

(and it has been so in all the cases with which I have been concerned), a large portion of it must necessarily be removed. The details of my operation may be thus expressed. After an assistant has retracted the eyelids, I transfix the cornea with a curved cataract needle, and with a cataract knife cut away the required portion.

69, Brook Street, Hanover Square, London, April 1859.

## FAILURE OF VACCINE.

By J. A. HINGESTON, Esq.

THE frequent failure of vaccination is now so generally admitted, that statistical proofs are not requisite in order to establish its truth. People look upon it as an equal chance, whether those who have been vaccinated shall be able to resist an attack of the small-pox or not, should they be exposed to it; while some go so far as to surmise, hastily and rashly enough, that vaccination is all but useless. A few vote for a return to the old variolous inoculation; and a few, still more inconsiderate, boldly declare themselves in favour of the small-pox itself, as the only and the surest guarantee of their safety. There is, of course, a great deal of exaggeration and misrepresentation in expressions of this sort; and much more is affirmed against the non-protective agency of vaccine lymph, than, as is usual, a dispassionate inquiry into all the circumstances of the case will justify or imply. The broad and undisputed fact of the actual diminution of small-pox since vaccination has been introduced and practised, is alone sufficient to contradict these wild notions, and to refute the vulgar prejudices afloat upon the subject. For, even during an occasional outbreak, the disease is nothing now to what it used to be formerly, when the old inoculation, which is itself not free from risk, was the only obstacle opposed to its incessant and alarming encroachments. At that time, it was a real plague of terrible malignity, whereas it is now a comparatively mild and transient epidemic. This well-known fact is a satisfactory answer in favour of the protective influence of vaccination, which, if not universally, is at least extensively serviceable and effectual.

To medical men, the occasional failure of vaccine lymph presents itself in a very different light from that in which it is viewed by the public at large; and with vaccinators in particular it is a topic of the deepest interest, which they endeavour to explore to the best of their abilities, and in every possible direction. The various points of inquiry offered to their notice, may be reduced to the few following items.

I. A chief cause is the capital oversight on the part of the vaccinator himself, in transferring lymph from an imperfect pock. There is no doubt that this oversight or carelessness is a copious source of the quantity of bad lymph in circulation, as well as of the ultimate failure of vaccination as a protective agent. For it is a maxim in vaccinating, never to transfer lymph from a pock in the slightest degree abnormal, nor from a normal pock in a constitution evidently disordered or unsound; because, if it be so transferred, the inevitable result will be abnormal pocks and inefficient lymph. It is impossible to restore contaminated lymph to its primitive purity; no subsequent care in its propagation can ever recover its lost or defective virtue. Having once become devious or degenerate, it continues to descend both degenerate and devious, until its power becomes extinct, and it fails to propagate itself, even in a degenerate form. This glaring fact is so unquestionable, that it is necessary to bring it forward, and place it first and foremost among the causes of the failure of the vaccine lymph.

II. Another main cause of failure is, we must candidly own, carelessness in the act of vaccinating. Not only is the good quality of the lymph used not strictly inquired into at the outset, but, what is more unpardonable, the mode of operating is not exactly performed. There is a

right and a wrong way of vaccinating, just as there is a right and a wrong way of amputating, bleeding, or tying an artery. Every surgeon knows the value of performing an operation rightly, and the evil consequences to be apprehended from operating wrongly. It is the same with vaccination, which, in its vital results, takes rank among the capital operations of surgery, and requires, for its proper performance, an intelligence as clear and a hand as dexterous as ever fell to the lot of the best of surgeons. By neglecting, or by not being aware of, the precise way of operating, it happens that so many vaccinations turn out, either eventually or immediately, inefficient. The puncture is made too wide or too deep, or irregular; each of which faults materially affects the shape and character of the vesicle; or else, if it have been properly performed, and the lymph effectually inserted, it is not punctually watched from day to day throughout its progress. Success demands constant vigilance. In performing the operation, the cuticle alone must be raised, and the cutis beneath exposed, but not wounded, or wounded as little as possible. The cutting, or rather the scratching, of the cuticle, should be done lightly and delicately, with the least possible irregularity, and over the smallest extent of surface consistent with the application or insertion of the lymph. Its course must be watched and noted on the third, eighth, and fourteenth days in particular; and no case can be pronounced safe, unless every step in its progress have shown itself to be regular, critical, and complete.

