

**An explanation of the causes why vaccination has sometimes failed to prevent small-pox, and also a description of a method ... of obviating such causes / [Edward Leese].**

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AN  
**EXPLANATION**  
OF THE  
CAUSES  
WHY  
**VACCINATION**  
HAS SOMETIMES FAILED TO PREVENT  
**SMALL POX,**  
AND  
ALSO A DESCRIPTION OF A METHOD,  
CONFIRMED BY EXPERIENCE,  
OF  
OBVIATING SUCH CAUSES.

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BY  
**EDWARD LEESE,**

Member of the Royal College of Surgeons, Fellow of the Medical Society of London,  
Stationary Vaccinator in the National Vaccine Establishment, &c. &c.

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“Salus populi, lex suprema est.”

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“In the multitude of people is the King's honor.”

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**SECOND EDITION.**

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1836.



TO

SIR HENRY HALFORD, BART.

F.R.S., F.A.S., &c. &c.

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*Sir,*

*In dedicating to you the following Observations on the Practice of Vaccination, a short allusion to facts will express more than anything I can offer in the language of panegyric; your splendid talents having long since advanced you to the summit of medical science, and placed you at the head of the Royal College of Physicians, where you ably preside, amidst your learned colleagues.*

*The same merits and acquirements exalted you to the high and important rank of Physician to His present Majesty, William the Fourth, and to the two preceding Sovereigns.*

*Of the National Vaccine Establishment,  
you are President also, in that Vineyard as  
a Stationary Vaccinator, I have long  
laboured, some of the experience so acquired  
has been embodied in the pages following:  
these I submit to your notice, soliciting for  
them your favourable consideration and  
patronage. With high estimation and  
respect,*

*I remain, Sir,*

*Your very obedient,*

*Humble servant,*

**EDWARD LEESE.**

**BAKER STREET,**

March, 1836.

AN

EXPLANATION, &c.

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BY way of Preface, it will be sufficient for me to say, that the little Barque now sent forth to encounter such gales of criticism as it may chance to meet with in the open Sea, has been put together by an Officer of long standing and much experience in the National Establishment, as the time for so doing could be taken from other avocations. He has full confidence in the materials of which it has been constructed, he knows them to be good, and that the hull is so firm it cannot be overturned; the ballast would sustain lofty masts, and sails of wide expanse, and it has fair claim also, to showy ensigns and pennants of honour, but usefulness is to be preferred to decoration, Benefit to the community is the object of the voyage, and hopes are enter-

tained that it may be a successful one; if it should be otherwise than prosperous, the fault must be in the arrangement of the outfit, and neither the materials nor the public service should be impugned.

At a fashionable Watering Place, and in some parts of this Metropolis, occurrences have recently presented themselves, which have excited in the minds of individuals, and in that of the public at large to some extent, doubts and fears as to the safety of themselves or their offspring in regard to a dangerous and frequently fatal disease; one from which I am confident, they may be safely, easily, and effectually protected.

The practice at a Public Station, connected with the means of protection, having many years been entrusted to me, I might by some persons be censured for apathy, or, by others blamed as criminal, were I to withhold the result of experience so acquired, and not set it forth for the benefit of the community. I am the more especially called upon to make it known, as, my confidence in the Prophylactic, after comparing the adverse with the favourable cases, *has increased*, as I have found the *practical*

*part of Vaccination* more attended to, and, by that means, from time to time *improved*.

That sound and able practitioner of the healing art, the late Dr. Heberden, as well as the illustrious Boerhaave, who published more than a century back, had expectations that a specific for Small Pox would be discovered: the latter, in his Aphorisms relating to that disease expressly says,---“that such a specific may, one time or another, be found, we have some hopes; and the great use it would be of to mankind, ought to encourage Chemists to go on in the search.” Towards the science of chemistry it is obvious his expectations were directed; thinking from thence a cure would be derived, that should cut short or disarm this pestilence of its fatal, or most dangerous symptoms.

In transferring Lymph, from the paps of the Cow to the arms of the human subject, Dr. Jenner has shewn that Pathology can accomplish (in so far as prevention is better than remedy,) more than was even hoped or contemplated by either of the learned, useful, and benevolent physicians that have been mentioned.



In the few pages that will follow, I shall, in accordance with the favourite motto of Boerhaave, "simplex sigillum veri,"--"truth unarrayed,"---endeavour, in plain language to shew that the doubts and apprehensions which have taken place, have most generally arisen in consequence of *negligent, slight, or imperfect Vaccination*. The inmates of public institutions will be adduced in illustration, and shewn in contrast with other persons, in whom the Prophylactic maintained its efficiency more than a fourth part of a century. Some pathological principles, as the basis of safe and effectual Vaccination, will be pointed out; and lastly, will be explained, a method of conducting the practice in such manner, as to ensure *effect on the constitution*, make that effect conspicuous, and cause the impression to be more durable.

