of his district once in every two years; and as he makes the successive steps of this inspection in the several unions or parishes of his district, he reports in succession as to the vaccinators. The adjudications of the Privy Council on these reports are monthly; and from the above-described distribution of work, each award, as a rule, will be biennial for the district to which it relates. Grants are recommended to public vaccinators whose work has been good both in quality and in quantity; and provisionally, two grades of rewardable merit have been recognised,—one to receive the whole, the other to receive two-thirds, of the sum permitted by Parliament.

On the present occasion, of course, I have only to speak of the above scheme as put in action by the Lords of the Council. On future occasions I may hope to speak of its working. And even now I will venture to express a very sanguine hope and belief that it will be found very importantly conducive to the objects for which Parliament has established it.

[The **Tenth Report, 1867**, contains the usual account of the departmental proceedings with reference to Vaccination which it is not necessary to reprint.—Ed.]

[From the **Eleventh Report, 1868.**]

I. VACCINATION.

1.—*District Arrangements.*

New Vaccination Law.

The superintendence of Public Vaccination in England occupied during the whole of the year 1868 a more than ordinary share of the attention of the Lords of the Council. For on the first day of the year the new Vaccination Act, 30 & 31 Vict. c. 84, came into operation; and, from then

onwards, my Lords were constantly engaged in proceedings, such as the Legislature intended to be taken, for the improvement of our public vaccination in respects where the system had hitherto been at fault.

The nature of the defects which required correction had been very fully explained in successive annual reports of this department, particularly in those from the second to the sixth inclusive; and as far back as 1859 my Lords had communicated to the Poor Law Board, for the assistance of local authorities contracting for public vaccination, an exposition of the broad principles of arrangement on which contracts must in future be based if the defects in question were to be prevented. In 1868, with the new law, the time had come when this merely recommendatory mode of dealing with very serious evils could no longer be considered sufficient; and my Lords accordingly saw fit to issue express regulations for the purpose, by an Order of Council bearing date February 18th, 1868. Of the regulations thus issued, a copy is subjoined to this Report, as Appendix No. 2. The great object was that public vaccination should no longer be so excessively subdivided among times and places and persons as to have needless difficulties put in the way of its effective performance; and with this object the regulations provided, as their general effect, that the public vaccinator under ordinary circumstances should vaccinate only at public stations, and at no station oftener than once a week, and, if in a town district, only at one station therein; that no two public vaccinators should in any case act for one and the same district; and that the division of towns into vaccination districts should not go beyond certain limits of smallness. Also, with reference to section eight of the new Act, a special regulation was made, limiting the extent to which re-vaccination at the public expense might be given.

The new law did not abrogate any of the existing contracts for public vaccination, but it tended to make new contracts in many cases desirable; and thus during the year new arrangements, which had to be conformed to the new law and to the regulations operating under it, and which my Lords had to

New regulations affecting contracts.

New contracts.

consider in more or less detail, and for the most part very minutely, with the respective local authorities or with the Poor Law Board, were proposed by more than a seventh part of the entire number of vaccination authorities of the country. The year has in this way been one of very great improvement in our system of public vaccination. Also in other and ordinary ways influences for improvement have been at work.

Ordinary inspections, and awards to vaccinators.

The systematic inspection which goes on under their Lordships' orders extended during the year to nearly half the public vaccination of England, namely, to 1,749 vaccination districts, comprised in 312 different unions or parishes: each inspection involving, first, an inquiry into the state of vaccination in the district; secondly, where requisite, a notification to the authority of defects found in the local arrangements for carrying the law into effect, and advice as to the changes required; and thirdly, in suitable cases, a recommendation of the vaccinator for reward under section five of the Vaccination Act, and in accordance with the system described in my ninth report. Of the money which Parliament had placed at their Lordships' disposal for this purpose my Lords distributed 2,753*l.* 2*s.* The number of vaccinators to whom gratuities were given was 345; namely, 129 who received first-class, and 216 who received second-class, gratuities. The gratuities of each class differed of course very considerably in money value in different vaccination-districts, just as the several contract-earnings differed. Where a public vaccinator was having so few vaccinations as to be only earning from his board of guardians some 20*s.* or 30*s.* a year, the supplementary payment by the Privy Council was necessarily quite insignificant as money, and, except that it implied an honorable recognition of service, might scarcely have seemed worth the trouble of formal transmission and acknowledgment; but, on the other hand, in many cases the payments were such as probably to be in themselves welcome additions to the often scanty stipends of the recipients. The largest aggregate payment of the year (a first-class gratuity on 2,738 vaccinations) was 136*l.* 18*s.*; the smallest (a first-class gratuity on 19 vaccinations) was only 19*s.*

2.—Supply of Vaccine Lymph.

My Lords, as usual, took means during the year to satisfy themselves as to the undiminished efficiency of the lymph which is supplied under their directions. Supply of vaccine lymph.

With reference to this branch of the service, my Lords had their attention drawn to a system which is in vogue in some parts of the continent, for maintaining continuous sources of lymph-supply for the human subject by keeping a succession of calves inoculated with the specific contagium; and their Lordships had a report prepared for them by Dr. Ballard on the arrangements which are in use abroad for this so-called "animal vaccination." Further information, however, is requisite before any final opinion can be formed on the question of making more or less use of the system for purposes of our National Vaccine Establishment; and therefore on the present occasion the subject cannot be written of in detail. Animal vaccination.

Fourteen of the twenty-two stations which are sources of lymph-supply for the National Vaccine Establishment, and also two stations which do not supply lymph for the public service, are used as educational stations under their Lordships' Order of December 1st, 1859. My Lords during the year inquired as usual into the conduct of the educational business of these stations, and received on this subject, as on the subject of the lymph-supply, a report which was entirely satisfactory. Educational status.

APPENDIX NO. 2 TO ELEVENTH REPORT.

No. 2.—FURTHER REGULATIONS by the LORDS of the COUNCIL for securing the efficient performance of PUBLIC VACCINATION, and in respect of the RE-VACCINATION of persons who apply to be re-vaccinated, made and issued February 18th, 1868.

APPENDIX
No. 2.
Further
Vaccination
Regulations.

I.—Places and Times for Vaccination under Contract.

1. Except where the Privy Council, for reasons brought to its notice, sees fit in regard of any particular district to sanction a system of domiciliary vaccination, every vaccination-district shall have in it at least one public station appointed for the performance of the vaccinations under contract; and where any such station has been provided for a district, no person resident within two miles thereof, and not being an inmate of the workhouse, shall be vaccinated under contract elsewhere than at such station, unless the vaccinator in the particular case be of opinion (which, if so, he is hereby required to note in his register) that, for some special reason, the person whom he purposes to vaccinate cannot properly be vaccinated at the station.

2. Except under special authorization from the Privy Council as aforesaid, or in so far as may be expedient at times when there is immediate danger of small-pox, vaccination under contract shall not be appointed to be performed at any station oftener than once a week.

3. And in any future contract concerning a vaccination district which is partly or wholly within a town, there shall not, except under special authorization as aforesaid, be appointed within the town more than a single station for the performance of the vaccinations of the district.

II.—*Vaccination Districts in Towns.*

No part of the metropolis, or of any city, or municipal borough, or town corporate, or other town, shall, in respect of any future contract, form by itself, or with any rural place, a separate district for vaccination, except with the approval of the Privy Council, unless it contain an estimated population of at least 25,000 persons, or else be as much of the metropolis, city, borough, or town, as is for purposes of vaccination under the control of one board of guardians.

III.—*Office of Public Vaccinator.*

After the expiration of the month of June next, no two or more persons shall be allowed to act severally as vaccinators under contract in any one and the same part or district of any union or parish.

IV.—*Re-Vaccination.*

The performance of re-vaccination by the public vaccinator on persons applying to him for that purpose shall be limited in each case by the following conditions: (1) that, so far as the public vaccinator can ascertain, the applicant has attained the age of 15 years, or, if during any immediate danger of small-pox, the age of 12 years, and has not before been successfully re-vaccinated; and (2) that, in the public vaccinator's judgment, the proposed re-vaccination is not for any sufficient medical reason undesirable; and (3) that the public vaccinator can afford vaccine lymph for the purpose without in any degree postponing the claims which are made on him for the performance of primary vaccination in his district.

[From the Twelfth Report, 1869.]

III. PUBLIC VACCINATION.

In 1869, as in previous years, my Lords superintended the Public Vaccination of England.

[Here follow details of inspections which it is unnecessary to reprint.—Ed.]

4. In my last year's report, when referring to our National Vaccine Establishment, I stated that the attention of my Lords had been drawn to a system which is now in vogue in some parts of the continent of Europe, for maintaining continuous sources of lymph-supply for the human subject by keeping a succession of calves inoculated with the specific contagium; and that their Lordships had had a report

prepared for them by Dr. Ballard on the arrangements which are in use abroad for this so-called "*animal vaccination*;" but that further information was necessary before any final opinion could be formed on the question of making more or less use of the system for the purposes of our National Vaccine Establishment. I have now to state that during the year 1869, in order to procure such further information, Dr. Seaton was instructed to visit certain foreign towns where animal vaccination is practised, and to collect evidence as to the working of that system. And I subjoin (App. No. 7) the report which Dr. Seaton has made on the matter thus given him for inquiry.

