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GREGORY

ON

Gregory—Your attention, I trust as my own, having been lately called to the consideration of vaccination as a protection against variolous infection. I have treated death of a very valuable friend and fellow-man, Dr. J. H. Lewis of the city of Alabama. I determined to publish his case in a somewhat abridged form, the services of Dr. George Cheyne, of London, which appeared in the London Medical Journal.

## VACCINATION,

REPUBLISHED WITH NOTES,

BY

J. M. COSGRAVE,

MIDW. LICENT. DUB.

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NO

VACCINATION

In the press and shortly will be published, *Harrison on the Arteries*, with an introductory essay on the Heart and the power which moves the blood in the capillary system. By JOHN M. COSGRAVE, Surgeon.

TRANSLATION

TRANSLATED FROM THE FRENCH OF MALLIN & OTTERSTAD

1861

TO THE GENTLEMEN COMPOSING THE CLASS OF JEFFERSON MEDICAL COLLEGE.

GENTLEMEN—Your attention, as well as my own, having been lately called to the consideration of Vaccination as a protection against variolous infection, by the lamented death of a most amiable friend and fellow-student, Mr. J. E. Lucas, of the state of Alabama, I determined to give you, in a connected form, the letters of Dr. George Gregory on Vaccination, which appeared in the London Medical Gazette.

The established character, great acquirements, and splendid talents of Dr. Gregory preclude me the pleasure of adding my humble testimonial respecting the worth of any of his works. As physician to the National Small-Pox Institution of Great Britain, a wide field of observation was opened to him, and in the following concise and practical essays he has given to us his opinions on this most interesting subject. They appeared at different times in a periodical publication which, until lately, it was rather difficult to obtain in this country.

To the consideration of this subject I beg to call your most serious attention: like many other minor points in surgery, it is too much overlooked in the eager pursuit of apparently higher professional acquirements: the demands of society and your character as professional men require this from you.

I feel great pleasure in anticipating that these few pages may be of essential future service to you, but I cannot conclude without adding the high opinion which the veteran Meckel has expressed of these essays in his Archiv. fur. Anat. et Physiol. in the following notice of the "permanent evidence of successful Vaccination."

"Under this head Dr. George Gregory has published a paper in the May No. of the Medical Gazette, in which he modestly disclaims all title to much novelty, and only hopes to be useful by refreshing the memory on certain minute points connected with vaccination. For several collateral remarks and observations, all of a practical nature, and all indicative of the sound judgment and accurate discrimination by which Dr. Gregory is distinguished, we must refer to the original papers."

These papers I beg to present you with my, warmest wishes for your future happiness and prosperity.

I am, with great esteem, Gentlemen,

Your obedient servant,

JOHN MAHON COSGRAVE.

77 Eleventh Street, 26th Dec. 1834.

## VACCINATION.

### LETTER I.

*To the Editor of the London Medical Gazette.*

SIR.—That a very general anxiety now prevails in this country on the subject of vaccination, will not, I presume, be questioned by any competent observer. In every family that I visit, something constantly occurs to bring it on the tapis: questions are every where put to me, touching the extent and degree of its protecting power; and every where do I find the same anxious but laudable desire to acquire some portion of that information on these points, which the world gives credit to the faculty for possessing. Under this impression, I have thought that a few pages might (with reference to both the classes into which mankind may be divided—those who take physic and those who give it) be beneficially occupied with a discussion on the principal topics which at present occupy the public mind in reference to vaccination. We have ceased to talk about a spurious cow-pox, a phantom which disturbed so greatly the minds of our predecessors. We have happily ceased, too, to consider vaccination as the parent of those cutaneous complaints by which infantile life has always been, and will probably ever continue to be, infested. But the march of time, which has left behind these subjects of common gossip and professional debate, has opened to us some new and curious questions concerning vaccine influence; and to these I propose to limit my attention in the short series of essays now contemplated. Being desirous to make myself intelligible to all classes of your readers, I must beg the indulgence of my professional brethren if I am sometimes more elementary than would otherwise be necessary.

The first and most natural question which occurs to those who hear of the fact of small-pox taking place after vaccination, is—what is the *extent* of such occurrences? In other words, what proportion of the vaccinated are subsequently affected by small-pox in a well marked and cognizable form? Their second question usually has reference to the *severity* or *intensity* of such attacks. Every one feels that the answers to these questions involve the very pith and substance of the whole question, and they will deserve, therefore, the priority of discussion. The

last report of the National Vaccine Establishment touches upon both points, but in so very loose a manner, that I am tempted to doubt how far the reply there given will be deemed satisfactory by the public. With regard to the question of *extent*, they say, that "the number of those who *fall into* small-pox after vaccination, is not greater than that of those who formerly *died by* inoculation whilst that practice prevailed." How the members of the vaccine board have arrived at this conclusion, I am unable to say; nor do I clearly see whether they mean that the *absolute* or the *relative* numbers of those who take small-pox after vaccination, is greater than the deaths in old times by inoculation. Mr. Edmonstone, in his recent work, entitled "Observations on Cow-Pox," p. 150, has shown that, if every individual born in the three kingdoms was to be inoculated for small-pox, the number of deaths by that disease would be annually 700. But as inoculation was certainly not practised, at any period, upon more than one-third of the population, the deaths accruing in that manner could never have exceeded 233; and surely the Board could not mean to say that this is the amount of cases of small-pox after vaccination throughout the whole island. In the year 1827, I had 105 cases under my own care at the Small-Pox Hospital, besides several whom I attended at the St. George's and St. James's Dispensary, and others in private practice. To suppose that I had under my own care one-half of all the cases that occurred throughout the kingdom in that year, is manifestly absurd. The Board, therefore, probably meant to intimate that such was the *relative* number of those who take small-pox to those who die by inoculation; in other words, that one out of 500 vaccinated persons are subjected, in after life, to small-pox. This, however, I have reason to consider very wide of the truth.

I have often thought that a fair ground of calculation, as to the extent of small-pox after vaccination, might be drawn from the following source. In the same year that I received 105 patients after vaccination, I vaccinated 3702 persons; that is to say, one out of every 35 may be said to have returned upon my hands. This calculation, however, requires some correction, from the consideration that other vaccine institutions do not, for the most part, receive variolous patients. Making a due allowance for this, therefore, I would consider that one in fifty will express, as nearly as our present knowledge authorizes, the proportion of vaccinated who subsequently take small-pox in a well marked cognizable form. Whether or not this proportion has yet reached its maximum, and whether the increased attention now paid to the performance of the operation is likely at some future period to *lessen* the proportion, are points on which I feel myself incompetent to argue at length. I would merely observe,

*en passant*, that the proportion of admissions into the Small-Pox Hospital, of patients labouring under small-pox after vaccination, which rapidly increased from 1808 to 1822, has become stationary since that period. The proportion in this case, it will be observed, is not between those who take it and who do not take it after vaccination, but between those who have small-pox after vaccination, and those who undergo that disease without preparation of any kind, and it is now as one to three. This fact induces me to think that the maximum of vaccine imperfection, is now obtained, and that the probability is rather in favour of a *diminution* than of any increase in those unpleasant occurrences which have of late so strongly excited the attention of the public.