The great era of Vaccination commenced in 1798, with a publication from the pen of Dr. Jenner, a distinguished disciple of the Hunterian School,--a diligent and careful observer of the works of nature,---a man whose mildness of disposition, and urbanity of manners endeared him to all who were

so fortunate as to come within the circle of his associates. As his name descends to posterity in the pages of history, generations yet unborn will be reminded of the greatness of his discovery; and that, possibly, they would not themselves be then in existence, if Jenner had not taught the means of preserving their forefathers from a malady of the most formidable and destructive kind.

In the Histories of the Plague, we find the destruction of human life to have been frightful and appalling; the devastation of Small Pox far exceeded that, by reason of its continued prevalence and unceasing ravages. In evidence produced before the House of Commons in 1806, it was shewn that an average of forty-five thousand annually, had been destroyed by this pestilence, in these kingdoms; and in London alone, three thousand, when the population did not amount to more than two-thirds of the present number.

That disposition in Dr. Jenner to improve science by noticing the operations of nature, induced him to profit by the tales of the farmers in Gloucestershire, who spoke of

the immunity enjoyed by their cowherds against Small Pox, which they attributed to blisters or vesications derived from the Cow, in the act of milking. Like marvellous stories or ignorant tales, (frequent among rustics,) these traditionary rumours passed unnoticed by any except the usual village throng, until they vibrated on the ears of Jenner: he put them to the test of experiment, and inoculated several human subjects with lymph taken by him from vesicles in the dugs of that animal: these children he afterwards repeatedly exposed to the contagion of Small Pox; and inserted into their arms matter derived from the pustules, without producing the disease in any of them.

The satisfaction must have been great,—the joy exquisite, in the benevolent mind of Jenner, when he ascertained by the trials he instituted, that the notion of the rustics was founded on accuracy and truth; and that he was really in possession of a safe and easy prophylactic against a disease, that had heretofore produced such suffering, and committed so much havoc in society.

The annals of improvements,—of inven-

tions—and discoveries, whether assumed or real, most generally informd us, that the individual, who takes to himself the merit, contrives also by secrecy, mysticism, or otherwise, to secure to his own coffers, the major part of the pecuniary profit to be derived from such discovery:—Physicians and Surgeons of high professional respectability testified before Parliament, that had he been so inclined, the practice of Vaccine Inoculation could have been secured to the discoverer, and that he selfishly might have gathered, from the higher and opulent ranks in society, a golden harvest; while through the inferior orders of the community, death might have continued to deal out destruction uninterruptedly. From the enlightened mind and benevolent heart of Jenner, emanated nobler sentiments and actions more philanthropic; he no sooner beheld the result of his experiments, than he hastened to impart the useful knowledge he had acquired, to the world at large, for the benefit and advantage of mankind generally; offering at the same time to every philosophic enquirer such a body of information, as would enable him to judge for himself;

and either to confirm, or to disprove, this new fact in pathology, by experiments under his own observation.

By means of my talented friend the late Mr. Ring, (author of a History of Vaccination, and several learned productions,) I became known to Dr. Jenner, about the year 1802, when he was assiduously occupied in forming, under the patronage of the reigning Monarch, and the different branches of the Royal Family of that period, **THE ROYAL JENNERIAN SOCIETY**; which, merged into the **NATIONAL VACCINE ESTABLISHMENT** in 1807, under the direction of the two Royal Colleges of Physicians and Surgeons. In consequence of an Act of the Parliament at the instigation of the Government, to keep up a supply of genuine virus for the public service, and the wants of the people at large, (neither of which could be done, by the general practitioners of medicine and surgery, in private practice,) **STATIONS** for extending vaccination gratuitously to the poor, were opened in different parts of the Metropolis; where they have all the advantage of receiving the virus in a fluid state, immediately

from one to other, in the most efficacious manner. At the St. Marylebone Station, now in Baker Street, the vaccine lymph has been applied to upwards of twenty thousand individuals of various ages\*

The present Government was disposed to abolish the National Vaccine Establishment, as a measure of economy, but it was found, that without public stations, a continuation of virus could not be maintained;—that the mortality from Small Pox would soon become terrific and perhaps would again amount to two or three thousand, in London, in a year, as heretofore. It was ascertained also, from the Secretary of State, that Vaccination, at the stations, had been more uniformly successful than elsewhere.