Facts stated in Dr. Seaton's report show most clearly that the system, as at present understood, has certain great disadvantages; and these, in my opinion, are of such kind as at present entirely to forbid an adoption of the system in place of our own, unless on independent grounds our own already deserved to be condemned. The disadvantages, at present imputable to animal vaccination, are its various peculiar liabilities to failure:—first, that apparently even able and painstaking operators may find it impossible to transmit successive vaccination from calf to calf without very frequent recurrence of failures and interruptions; secondly, that the transference of infection from the calf to the human subject even under the most favourable circumstances (*i.e.* by experienced operators and with lancet direct from calf to arm) has in it such risks of failure, that, for instance, at Rotterdam, the proportion of unsuccess was nearly twenty times as great as in the ordinary arm-to-arm vaccinations; and thirdly, that the calf-lymph, as compared with ordinary lymph, is peculiarly apt to spoil with keeping, and in the form of tube-preserved lymph can so little be relied on, that the Rotterdam establishment in distributing supplies of lymph now uses only lymph from the human subject. Evidently, then, in the present state of knowledge, a system of animal vaccination would have in it an extreme uncertainty of operation; and this uncertainty would, for obvious reasons, be so conclusive against our preferring the system on its own merits for

Animal vaccination as a source of lymph supply.

purposes of public vaccination, that practically we have only to consider whether our own system has demerits entitling it to any considerable mistrust.

To the question whether any such mistrust ought to be entertained, I have already in part given a satisfactory answer in reporting the undiminished efficiency of the lymph which is supplied by our National Vaccine Establishment; but the question includes another point, on which at the present opportunity I would wish to submit a few more explicit observations.

Alleged invaccinations of syphilis.

§. The advocates of animal vaccination in this country have very generally taken as their chief ground, that our ordinary system of vaccinating from child to child involves the risk of spreading syphilis in the community: *i.e.* (as I understand the proposition) by means of a compound contagium which the child with inherited syphilis, but perhaps with no outward signs of this taint, may supply from its vaccine vesicles. And I will at once concede that if this risk were real in the sense which is apparently meant,—if, namely, a vaccinator, though using the ordinary lights of professional knowledge, and operating according to the rules of his art for the time being, must nevertheless under our present system be liable to spread syphilis among those whom he vaccinates,—such liability would represent a very strong argument in favour of some change of system. This hypothetical concession, however, must not be taken for more than it means. Very advisedly it does not go beyond the case of *vaccination properly performed*: for this is what the State understands by “vaccination,” when requiring it to be universally adopted, and when offering it gratuitously to all applicants; and the vague possibilities of *mala praxis*, though they require incidental consideration, are almost irrelevant to our main issue.

In any attempt to discuss the subject of alleged invaccinations of syphilis, it is essential to remember that such allegations may easily be made, with or without dishonest intention, in cases where there is not even a pretext for them; and that above all, where such allegations relate to single

infections of syphilis, hasty belief in them ought particularly to be avoided. A first reason for caution is this:—“When a child is born with the heritage of syphilis (a very frequent incident, if its parents have been suffering from that infection) the characteristic symptoms commonly do not appear till some weeks after birth, and then the scandal discloses itself. Now among persons with any sense of shame, the knowledge that one had transmitted syphilis to one’s child would always be a sore subject. There would be strong temptations to employ false pretexts. Not only would parents often conjointly wish to disguise from their medical attendant, or from members of their household, the real explanation of the child’s ailment; but also, not infrequently, one parent would wish to conceal from the other that the origin of the disease had been a conjugal infidelity. In respect even of unmarried people, every surgeon knows what utterly false, far-fetched, and absurd explanations are given of syphilitic symptoms, primary and secondary; and it requires little experience to imagine how much more pertinacious will be the demand for excuses, and how much more active the supply of falsehood, under the complicated circumstances of connubial syphilis. Accordingly it is a matter for surprise that vaccination has not almost generally been pitched upon by persons in search of an apology for their syphilitic children.” Another reason for caution, even in cases where the good faith of the accuser is unquestionable, consists in the fact (for which I can vouch from personal observation) that a simple surgical cut, in a child having latent in it the taint of hereditary syphilis, may proceed by ulceration to assume the ordinary characters, and require the specific treatment, of a syphilitic sore. For, as such is the fact, presumably the same thing might happen at the vaccination-punctures of a child having latent constitutional syphilis; so that, under the operation of the constitutional taint, they, or one of them, though the vaccination had been performed with perfectly healthy lymph, would become the seat of syphilitic ulceration; a phenomenon, which, if the parents were disguising the previous facts of the case,

might mislead or greatly perplex an observer. Moreover, if there are cases where these sources of fallacy do not apply, cases where a person pretending to vaccinate has indubitably inoculated syphilis, we must not, without very critical examination, assume that the act which did the mischief was one which could in any reasonable sense be called vaccination, or that any inference from such a case is applicable to our present argument. For in foreign countries attempts have again and again been made to decide by experiment whether vaccination from persons obviously ill with constitutional syphilis will communicate syphilis to the recipient; and it is, to say the least, a very remarkable fact that in not one of these experiments has anything like syphilis resulted.* On a former occasion (of which I shall presently have again to speak) I quoted many such experiments; how, for instance, M. Taupin, of the Children's Hospital at Paris, in order to settle such questions as these, had, in large numbers of cases,

* The evidence of these experiments is in so far practically unimportant to us, that subjects such as they describe ought never under any circumstances to be used in contribution to lymph-supply. It is a fundamental rule in vaccination that lymph is to be taken only from subjects who, as far as can be ascertained, are healthy; and, irrespectively of the moot question of physical consequences, a vaccinator must be criminally indifferent to the social acceptance of the great good which he pretends to administer, if ever in any single case, acting in contravention of that rule, he affronts the natural antipathies of those who bring their children to him to be vaccinated. Still, the above quoted experiments are of extreme speculative interest; and I therefore observe that their very curious testimony, as regards syphilis, is confirmed by the equally curious fact that small-pox, under similar conditions, has again and again been seen not to communicate itself by vaccination. For, not once or twice, but at least hundreds of times especially in the early days of vaccination, something to the following effect has occurred:—A patient, after exposure to the infection of small-pox, has been vaccinated a little too late for his protection. Warned of his danger, he has had recourse to vaccination when already small-pox was latent in his system. The two contagia, the inoculated vaccine contagium and the previously inhaled contagium of small-pox, have been simultaneously operative in him; the latter producing the general eruption and high febrile disturbance of small-pox, while the former has produced at the vaccinated spots characteristic Jennerian vesicles. And from the lymph of those Jennerian vesicles, again and again, successful vaccinations on other subjects have been performed: vaccinations pure and simple, without any communication of small pox, though the patients whose Jennerian vesicles had yielded lymph for these vaccinations had at the time their bodies generally pervaded and drenched with the infection of the other disease.—J.S.

deliberately vaccinated from the arms of children who (while under vaccination) were sick with all other sorts of communicable disease, including syphilis, but had never, on any occasion, seen any of these infections communicated in his vaccinations: "*dans aucun cas, nous y insistons à dessein, le virus n'a rien communiqué que la vaccine toute seule:*" how, again, Dr. Schreier of Ratisbon had similarly on two occasions experimented with vaccine lymph from very syphilitic children, and, like M. Taupin, had got no syphilitic results: how, also, Professor Heim, of the Wirtemberg military service, had done similar experiments with similarly negative results: how, further, Dr. Heymann had seen, as the habitual practice in Java, that children having scrofula, syphilis, itch, the endemic framboesia, and other complaints, were used indifferently with others as sources of vaccine lymph, and that no evidence ever appeared of any of the complaints being so communicated. And to this former negative testimony from several independent experimenters I may now add the similar testimony of Professor Boeck of Christiania: testimony which has peculiar value because of Dr. Boeck's very eminent relation to contemporary studies of syphilis. In the British Medical Journal of September 23rd, 1865, Dr. Boeck reports that, having under his observation two men affected with elephantiasis, two men who never had had syphilis, and whom their elephantiasis of course would not have rendered insusceptible of it, he, on three different occasions far apart, vaccinated these two men from children having well-developed hereditary syphilis; that in one of the six vaccinations, five normal vaccine vesicles resulted, but in the others none, nor any other local change; that "these two patients were observed daily during three years, and never presented a single symptom of syphilis."* With

* It may be noted in passing, that if Boeck's experiments had conveyed syphilis, their evidence would not have been conclusive against the *lymph* which he used. For, in all six vaccinations, he was careful to use not lymph alone, drawn from the arm of the syphilitic child, but an admixture of lymph and blood drawn from that impure source. And therefore, if syphilis had resulted, the question would still have remained, whether lymph, without blood, would have done the mischief.—J.S.

well-attested experiments like the above standing on record, we are obliged to doubt whether vaccination (*i.e.* genuine and simple inoculation with vaccine lymph) from however syphilitic a subject can possibly communicate syphilis; or, at the very least, whether some stage of the vaccine vesicle more advanced than vaccination rules allow to be proper for lymph-supply, or some admixture, which fastidious vaccinators never permit, of blood with the vaccine lymph, must not be a condition for such possibility. That some ignorant quack-salver, pretending to vaccinate, but neither knowing the aspects of a vaccine vesicle, nor caring from what sort of body he draws his supposed lymph, may take, as his "healthy source" for lymph-supply, an infant all maculated or ulcered with syphilitic skin-disease, and may from its spots or sores transfer infective material to some victim of his mis-called vaccination, is of course evident; for syphilis does not cease to be syphilis because noodle or knave calls it vaccinia; but facts of this kind cannot in any reasonable sense be counted against vaccination, any more than we should count it a fact against quinine that some grocer had dispensed strychnine in mistake for it. Finally, too, I permit myself this general remark: that, in proportion as any alleged fact contradicts an otherwise universal experience, the individual witness must be regarded as making larger and larger demands on us for belief; and that in matters like the present, where sources of fallacy are so abundant, the witness's accuracy of observation requires to be most thoroughly guaranteed.