The second question relates to the severity or intensity of the attacks of small-pox occurring subsequent to vaccination; and here again we have the Vaccine Board expressing themselves in doubtful terms. "This disease," it is said, "is safe, though sometimes severe." If by this we are to understand that small-pox, after vaccination, never terminates fatally, which the word *safe* appears decidedly to imply, the assertion is directly at variance with their own former reports, with the experience of the Small-Pox Hospital, with that of several of our best writers, and with the documents published in foreign countries, where vaccination is said to enjoy, like a prophet, more honour than in its native country. In the National Vaccine Report for 1819, we find the following passage:—"Five cases have been reported to the Board, of vaccinated persons who have subsequently died of small-pox." In the report for 1820 it is stated, "In several of these cases the malady has been prolonged to its ordinary period, and in eight reported cases it has proved fatal." That the occurrences are afterwards satisfactorily explained without impugning the general efficiency of vaccination, is undoubted. Again, since my last Report, of the Practice of the Small-Pox Hospital dated Jan. 1, 1826, up to the present day, I have received 190 patients having small-pox subsequent to well ascertained vaccination, of which number five have died. Several of our writers offer their testimony to the same fact. Witness Mr. Edmonstone, of New Castle, in the work just quoted, (a strenuous advocate of vaccination,) who informs us, that from the year 1801, to the 29th April, 1825, 42 cases were entered on the books of the New Castle Dispensary with small-pox after vaccination, including both real and presumed, of which number five died, being in the proportion of 1 in 8. Lastly, we read in a valuable document recently published by the College of Physicians of Stockholm, that an epidemic small-pox raged throughout Sweden in 1824, in the course of which 560 persons perished, of whom 34 are reported as having been vaccinated effectually, and 69 doubtfully.

I have quoted these several authorities, not with the insidious design of injuring a cause which I profess to support, but merely to establish the fact itself which may next become the subject of more particular inquiry. It must be obvious to all who have watched the course of this dreadful disorder, (the small-pox) that it proves fatal in two different ways: first, by the violence and extent of its own specific action; and, secondly, by calling into activity other latent diseases. The fact I believe to be, that small-pox very rarely indeed proves fatal by the first of these modes; but that it does occasionally prove fatal in the second, cannot, I apprehend, be doubted. Nor need this be a matter either of regret or surprise. When small-pox and its accompanying fever once take possession of a weak, delicate, and scrofulous habit, or of one extremely plethoric—when such a disease attacks persons recovering from other disorders—when its inroads are synchronous with some other affection, say inflammation of the lungs or bowels—he is a bold man who would attempt to set bounds to its injurious tendencies. The eye of the practised physician can, indeed distinguish between the specific and the accidental modes of death in small-pox; but this nicety can never be made intelligible to the public mind, which, in the event of the patient dying within 30 days from the invasion of small-pox, will always be inclined, and not without some justice, to attribute the death to that cause.

From all I have read and seen, I would say, that the public are not so unreasonable as to expect that vaccination should prove a complete and never failing safeguard against the manifold dangers of small-pox. They well know the importance of a sound constitution in resisting its attack; and further, that in the “severe” cases which the Vaccine Board acknowledge, the result must, in some degree, depend on the skill with which the patient is treated. All that, as it appears to me, the public requires, is an assurance, founded on clear data, that in its ordinary and regular course, small-pox, as it occurs after vaccination, is like a sore throat, or rheumatic fever, a safe disease; and that the deaths which it sometimes occasions are referrible to accidental circumstances, which no human foresight could have guarded against. But of the 105 cases of small-pox, after undoubted vaccination, which fell under my care last year, as already stated, I lost but one—a man vaccinated in Kent; and his death is attributable to the concurrence of small-pox of a severer kind than usual, with a diseased condition of the lungs which would alone have occasioned his death, in all human probability, in less than six months. That the general character of small-pox, as it occurs subsequent to vaccination, is that of a mild disorder, not implicating the great springs of life, is a fact fully established, and as

well known to the public as to the medical profession. My experience among the out-patients at the Small-Pox Hospital enables me to say that such a complaint is not, in any degree, dreaded by the great majority of the lower and middling ranks throughout the metropolis and its neighbourhood. One woman applied to me, within the last two months, expressly for the *vaccine preparative*, and all who apply at the hospital are impressed with the belief, that a certain proportion of the vaccinated will, in after life, become the subjects of the mitigated, or mild small-pox, as they commonly call it.

The extent to which inoculation is now carried in London and in the country; the increasing practice of re-vaccination, with its advantages and disadvantages; the propriety of testing with variolous matter, and the probable sources of imperfection in the vaccine process, will form the subjects of my next communication.

I have the honour to be, Sir, your obedient servant,  
GEORGE GREGORY.

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#### LETTER II.

*To the Editor of the London Medical Gazette.*

SIR—Whatever difficulty there may be in determining the exact proportion in which vaccination fails to impart that “charmed life” which was its early attribute, one thing is clear, that the cases of failure have been sufficiently numerous to attract forcibly the attention of the public. Incompetent to reason correctly concerning these occurrences, and wanting the means of tracing them to their true, but obscure causes, that public has, nevertheless, made efforts to improve their condition, in respect to security from the small-pox, and three different proposals have been suggested with this view. Each of them is occasionally practised—each of them becomes, in its turn, the topic of familiar conversation. They will, therefore, require separate consideration. A fourth proposal to improve the public protection originated with a member of our own profession, and will require some notice, in order to complete that sketch of *remedial measures* which it is my object, in this letter, to lay before your readers.