The registers that have been kept, since the formation of stations in 1803, become every year more valuable, as records of the earliest cases, and of the mode of practice at different periods. By advertisement,

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\* In 1835, with the assistance of my son, I vaccinated two thousand three hundred and sixty-nine, from a few days old, to three-score years; under various degrees of exposure to poverty,—to small pox,—and other maladies.

and by personal application, I have lately sought out some of the earliest patients, after the commencement in Great Castle Street; and find many have been exposed to Small Pox, by inoculation, as well as by casual infection, who yet have resisted all its powers, twenty-five, and thirty years; giving strong reason for the conclusion that they will continue to be protected the full term of human life.

Dr. Jenner's mode of Vaccinating was peculiar. That the fluid he employed might gravitate towards the point of the lancet, he held it as he would a pencil;— he made but one puncture in each arm, and was satisfied, if *one* only of these produced effect; undoubtedly in some constitutions, the susceptibility to the variolous disease has been removed by such *slight vaccination*; in others it has not been so successful: and as Time has held on his course, we have been taught by experience, the propriety of causing a deeper, and more lasting impression, than *one* or even *two* vesicles are likely to effectuate: for if THE FEBRICULA OF VACCINATION, i. e. what, in the phraseology of the schools, is

termed SYMPTOMATIC FEVER, be not excited, we have done but little to eradicate the inherent susceptibility, or predisposition to Small Pox, that is natural to all persons. *A local effect will not suffice*; for a slight impression may not be *permanent*, and may subsequently admit the variolous malady sooner or later; hence has arisen the notion, that it is requisite to *repeat the Vaccination every five or seven years*. When Small Pox has appeared after slight and imperfect Vaccination, I have always found it to have been modified; the severity in an inverse proportion to the regularity and intensity of the previous vaccine process; altered in type,—shortened in duration,—and deprived of the most dangerous part, viz: the secondary fever.

In the report made to government by the Royal College of Physicians it was remarked, “there is little doubt some of the failures are to be imputed to the inexperience of the early vaccinators; it is reasonable to expect that further observation will yet suggest many improvements, that will reduce the number of anomalous cases, and



furnish the means of determining with greater precision, when the vaccine disease has been *perfectly received.*"

So active and virulent a material as a particle of Small Pox matter, when applied effectively to the arm of a human subject, is followed by fever, and other symptoms, demanding attention in every stage. With vaccine lymph it is not so: indeed its mild and benign qualities have often been the cause why the effects have been neglected, or carelessly managed; and thus has the practice itself frequently been brought into jeopardy, its efficacy doubted, and it has met with that obloquy, which in fairness and in justice, should have fallen upon the operator. The progress of Vaccination should be inspected almost daily; not to resist or to guard against dangerous, or violent symptoms, but to be assured that it proceeds regularly; to notice if the Symptomatic Fever does take place in proper degree, so as to leave impression on the general system; for if it do not, we have done but little good for our patient, causing him to receive but an inadequate protection

against his malignant enemy. This attention is the more needed, if dry virus has been used, lest it may have become decomposed, or in some way deteriorated; (which is the case frequently), the result then being a spurious pustule.

Motives truly benevolent have sometimes induced ladies, clergymen, and others, to take up the Jennerian lance, using it without the necessary judgment to discriminate the effects resulting from the wounds they have inflicted: often professional men have been careless, and have thought the daily superintendence of the slow and quiet march of a vaccine vesicle to be unnecessary, and almost “*infra dignitatem*:” such practitioners should be reminded, that they are endangering human life,—tampering with security,—and leading their patients, by the supposition of having received protection, into dangers, that possibly they would otherwise avoid. Dr. Jenner, in one of his later publications (which he did me the favor to present to me) writes, —“a general knowledge of the subject is *not* sufficient to enable, or to warrant, a person to practice vaccine in-

oculation: he should possess a particular knowledge; and that which I wish strongly to inculcate, as the great foundation of the whole, is, *an intimate acquaintance with the character of the true and genuine vaccine vesicle: the spurious pustule* would then be easily detected, whatever form it might assume, and errors known no more."

The Doctor might have added, that a *solitary vesicle*, even when "true and genuine," does not at all times, or to all persons, impart sufficient protection: perhaps we might give a sort of running lease of security, terminable at the expiration of seven, fourteen, or twenty-one years, by producing one, two, or three vesicles; or what may readily be effectuated, give such, and so many, as will ensure protection during life. All however will depend on the *constitutional effect*; to insure which, and to make it at the same time apparent to the eye of even a common observer, will be further explained, as I proceed to notice and describe the double process.\*

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\* A mode that has been urged by Mr. Bryce, of Edinburgh, but I believe was first suggested by a Surgeon, in Cornwall named Hugo, in one of the earliest numbers of the Medical and Physical Journal.

Authors and those persons who have practised Small Pox inoculation, admit that the variolous pustule may also be local, that is, its influence may not extend beyond the part where the matter had been deposited, and that such patients may at some distant time afterwards have that disease, with all the plenitude of horrors generally attending it.