From this preliminary statement of the very real difficulties of the discussion, I proceed to the alleged case against vaccination.

During the last sixty years the medical literature of Europe has gradually accumulated records of various occasions (I believe, in all, more than twenty) on which it has been definitely imputed to a vaccinator that he had made syphilitic inoculations. From various causes it is impossible to obtain absolutely complete and trustworthy evidence even on the most recent of these cases; and in a large proportion of the number (particularly in those which were of earliest

date, and in those which have related only to single vaccinations) there may have been misstatements or fallacies which cannot now be exposed. Of the 14 accusations which seem to be most credible, 9 were in Italian practice, 2 in German, and 3 in French; or if four of the fourteen be omitted, as relating only to one or at the utmost to two vaccinations, the remaining 10 were in 7 instances Italian, in 2 German, and in 1 French.* As regards most, if not all, of these ten instances, I think it certain that the so-called vaccinator really did, somehow or other, produce the result which was imputed to him. What may have been the intimate mechanism of these occurrences as regards the introduction of the extraneous poison, I cannot feel perfectly sure. It is not to be expected that the man who has introduced syphilis while purporting to vaccinate always will, or even always can, inform us how his effect was produced.† As regards the French case (concerning which I happened at the time to be able personally to get some particulars, but have in vain endeavoured to obtain official records) I was satisfied by such informal statements as were made to me, not only that the mischief had not arisen in any decently-conducted vaccination, but that the circum-

* Three of the most important cases have been within the last twelve years. One, unfortunately on a large scale, was in 1862, at Rivalta, near Acqui, in Piedmont; in connexion with which, report was made of a similar mischief having occurred six years previously at Lupara in the province of Naples; and another such occurrence was at Paris in 1865.—J.S.

† His mere declaration of blamelessness in the matter must generally, from the nature of the case, be in itself almost valueless. Perhaps the chief point respecting which he is on his trial is, whether, in an infant from whom he took lymph some three or four months ago, he *overlooked* signs, which he ought to have seen, of syphilis: and his assertion that he saw no such signs is in itself worth nothing, unless it be sure that his eyes were properly open, and his wits properly educated, to see and understand whatever of the kind may have been there. Or the point raised about the vaccinator, may be whether, some three or four months ago, he *unawares* did some thoughtless or slovenly act which mixed syphilitic and vaccine contagia on his lancet, or substituted the former contagium for the latter; but here again, for obvious reasons, his mere denial might count for little. And while thus from the nature of the question the vaccinator's personal testimony in his own favour must (whether it be true or false) almost necessarily be inconclusive, conclusive collateral testimony, in cases of any real doubt, can of course hardly ever be attainable. —J.S.

stances under which it arose were circumstances of the most atrocious misconduct. That misconduct was also at the root of the two German cases may be sufficiently gathered from the fact that in each case legal proceedings were taken against the vaccinator, and resulted in his being sentenced to imprisonment. The remaining seven cases (including the most important cases in the whole list) are all Italian; which fact in itself is noteworthy, as the Italian rules of vaccination-practice appear to be in some respects less strict than our own; and, beyond this, I find that in some of the cases, fault, which even the Italian rules would no doubt call malpractice, is confessed. It was with reference to facts like these that at starting I thought it so necessary to distinguish between *vaccination properly performed* and the *mala praxis* of an individual vaccinator. That, under such circumstances as there were in the French case and manifestly in some of the others—circumstances which would more than justify the institution of criminal proceedings against the offender—syphilis has been, and may again be, inoculated by a person pretending to vaccinate, I do not in any degree doubt. Under such circumstances that which purports to be vaccination may be vaccination in nothing but name. But, may the like mischief occur under any different circumstances? Can an educated medical practitioner fall into it by mere mischance, or must he, in order to avoid it, exercise more than average vigilance and skill?

These questions, difficult perhaps at present to answer by any sort of deduction from general pathological principles, and surely not empirically answered by the few published cases in which the vaccinator who has inoculated syphilis declares himself to have been blameless in the matter, receive, fortunately, a sort of practical answer, and, as regards the probabilities of the case, seem quite overwhelmingly negatived, when common experience is appealed to. If our ordinary current vaccination propagates syphilis, where is the syphilis that it propagates? Who sees it? The experience of this department is an entire blank on the subject. For the last ten years we have been in incessant

intimate communication with the different parts of England on details of public vaccination, and, during these years, every one of the about 3,500 vaccination districts into which England is divided has been visited three or four times by an inspector specially charged with the duty of minutely investigating the local practice of vaccination; yet, from this systematic and extremely detailed search for all that has to be said on the subject of vaccination in England, no inspector has ever reported any local accusation or suspicion that a vaccinator had communicated syphilis. Again, our National Vaccine Establishment has been in existence for more than 60 years, vaccinating at its own stations every year several thousands of applicants, and transmitting to other stations supplies of lymph with which every year very many (at present some fifty or sixty) other thousands are vaccinated, who in their turn become sources of vaccination to others; but this vast experience does not, so far as I can ascertain, include knowledge of even one solitary case in which it has even been alleged that the lymph has communicated syphilis. Is it conceivable that these negative experiences could be adduced, if the vaccine lymph of children with latent hereditary syphilis were an appreciable danger to the public health?

But our special departmental experience, immensely large though it is, constitutes only a fraction of the overwhelming evidence which may be adduced to the same general effect. Thirteen years ago it devolved upon me (as Medical Officer of the then General Board of Health) to make the widest possible enquiries, both of scores of public departments and institutions, and also of many hundreds of individual practitioners, in our own country and on the continent of Europe, with a view to elicit all existing experience on the validity of objections which had been alleged against vaccination; and on that occasion I of course gave great prominence to the point which is here raised. One of the four questions which I circulated was the following:—"Have you any reason to believe that lymph, from a true Jennerian vesicle, has ever been a vehicle of syphilitic, scrofulous, or other

"constitutional infection to the vaccinated person; or that
 "unintentional inoculation with some other disease, instead
 "of the proposed vaccination, has occurred in the hands of a
 "duly educated medical practitioner?" The answers which I received on this, as on each of my other points, from 542 members of my profession, are all printed in alphabetical succession in the Appendix of the Report which I made in 1857 on the results of my inquiry.* The answers, as regards syphilitic inoculation, are only just short of being an absolutely uniform *No*; partly because some expression was given to merely speculative opinion, and partly because, in a very few individual instances, a practitioner believed he had known a case or cases of unintended infection. Whether in these most isolated instances the observer had been duly on his guard against the very probable sources of fallacy to which I have above referred, and whether, so far as he had been so, the imputed syphilitic inoculation was a fact of surgical *mala praxis*, are points which I need not here discuss; for the alleged cases were thrown into real insignificance by their relation to the main body of testimony. Men of the largest and oldest consulting practice in the United Kingdom, men who were believed to have seen every variety of disease and accident to which the human body is liable, our leaders who had for years taught medicine and surgery to the mass of the profession, physicians and surgeons of our largest metropolitan and provincial hospitals in England and Scotland and Ireland, physicians who had specially studied the diseases of infancy, surgeons who had specially studied the inoculative diseases, pathologists of distinguished insight and learning, men of all these sorts, scores on scores of them, had never in their experience "had reason to believe or suspect" any such occurrence as my question described. In the alphabetical series to which I have referred, there may be read all the most eminent British names of thirteen years ago, certifying to such negative experiences; there may be read too that equally

* Papers relating to the History and Practice of Vaccination; presented to both Houses of Parliament by command of Her Majesty; 1857, 4to., pp. 280.—J.S.

negative in Paris had been the vast experience of Chomel and Moreau and Rayer and Ricord and Rostan and Velpeau; equally negative at Vienna, that of Hebra and Oppolzer and Sigmund. And in here recurring to that very remarkable mass of testimony, I may repeat the remark which my former review of it suggested to me:—"Obviously one, at least, of two conclusions is inevitable; either it is the case that, even with reprehensible carelessness as to the source of lymph, vaccination (so long as in any sense of the word it is vaccination) cannot be the means of communicating any second infection; or else it is the case that in the world of vaccinators care is almost universally taken to exclude that possibility of danger. To the public, perhaps, it matters little which of these conclusions is true."