1. The first plan proposed is the resumption of small-pox inoculation. It is no less curious than instructive, to observe how differently this proposal has been met in the metropolis, and in the provinces. Here, small-pox inoculation is practised to an extent so trifling, as scarcely to merit notice or animadversion. In the western parts of London there are only three or four persons who have the character of being inoculators. Their practice, in

that respect, is very limited ; and, from all I can learn, directions with regard to seclusion are properly given by them, and faithfully executed. In one instance only, for many months past, has any patient in the Small-Pox Hospital traced his complaint to the practice of inoculation ; and I am inclined to think that the public is in no material degree injured by the few cases of inoculation which an immense population, like that of London, must always be expected to afford. In the provinces, however, a very different notion prevails. Applications for small-pox virus, for the purposes of inoculation, have frequently been made to me by respectable practitioners ; and in too many instances the spread of small-pox in a village has been distinctly traced to inoculation, practised by persons in a lower rank of life. It is impossible, I think, to separate this fact from the consideration of the greater facility of obtaining good and fresh vaccine lymph in the metropolis, to that which the country affords. Vaccination enjoys a higher reputation in London than in the country, because it is found, by experience, to be more effectual. It is more effectual, because the supplies of lymph are here more copious, more regular, more accessible, and, I believe, more *perfect*. I shall, hereafter, have occasion to revert to this topic ; but, in the meantime, may join in expressing my earnest hope that the practice of small-pox inoculation will be as much discouraged throughout the country, as it has long been in London ; and that practitioners will never lose sight of the often-repeated fact, that inoculation, by keeping up the supply of contagion, destroyed two for every one that it preserved.

2. The favourite system in London, at the present moment, is revaccination. This is, by many, considered as the panacea for all vaccine imperfections ; and the practice is rapidly extending. It was originally grounded on the theory of the limitation of vaccine influence. The period for which vaccination *ensures* the constitution has been differently stated—at seven, ten, and fourteen years. I have not been able to trace this idea to any medical author ; but though it began with the public, it is not on that account to be discarded from medical reasonings. Dr. Jenner held, that “when once the human frame had felt the *full* influence of the genuine cow-pox, it was never afterwards assailed by the small-pox.” Admitting the correctness of this, as a general doctrine, we may reasonably inquire what is the law, when, owing to some peculiarity, the human body receives only a *portion* of that influence which the cow-pox is capable of imparting ? In other words, when the arm of a vaccinated child exhibits a small vesicle, with an imperfectly formed areola, the whole process being completed, and the scab falling off within fourteen days, leaving an indistinct cicatrix, what opinion is to be given ? What

is the law which regulates the subsequent susceptibility of small-pox, under such circumstances ? These cases are far from being uncommon, and the answer requires deliberation. From the result of my own observations, I am induced always to state to the parent that such a process will give a *temporary* security to the child ; that, for a certain number of years, such a child will not be susceptible of the small-pox ; but that, at some future period, revaccination will be necessary, in order to complete that saturation of the system with the vaccine influence, which circumstances at present preclude it from receiving. It will thus be seen that I am disposed to accede to the doctrine of a limitation in the period of vaccine protection, under certain restrictions. I believe it to be an essential feature in the theory of vaccination, but I have no grounds whatever for believing that it applies to those far more numerous cases, in which the primary process is complete in all its stages ;—that is to say, when every insertion takes effect ; when the vesicles are large, pearly, and elevated ; when a full areola is at its height on the tenth day ; when the constitution, at that time, gives some evidences of internal derangement ; when some of the scabs remain adherent to the twenty-first day ; and, lastly, when the resulting cicatrix is *permanent* in after life.

It may be asked on what grounds, I aver that the notion of a limitation to the period of vaccine protection is applicable only to the cases of *imperfect* vaccination ? My reply is, that it corresponds with the phenomena daily passing before my eyes, and more especially with those of revaccination. It is only within the last twelve months that I have witnessed these upon an extensive scale, and I believe there are few practitioners hitherto well acquainted with them. This will, I hope, plead my excuse for submitting to the notice of your readers those few facts which have lately come to my knowledge regarding revaccination. I may previously mention, that a most unexpected and admirable opportunity lately occurred, at the Deaf and Dumb Institution, of prosecuting this investigation. The results have not hitherto reached me, but I have reason to hope that Dr. B. Babington will, ere long, communicate them to the profession.

I have noticed four different effects resulting from the operation of revaccination. In some cases, the skin appears completely insensible to the virus. The incision heals as though the unarmed lancet had alone been employed. More commonly, however, the poison irritates locally. In three (or at furthest four) days from insertion, an irregular areola appears, surrounding a minute acuminated and angry vesicle. Frequently the axillary glands swell ; and in particular habits of body, especially in adult females, irritable fever, to a considerable extent, is superinduced. In a third

set of cases, a pimple forms more gradually without any of this local or constitutional irritation. A slight degree of surrounding inflammation succeeds, and the vesicle contains, on the ninth day, a considerable quantity of a thin lymph; but this lymph will be found, on trial, *incapable* of propagating the disease. In a fourth set of cases, the revaccination runs a regular course. A true areola appears on the usual day, and the lymph will be found to propagate a good and genuine cow-pox. It may be called jumping at a conclusion, but I cannot forbear entertaining the idea, that those who exhibit the first set of appearances now described, would have effectually resisted small-pox; that those who were under the circumstances last mentioned, might have undergone the disease in some of its ordinary forms; and that the others might, under exposure to small-pox contagion, and in circumstances calculated to favour its development, (such as change of air,) have exhibited that class of symptoms called *varicella*, chicken-pox, mild or modified small-pox.

From the remarks now offered, it may be presumed that, in my own practice, I am induced to recommend revaccination in special cases only; that is to say, whenever any reasonable doubt exists as to the perfection of the primary process. But I as invariably discountenance it, when the proofs of a prior successful vaccination are clear, from the conviction that it is unnecessary, and from the feeling so strongly expressed by Mr. Edmonston, and so properly echoed by yourself, that the general adoption of such a principle, merely to gratify curiosity, or to indulge the caprice of a parent, or to increase the chances of success, is wantonly, nay, cruelly, to disturb the public mind.

3. A third suggestion which has been thrown out with the view of insuring the safety of an individual from the chance of casual small-pox, is testing with variolous matter at some considerable distance of time from the original vaccination. This has been more talked of than practised. Those who have confidence in vaccination of course object to it; and those who may have imbibed doubts on the question of its unlimited efficacy, yet acknowledge its modifying influence, and feel that the inoculated disease cannot well be milder than the casual disorder, as it occurs after vaccination. The surgeon inoculated for small-pox merely because it was a disease of such extraordinary malignity. Remove that malignity, and the necessity for inoculation ceases. The cases, therefore, that warrant the practice of testing with variolous matter are very few indeed. It is perhaps applicable to the case of young men intended for the medical profession, who must necessarily be much exposed to small-pox contagion, and who may chance to take the disease at a very inconvenient moment. Under this impression, I have tested two or three gentlemen; but

hitherto, in every instance, they have resisted the contagion. I am far from recommending this practice; yet it might be defended, with some show of reason, on the following ground. The most favourable age for receiving small-pox, (as far as my own observations extend) is from eight to fourteen. The comparative feebleness of the human constitution in infancy, offers less resistance to the inroads of this severe disorder; and consequently, any measure calculated to throw the burden of the disease upon a period of life better able to oppose it, would benefit mankind, even though it enjoyed no pretensions whatever to the character of a *preventive*.