To repose confidence in the production of one, or of two vaccine vesicles, is at all times imprudent; and fortunately the pain or inconvenience of several is so small, as to be, in proportion to the increased degree of security, unworthy of consideration. The number maybe increased on the fourth, fifth, or sixth day; or, if that period has passed by, the patient should, after the lapse of a week or two, or longer space, be vaccinated *de novo*; as a vaccination so slight will not give protection to every constitution: one or both of the vesicles may perhaps be interrupted, possibly by the nails of the patient, a tight sleeve, or other violence, leaving him liable to have afterwards a modified Small Pox, the varioloid disease of some Nologists; this

sometimes commences with much severity exciting great alarm in the minds of the surrounding friends; suddenly, however, the violence usually abates about the fifth or the sixth day, and all are agreeably surprised to witness the mildness of the later stages; the dreaded secondary fever not following at all, or in a slight manner only. Cases of this kind of illness were detailed in a former publication in 1812; among others, that of the Honourable Robert G——, now a conspicuous member of the Senate; and that of the Son of Sir Henry M——. These had been reported to the Board of the National Vaccine Establishment; and Sir Henry Halford, and other Physicians who attended them, gave it as their opinion, that escape from death might be attributed to some antivariolous power, left by the previous Vaccination, by which the susceptibility to Small Pox had been *diminished and controlled, though not extinguished*: the Doctors at the same time remarking, that they had not seen any patient recover after having had some peculiar symptoms which they enumerated.

Towards the completion of the eighteenth

century, and in the short progress of the nineteenth, improvement has made wide and rapid strides in the art of destruction, and in various sciences: the Healing Art, with Vaccination it's younger sister, has progressed also; and fairly it may be supposed, that the untoward cases alluded to would not have happened, had those personages been vaccinated according to the *present mode of practice at the Government Stations*. The weak points of the citadel have been discovered, and we have learned the method to secure our patients more effectually against the assaults of the enemy. Malthus, and his converts, will perhaps hear with dismay, that the practice of vaccination will preserve and increase the population of this Globe, more certainly than any suggestions of their's,—or the chances of war,—are likely to diminish it. When I urge the diffusion of Vaccination to preserve human life, and attempt to make it a more effectual shield against pestilence, I cannot believe that I am violating any divine law, or sound moral precept.

“In the multitude of people is the King's honor.”

Of the negligent and inadequate manner, in which the new practice has been conducted in different parts of the kingdom, very many individual instances could be adduced in illustration; but the following are strong proofs on a larger scale.

In June, 1822, it became a part of my duty, as House Surgeon to the Clergy Orphan Society, to make a particular inspection as to the safety of the children in their School, near the Regent's Park; about one hundred in number, coming from various parts of the kingdom, all of whom brought with them, according to regulation, certificates of having had Small Pox, or of having been vaccinated. It was discovered, that fifty-six of them had such imperfect cicatrices in their arms, as led to the supposition of their having been only *partially vaccinated*, and were not secure against the attacks of Small Pox. These were all re-vaccinated with fluid virus, from an infant taken to the house of the institution for that purpose. In almost every one of them the effect was so great, the areolæ so perfect, the whole progress so regular, as to make it manifest that most of

them would have taken the variolous disease, had they been exposed to it; the previous vaccination having been managed in such manner as not to reach and impress the constitution sufficiently.

In June, 1832, an Officer in the Royal Horse Guards became violently ill with Small Pox; others of the same corps, wishing to ascertain their security against the same malady, requested me to put them to the test of a second vaccination: accordingly a child was conveyed to the Barracks at Knightsbridge, and fluid virus applied to six of these gentlemen; by which means it was clearly shewn, that two, if not three of the number, were not previously safe from the variolous malady. Mr. N— more particularly.

When appearing in print before the public on a former occasion, several documents of an official kind, that had emanated from different public bodies in favor of vaccination, having been inserted, it is unnecessary to occupy the time of the reader on the present occasion, by repeating them: the abstract question has been examined, and decided upon affirmatively,



by competent authorities. I have now to speak only in reference to the *practical part* of the subject.

That *some individuals* out of the large number vaccinated, and that too under a great variety of circumstances, should take Small Pox, is not to be wondered at; but it is a point, worthy of investigation, either as a matter of fact, or of science, (if it were not so likewise on the score of humanity,) whether a few exceptions to a law which appears to govern almost invariably the animal economy, are not more likely to have been caused by an error in *practice*, rather than by any mutability in the law itself. To me it appears, such occurrences may be, in accordance with the known and acknowledged principles of pathology, explained satisfactorily; that it is either by defective virus, or by inadequate application of it, if it were perfect and genuine.