It is very necessary to point out these causes of failure; first of all, because they are frequent, and seem, in a great measure, to have lost of late years something of their due weight and importance in the estimation of medical men.

From the medical pupil never having been hitherto distinctly educated on the subject of vaccination, he is naturally liable to fall into mistakes through inexperience, which can only be overlooked out of tenderness to his unavoidable ignorance, in consequence of his never having been taught, *ex officio*, how to proceed with scientific precision. But, upon public grounds, inexpertness is inexcusable, and cannot be too severely censured and condemned.

III. Owing to a want of attention to the proper time for taking it, the lymph is transferred too soon or too late, and the obvious consequence is, that unripe or effete lymph is procured and propagated. Of course such lymph is weak, or altogether inefficient. It ought never to be taken away earlier than the eighth, and sometimes not before the ninth day. At too early a day, it is ichor rather than lymph. Again, it may be taken away too late; that is to say, after the ninth day, when it is becoming purulent, and the vesicle is turning into a pustule. The exact time is eight times twenty-four hours, dating from the hour of the day of vaccinating. The lymph will remain genuine till the ninth day is over, and sometimes even till the tenth; for occasionally the whole course of the pock is stage by stage a day after its time: thus, the inflamed point of the third day is delayed till the fourth, and the inflamed halo of the ninth does not reach its climax till the tenth, and so on. This delay in the progress of the symptoms is regarded as a favourable prognosis; and certainly, in cases disposed to reject the specific action of the virus, the inflammation and vesicle, besides their being abnormal, arise and disappear much too quickly. Lymph taken after the tenth day is universally reprobated; and none but such as are miserably ignorant or indifferent would ever think of transferring it at this late epoch.

IV. It is advisable never to transfer lymph that has become purulent. A prudent vaccinator never does. Not that pus *per se* invalidates the lymph any more than blood does; for it may appear on the ninth day mixed with the genuine lymph: nor would its accidental presence alone weaken or destroy its efficiency: but it indicates more inflammation than is necessary for the production of the true vesicle, and it moreover signifies the co-existence of an inflammation different in kind from that which produces the genuine lymph. After the tenth day, pus is sure to be

mixed up with the contents of the vesicle, which is thenceforth rapidly declining, and ceasing to be prolific. A blow or injury of the vesicle will hurry on the appearance of the tenth day, and consequently render the lymph unfit for transfer. Sometimes the first stages of the pock are suppressed, and then it breaks forth all of a sudden into its normal appearance of the eighth day; but such a pock is invalid.

v. Many parents, especially in the upper classes of society, object to lymph being taken away from their child's arm, lest, as they fancy, it should weaken its ultimate effect. A prejudice of this kind would extinguish vaccination altogether. Nevertheless, there are not wanting acute observers who consider that, if all the vesicles be exhausted of their lymph, the prognosis is thereby rendered unfavourable, and, moreover, that such exhaustion causes local irritation and disturbance. Indeed, it is affirmed that convulsions and death have ensued from such a proceeding. Be this as it may, it is certain that every one concurs in the propriety of leaving one vesicle intact, for the express purpose of judging of the normal progress of the pock from first to last; and no one would, we should suppose, be so imprudent as to irritate the exposed surface with the lancet or an ivory point, merely for the sake of draining it of every drop of its lymph. Yet it may be well to bear in mind, that one of the causes of the failure of vaccination as a protective agent, is imputed to thus draining the exposed vesicle—an error which, if it be one, it is easy enough to avoid.

vi. Lymph should never be taken from any but a primary pock. The pock resulting from a revaccination is not to be relied on. If there is any reason to doubt the vesicle being a primary one, it ought to be rejected.