4. The last topic to which I shall advert, is the proposal of Dr. Ferguson to inoculate with the vaccine and variolous virus at the same time, or within such short periods that the two influences may co-exist; the object being to produce artificially that mild small-pox which we now so often meet with casually, at long periods after vaccination. Such a proposal appears, at first sight, to be a philosophical application of the facts and principles now under discussion; but the difficulties which oppose its introduction into practice are insurmountable, as Mr. Edmondson, in the valuable Essay already referred to,\* has clearly shown. It proceeds upon the principle of keeping alive pure small-pox and pure cow-pox. Its application, therefore, could be only on a very limited scale; for, were the practice to become general, pure cow-pox would either become extinct, or continual recourse must be had to the cow. This involves a question which has been frequently agitated; but having already exceeded the just limits of a communication, I must defer it, with some other questions of a speculative nature to a future opportunity.

I have the honour to be, Sir, your very obedient servant.

GEORGE GREGORY.

### LETTER III.

*From the London Medical and Physical Journal.*

SIR—One of the most popular explanations of the occurrence of small-pox subsequent to vaccination, is that which attributes it to deterioration of the virus—the natural result of its passing through the bodies of so many individuals; and the obvious remedy for the evil, therefore, is more frequent recourse to the cow. This doctrine has been repeated over and over again, until, by mere habit, it has come into general notice, making its impression on the public mind, *non vi, sed s<sup>e</sup>pe cadendo*. It is time that the

\* Edmonston's Observations on Cow-Pox, page 113.

truth or falsehood of this statement should be ascertained; and it was originally my intention to have made this the first subject of inquiry in the present communication, but the appearance in your columns of a letter signed M. D. obliges me to clear the ground by a few preliminary remarks.

I cannot bring myself to believe that that letter expresses the general opinions of the profession on the subject which it undertakes to discuss; but the notice which you have thought proper to take of it, has given it an importance to which *per se* it is scarcely entitled. The writer is pleased to say, that my single remark on the theory of spurious cow-pox (occupying exactly three lines of your small columns,) exhibits a *strain of sentiment* calculated to do much mischief; and he inquires, with great formality, whether I believe in an imperfect cow-pox, when the self-same letter (No. 1,) concludes with an expression of my intention to inquire into the probable sources of *imperfection in the vaccine process*.

The remaining questions which the writer of that letter has put, show that he has only thought very superficially on the subject which he discusses; for he mixes up many doubtful, and some quite inaccurate statements, with others that are clear and undeniable. I shall take the liberty of offering a few comments on these questions, the more willingly, as the discussions to which they will lead fall in with some which the undisturbed course of my argument would have naturally suggested.

I cannot avoid entertaining the suspicion that your correspondent, M. D., has never *hunted* sufficiently through the older writers to know what they meant by spurious cow-pox; for he talks of it as not affording the *full* amount of protection. Dr. Jenner defined that to be a spurious cow-pox "which is incapable of producing any specific change in the constitution, but which leaves it as susceptible of the small-pox as any other common cutaneous disorder." The original notions on this subject were, that there are three diseases of the cow's udder and of the horse's hoof, which have been indiscriminately termed cow-pox; but that only one of these three is the real preventive of small-pox. The other two were called *spurious* cow-pox; but it was confidently maintained that these two spurious disorders were capable of being continued by successive inoculations,—frequently showed an *exact similarity* in many of their appearances to the true species,—and that *it required the discrimination of the exercised practitioner to distinguish the one from the other.*"† This was the original doctrine of a spurious cow-pox; and I repeat what I said before, that such an idea no longer disturbs our minds; and that the doctrine, as thus announced, was, I firmly believe, a mere *phantom*. It will be observed, that the term *spurious*, as originally applied to cow-pox, had re-

† See "Address to the Public," by H. W. Jenner, 1799. Pages 9, 12, and 13.

ference to the *primary* source of the pock, which was bad. I am well aware that the phrase was at one period employed (even by Dr. Jenner himself) to express the altered condition of a *genuine* cow-pox; but the term *degenerated* cow-pox was afterwards substituted, which, in the lapse of time, gave way to those which are now in common use, viz: *irregular* or *imperfect* cow-pox, which are always understood to mean modifications of a pock *originally perfect*. This important distinction between a pock originally bad, and one rendered imperfect by accidental circumstances, though obviously known to your correspondent, is not clearly stated by him.

In his desultory mode of treating the subject, he next advert's to two points in the doctrine of vaccination, which he takes for granted as being true, though they are certainly open to much doubt, and, as far as my present experience goes, are actually contrary to the fact. These are, first, the question whether genuine cow-pox can ever pass through a system so as to excite a local affection, but to afford no constitutional security whatever; and, secondly, whether such an irregular or *imperfect* pock is capable of being perpetuated by inoculation, so as not to afford the due measure of security against the small-pox. Your correspondent evidently means to decide both questions in the affirmative, though the obscurity attaching to his use of the term *spurious* gives him a loop-hole at which he will perhaps desire to escape. On the first of these questions I offered an opinion in my last letter. My belief is, that however imperfect the pock may be, provided some areola be formed, a certain portion of protective influence is imparted to the constitution, though that be slight, and probably temporary. This, however, is a point still open to discussion. Dr. Jenner held, at one time, (I do not know if he continued to maintain the doctrine) that virus taken from a true vesicle at a very late period, produced an imperfect disease; and your correspondent probably alludes to this when he asks, "whether it be of moment that the virus be employed in its active or efficient condition?" The facts, are, I believe, these: after the tenth and eleventh days, the virus becomes so *diluted*, that it is extremely difficult to reproduce the disease by it. Out of a dozen incisions made with such lymph, not more than one or two will prove effective; but that one is just as good, and just as effectual in preserving against the small-pox, as lymph of the seventh or eighth days. The unanswerable argument in favour of this position is, that the *scabs* of cow-pox, moistened with a little lukewarm water, will produce the disease in all its purity; but out of twenty or thirty incisions made with such a virus, not more than *one* will be found to take effect.

Again, your correspondent asks, with a sort of triumph, "have

I forgotten that an irregular or imperfect pock, when excited, is capable of being *perpetuated* by inoculation?" If he means to speak of an imperfect pock, the offspring of a *perfect* one, my reply is, that I have not forgotten it, because I never knew it. In fact, I know that the direct reverse is true; and that, as the modified small-pox will produce in the unprotected the true (perhaps confluent) small-pox, so will cow-pox, degenerated by some peculiarity in the habit of an individual, re-appear when transplanted into a healthy, well predisposed subject, in all its original purity and perfection. I have proved this in numerous cases at the Small-Pox Hospital, and it is an important practical fact, of which, if your correspondent should doubt, he may, at any time, with perfect safety to the individual, convince himself by actual experiment.