To every one it is known, that certain diseases do not appear in the human constitution more than once; the malady having taking place a first time, leaves a certain impression upon the constitution, and effectuates such a change throughout

the system, as to destroy the predisposition, or susceptibility, in the individual, to that particular disease. Chicken Pox, Small Pox, and Measles, are of this kind; and by the writers on pathology it is admitted, this alteration is brought about by means of the *specific symptomatic fever*, which accompanies each of them respectively. The Febricula induced by the vaccine process, accomplishes this change, *when properly managed*, as far as Small Pox is concerned: some other diseases attended with little if any fever, do return repeatedly, whenever the exciting cause is applied.

Those members of the Æsculapian Fraternity, who have pursued their labours extendedly through different grades of the community, have, ever and anon, met with whole families, in whom there has existed a peculiar susceptibility to particular diseases, from which they have suffered more severely and intensely, than other persons with the same malady:\* indeed whole

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\* There are some constitutions very liable to receive Small Pox, and on which that contagion operates very violently.  
MONRO.

nations of people, as well as different families and individuals, have thus suffered with small pox, in consequence of climate, of manner of living, or peculiarity of constitution. I have no doubt, that the individual who receives the disease, will have it mildly or severely, according to the state of his own constitution, structure, or situation, whether the specific infection be derived from a distinct, or a confluent kind;—from a benign, or a malignant species;—all depending upon his own habit, or, what is denominated in the language of physics,—*ideosyncrasy*. At public institutions, virus, taken from different patients, has proved this repeatedly.

In accordance with the preceding analogy it may be inferred, that certain individuals *in whom the susceptibility to the variolous disease is great, will require a more intense degree of the symptomatic fever, i.e. the vaccine febricula must be greater, to eradicate from their constitutions the predisposition to small pox.* In some, a solitary vesicle may be sufficient; while others will require two, four, or six. Happily the ultimate of security is easy

and without danger, and therefore should, on every occasion, be adopted.

The learned Doctor to whom mankind became so largely indebted for the origin of vaccination, was particularly circumspect as to the proper state of the virus he implanted; and gave minute directions as to the taking and preservation of it. There are persons of the present day, who think that we should revert to the animal from whence it was first taken; this has been done repeatedly by myself, without any satisfactory result, hitherto. I may perchance renew the attempt, as a matter of curiosity; but, as a measure of utility, it is not expedient. The genuine vesicle is seldom to be met with in the cow, and more rarely, can it be seen in a state from which pure lymph can be obtained; for the hands of the milker soon discharge the contents, destroy the progress, and excite ulceration: matter then taken, would be far from pure and agreeable to our wishes, could it be distinguished from other animal secretions. As this plan therefore is almost impracticable, and will not suit for general purposes, it is better to make use of such

as has already been tried, and has manifested upon the human subject, genuine properties; and of such, the Stations established by Government, keep up a supply. It does not suffer change, or admixture by repeated transmission; all the properties it first possessed, remaining the same, and are again and again produced, *de novo*. No Pathologist will doubt if each variolous pustule contains matter capable of producing small pox as perfect and genuine, as that originally derived from the camel or other quadruped: neither will any Botanist, or common observer suppose, that an acorn will fail to produce an oak, that will bear in due time, a crop of acorns as perfect as the original. Neither is there such danger, as has been imagined by some of the admixture of other morbid fluids: in public practice it frequently has happened, that a child has been brought, and has been vaccinated, who had already been exposed to small pox, that, two or three days after has manifested itself; *variola* having been in the constitution previously, though not apparent; such an infant will have both the complaints co-existing; nevertheless, *pure*

*unmingled* virus, has been taken both from the vaccine vesicles, and the variolous pustule, (while each was seated so as almost to touch each other in the same arm) which when applied to other subjects has produced only its own specific disease,—the exact similitude of that from which it had been taken. The same remark will apply to other diseases, when existing simultaneously with the cow-pock.

When practicable, vaccine virus should be applied in a *fluid state, transmitted from one patient to another, by bringing them together in the same house*, for if it be kept a few hours only on a metal lancet, it may become deteriorated. Dr. Jenner used to appear almost horrified, by the idea of a particle of rust being inserted with the matter. If it be intended to preserve it more than a day, it should be received on points of ivory, which, after a puncture with a common lancet, may be inserted into the orifice without any previous moisture: plates of glass are very objectionable; as, from them, it cannot be taken without steam, or some fluid that may dilute or decompose it. The virus should be

introduced into two or more places, in each arm; the punctures merely penetrating the cuticle, and allowing scarcely a speck of blood to appear, lest it should dilute or carry away the lymph.\* The effect should be inspected almost every day after the fourth, to be assured that the progress is regular, that the appearance of the areolæ is at the proper time, and that the constitution receives the requisite impression. Great care should be taken to preserve the vesicles from interruption by scratching, by a hard or tight garment, or by any other violence; lest they degenerate into irregular pustules producing much soreness, without leaving to the patient the wished for protection.