vii. The actual or suspected presence of scrofula, syphilis, porrigio, etc., is quite sufficient to condemn the subject of it as a legitimate source of fresh lymph. A vesicle on such a subject, however perfect, should be allowed to die out by itself. Indeed, any eruption of the skin is a barrier against vaccination, except under the imminent risk of catching the small-pox; but as to transferring matter from such a constitution, it is out of the question.

viii. The sudden accession of constitutional disturbance during the pock, or the increase and extension of the inflammation around it, should render the validity of the operation more than doubtful. A second vaccination should be attempted within six months from the first, and the sensitive feelings of mothers opposed to such a proceeding should be steadily overruled. Many a vaccinator, not satisfied with a first pock, would wish to repeat it until he felt confident in the normal character of the last produced. But he is seldom permitted to adopt this wise precaution; and this may be numbered among the causes of failure in vaccinating. The forms of society tie our hands, and force us to comply with its own conventions.

ix. The number of vesicles is said to modify the result of vaccination. Some maintain that one alone is sufficient, while others declare that several are requisite, to insure efficiency. There is no proof to support either the one or the other of these two assertions. Pathologically speaking, it would seem, *a priori*, that the existence of a single good pock manifests the saturation of the system with the virus as entirely as any multitude of them would do. But as a matter of fact, there is nothing to help us in arriving at a decisive conclusion respecting it.

x. The most popular notion concerning the failure of vaccine, is that derived from its supposed contamination by passing through so many successive generations of mankind. This is the most popular belief, and the one which appeals most readily to the greater number of minds. Nevertheless, of all the different reasons alleged for accounting for the acknowledged fact of deteriorated lymph, this would seem to be the most untenable. It is an hypothesis built up in the face of facts that directly contravene it. For genuine lymph, dating from the time of its first introduction, continues to produce a genuine vesicle from a genuine vaccination performed on a subject in a genuine

state of health, as exactly now as it at first produced it under the hands of Jenner himself. Lymph, fresh from the cow, is certainly more energetic than such as has been long ago in use; but the pock that it produces is identical, and its immediate and ultimate effects upon the constitution are the same. This hypothesis, likewise, fails in explaining the failures that happened even in persons vaccinated by Jenner. We must look for the cause of deteriorated lymph in other sources than this.

xi. Dry lymph is said to be another cause of failure, and the use of liquid lymph is enjoined. No doubt, liquid lymph, and vaccination from arm to arm, is always preferable, but it cannot always be brought about. Besides, there is no solid ground for supposing that the virus, when dry, upon points, between glasses, or in a crust, is not equally as active as when it is still moist and quite new. Every vaccinator is aware of this. Lymph may be taken to India and brought back again, and still prove energetic and effective.

After all that has been said, the most apparent cause of failure is that of vaccinating with lymph taken from an irregularly formed vesicle, or from an unsound constitution, or at a wrong date of the pock. Independent of all other causes, this inadvertence or carelessness cannot be overlooked.

The signs of an obnoxious or doubtful vesicle ought to be closely studied. They are both constitutional and local. The health may be cachectic, the child suffering from debility, or some congenital infirmity or malformation. In these instances the pock is worthless. Regular vesicles may coexist with an irregular one, which alone is sufficient to invalidate the integrity of all the rest—unless its irregularity can be accounted for by something purely accidental.

The following eight points should be impressed on the memory:—1. Irregularity of form throughout all the stages of the pock. 2. The vesicle not being round. 3. The colour of the inflammation not being fresh and rosy, and that of the vesicle not of a pearly whiteness. 4. Its fluid contents being straw-coloured, instead of colourless and transparent; or else being purulent on the eighth day instead of the tenth. 5. The areola, or surrounding inflammation, not being defined and circular, but, on the contrary, irregular, confused, and, as it were, blended with the vesicle, whereas it ought to be distinct from it. 6. The crust forming prematurely, looking pale or yellowish-brown, and being friable and gritty, instead of dark, round, and compact. 7. The vesicle forming on the fifth day, and rising up of a conical shape, or festering like a small pustule. 8. The areola becoming efflorescent, or scurfy, or shooting out into a figure like the margins of a map. All such cases should be rejected without hesitation, and a second vaccination should be earnestly advised. It is by vaccinating from vesicles, more or less imperfect according to this description, that so many failures are recorded.