And this brings me, at length, to the question of recurrence to the cow, the point from which I diverged in pursuit of your correspondent M. D. It is insinuated by many, that we should recur for fresh supplies of lymph to the cow, because the virus necessarily degenerates by passing successively through so many human bodies. I deny this assumption *in toto*. So far from seeing any evidence of degeneration, I am sure that the lymph with which I vaccinated many children on Monday last, was as perfect as the best lymph of 1799. The elevation and pearl-like colour of the vesicles on the ninth day, the extent and circular shape of the areola, the regularity in the stages of the disease, and the colour and form of the resulting scab observable in the cow-pox of the present day, are such as leave nothing to desire. I have already expressed my firm conviction, that by the careful selection of healthy and well predisposed children, the pock may be restored from an imperfect to a perfect state; and it naturally follows, that by a similar care, it may be kept up for any length of time in that desirable condition. But a question of great practical moment meets us here. What is the proportion actually found to exist, in practice, between the perfect and imperfect pocks? for this naturally leads to the inquiry, what is the minimum of subjects on whom you can operate, so as to ensure at all times lymph in a state of perfect activity? I have no experience of the fact; but from all I have heard and read, I cannot doubt that if three or four children are *successively* vaccinated from each other, *all* of whom are, from various causes, ill-disposed to take the disease, the matter degenerates, and at length wears out altogether. A good illustration of this doctrine may be found in a letter from Mr. Ferguson, on the state of cow-pox at Sierra Leone.\* I have heard it calculated, that even supposing the subjects to be well selected, one out of every five vaccinations fails the first time; but

\* At page 24 I have added the paper to which Dr. Gregory refers.

as the constitutional disposition to receive the cow-pox kindly can never be predicted with perfect precision, it follows, that in order to secure a permanent supply of genuine efficient cow-pox, two or three children at least must be vaccinated at the same time; and when we further take into account the certainty of occasional failure in the operation, the chance of the child's being attacked by some other disease, the great probability of inattention or obstinacy on the part of some parents, it may safely be concluded, that to ensure a steady supply of recent and perfect lymph all the year round, 500 children at the least must be vaccinated annually. This I am inclined to consider as the minimum of vaccinations at which any establishment can secure its own supply of perfect fresh lymph at all times.

But to return to the consideration of that popular question-- how far it is proper, and even necessary, to have occasional recourse to the cow, and to allow the present sources of vaccine lymph to die out? To my mind many powerful arguments suggest themselves against the adoption of such a measure. 1. It is by no means easy to find the true cow-pox even in a large dairy. I have been given to understand by those most conversant with the subject, that a twelvemonth often elapses without its being seen. 2. There must be always some doubt as to the purity or genuiness of the new stock, until the experiment of variolous inoculation has been subsequently made; which parents, who subject their children to vaccination, are very seldom disposed to allow. 3. The true vaccine lymph, as first taken from the cow, is frequently of a more acrid nature than that which has been assimilated to the human constitution by frequent successive inoculations, and consequently the first trials are likely to produce glandular swellings and other inconveniences, and thus occasion distrust rather than increased confidence. Fourthly, and lastly, it is not found that the cases of small-pox, after vaccination, are comparatively more frequent among persons recently vaccinated. It is true that we hear of such cases much more frequently than we did ten or twenty years ago; but common experience will bear me out in saying, that the occurrences of which I speak are principally met with among persons vaccinated from fourteen to four-and-twenty years ago. When we do meet with children under ten years of age affected by small-pox, subsequent to vaccination, the disease is, for the most part, very mild, scarcely deserving a higher title than that of varicella.

These are the objections I have to offer against the proposal to revert frequently to the cow. It appears to me not only uncalled for by the circumstances of the times, but in some respects hazardous; nor am I convinced that it would tend, in any degree whatever, to diminish those unpleasant occurrences which are now

bringing vaccination into some discredit. On the contrary, it appears to me that a very different train of measures must be resorted to, to meet the exigencies of the case.

Instead of seeking for new and stronger lymph, that which we have must be diligently fostered and encouraged; and the surplus of it rendered as copious, as perfect, and as easily accessible as possible. These I believe to be the real and efficient remedies for the evils now so generally admitted, and it will be the object of my next (and concluding) communication, to show what those measures are, and how they may, most advantageously to the public, be carried into effect.

I have the honor to be, your very obedient servant

GEORGE GREGORY.

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#### LETTER IV.

*To the Editor of the London Medical Gazette.*

SIR,—The object of my last communication was to show, first, the incorrectness of that theory which would attribute the failures of vaccination to deterioration of the virus by successive inoculations; and secondly, the futility of that advice which would send us back to the cow for fresh sources of lymph, on the occurrence of any fresh sources of alarm. By a singular coincidence, the same number\* of your Journal contained a brief notice of some recent experiments in Egypt, tending to show, first, that the cow was susceptible of the small-pox; secondly, that this animal converted the small-pox into the cow-pox; thirdly, that this converted disease was communicable to man; and fourthly, that from man it might be propagated without degenerating into small-pox. You remarked, with great justness, that these facts, if true, would prove of the utmost importance. They would set at rest that long disputed and curious question—whether the cow-pox is, or is not, a modification of the variola. They would go far to determine the identity of the cow-pox, and the grease of horses; but above all, they would ensure to us, at all times, the means of combating the small-pox, since that baneful contagion might be made, on any emergency, to furnish its own antidote.

\* In a paper read before the College of Physicians, Dr. M'Michael stated on the authority of a letter recently received from India, that "From vaccine matter having lately failed in Egypt in a great many cases, medical gentlemen were led to institute many experiments, by which it had been ascertained that by inoculating a cow with small-pox taken from the human body, fine, active, vaccine matter is produced. At the time the letter was written, there was a Greek child at Mocha, that had been successfully vaccinated with matter from the cow, produced as above mentioned; and the virus taken from the pustules had acted with the best effect on several other children at Suez, where former attempts had failed."

The respectability of the source whence this information was derived, precluded all doubt as to its authenticity; though I could not but consider it as singular, that facts of this importance should have been first made out by medical gentlemen in Egypt; and that, being so important, they should have first found their way to this country by the very circuitous route of India. The idea, however, once started, it became very desirable to set the matter at rest, more especially as several circumstances were omitted in the statement communicated to Dr. M'Michael,—viz. first, whether the cow, in converting the small-pox into cow-pox, underwent any constitutional indisposition; secondly, whether the same animal was susceptible of the disease more than once; thirdly, whether the local appearances in the cow resembled those described by Jenner, as appertaining to his cow-pox; and lastly, where, when, and how, the inoculation of the animal might be most successfully performed.