So long as they, who grasp the Jennerian

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\* In a market town in Kent, I saw a practitioner commence to vaccinate an infant, by placing his thumb on the lancet some distance from the point, to regulate the depth he meant to plunge it; saying, he liked "to make sure work by going deep enough." The child cried piteously, as the blood trickled to the ground from each elbow. Not long since a paper appeared in a Medical Periodical, sanctioning, if not encouraging, similar ignorant and unnecessary severity, at a public institution.

lance, wield it as feebly and unskilfully as many have heretofore done, we must expect to hear that Small Pox appears, sometimes in persons to whom the vaccine virus has been applied: such must lose their confidence in the prophylactic, in itself all-powerful; while others who apply it more ably, become more and more assured, that their subjects will remain untouched by the destroying demon—Variola; and, that hoary Time will pass by, year after year, and find them in safety and in health.

As doubts and fears have arisen in the minds of individuals in the lower orders of society, they have repaired to the public stations, where they are put to the test of a second vaccination: those, who come to that under my direction, have *recent limpid virus* inserted into their arms: if they were not safe previously, this will make them so, and restore confidence in them: or should they have been secured from the first, a very trivial irritation will take place, without any constitutional affection.

From the register I extract half a dozen of recent cases of this kind, as having been



done in the first instance, as far back as five and twenty or thirty years.

No. 826. A.A. Mary Taylor, No. 3, New Quebec-street, was vaccinated twenty-eight years since. The second insertion of virus had very slight effect.

No. 1015. 7. Ann Green, No. 4, Selby-mews; twenty-five years have elapsed since she was vaccinated, in Bedfordshire.

No. 1018. 7. James Chapman, now coachman to the Rev. Mr. Colgan, was vaccinated by Mr. Kilpatrick, of St. Martin's-lane, thirty years back. Slight effect by the second inoculation.

— Elizabeth Eagles, Blandford-mews, Baker-street, when at Northampton thirty years since, was vaccinated by Mr. Bonnet of that Town; has since been exposed frequently to Small Pox, without injury.

No. 1158. 7. Susannah Townsend, now of No. 3, King-street, Golden-square; was vaccinated about twenty-seven years since.

No. 1027. 7. Sarah Wright, No. 47, South Molton-street; full thirty years have

elapsed since the vaccine lymph was applied to her arms in Westmoreland, *perfect cicatrices* are now apparent; to satisfy her mind, active fluid virus was inserted, with the usual slight effect under such circumstances.

No. 355. G. M. Leese, vaccinated Oct. 4th 1811, with fluid virus in one arm, from which lymph was transferred to the other on the sixth day; the ~~variola~~ *amol* appeared synchronously on the ninth day:—being trained to the practice of medicine, he has of late years attended many patients suffering with Small Pox; —himself efficiently protected against that infection.

The appearance and degree of effect, resulting from the second insertion of vaccine fluid after such long intervals from the first, made it evident that the former had been effectual, and continued to protect them, as much as that of Small Pox could have done.

The observations scattered through the preceding pages, are offered as applicable to vaccination generally; and, if the process be conducted in conformity with the

suggestions already expressed, it may be relied upon confidently, as a protection against the variolous malady.

The age of the vesicle from which virus is to be taken for inoculation, is a matter of some importance. There are those in high authority who are inclined to believe the prophylactic quality exists in perfection, one, or perhaps two days only, and those neither late nor early in the progress; but for my own part, I think the properties are particularly active, more likely to produce effect, and possibly more completely so, when taken at the earliest period at which it can be obtained, even earlier than the eighth day: certainly after the areola has been developed, the fluid becomes more aqueous and limpid, and perhaps has lost some of its efficiency. The late Dr. Pearson asserted, that if nineteen portions of water were mingled with one of virus, it would not be prevented thereby, from taking effect. The crusts that have fallen from the arms, when the whole process has been completed, have, softened with water, produced vesicles. The great principle upon which all prophylactic efficiency depends,

is, in my opinion, the SYMPTOMATIC FEVER; and such virus, as, upon the due application of it, will produce a proper degree of this, is the "sine quâ non."