Laxity of practice in this respect is owing to vaccination not being hitherto included within the pale of legalized medicine. Any one may vaccinate as he pleases. There is no recognized authority to guide or check him in his pursuit, and no one is responsible for the lymph he uses, nor for what he thinks proper to circulate. Vaccination has slipped out of the guardianship of Jenner's learned successors, and has been allowed to pass into the custody of a so-called inferior grade of the medical profession.

Few know the criterion of a perfect vaccine vesicle—"The pearl in the rose",—as Jenner admirably defined it. The practised eye alone can discern it. Too often it is looked upon but in a loose way: a pock, more or less perfect, runs through its course in fourteen days; and this is reckoned a sufficient evidence of its authenticity. Far from it: much more accuracy than this is called for, before a certificate of its completeness can be justly drawn up and signed. It must have been minutely correct in each step of its progress, not only apparently correct upon the whole; it requires a studious attention, the most refined in the practice of medicine; and the superficial haste with which vaccination is sometimes conducted and dismissed, is enough to rouse

the shade of its great discoverer from his resting place among the dead.

The manner, likewise, in which the lymph is preserved on points or glasses, is not more praiseworthy. It is carried about in the waistcoat pocket, or laid aside in a warm room, or left in a damp corner, where it spoils or turns putrid. And who can expect that, after being treated in this way, the lymph should take effect, or that, if effective at first, it should prove eventually genuine? It is folly to suppose it.

My much honoured father, who was a careful vaccinator of the old school, "remote from consequence, and unknown to fame", vaccinated from crusts that had been allowed to form and dry up unmolested. He was very particular in his selection of these crusts; for, after rejecting a great many, he would retain but a few for his private practice. He kept them enclosed in a covered box, in a dry place, in the dark, for he had a notion that light and air were prejudicial to them. They were round, blackish crusts, indented in the centre, and greyish on the inside. When he intended to vaccinate from them, he mixed up a drop of distilled water, or water that had been boiled, with the point of his lancet, in the hollow of the inside of the crust until he had stirred it up into a thickish fluid. With the lancet, thus armed, he vaccinated confidently. He used to say that, though it was matter apparently taken on the fourteenth day instead of the eighth, yet the crust comprised the virtue of the entire pock, and that the centre of the crust contained the lymph of the eighth day, undisturbed, and in its utmost vigour. This was the reason why he preferred the crust to matter drawn from the vesicle. Jenner preferred catching the lymph as it oozed out of a vesicle perfectly ripe; and Dr. Walker used to remove the epidermis altogether, and take the matter upon glasses from the exposed base of the ulcer, without any ulterior damage that I can remember; for Dr. W. was an excellent vaccinator, and most punctilious in all his observances.

There are certain signs of a genuine vaccination which are pathognomic. The microscope reveals a small vesicle within forty-eight hours after the insertion of the lymph, while the unaided eye can as yet discern nothing but a tiny scar with a faint blush. By passing the finger gently over it, a small elevated point is perceptible. On the fourth day, the redness, which is more decided, ought to have a dark central point in it, over which forms a small vesicle of a dull white colour. As the surrounding inflammation extends, it should be circular, or only slightly oval, in correspondence with the long axis of the puncture. Its margin must be well defined, and the inflammation itself full, red, and shining. The vesicle ought to be quite round, with rounded edges, and a central depression, as if the finger had pressed it down; but it becomes more elevated on the eighth or ninth day—the centre rises up and the circumference sinks.

The constitutional symptoms ought to be trifling. Adults complain of headache and lassitude, and the pulse becomes quick. A gland may become tender in the axilla. In adults, too, the vesicles are thinner and more easily torn, and the lymph is more yellowish, and the areola broader, than in children. The tendency to lichen, however, is not so great.