Though it would be the merest idleness to take again now the sort of formal census of medical opinion which I took thirteen years ago, I may state that ever since that time I have felt it among my strictest duties to be generally watchful and interrogative on the present subject; all the more so, as the period has been one of extraordinary pathological progress, and especially has brought to light very important new knowledge concerning syphilis; and I have every reason to believe that a present census of personal experience in this country would give just the same practical results as those which accrued from the former inquiry. Indeed in a few very important directions I have satisfied myself that it does so. I may mention, for instance, that the Army Medical Department has during the last eleven years had cognizance of 151,316 (adult) vaccinations and re-vaccinations performed on the soldiers and recruits of Her Majesty's service: where, from the nature of the case, the subjects of the proceeding are persons who afterwards permanently remain under medical observation, and in whom therefore no syphilitic consequence of vaccination could possibly escape notice: where moreover the chances of latent constitutional syphilis in subjects furnishing the lymph must be about the same as among our civil population: but that in all this vast and critical experience, so far as is known to Dr. Balfour—the eminent and laborious

annual reporter on the diseases of the British army, no single case has ever been alleged of a soldier syphilized by vaccination. Another fact too which I take particular pleasure in mentioning is this. Among the extremely few answers in 1857, where respondents had seen syphilitic effects which they believed to have arisen from vaccination, one had particular importance in my eyes, as coming from a surgeon of specially large opportunities, and (as I personally knew) of very special accuracy and skill of observation, Mr. Jonathan Hutchinson: whose answer was—"I believe that I have seen four or five " instances in which local syphilitic affections [and in one or " two of them with constitutional consequences] were induced " by vaccination performed under ordinary circumstances and " by duly qualified men." I have at the present opportunity referred again to Mr. Hutchinson on the subject, anxious to get the result of his greatly increased experience, and knowing quite well that, after his attention had once been drawn to the point, cases bearing on it would not be likely to escape his notice. He now answers as follows:—"In the 13 years " and upwards which have passed since I made the communi- " cation which is given at page 73 of the 'Papers relating to " 'the History and Practice of Vaccination' I have not met " with a single case, either at the Hospital for Diseases of the " Skin, or elsewhere, in which I have had any reason to " believe or suspect that syphilitic disease had been commu- " nicated by vaccination. The origin of the diseases which " have come under my observation among the children at the " hospital for skin-diseases has, of late years especially, been " with me an object of particular investigation. I doubt " also whether, had I investigated the cases to which I " have referred in the 'Papers, &c.,' with my present know- " ledge and experience, I should have formed altogether " the opinions respecting their nature or origin therein " expressed."

Indisputable certainties, which anyone can verify for himself, are: first, that year by year millions of vaccinations are performed in Europe with scarcely a solitary accusation transpiring that syphilis has been communicated by any of

them; and, secondly, that physicians and surgeons who could not fail to see such cases in abundance, if such abundance were a reality, concur with almost absolute uniformity, hundreds of them together, in declaring they have never in all their experience seen even a single case of the kind. Surely for every practical purpose certainties like these are our best guides; and with such certainties in our knowledge, it would be the merest pedantry to insist on infinitesimal speculative uncertainties, as though our English system of vaccination deserved mistrust because we are puzzled to explain some alleged syphilizations on the continent. And if 13 years ago I was able to show that vaccination, as till then administered in England, had not deserved public mistrust in the matter here under consideration, what much stronger claims on public confidence, in that as in all other respects, may be advanced for our present system!

The system of 1843-57 (as described in my above quoted special report, and retrospectively again in the second annual report of this department) was so extremely defective, and so unguarded by any kind of supervision, that, though happily syphilis was not among its fruits, other kinds of mischief, and at least very much inefficiency, might, with comparative justice, have been attributed to it.*

Recent improvements of English system of vaccination.

Such were the circumstances of the case when my Lords, by the Public Health Act, 1858, were first called upon to superintend the public vaccination of this country; and the successive steps which my Lords have taken in fulfilment of this responsibility, and which may be traced in ample detail in the annual reports of the department, have, I venture to say, gone far towards giving this country such properly-administered vaccination as England, before all countries of the world, surely ought to have. I confine myself here to mentioning those of their Lordships' acts which have aimed at providing every possible security against any such sorts of malpractice as I have adverted to in the present report.

* See History and Practice of Vaccination, page 289.—J.S.

The Act of 1858 authorized their Lordships to frame regulations "for securing the due qualifications of persons to be hereafter contracted with by guardians and overseers of unions and parishes in England for the vaccination of persons resident in such unions and parishes, and for securing the efficient performance of vaccination by the persons already or hereafter to be contracted with as aforesaid;" and to "cause to be made such inquiries as they see fit in relation to....the observance of the regulations and directions issued by them under this Act."

Evidently a first rule to be made by their Lordships under the above authorization, was that in future no one should be admissible as a contractor, nor be allowed to act as deputy to a contractor, without producing evidence that he had sufficiently studied vaccination; but no such rule could be of effect till a preliminary difficulty had been overcome—the difficulty, namely, of procuring satisfactory evidence that the candidate for a vaccination-contract or deputyship really had learnt the business which he wished to undertake. The ordinary apparatus of medical diplomas or licenses was here inapplicable; for the various licensing corporations in England had neither the habit nor the means of practically inquiring whether their respective candidates had gained a proper knowledge of vaccination; and hitherto, as already stated, there existed no schools where vaccination could be duly learnt, and whence certificates of proficiency could be received. Accordingly, if the intentions of the legislature were to be fulfilled, it was preliminarily needful that special establishments should be organized where vaccination could be studied under skilled guidance, and whence candidates, after due instruction or examination, could obtain such certificates of proficiency as would show them qualified to be contracted with (provided they had the necessary professional licenses) for the performance of public vaccination. Proceedings which my Lords took in 1859, and which are particularised in my report for that year, made all required provisions in these matters. Certain carefully-selected public vaccinators, officiating in places where there are recognized medical schools, were

authorised to act for their Lordships' purpose as teachers of vaccination, at whose "educational vaccinating-stations" any medical student might thoroughly learn vaccination, and acquire a certificate of having done so: and, this preliminary arrangement being concluded, my Lords issued their rule that no future entrant on the medical profession should be eligible as a contractor for vaccination, or be allowed to act as deputy for a contractor, unless he, in addition to his general qualifications, "produce a *special certificate*, given under such conditions as the Privy Council from time to time fix, by some public vaccinator whom the Privy Council authorise to act for the purpose, and by whom he has been duly instructed or examined in the practice of vaccination, and all that relates thereto."*

Secondly, as the above rule could only relate to future contractors for vaccination, and even to them only in so far as they were not already members of the medical profession, my Lords issued certain technical instructions which all public vaccinators were required to follow, and which would supply a public standard of what in their Lordships' opinion was "properly performed vaccination." Some of these instructions bear so specially on my present subject-matter that I beg leave to draw particular attention to them:—"1. Except there be immediate danger of small-pox, vaccinate only subjects who are in good health. Satisfy yourself that there is not any eruption behind the ears, or elsewhere on the skin; nor any febrile state; nor any irritation of the bowels. Under no circumstances vaccinate a subject to whom, from the state or prospects of his health, vaccination is likely to prove injurious. . . . 6. Consider yourself strictly responsible for the quality of whatever lymph you use or furnish for vaccination. Take lymph only from subjects who are in good health, especially satisfying yourself that they are free from eruption on the skin. Take it only from well-characterised, uninjured vesicles. Do not take it from cases of re-vaccination. Take it (as may be done in all regular cases on the

* See above, page 335.—ED.

“ day week after vaccination) at a time when the vesicles are
 “ plump, either just before the formation of the areola, or, at
 “ the latest, not more than 24 hours after the areola has
 “ begun to form . . . 7. In vaccinating from arm to arm, and
 “ still more in proceeding to store lymph, avoid draining any
 “ vesicle which you puncture . . . 8. Scrupulously observe in
 “ your inspections every sign which tests the efficiency or
 “ purity of your lymph. Note any case wherein the vaccine
 “ vesicle is unduly hastened or otherwise irregular in its
 “ development, or wherein any undue local irritation arises;
 “ and if similar results ensue in other cases vaccinated with
 “ the same lymph, desist at once from employing it . . . 9. If
 “ from any cause your supply of lymph ceases, or becomes
 “ unsuitable for further use, take immediate measures for
 “ obtaining a new supply:—10. Keep in good condition the
 “ lancets or other instruments which you use for vaccinating,
 “ and do not use them for other surgical operations. Supplies
 “ of lymph, guaranteed by the National Vaccine Board, are
 “ furnished on application to all medical practitioners.” In
 the present connexion too it deserves notice, that, among their
 Lordships’ regulations which have been in force for the last
 ten years, is one requiring the public vaccinator in every case
 where he vaccinates to particularise in a special column of his
 register the lymph-source from which the vaccination is done:
 so that if afterwards in any case an accusation against the
 lymph should arise, the question of the fitness or unfitness of
 source can at once be properly investigated.*

Thirdly, my Lords in 1860 began on a small scale, and by
 1862 had brought into full work, arrangements for systematic-
 ally inspecting the local machinery in force throughout the
 country for purposes of public vaccination, and the actual

* A capital illustration of the advantages of this system was given last year
 in the Bow Street Police Court, as may be read in the “*Times*” of Sept. 11th
 and 16th, 1869. A mother had appeared in the court, bitterly complaining that
 loathsome disease had been given to her infant by a public vaccinator’s use of
 impure lymph. The charge was immediately investigated from this department,
 and, as result, proof was publicly given that the accusation was entirely unjust;
 but parts of this proof could not possibly have been had, except for the clues
 which, as above described, were existing in the vaccinator’s register.—J.S.

results obtained by the machinery in each district. Five of
 my annual volumes (from the third to the seventh inclusive)
 contain details, which of course it has not been necessary to
 continue in subsequent volumes, of the minute local examina-
 tions which were made during those years, of the faults which
 were found, and of the reforms which were recommended:
 and, to illustrate in only one particular the minuteness of
 these inquiries, I may note that the reports for only 1863–4
 contain record of (among other things) the personal examina-
 tion of some 260,000 children, and of the evidence given by
 their respective vaccination-marks as to the quality of the
 vaccination which each vaccinated child had undergone.