The Febricula accompanying vaccination i. e. the symptomatic fever alluded to, as so important with reference to the safety of the individual against subsequent variola, frequently escapes the notice of those who have the care of infants; or, sometimes, other infantile disorders connected with teething, or with intestinal irritation, may be mistaken for it: those persons, who are of age sufficient to express their feelings, inform us they experience during a few hours, or a day, a general lassitude, a slight degree of head ache, and sometimes nausea, with a sensation of fulness under the arms, in the glands of the axillæ: it is seldom they are conscious of any thing like rigors, or increased heat; and, for the most part, these symptoms would pass without observation if the patients' attention were not directed to them by queries.

So to conduct the practice, as to ensure, and exhibit conspicuously, this affection of the whole system, is, to rescue vaccination

from much of the doubt, uncertainty, and disappointment, that have too often attended it hitherto. BY A TWO-FOLD INSERTION OF THE VACCINE FLUID, ALL THIS MAY BE EASILY ACCOMPLISHED: the great object in view, in the present, and in a former publication, is to set forth, and to explain, the advantages to be gained by adopting that mode generally, and to impress it on the minds of practitioners and the public.

The practice of Vaccination was quite in its infancy when I was appointed in 1803, by the Medical Council of the Royal Jennerian Society, now extinct, in conjunction with my departed friend Ring: the number of cases then was small; but at the Station of the National Establishment in Baker Street, during the year 1832 two thousand two hundred and eighty-two received protection, gratuitously. The practice has now attained to adult age; and competent authorities have satisfied the Government that Vaccination at the Stations has been particularly successful, and that, without them, a succession of virus could not be kept up. The Station-

ary Vaccinators are obligated to supply and assist each other occasionally, or, from the lack of patients in the winter months, it would be exhausted; and if once lost, could not easily be restored, as has before been shewn; then again would the Moloch be restored to power, and his victims fall in thousands every year.

When vaccine fluid is applied to an individual for the first time, a vesicle of peculiar character ensues, that goes on increasing until about the ninth day, when it is surrounded with an exanthematous areola; at which period desiccation begins, and the crust falls off in eight or ten days more.

If similar virus be inserted into the arm of one who has had Small Pox, or been vaccinated before at any distance of time, a small degree of irregular angry looking inflammation takes place, attended with some irritation and much itching, there will be a papulous hardness (seldom any distinct or perfect vesicle) at the point punctured, with an areola of a buffy hue, not so florid as usual, and less distinctly margined; these effects will generally after

the fourth or fifth day begin to decrease, should the patient have previously been *effectually secured*, otherwise the progress will be more slow, will continue longer, and will be more or less regular according to the degree of security that had been imparted originally.

When virus is deposited a first time in one arm only, and from which if lymph be transferred five days subsequently, the effects will be different from either of the preceding instances: the first will proceed slowly, the second much more rapidly; and each will have a perfect areola, at one and the same time; these areolæ will continue twenty-four, or forty-eight hours longer than usual; and they will fade together; the last made vesicle being perfectly characterised, and exactly like the other, but in miniature size.

The points of difference noticed in the three last preceding paragraphs, show some of the advantages to be gained by a second application or transfer of virus from one arm to the other, a few days after the first insertion.

That the vaccine lymph has the peculiar

property which enables it to destroy the susceptibility or predisposition to small pox naturally inherent in the human subject, is not to be doubted at the present day, any more than that the occurrence of that disease once, prevents it from appearing a second time in the same person; this pathological fact was proved and placed beyond dispute by Dr. Jenner in 1798, and the innumerable cases now on record confirm it: but in vaccination as in chemistry, and in physics generally, cause and effect bear a proportion relatively to each other;—one grain of alkali does not neutralize an ounce of acid;—an ague is not cured by a dram of bark;—neither should we rely upon a *single vaccine vesicle* in the human arm, to effect such a change in the *whole system*, as will enable it to resist for the remainder of life, the matter and the contagion of small pox: means so slender diminish or suspend the susceptibility for a time, but may not effectually extinguish it; attempts so feeble deserve to be characterized by the trite latin adage, “*ex nihil, nihil fit.*”

The mildness of the vaccine process led to its general diffusion, but at the same time



caused it often to be very negligently practiced; many who attempted it, have complained loudly of their frequent disappointments in producing any effect, and that some of their patients have had small pox subsequently; the first may have been caused by the virus having lost some of the properties it originally possessed, in consequence of having been kept too long upon steel, glass, or ivory; or by too much blood having escaped when it was applied; other Surgeons, particularly those discharging duties at public institutions, from having always *fluid virus*, fail but seldom; and their patients resist the variolous infection.—