The areola should develop into a halo of erythematous character. It should itch, and the adjacent skin should sympathize beyond its margin. Its diameter is one or two inches. A number of little vesicles, filled with an amber coloured serum, sometimes arise upon it. The areola is the discriminative sign of a laudable vaccination. On the eleventh day it declines, its colour fades, and, as it passes away, it leaves behind it one or two concentric rings of a blueish light grey colour. It is almost gone on the thirteenth day; the vesicle hardens, and a circular dark brown crust remains. Beneath this crust, the fluid dries up, beginning at its centre. At the end of twenty-one days, the crust falls off, leaving the skin beneath clean and entire, but at first reddish, the site of the pock being marked with a scar, which eventually becomes flat, shining, and colourless. Its shape is zig-zag, and its area exhibits a number of depressed points corresponding with the cells of which the vesicle had

been composed. For the vesicle, resulting from each puncture, is made up of little cells intercommunicating with each other, and secreting a perfectly transparent colourless lymph, which on the seventh, eighth, and ninth days is at its full maturity, and ripe for transfer. After this crisis, the lymph becomes thicker, less transparent, at last purulent, and unfit for transfer.

These signs are as important as those which indicate a dislocated joint, or a strangulated hernia; and they are as indispensable to the correct diagnosis of its nature as they are to the scientific application of the rules for treating it.

There are, however, some deviations incidental to an efficient vaccination, which do not invalidate its protective quality. The local inflammation may transgress its limits, extending upwards and downwards, from the wrist to the shoulder and thorax. It may become erysipelatous, and an open ulcer may form in the place of the usually fair and placid vesicle; a papular eruption may break out and spread over the extremities and trunk. Such things may happen without damage to the specific action of the virus; and, it has been affirmed, that an eruption of this sort is a favourable sign, by showing the system to be thoroughly imbued with the lymph. It may be so, and the vaccination may be complete; but it weakens our confidence in its results, and certainly the lymph is not the most approved of, if transferred.

In the foregoing short remarks, I have confined myself exclusively to the consideration of the means proper for the transfer of genuine lymph. I have likewise attempted to point out a few of the characters of genuine lymph itself, without which, success is impracticable. There are many other circumstances connected with vaccination, which may be reserved for a future occasion. The main object in view is that of directing attention to an accurate knowledge of the true vesicle (so little appreciated), without which all hopes of keeping up a constant supply of good lymph are delusive and pernicious. The stock from which we derive it may be the most authentic in the world; but only let it fall into the hands of a careless practitioner, and it will be sure to disappoint our reasonable expectations in the second or third removes, and will not fail sooner or later to cease altogether in taking effect, or else go doggedly on in engendering any thing but an approved and perfect pock. Hence it arises, that so many false or imperfect pocks are observed, that the protective power of the lymph is weakened or lost, and that vaccination itself has fallen into so much disrepute and neglect.

Brighton, May 1853.]

## AUSCULTATION, WITH REFERENCE TO THE SIMPLIFICATION OF TERMS.

By A. WHYTE BARCLAY, M.D., Medical Registrar to St. George's Hospital.

I TURNED with anticipated pleasure to a paper by Dr. Theophilus Thompson in the Journal issued on the 29th of April, the object of which seemed to be to simplify and correct the arrangement and nomenclature of the stethoscopic signs of disease in the lungs. With most of the observations there made, I most fully agree; and I am glad to find one of the physicians of the Hospital for Consumption deprecating that over-refinement, and those excessively minute distinctions, which they must be so constantly tempted to draw in confining their attention so exclusively to one disease; distinctions which few have an opportunity ever afforded them of learning with any degree of accuracy, and which, when learnt, have not a tithe of the value of information obtained with so much more ease and so much greater certainty from the patient's own lips, in the history of the incursion of the malady and the general state of his health.

I find Dr. Thompson set out with the assertion, that doubtless much confusion has arisen from the use of inaccurate terms; and he announces that, though unwilling to