No one can doubt but that the work of these years, during
 which every public vaccinator of England found his work sub-
 jected to skilled criticism, and was assisted to understand the
 causes of whatever shortcomings were found in it, must have
 been of substantial influence on the trustworthiness of English
 vaccination. It represented the beginning of a new era; and
 consequently in 1865, when a second series of inspections
 began, evidence of very extensive, and often of very great
 improvement in the quality of our public vaccination was
 manifest. But hitherto the vaccination-law of England had
 very serious defects, which in some cases actually impeded,
 and in other cases left without necessary assistance, the
 endeavours which my Lords were making to perfect the
 system. In 1867 those defects were removed by the new
 Vaccination Act of that year; and from 1867 there con-
 sequently date further very considerable measures of improve-
 ment. Every vaccination-district in England is now visited
 once in every two years, the quality of its vaccination
 minutely examined by the inspector whom their Lordships
 send, and all necessary advice and assistance given to local
 officers and authorities as to whatever may improve the vac-
 cination. Nor is this all. For, during the last four years an
 entirely new influence has been at work in the system of
 pecuniary awards to meritorious public vaccinators, which (as
 described in my ninth report) the liberality of Parliament has
 empowered my Lords to administer, and some details of which

for the year 1869 are mentioned at a previous page of my present volume.

Further I have to say that, while since 1858 all the above influences have been powerfully tending to improve the public vaccination of England, so far as dependent on the individual efficiency and zeal of the about 3,500 medical practitioners by whom it is locally administered, exertions equally great have been made by their Lordships to improve other most important relations of the service. Foremost among such work as I here refer to, and of special importance with regard to the quality of public vaccination, are the measures which my Lords have taken to improve the local organisations which concern the maintenance of local lymph supplies. In my departmental memorandum of 1858 [see above, page 343], I explained the nature of an immensely important reform which those organizations were then needing; and my earlier annual reports contained lamentable proofs, both of the very wide extent in which the reform was needed, and likewise of the very imperfect powers which my Lords at that time had to introduce it: but, in 1867, the new Vaccination Act began, in this as in all other respects, an era of greatly accelerated progress. Early in 1868 my Lords issued in relation to this matter definite and imperative regulations, where previously they could at the utmost only suggest; and during the time which has since elapsed, these regulations, with a complete re-inspection of the country, have gone far to establish throughout England the better local arrangements which were required. And I may add that while by these improvements a greatly improved security has been taken for the excellence of local lymph-supplies, my Lords have also taken corresponding measures (which even at the present time are being further developed) to perfect the basis of lymph-supply for their own central distributory establishment.

Considering all the above improvements, made within the last dozen years, in the arrangements of public vaccination of England, and considering especially their bearing on the quality of the vaccination, both as regards the probable efficiency and care of the vaccinator, and as regards the

local arrangements which affect his selection of lymph, I venture strongly to insist on the comparison which it has been my object to draw. And if in 1857 I was able to shew that vaccination, as till then administered in England, had not deserved any such imputation as that which I have here been again discussing, surely I may anticipate that, in the present immensely improved state of the case, no such imputation will be deemed warrantable.

[The **Thirteenth Report, 1870**, contains the usual account of the departmental proceedings with reference to Vaccination, which it is not necessary to reprint.—Ed.]

[From Mr. Simon's contribution to the **First Report of the Local Government Board, 1872.**]

[It must be explained that though the Report was addressed to the Local Government Board, the proceedings reported in it were for the most part (i.e. down to Aug. 14) proceedings of the *Privy Council*.—Ed.]

1. SMALL-POX AND VACCINATION.

1. In regard of business concerning the Public Health, the year 1871 was chiefly remarkable through the prevalence, first in London, and afterwards generally in England, of a far severer epidemic of Small-pox than any which had been witnessed of late years, or probably since the general use of vaccination. It appears to have killed in England, within the year, nearly 23,000 persons, including 7,876 of the population of London; and even at the present time there is no reason to suppose that the epidemic has nearly completed its course.

The severity of this epidemic became evident in two different ways; first, by the extraordinary multitude of persons whom the disease attacked; and, secondly, by the

Small-pox
Epidemic.

extraordinary intensity of the disease in its individual cases. To illustrate the latter point, it may suffice to mention that at the London Small-pox Hospital, where 950 cases were treated during the year, the deaths in proportion to the cases were nearly twice as many as the average experience of the hospital for thirty-two years would have prognosticated.

The present great epidemic of small-pox is not being confined to our own country; and though authentic information cannot yet be quoted as to all the diffusion of the disease in continental Europe, facts enough are known to justify the belief that at least in the north-western parts of the continent the power of the epidemic has been, or is, as great as here. Also, though the time has not yet come for attempting to sum up with exactness the lessons of this epidemic in reference to the value of vaccination, yet, even already, there are reported some very suggestive facts for comparison. In the chief towns of Holland, where vaccination is non-compulsory, and where, as a rule, the children are long left unvaccinated,—in Hamburg, with non-compulsory vaccination,—in Paris, where not only vaccination is non-compulsory, but where also, at least some years ago, there were strong grounds for suspecting the quality of much of the current vaccination,—in all these places the epidemic seems to have raged with very much more severity than even in London; and it is stated that Hamburg, which, though having but a tenth part of our London population, suffered nearly two-thirds as many deaths as London, has now, under influence of this terrible suffering, been led for the first time to pass a law of compulsory vaccination.

Proceedings
against small-
pox.

The proceedings taken in the medical department in 1871 with reference to the epidemic of small-pox, consisted in endeavours to move local authorities to resist the disease in their respective districts by duly administering, first and above all, as specially applicable to the case, the provisions of the vaccination-law, and, secondly, those provisions of nuisance-law which apply to all dangerous infectious disease, and are meant to secure the isolation of the sick and

the disinfection of infected houses and things. As regards the Metropolis, circular letters (see Appendix) were in the month of January addressed to the 30 Boards of Guardians, as the local vaccination-authorities, and to the 39 Vestries and District Boards, as the local nuisance-authorities, urging the measures which ought to be adopted; and during many weeks the department was continuously occupied in inquiring by its inspectors into the measures which were being taken as above in the several districts of the Metropolis, and in giving, where necessary, special advice with reference to particular local circumstances. Subsequently, proceedings of like purpose, but necessarily with less possibility of inspection, were taken in regard of the country generally. A circular letter of advice (see Appendix) was addressed to the 620 extra-metropolitan Boards of Guardians. Afterwards in regard of 165 Unions (see Appendix) where the epidemic was known to have begun, special communications were addressed to the Guardians, and in some cases also to other authorities, pressing the necessary measures; and in the comparatively few cases where alone it was practicable (cases marked in the above list) the inspectors of the department were instructed to communicate personally with the local authorities in relation to such measures.

The extensive diffusion of small-pox in England, like the great scarlatinal epidemic of two years ago, brought into prominence the evil results of the general want throughout the country of hospital-accommodation for cases of dangerous infectious disease; and in communicating as above with local authorities on steps to be taken against the present epidemic, it was necessary to advert particularly to the need of hospital-accommodation for the sick, and to urge that, if not already existing, it should at once as far as practicable be extemporised. The experience of the department on the indispensable necessity for this provision, as part of any local machinery intended to limit the spread of dangerous infectious disease, and such general suggestions as the department could give on ways to provide the accommodation, were stated for the

Hospital ac-
commodation.

information of the local authorities in a special memorandum which I subjoin. See Appendix, No. 42a.

Re-vaccination.

Early in the London epidemic it became the duty of the department to issue for general information a memorandum on the use of Re-Vaccination, as an additional safeguard which persons who have been vaccinated in infancy ought in general to adopt at about the age of puberty; and with this memorandum were issued also some suggestions for medical practitioners with regard to the supply of lymph for re-vaccination: of which memoranda I subjoin copies, Appendix, Nos. 41, 42. The epidemic brought into strong relief two popular errors with regard to re-vaccination; first, the error of not having it performed on each person (irrespective of any immediate alarm of small-pox) on his attaining the above-mentioned age; and secondly, the error of seeking under panic to have it performed indiscriminately again and again. Under the influence of these two errors, the first allowing an indefinite accumulation of postponed cases, and the second giving swarms of needless, or relatively needless, re-applicants, the demand for re-vaccination, under alarm of this great epidemic, has been such as medical practitioners could not by any possibility at once meet without sacrificing the cardinal conditions of safe vaccination. In this connexion I beg particularly to refer to the latter of the above-mentioned memoranda.

[Here follow details of the work of the department in connexion with the superintendence of Public Vaccination, which it is unnecessary to print.—Ed.]

HOUSE OF COMMONS SELECT COMMITTEE ON VACCINATION.

Mr. Forster's Select Committee, and its consequences.