To determine these curious points, Dr. Naylor and Mr. Mayo made the experiment upon an Alderney cow at Paddington; while Mr. Sewell, of the Veterinary College, anticipating very ingeniously an objection, that possibly this cow might have already passed through the cow-pox, and been thereby rendered unsusceptible, made (with the assistance of Mr. W. Wheeler) a similar experiment upon a fine calf, at the Small-Pox Hospital. Mr. Sewell, anxious that no means should be left untried of improving our knowledge of the connection of human and epizootic maladies, took the same opportunity of inoculating, with fluid small-pox matter, two lambs, and some rabbits. In none of these instances did the inoculation take effect. Conceiving that possibly this disappointment might have arisen from accidental circumstances, and understanding from Dr. Paterson (late of Ayr) that he had succeeded, in various instances, in communicating the small-pox to a cow, while in milk, Mr. Coleman, zealous in the same cause, has since inoculated another cow and an ass, with variolous matter furnished by me. Mr. Alcock assisted at this experiment. Speculating upon the possible causes of the former failures, I was led to suspect that they might depend upon the animal's constitution being unsusceptible of a truly human poison. To determine, if possible, this point, I vaccinated, on Friday last, (in presence of Mr. W. Wheeler,) the calf (the subject of the prior experiment,) with lymph, descended in an uninterrupted stream from that which was originally supplied to us from the cows of Mr. Harrison's dairy in 1799. The results of the former experiment cannot yet be known; but I may add, that the vaccination has taken no effect upon the calf beyond that of a common irritant.

Whatever conclusions these experiments may lead to, with

respect to the pathology and mutual relations of cow-pox and small-pox, one thing at least appears to be certain, viz. that no reasonable hope can be entertained of procuring, by this means, a supply of vaccine matter in any district or country into which small-pox may have accidentally found entrance. Though I am far from thinking that these experiments have hitherto been carried to their farthest reasonable limit, yet enough has been done to show that the communication of small pox to the cow is both difficult and uncertain; and, therefore, that other means must be resorted to for keeping up the supply of vaccine lymph, and rendering it at all times available for the protection of the human race. The difficulty of effecting this has always been acknowledged; but few, except those who have turned their attention seriously to the subject, could imagine how very great that difficulty is. In the West India Islands, and all other small societies, keeping up their own supply of recent lymph is impossible. No single practitioner in England, however extensive his practice, is capable of doing it. Even the public establishments in London, devoted to the task, find a difficulty in effecting it during the months of December and January, when parents, with a natural and praiseworthy caution, hesitate to expose their children to the keen blasts of a wintry air. It may be stated, without fear of contradiction, that such public establishments are indispensable to the preservation of vaccine lymph in this or any other country; and the question for consideration, therefore, resolves itself simply into this—how can such establishments be kept most effective?

In all (or almost all) the countries of Europe,—in India, in Ceylon, at the Cape of Good Hope,—and, I believe, in most of our other large colonies,—the supply of vaccine lymph to the public is taken under the protection of government; and when we reflect how much the attention of individuals is subdivided, no one can doubt for a moment that a wise government will never submit a matter of so much consequence to the community to the chance of neglect, or delay. In London, the liberality of the public, and the philanthropic spirit of a few individuals, have opened sources of vaccine lymph, independent of those which the government furnishes; but still it cannot be questioned, that, to the National Vaccine Establishment, this country must mainly look, for its regular and permanent supplies of vaccine lymph.

Vaccination had been known and generally practised in England ten years before it was taken under the protection of government. It was not until 1808 that the National Vaccine Establishment was formed. Within a very short time afterwards, it was placed on the footing, and under the superintendence which it now enjoys. That it has been eminently serviceable in distribu-

ting vaccine lymph to all parts of the United Kingdom, and to many distant countries; and that those connected with it have been most assiduous in their exertions to extend its usefulness, is most true. No one is more fully sensible than I am of its well-earned character; and if I throw out a doubt how far, as at present constituted, it is calculated to meet the wants of the times, it is for this very reason,—because I have seen and watched its sphere of usefulness, and wish to see that sphere extended.

But a very few months have elapsed since my opinion was asked on the subject of a central or National Vaccine Establishment at Edinburgh; and I then learned, for the first time, that the North of Scotland had no other *certain* means of supplying themselves, on an emergency, with vaccine lymph, than application to London. The ample and steady supplies which an enormous population, like that of Edinburgh and Leith, is so well calculated to afford, are, in a manner, lost for want of care. Nor can a private institution supply the deficiency. The free transmission of lymph by post, essential to its general utility, is a power vested in the National Vaccine Establishment alone. In reply to an offer which I made to the government in 1825, to supply country practitioners with vaccine lymph from the Small-Pox Hospital, I was informed that such a privilege could not be granted, without admitting a precedent which would be attended with great inconvenience.

A conviction of the necessity of vaccinating with recent lymph, if we desire to ensure the success of the operation, and of the importance of public establishments having the privilege of free transmission by post, for the due supply of such recent lymph, induces me to think that great advantages would arise if the plan of the National Vaccine Establishment were enlarged, if *branch banks* were established for the greater facility of obtaining, and distributing lymph; and if the whole were placed under the superintendence of a central committee in London. It is far from my wish to occupy your columns by a detail of the measures which such a plan would render necessary. I cannot, however, have daily before my eyes the advantages which the affluent population of London enjoy in the possession of public establishments for the diffusion of vaccine lymph, without desiring, as far as in me lies, to extend the same to the poorer classes in the country.

When I call to mind who are the individuals who at present guide the National Vaccine Establishment, I feel convinced that if such a measure as I now contemplate be really required, it will be carried into effect. I can of course know but little what facilities of obtaining effective lymph the population of the provinces enjoy, and I may perhaps have overstated the case. In the event, however, of my suggestions being thought worthy of attention by

those to whom the government entrusts the important task of superintending the public supplies of vaccine lymph, I venture to add the following hints.

The districts in which branch establishments are formed should be such as will afford not less than 500 vaccinations annually. They should be conducted by medical men, sufficiently paid to enable them to give up three of the best hours of the day to the purposes of vaccination. Their remuneration should come in part from the medical men in the vicinity, (who, in return, would have free access to the establishment) and in part from the government, who would claim, in return, the privilege of directing and overlooking their proceedings. For this purpose one or more persons should be charged with the duty of inspectors, and by them all matters of detail would be regulated.

On a careful consideration of the whole of this interesting subject, I have satisfied myself that no measure would go so far to meet the emergencies of the case as that which I have now suggested; and I cannot for a moment believe that the government of the country would grudge the additional expense which it would entail, or refuse to extend to the provinces that boon which the experience of twenty years has proved to be of incalculable value to the inhabitants of the metropolis.

I have the honour to be, Sir, your very obedient humble servant,  
GEORGE GREGORY.