The sitting for more than three months (from February 13th to May 23rd) of a Select Committee of the House of Commons, appointed [on Mr. Forster's motion] to inquire into the operation of the Vaccination Act, 1867, and followed, as it was, first, by the proposal to Parliament of new provisions to secure infantine vaccination and otherwise to amend the law of 1867, and afterwards by the need of special proceedings with reference to the changed state of

the law, involved during nearly all the year large additions to the ordinary business of the medical department.

While the Select Committee was taking evidence, some cases of co-infection of syphilis and cow-pox—cases of such rarity, that even the possibility of the occurrence had hitherto been extensively doubted by the medical profession in this country, came to the knowledge of the medical department, and were brought as undoubted facts to the knowledge of the Committee.* In the interests of truth it was most fortunate that these cases, if ever to happen, should have happened and become known when they did; for previously, though eight sittings of the Committee had been occupied in hearing the evidence of professed complainants against vaccination, the genuineness of this particular possibility seemed likely still to remain in dispute; and it was highly important that the Committee, having to pronounce judgment on the subject of vaccination, should have before it in evidence everything which could truly be objected to the practice. With knowledge of the above cases, however, and after hearing (with much other skilled evidence) the testimony of the eminent surgeon under whose treatment the cases had been, the Committee reported, as one

* [The chapter of accidents was very curious. Most of my own evidence before the Committee had been given on the 24th, 28th and 31st of March; and on the last of those days the Committee rose for Easter. Within a week of that day, and during my temporary absence from London, a group of cases (re-vaccination of adults) in which syphilis had been communicated by vaccination was brought to the knowledge of the late Dr. Seaton, acting for me at the office; and at his judicious suggestion these cases were forthwith put under Mr. Hutchinson's observation and treatment. Dr. Seaton at once informed me of the occurrence, and I of course immediately brought my information before the Chairman of the Committee; who thereupon took the necessary steps to bring before the Committee Mr. Hutchinson's evidence regarding the cases. Mr. Hutchinson's evidence was given on the 9th of May; and by one of the most extraordinary of chances, Mr. Hutchinson, when he appeared before the Committee, had to speak, not only of the original group of cases, but also of a second, and as it proved even more serious, misfortune of the same sort, which had become known to him in the interval, and which he was then engaged in investigating. The history of the two groups of cases was communicated by Mr. Hutchinson to the Royal Medical and Chirurgical Society, in a paper which was afterwards published in the Society's Transactions.—J.S., 1887.]

of its main conclusions, to the House of Commons:—"that, "if the operation [of vaccination] be performed with due "regard to the health of the person vaccinated, and with "proper precautions in obtaining and using the vaccine "lymph, there need be no apprehension that vaccination will "injure health or communicate any disease."

It was of course my duty to inquire fully and minutely into the above mentioned cases, and into the circumstances under which they had occurred, and to consider, particularly with reference to the conduct of public vaccination, whether existing securities against such danger could in any respect be made stronger than they were. For the latter purpose I revised most carefully, and with the best assistance, the technical Instructions under which public vaccinators act in discharge of their duty, and submitted to the Lords of the Council an amended scheme of such Instructions. These, having been approved by their Lordships, were brought into effect by an Order bearing date July 29th, 1871. See Appendix, No. 50.

APPENDIX No. 41.

RE-VACCINATION.—MEMORANDUM OF PRIVY COUNCIL.

Memorandum of Privy Council on re-vaccination of 1871.

By vaccination in infancy, if thoroughly well performed and successful, most people are completely insured, for their whole life-time, against an attack of small-pox; and in the proportionately few cases where the protection is less complete, small-pox, if it be caught, will, in consequence of the vaccination, generally be so mild a disease as not to threaten death or disfigurement. If however the vaccination in early life have been but imperfectly performed, or have from any other cause been but imperfectly successful, the protection against small-pox is much less satisfactory; neither lasting so long, nor while it lasts being nearly so complete, as the protection which first-rate vaccination gives. Hitherto, unfortunately, there has always been a very large quantity of imperfect vaccination; and in consequence the population always contains very many persons who, though nominally vaccinated and believing themselves to be protected against small-pox, are really liable to infection, and may in some cases contract as severe forms of small-pox as if they had never been vaccinated. Partly because of the existence of this large number of imperfectly vaccinated persons, and partly because also even the best infantine vaccination sometimes in process of time loses more or less of its effect, it is advisable that *all persons who have been vaccinated in infancy should, as they approach adult life, undergo* RE-VACCINATION. Generally speaking, the best time of life for re-vaccination is

about the time when growth is completing itself, say from 15 to 18 years of age; and persons in that period of life ought not to delay their re-vaccination till times when there shall be special alarm of small-pox. In proportion, however, as there is prevalence of small-pox in any neighbourhood, or as individuals are from personal circumstances likely to meet chances of infection, the age of 15 needs not be waited for; especially not by young persons whose marks of previous vaccination are unsatisfactory. *In circumstances of special danger, every one past childhood, on whom re-vaccination has not before been successfully performed, ought without delay to be re-vaccinated.*

Re-vaccination, once properly and successfully performed, *does not appear ever to require repetition.* The nurses and other servants of the Small-pox Hospital, when they enter the service, are invariably submitted to vaccination, which in their case generally is re-vaccination, and is never afterwards repeated; and so perfect is the protection, that though the nurses live in the closest and most constant attendance on small-pox patients, and though also the other servants are in various ways exposed to special chances of infection, the resident Surgeon of the hospital, during his thirty-four years of office there, has never known small-pox affect any one of these nurses or servants.

Legal provisions for re-vaccination are made in the 8th Section of the Vaccination Act, 1867, and in Section IV. of the Regulations which the Lords of the Council under authority of the Act issued in their Order of February 18th, 1868. Under these provisions, *Re-vaccination is now performed by all Public Vaccinators at their respective Vaccinating Stations*; and, so far as is not inconsistent with the more imperative claims for primary vaccination, *any person who ought to be re-vaccinated may, on applying to the Public Station of the District in which he resides, obtain Re-vaccination at the public expense.*

APPENDIX No. 42.

RE-VACCINATION.—MEMORANDUM OF PRIVY COUNCIL ON LYMPH SUPPLY.

At any time when exceptional claims for re-vaccination are arising, it becomes essential clearly to understand how the lymph for such re-vaccination is to be supplied.

Memorandum of Privy Council on lymph supply of 1871.]

In regard of lymph supply, re-vaccination unfortunately differs from primary vaccination, in that it contributes nothing to its own support, but that each case of re-vaccination, while requiring to draw lymph from a case of primary vaccination, will itself furnish no available lymph in return; for, even when good vesicles result from re-vaccination, their lymph cannot properly be used for other vaccinations or re-vaccinations. Thus, no wholesale re-vaccination is possible which does not have for its basis a large system of primary vaccination; and as, in England, such a system exists in the hands of the public vaccinators, but, with very rare individual exceptions, not in any other hands, so, our essential security for means of re-vaccination (as well as for means of primary vaccination) is in the system of public vaccinating stations established by law.

At these stations a large majority of all the infantine vaccinations of the country are performed in successive weekly groups; the cases of each vaccinating-day returning a week afterwards to furnish lymph for the arm-to-arm vaccination of a new group. Each well-frequented station is thus a continuous

source of primary lymph-supply, and is able, not only to maintain its own weekly performances of vaccination and re-vaccination, but also to contribute more or less towards the requirements of places where the public stations are too ill-frequented for the maintenance of a continuous supply, and towards the similar requirements of private practitioners. From certain of such stations, carefully selected and superintended, the Medical Department of the Privy Council Office receives regular contributions of lymph, preserved dry on ivory points, or liquid in capillary tubes; and out of the stock thus contributed, the department answers day by day the demands which are made on it for lymph; demands emanating not only from among the many thousand vaccinators, public and private, of the civil population of England, and the other divisions of the United Kingdom, but also from Her Majesty's Army and Navy in all parts of the world, and from the Diplomatic and other Foreign Services, and from the Colonies.

It is essential for the objects which have to be accomplished that this National Vaccine Establishment should be maintained in a solvent condition, as regards all such demands as its constitution is intended to meet; and it is satisfactory to know, as an effect of large improvements which of late years have been made in the system of supply, that the resources of the establishment are now many times greater and more elastic than they have been during any previous epidemic of small-pox, and are fully adequate to meet all such demands as the establishment professes to provide for. It must be remembered, however, that there are certain claims which the establishment is neither meant nor would be able to meet. No central dépôt of lymph can pretend to give such separate supplies as will enable each individual practitioner to vaccinate at once large numbers of persons. The principle on which the National Vaccine Establishment proceeds (and has always proceeded) in its distribution of lymph, whether to public or to private vaccinators, is as follows:—*It furnishes each applicant with a sufficiency for the performance of a few first vaccinations, and it expects that the recipient, so far as the circumstances of his practice render necessary, will exert himself to vaccinate in series from the beginning which he is thus enabled to make.* This principle is acted on in relation to public vaccinators (as especially in country districts) whenever, from local circumstances, the weekly succession of groups of cases has been interrupted; and no other principle can be worked on a large scale in relation to private vaccinators. If re-vaccinations are in question, they, to any considerable extent, cannot be *immediately* dealt with at the expense of the central dépôt. And if the vaccinator, on receiving his packet of preserved lymph, does not use it for starting primary vaccinations, from which afterwards his re-vaccinations could be performed, but, instead of so doing, expends the preserved lymph on some of his claimants for re-vaccination, he must not rely on being able to satisfy other claimants with new supplies from the central dépôt.

Where medical practitioners, not being public vaccinators, and not having otherwise in their practice cases for primary vaccination, are called upon to re-vaccinate on considerable scale (as in hospitals, commercial establishments, schools, and even large households) they would generally find it best to make direct application for assistance to the public vaccinator of the district in which they have to act; with whose assistance they may commonly find it in their power to arrange with the parents of children recently vaccinated at the public station, that some of such children shall at the proper time be taken to places where private re-vaccinations have to be performed, so as to furnish from arm to

arm any required quantity of lymph. Generally, too, any private medical practitioner who, from any cause, desires to obtain extraordinary supplies of lymph, will most easily attain his object by applying to the public vaccinator of the district in which he resides. And as public vaccinators, appointed under the Vaccination Act, 1867, are of course free to accept payment for any extra-official work which they may be willing to undertake, private practitioners would probably have no difficulty in obtaining, by voluntary agreement, the assistance of some of these officers as collectors of lymph for private re-vaccination.

It is important for the public to observe that re-vaccination on a large scale is not easily conducted unless in a thoroughly systematic manner, and that individual difficulties in finding lymph for re-vaccination are inseparable from the too general practice of deferring re-vaccination to periods of panic, instead of having it proceed, as it should, regularly and uniformly, in proportion as successive numbers of population reach the proper age for its performance.

Section VIII. of the Vaccination Act, 1867, is as follows:—"The provisions of the contracts entered into before this Act comes into operation shall not, after the thirty-first day of December next, apply to the cases of persons who, having been previously successfully vaccinated, shall be re-vaccinated; but if the Lords of Her Majesty's Council shall have issued or shall hereafter issue regulations in respect of the re-vaccination of persons who may apply to be re-vaccinated, which such Lords are hereby authorized to do, the Guardians shall pay, in respect of every case of successful re-vaccination performed in conformity with such regulations under such contracts or under new contracts entered into after the date hereof, a sum amounting to two-thirds of the fee payable upon each case of successful primary vaccination."

Section IV. of the Regulations issued by the Lords of the Council in their Order of February 18th, 1868, is as follows:—"The performance of re-vaccination by the Public Vaccinator on persons applying to him for that purpose shall be limited in each case by the following conditions—(1) that, so far as the Public Vaccinator can ascertain, the applicant has attained the age of fifteen years, or, if during any immediate danger of small-pox, the age of twelve years, and has not before been successfully re-vaccinated; and (2) that, in the Public Vaccinator's judgment, the proposed re-vaccination is not for any sufficient medical reason undesirable; and (3) that the Public Vaccinator can afford vaccine lymph for the purpose without in any degree postponing the claims which are made on him for the performance of primary vaccination in his district."

February 6th, 1871.

APPENDIX No. 42 a.

HOSPITAL ACCOMMODATION.—MEMORANDUM OF PRIVY COUNCIL.

A large part of the mortality of England is caused by diseases which spread readily by infection from person to person; such as scarlatina, typhus, small-pox. In order to prevent the extension of such diseases in neighbourhoods where they have begun, it is of the utmost importance that (in addition to whatever other sanitary precautions may be requisite) every endeavour should be made to separate the sick from the healthy. This object is comparatively easy when

Memorandum of
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modation of 1871.

means to attain it are taken early, while cases of the disease are very few; but any interval of delay allows the cases of sickness to multiply, and perhaps at last to become so numerous that endeavours to isolate them cannot succeed.

These considerations are, most of all, important in regard of the poorer parts of the population; because their usually crowded and ill-ventilated dwellings give extreme facilities for infection. And among these classes the sick, generally speaking, cannot be separated from the healthy, except in proportion as proper hospital accommodation has been provided for the purpose.

Power is given by the 37th section of the Sanitary Act, 1866, to the Local Board, Improvement Commissioners, or Town Council, or where there is none of these bodies, to the vestry, to provide "for use of the inhabitants within its district hospitals or temporary places for the reception of the sick." When this provision has been made, any justice may order the removal to such place of any person suffering from any dangerous infectious disease, if he is without proper lodging or accommodation, or lodged in a room occupied by more than one family, or is on board any ship or vessel.

The present Memorandum is intended for the assistance of health authorities, who, having to secure the isolation that is needed for cases of dangerous infectious disease, but not yet having the requisite hospital accommodation within their districts, would provide such accommodation under the powers of section 37 of the Sanitary Act, 1866, or otherwise.

A condition of the first degree of importance for the usefulness of any such accommodation is that the accommodation shall be ready beforehand. The quantity of accommodation wanted will, of course, be widely different in different cases; and it must be remembered that when two infectious diseases are prevalent in one place at one time, patients having the one infectious disease cannot properly be in the same ward with patients having the other infectious disease. In kind, the accommodation ought, in all cases, to be as good as the authority can reasonably supply. It is believed, however, that, even under these conditions, the cost of providing hospital accommodation, whether for villages or for towns, needs not ever be proportionately great.

(a.) As regards villages,—each village ought to have the means of accommodating instantly, or at a few hours notice, say, four cases of infectious disease in at least two separate rooms, without requiring their removal to a distance. A decent four-room or six-room cottage, at the disposal of the authority, would answer the purpose. Or permanent arrangement might be made beforehand with trustworthy cottage-holders not having children, to receive and nurse, in case of need, patients requiring such accommodation. Two small adjacent villages (if under the same nuisance authority), might often be regarded as one.

When, in a village, such provision as this has been made by the authority, and cases of disease in excess of the accommodation occur, the sick must not be crowded together, but temporary further provision must be made for them. The most rapid and the cheapest way of obtaining this further accommodation, may often be to hire other neighbouring cottages; or in default of this, tents or huts may be erected upon adjacent ground.

(b.) In towns, hospital accommodation for infectious diseases is wanted more constantly, as well as in larger amount, than in villages; and in towns there is greater probability that room will be wanted at the same time for two or more infectious diseases which ought not to be treated in the same ward. The permanent provision to be made in a town, in order to obtain reasonable security

against the spread of infectious diseases, should consist of not less than four rooms, in two separated pairs; each pair to receive the sufferers from one infectious disease, the men and women of course separately. The number of permanent beds to be supplied must depend upon various circumstances, chiefly upon the size of the town; but, as no reasonable amount of permanent accommodation could be trusted always to supply the requirements of a place when infectious disease has actually become epidemic, foresight must in the first instance be used, how, in emergency, additional accommodation can be temporarily given, to meet requirements in excess of the permanent provision; otherwise, the authorities may unexpectedly find themselves obliged to leave ill-lodged infectious cases at their homes, much as if no hospital had been provided. Accordingly, for a town of any importance, the hospital provision ought to consist of a permanent building, having around it space enough for the erection of temporary structures as occasion may require. Considerations of ultimate economy make it wise to have the permanent building equal to somewhat more than the average necessities of the place, so that recourse to temporary extensions may less often be wanted. In small towns, for instance, if a hospital, consisting of four wards and the necessary administrative offices, is to be provided, the original expense of making each ward serve for (say) eight persons, will be far less than double that of making the wards for four. And in any case it is well to make the administrative offices somewhat in excess of the wants of the permanent wards; because thus, at little additional first cost, they will be ready to serve, when occasion comes, for the wants of the temporary extensions, and so to save great inconvenience and outlay.

This Memorandum does not propose to deal with the principles on which permanent hospitals should be built; but, in view of the necessity that they should give the greatest possible assistance for the recovery of the sick, it may be useful to observe, that the foremost requisites are the following:—

- Accessibility of situation, so that the sick may not be exhausted by long journeys, and, as far as consists with accessibility, an open uncrowded neighbourhood;
- Adequate ward-space for each patient, approaching as near as circumstances allow to 2,000 cubic feet, with 144 square feet of floor, for each bed;
- Thoroughly good provision for ventilation, *i.e.*, for sufficient unceasing entrance of pure air and of exit of ward air; with arrangements also for immediate change of air in the whole ward, when necessary; and with perfect security against the possibility of any foul air (as from privies and sinks) entering the wards;
- Means of warming the ward in winter to a temperature of 60° Fahrenheit, and of keeping it cool in summer;
- Means for safely disposing of excremental matters and of foul slops, and for cleansing and disinfecting infected linen and bedding;
- Facilities for obtaining, in the use of the hospital, the very strictest cleanliness of every part.

When the pressure of a particular epidemic requires temporary extension of the accommodation, *Huts*, or, in the summer and autumn, *Tents*, erected on the adjacent ground, will sufficiently answer the purpose; and if the administrative part of the original building have been thoughtfully devised, these temporary structures may be of very simple construction.

The *Tents* may be either such as the bell tent or hospital marquee of Her Majesty's army, or one of the various forms of tent and marquee used in civil

life. Huts may be of wood or iron. Both tents and huts need to be carefully arranged and regulated, especially in the following respects:—

As to Tents.—It is essential to secure the dryness of the ground upon which they are pitched, by trenching around and between them, so as to carry off all rainfall and prevent the lodgment of moisture. The tents should everywhere be distant at least a diameter and a half from each other. The floors should be boarded. The approaches should be paved or otherwise prepared, to prevent them being trodden into mud in wet weather. It is especially requisite that abundant proper means be provided for the reception of refuse matters, and that no casting of slops or other refuse upon the ground in the vicinity of the tents be allowed. In the distribution of patients in active stages of disease, not more than one patient should be assigned to a bell tent of the ordinary regulation size, and not more than three such patients to the regulation hospital marquee.* In other forms of tents the number of patients should be regulated in similar proportions.