### VACCINATION.

As the following letter of Dr. Auban communicated to Dr. Johnstone, by Dr. Baron of Gloucester, England, refers so immediately to the subject of these essays in connection, with certainly the most delightful and interesting portion of the globe. I beg to subjoin it, and also a short account of the Report of the Committee appointed by the Academie Royal de Medecine in France, to investigate the influence of vaccination upon the human constitution, although I do not entirely concur in their opinions, for I should most certainly advise every parent to have their infants vaccinated at five or seven months old: and again put under the vaccine influence at some period between three and seven years of age. I regard it safer to use the recent lymph, but in general the scab will prove quite as efficient if it have not been kept too long. It is prepared by mixing a small portion of it with a drop of warm water on a piece of glass, using in this manipulation the lancet with which the abrasions of the cuticle are to be made, and these should always be made in the line of the Basilic or

Cephalic vein above the elbow joint. It would be, in my opinion an improvement in the form of vaccinating lancets, if surgical instrument makers were to run a vertical groove along the centres of these instruments.

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### VACCINATION IN TURKEY.

SIR—I hope you will find it convenient to insert in an additional page, the accompanying interesting letter. It is translated from a copy in French, which has been transmitted to me within these few days, by Dr. DE CARRO. The facts which it discloses, whether considered morally, medically, or politically, are very curious. He intended that it should appear in the second volume of my Life of Jenner; but as some time must elapse before it can be published, I think it wrong to withhold an account of this signal triumph of vaccination over national and religious prejudices, till that event takes place. I therefore transmit Dr. A.'s letter for your Journal, which, during a long series of years, has evinced unwearied zeal and diligence in recording every important circumstance connected with the vaccine discovery.

I have the honor to remain, Sir, most faithfully yours,

J. BARON.

*Gloucester, Nov. 2, 1827.*

*Copy of a Letter from Dr. Auban, a French Physician, settled at Constantinople for upwards of thirty years to Dr. De Carro, formerly of Vienna, now of Prague.*

If during so long a time I have not given you any sign of my being alive, it is because vaccination in this country no longer offered any thing interesting; but an event, which no one could have surmised, and which, in consequence, has astonished all those who have been made acquainted with it, ought to be transmitted to you.

Before announcing it to you, I should remind you that no Christian is ever permitted even to touch any prince of the Ottoman race, or still less to take blood from him in any way, or on any account. The great revolution that has been effected among the Mussulman people since the destruction of the Janissaries has changed every thing! The troops placed on the footing of other European soldiers,—the musket with its bayonet,—the military music, and nothing played except European airs,—a drum major, with his great cane in his hand,—the sappers preceding the regiments,—the Grand Seigneur himself in general's uniform, ordering certain manœuvres; all these are the prodigies which one can

with difficulty comprehend, and the whole brought about in a very short time indeed by one individual, but he, in truth, a great man!

Vaccination performed the 16th of May on three Sultans, or Sultaness, (a title given only to infants who are born on the imperial throne,) and two other young ladies of the harem, proves how much every thing has been changed amongst this people.

On the 14th May, one of the physicians of the Sultan's seraglio begged of me to go to his apartments. He told me that he had received a message from the Echim Bachi, directing him to request of me to hold myself in readiness to go to vaccinate the children of the Sultan,—to have the vaccine matter always about me, and not to remove any distance from Pera. I remarked to him, that intrigue would cause some other person to be chosen to perform that operation. He replied to me, "There are no longer any intrigues that can cause the order of the Sultan himself to be altered, who has pointed out you on account of your age, your nation, and your name."

On the 16th, in the morning, an order for me to go to the palace with one of the physicians, who would act as interpreter, was transmitted to me. About nine o'clock we were shown into a chamber allotted to the Echim Bachi, who made no delay in coming. He caused the Kislar Aga (the chief of the black eunuchs) to be sent for, and immediately we three were introduced. At the first chamber where we stopped, we found a young sultan, seven or eight months old, who was vaccinated forthwith. A few minutes afterwards his elder sister, about a year and a half old, appeared; she was also vaccinated; and then was brought in a still younger princess, who was submitted to the same operation: and all this took place without the smallest difficulty or ceremony. In two other apartments, two young ladies were also vaccinated.

The verification was adjourned to the 23d of the same month. The Echim Bachi, being sick, did not come; but we were introduced notwithstanding, and all the persons vaccinated were found going on well, with a most beautiful (*tres-belle*) vaccine pock.

The 28th of the same month we returned to the palace, and the crusts which had formed left no fear about the maturation of the vesicles: all was finished, and complete. The Kislar Aga remitted me a very handsome present on the part of his highness, adding, "I have received this from the hand of the Grand Seigneur, to be given into yours. He has sent it to you also to testify his satisfaction with you. That which you received the first day was sent to you on the part of the mother of the two young princes. We will now go home, to return no more to this place until some new prince be born."

You have here, as I think, a piece of news which ought to be transmitted to you. If you wish for further details, let me know, and I shall consider it a duty to satisfy you. All this was done without the least mystery.

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### VACCINATION IN AFRICA.

On the departure of Lieutenant James Holman, R. N. the celebrated blind traveller, for Africa, I begged the favour of him to procure for me some authentic information respecting the present state of small pox and vaccination in the Negro country, and I supplied him with a few queries calculated to direct his inquiries. He has just transmitted to me the accompanying communication from W. Ferguson, Esq., surgeon of the Royal African Colonial Corps, which appears to me to possess sufficient interest to merit a place in the pages of your excellent Journal.

I am your obedient servant,

GEORGE GREGORY.

London, December 19, 1830.

*Replies to Queries on Vaccination and Small-Pox.* By W. FERGUSON,  
Surgeon Roy. Af. C. C.

1st. Is vaccination generally practised among the infant negro population?

2d. Whence do they derive their stock of lymph?

3d. What is the degree of confidence placed in it?

Vaccination is not at all practised among the negro population by native vaccinators; it is, however, practised among certain branches of the negro population by European surgeons. The negro population of Sierra Leone consists of Nova Scotian and Macroon settlers, liberated Africans, and several of the aboriginal African tribes, such as Limmaners, Mandingoos, Soosoos, Sherbros, &c. &c. &c. The three first mentioned of these branches of the negro population, having greater intercourse with Europeans, are better acquainted with European customs, and have, of course, imbibed more of European notions and prejudices on such subjects as the one now under consideration, than the aboriginal inhabitants of this part of Africa: vaccination therefore is, and has been, practised among them to a considerable extent; the stock of lymph being derived from, and kept up by frequent renewal from England. That their confidence in it as a measure preventive of small-pox is great, I judge from the anxiety which they show, and the eagerness which they manifest to have their

children vaccinated, when small-pox is raging round them; while, under ordinary circumstances, and when their fears have been lulled by the absence of this fatal epidemic, (an absence which they well know is probably but temporary,) they exhibit such an unaccountable apathy regarding vaccination, that a stranger might well suppose they had no faith in it at all as a prophylactic measure. Notwithstanding this, I believe they have great confidence in it, although, from circumstances to which I shall presently allude, that confidence has, I believe, declined considerably.