As to Huts.—Dryness of site is, as in the case of tents, of the first importance. Each hut should be trenched round. Its floor should be raised a foot or a foot and a half from the earth, so as to permit the free under-passage of air; but care must be taken to prevent the lodgment of moisture or impurities beneath the floor. A distance not less than three times the height of a hut should intervene between any two huts, and each hut should be so placed as not to interfere with free circulation of air round other huts. In huts, as in permanent buildings for the treatment of infectious diseases, not less than 2,000 feet cubic space, with 144 square feet of floor, should be given to each patient. The ventilation of huts, also, is of equal importance with that of permanent hospital buildings. It is best secured by the combination of side-windows with roof-opening, the latter protected from rain, and running the whole length of the ridge of the roof. The windows, capable of being opened top and bottom, should not be fewer than one to each pair of beds, or in large huts one to each bed, nor should be of less size than the sash-window in common use for houses. The ventilating opening beneath the ridge may have flaps, moveable from within the hut by ropes and pulleys, so that the opening to windward can be closed, if necessary, in high winds. Double-walled wood huts may have additional ventilation by the admission of air beneath this outer and inner wall, and its passage into the interior of the hut through openings with moveable covers at the top of the inner lining. The roof should be covered with waterproof felt; the edges of the felt fastened down by strips of wood, not by nails. The hut should be warmed by open fire-places, fixed in brick stove-stacks placed in the centre of the floor, the flue being carried through the roof.

The sewerage and scavenging arrangements both of *Tents* and *Huts* demand very careful consideration. When the tents or huts are placed within the area of a public system of sewerage and water-supply, no difficulty will arise; for drains may be laid into the public sewer, and waterclosets may easily be adopted. But where no system of sewerage exists, the disposal of excremental matters and other refuse will require special provisions. In regard to excrement-disposal under such circumstances, the best method to adopt is the dry-earth system, or, failing this, a pail system, with careful arrangements for the disinfection and

* *Regulation Bell Tent.*—Diameter, 14 ft.; height, 10 ft.; area of base, 54 square ft.; cubic space, 513 ft.—J.S.

Regulation Hospital Marquee.—Length, 29 ft.; width, 14 ft.; side walls, 5 ft. 4 in.; height to ridge, 11 ft. 8 in.; cubic capacity, a little over 3,000 ft.—J.S.

subsequent disposal of the excrementitious matter. (See the Departmental Report, *On certain Means of preventing Excrement Nuisances in Towns and Villages.*) All slops and other refuse should be deposited in metal pails, and removed from the tents and huts at frequent intervals, and so disposed of as not to become a nuisance. Too much attention cannot be given to the careful scavenging of tents and huts, and to the proper disposal of the refuse from them; and the servant or servants to whom the duty is assigned should be under very vigilant supervision.

Appended is a plan of a temporary hospital hut for male and female patients, and a section showing the construction of the double-walled regulation military hospital hut. If no cottage or other building has been adapted permanently for the administrative purposes, or can be rendered available for them, the kitchen and other necessary offices (larder, wash-house, bedding and foul linen stores, additional nurses' accommodation, nurses' watercloset or pail-closet, dead house, &c.) are most readily provided by simply constructed huts or tents, conveniently arranged near the huts or tents which contain the sick.

*Medical Department of the Privy Council Office,
August 1871.*

APPENDIX No. 50.

INSTRUCTIONS FOR VACCINATORS UNDER CONTRACT.

- (1.) Except so far as immediate danger of small-pox may require, vaccinate only subjects who are in good health. As regards infants, ascertain that there is not any febrile state, nor any irritation of the bowels, nor any unhealthy state of skin; especially no chafing or eczema behind the ears, or in the groin, or elsewhere in folds of skin. Do not, except of necessity, vaccinate in cases where there has been recent exposure to the infection of measles or scarlatina, nor where erysipelas is prevailing in or about the place of residence.
- (2.) In all ordinary cases of primary vaccination, if you vaccinate by separate punctures, make such punctures as will produce at least four separate good-sized vesicles, not less than half an inch from one another; or, if you vaccinate otherwise than by separate punctures, take care to produce local effects equal to those just mentioned.
- (3.) Direct care to be taken for keeping the vesicles uninjured during their progress, and for avoiding afterwards the premature removal of the crusts.
- (4.) Enter all cases in your register on the day when you vaccinate them, and with all particulars required in the register up to column 9 inclusive. Enter the results on the day of inspection. Never enter any results which have not been inspected by yourself, or your legally qualified deputy. In cases of primary vaccination, register as "successful" only those cases in which the normal vaccine vesicle has been produced; in cases of re-vaccination, register as "successful" only those cases in which either vesicles, normal or modified, or

Instructions
for vaccinators
issued in 1871.

papules surrounded by areolæ, have resulted. When the vaccination of an unsuccessful case is repeated, it should be entered as a fresh case in the register.

(5.) Endeavour to maintain in your district such a succession of cases as will enable you uniformly to vaccinate with liquid lymph directly from arm to arm; and do not, under ordinary circumstances, adopt any other method of vaccinating. To provide against emergencies, always have in reserve some stored lymph;—either *dry*, as on thickly-charged ivory points, constantly well protected from damp; or *liquid*, according to the method of Dr. Husband of Edinburgh, in fine, short, uniformly capillary (not bulbed) tubes, hermetically sealed at both extremities. Lymph, successfully preserved by either of these methods, may be used without definite restriction as to time; but with all stored lymph caution is necessary, lest in time it have become inert, or otherwise unfit for use. If, in order to vaccinate with recent liquid lymph, you convey it from case to case otherwise than in hermetically-sealed capillary tubes, do not ever let more than eight hours intervene before it is used.

(6.) Consider yourself strictly responsible for the quality of whatever lymph you use or furnish for vaccination. Never either use or furnish lymph which has in it any, even the slightest, admixture of blood. In storing lymph, be careful to keep separate the charges obtained from different subjects, and to affix to each set of charges the name, or the number in your register, of the subject from whom the lymph was derived. Keep such note of all supplies of lymph which you use or furnish, as will always enable you, in any case of complaint, to identify the origin of the lymph.

(7.) Never take lymph from cases of re-vaccination. Take lymph only from subjects who are in good health, and, as far as you can ascertain, of healthy parentage; preferring children whose families are known to you, and who have elder brothers or sisters of undoubted healthiness. Always carefully examine the subject as to any existing skin-disease, and especially as to any signs of hereditary syphilis. Take lymph only from well-characterised, uninjured vesicles. Take it (as may be done in all regular cases on the day week after vaccination) at the stage when the vesicles are fully formed and plump, but when there is no perceptible commencement of areola. Open the vesicles with scrupulous care to avoid drawing blood. Take no lymph which, as it issues from the vesicle, is not perfectly clear and transparent, or is at all thin and watery. From such a vesicle as vaccination by puncture commonly produces, do not, under ordinary circumstances, take more lymph than will suffice for the immediate vaccination of five subjects, or for the charging of seven ivory points, or for the filling of three capillary tubes; and from larger or smaller vesicles take only in like proportion to their size. Never squeeze or drain any vesicle. Be careful never to transfer blood from the subject you vaccinate to the subject from whom you take lymph.

(8.) Scrupulously observe in your inspections every sign which tests the efficiency and purity of your lymph. Note any case wherein the vaccine vesicle is unduly hastened or otherwise irregular in its development, or wherein any undue local irritation arises; and if similar results ensue in other cases vaccinated with the same lymph, desist at once from employing it. Consider that your lymph ought to be changed, if your cases, at the usual time of inspection on the day week after vaccination, have not, as a rule, their vesicles entirely free from areolæ.

(9.) Keep in good condition the lancets or other instruments which you use for vaccinating, and do not use them for other surgical operations. When you

vaccinate, have water and a napkin at your side, with which invariably to cleanse your instrument after one operation before proceeding to another.

(Signed) JOHN SIMON.

N.B.—Supplies of lymph are furnished to medical practitioners on personal application at 3, Parliament Street, London, S.W., between the hours of 12 and 2; or by letter (unstamped) addressed as follows:—

To the Medical Officer of the Privy Council,
3, Parliament Street,
London, S.W.

*National Vaccine
Establishment.*

[The Second Report of the Local Government Board, published in 1873, contains a short statement by Mr. Simon, which needs not here be reprinted, of the departmental proceedings in regard of vaccination during the year 1872. Afterwards Mr. Simon began his *New Series* of Reports; and the vaccination proceedings of 1873, 1874, and 1875, are detailed in Nos. I., IV., and VII. of that series. In No. IV. (reprinted below) Mr. Simon gives a full recapitulatory account of the English system of public vaccination, with the improvements which had been made in it: seeking to contrast the vigorous efforts which Government made for the prevention of small-pox with the comparatively trifling efforts it made for the prevention of other diseases. That passage is left *in situ* (where it forms part of an argument) in preference to transferring it to the present page; and it is not thought necessary to reprint, from the other numbers of the *New Series*, the passages which relate to annual details of vaccination-superintendence.—Ed.]