4th. How soon does the areola arrive at its greatest height in these countries?

The areola surrounding the vaccine vesicle is, I think, at its greatest height about the eleventh or twelfth day after vaccination, if the lymph used has been genuine.

5th. Does small-pox prevail there?

6th. Does small-pox prevail there after vaccination?

Small-pox prevails occasionally, and there are instances of its having occurred even in a confluent form after vaccination. One genuine instance of this kind came under my notice in the year 1824, in the person of a liberated African girl, of about sixteen years of age. Vaccination had been performed in this case by the late Dr. Nicol, deputy inspector of hospitals, and was considered satisfactory. The case proved confluent. The secondary fever was accompanied by severe diarrhoea, which carried off the patient about the thirteenth day. Another well authenticated instance of the same fact occurred in the early part of the present year, in the family of a respectable Nova Scotian settler. Other cases of a similar nature have been reported by the inhabitants; but I do not consider that in these cases the proofs of a pure previous vaccine disease have been satisfactorily established. When vaccination has been carried on for some time from the same stock of lymph, the disease is apt to degenerate and become spurious; from which cause we require a frequent renewal of lymph from England, in order to keep it in continuous and successful operation. The spurious disease, on the fifth day, generally shows itself in the form of a small globated papula; on the eighth day it presents sometimes an ash-coloured pustule, containing purulent matter; at other times, and less frequently, a brown coloured scab, having a small quantity of purulent matter under it, capable of producing, by inoculation, a disease similar to itself. The great prevalence of a disease among the negro population called *Craw Craw*, is considered as materially influencing that change in the properties of the pure vaccine lymph which has been just noticed. That apathy and indolence, of which I have already accused the negro population, leads them to consider the appearance of disease in the arm after vaccination, as the test of safety.

from small-pox. Great as the difficulty sometimes is in getting them to bring forward their children for vaccination, it is still greater to procure the necessary examinations in its progress and maturation. The mere appearance of disease in the arm is supposed to carry along with it immunity from small-pox ; and, on the occurrence of the epidemic at an after period, it may be easily foreseen how wretchedly and how fatally this confidence in the spurious disease may be misplaced. I, therefore, do not consider that, in all the cases spoken of among the inhabitants as cases of small-pox occurring after vaccination, there existed satisfactory proofs of the patient's having previously undergone the genuine vaccine disease ; yet I am sorry to say that, from such occurrences as these, vaccination has rather lost ground in the opinion of the negro population.

7th. Is small-pox an increasing malady?

Small-pox is not an increasing malady : it is generally introduced here from the slave cargoes of vessels detained by the squadron, and sent here for adjudication. Were this source of its renewal removed, I am persuaded that small-pox would, in the course of a few years, be almost unknown in this part of Africa.

8th. Can the vaccine virus be retained on points and glasses, so as to be fit for use ?

The vaccine lymph, if taken on points, will not retain its power seven days in this country. This observation is established by repeated trials. If taken on glasses, I would not be disposed to depend on its activity when kept longer than fourteen or sixteen days, though I have known it sometimes to retain its original properties for four or five weeks. If preserved in glass bulbs hermetically sealed in the manner practised by the National Vaccine Institution, I have known its properties unimpaired after keeping for three months. Repeated trials have convinced me of the excellence of this mode of preserving the vaccine lymph, and I believe it to be the best and surest that has been yet devised, of transmitting the lymph from England to tropical countries : next to this method, I believe the crusts have proved most successful.

9th. Are there periodical vaccinations of large districts, or is each child vaccinated soon after its birth ; if the latter, how soon ?

The practice in these cases is, as long as the vaccine lymph continues to produce a genuine disease, to keep it up by the weekly vaccination of all comers. Children are rarely vaccinated under four weeks old, but there is no rule observed on this head.

10th. What sort of scars are usually left in the arm ?

The scar bears the shape of the original vesicle, and is slightly depressed below the surface of the surrounding skin. The surface of the scar is marked by a number of small depressions of

various shapes, corresponding, I believe, with the cells in the original vesicle.

11th. Is vaccination in hot countries attended with feverish symptoms? If it is, on what day do they begin?

Vaccination is sometimes in this country attended with feverish symptoms; but, in the most marked cases, so far as I have seen, these symptoms have been so slight as almost to escape common observation. I have not remarked on what day they begin.

12th. Is vaccination ever followed by any eruptions?

I have seen only one case of this: an eruption appeared on the sixth day after unsuccessful vaccination: it was diffused over the whole body, and is now in progress.

*Sierra Leone, Sept. 24, 1827.*

N. B.—The case alluded to in the last of the above replies, was in the first instance a papular eruption, the base of each papula being surrounded by an inflamed ring. The eruption was thickest on the thorax and on the arms. In its progress the eruption became pustular, the pustules being in circumference about half the usual size of the vaccine vesicle. On the twelfth day, the crusts had dropped from some of the smaller pustules; and, by the seventeenth day, they had all dropped off, leaving a mark, but not in any manner pitted, and which I do not think promises to be permanent.

## VACCINATION.

The notion that the vaccine influence wears out in the human constitution, has recently occupied the attention of a committee of the *Academie Royale de Medicine*, who gave in their general report of the efficacy of this practice, at the late annual public meeting, upon which occasion the venerable Portal presided. It is certain that the small-pox has made its appearance in persons in whom vaccination had displayed all its regular phenomena; but probably with much less frequency than has been alleged; and not one has reached the knowledge of the Academy which terminated unfavorably.

The promulgation of the idea in question, is looked upon by the committee as fraught with the greatest danger, inasmuch as it will disturb the peace of families, confuse the notions of those who attend to the subject, and impair that confidence which is essential; while, as the period during which the vaccine influence is supposed to be valid, differs exceedingly in the opinions of

individuals, the proposal to revaccinate is judged altogether inadmissible.

The concluding remark in their report is characterized by candour and good sense.

"It is evident," say the authors, "that when the utmost concessions are made—when all the cases of small-pox after vaccination which have been reported, are considered authentic, it would be sufficient to compare these rare occurrences with the innumerable cases of the disease in those who have not been vaccinated: and also with the immense number of those who have undergone the process, and been exposed to contagion with impunity, in order to be convinced that vaccine inoculation is one of the most beautiful and useful discoveries that have ever been made, and that this invaluable antidote still preserves its virtues."