We are much annoyed at the Government Stations by irregularity in the after attendance of those who apply to us, many do not appear a second time for us to correct or amend, what may happen to be proceeding imperfectly; in these therefore I make at one time several punctures in each arm; but with regard to my private patients on whom I can call and inspect the progress, I proceed somewhat differently, and adopt what I think to be a

method far preferable;—from among the poor persons who do attend on the public days, I select a healthy child in whose arm the lymph is in a proper state, I have it taken to the residence of the infant who is to be vaccinated, that the virus may be transferred from one to the other when in a fluid state, punctures are made in two or three places in one arm only on the first day, in pairs; on the fourth, fifth, or sometimes the sixth day, (according to the progress the vesicles have made,) lymph is taken from the arm, and applied to the other, this causes no more trouble or pain than if all had been done at first, yet is of considerable importance in producing symptoms upon which the judgement as to security, is to be founded;—should the virus be dormant, or its action be circumscribed within narrow limits only, a new impetus will be given by a second insertion,—the slow progress of one set of vesicles,—the more rapid march of the other,—the difference in the appearance of the areolæ, and whether successive or synchronous, are diagnostic land marks for our guidance, of much value; vaccination

so combined not only shews plainly the constitutional effect, but sinks deeper into the constitution, and will secure to the patient more certainly, an adequate and lasting protection against small pox.

The practice of vaccination does not, like inoculation for small pox, destroy by producing and disseminating infection; several governments on the Continent of Europe and America have prohibited variolous inoculation as being the great source from which it <sup>is</sup> propagated. "It behoves every member of society, to conform to laws enacted for the preservation and furtherance of the general good: thus a man, who sets fire to his house, is punished by law, although the house and its contents be his own property: there are quarantine laws, to prevent the introduction and spreading of plague, leprosy, &c. on pain of death: yet these are but partial evils, compared with Small Pox. Firing a house can endanger only a few persons; the introduction of plague, a few thousands during the time it continues its violence; but small pox has destroyed every year on average forty-five thousand people: this was proved before the Hon. House of

Commons by Sir Gilbert Blane, and others. Endeavouring to restrain plague, and admitting the *inoculation* of small pox, is verifying the adage. viz; strain at a gnat, yet swallow a camel. In this kingdom, it is much to be desired, that the legislature would turn its attention to *small pox inoculation*, and that it would adopt some means to restrain the practice. In a pamphlet, attributed to the late Chief Justice of Ceylon, it is written,—“it would, I apprehend, be no arbitrary or rigorous decree of the legislature, that should wholly prohibit *variolous inoculation*; but longer to forbear to regulate and limit that practice, would be a vicious acquiescence in individual caprice, to the public detriment.”\*

The Royal College of Surgeons have published the following:—“We, the president, vice-presidents, and council, of the Royal College of Surgeons in London, deeply impressed with the many fatal instances of small pox, which daily occur in this Metropolis, and in various parts of the

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\* Explanation of Causes, &c. &c: part first, 1812,

Kingdom, assured that such events are in a great degree consequences of the support and propagation of that disease by inoculation, and unshaken in our confidence in the efficacy of vaccination in exterminating small pox; from a sense of duty to the community, hereby renew the engagement entered into by the Court of Assistants in 1813, not to inoculate small pox, but to pursue, and to the utmost of our power promote, the practice of vaccination. And we earnestly recommend, to all members of the College, similar engagements, convinced that the entire extinction of small pox would be the happy result of the suppression of inoculation of that disease, and the universal adoption of vaccination."

If one or two persons in every hundred of those vaccinated, were to take small pox subsequently, instead of one in many thousands, (even in the negligent manner in which it has often been conducted,) it would still be worthy of general notice and adoption, in consequence of the uniform safety and mildness of its qualities; and because it is not infectious by effluvia to others.

By observing the symptoms, progress, and peculiar manner of termination of small pox, when it has happened to appear subsequent to vaccination;—by noticing the ratio of effect when vaccine lymph has been applied a second time, to individuals who had already one, two, or more cicatrices of a former vaccination;—and by marking attentively the pathological facts generally that have developed themselves in conducting the practice at a public station since 1803:—duly considering and appreciating all these, my confidence in the power of the Jennerian Prophylactic has been not only confirmed, but increased: permanent protection is the result of a due portion of the Symptomatic fever;—the point to be attained is a decided impression on the general constitution; and the method by double insertion of virus, as detailed at page 41, is that most likely to be effectual in accomplishing this desideratum; we should not leave the safety of our patient to rest on the slight influence of a single vesicle. To the *practical part* are we to look for the causes why vaccination has sometimes failed to prevent

small pox; and I feel assured, that, if the principles I have laid open in these pages, be constantly kept in view, and the practice is made in all cases, to accord with them, protection will be more certain, and more permanent; failures and disappointments will gradually diminish, and in due time, will cease to recur: thus the cloud that has now and again obscured the brilliancy of this great discovery, will be dispersed; Vaccination will shine forth with renewed splendour, and be received with increased confidence; more individuals then having recourse to it,—more will be rescued from suffering and danger; from blindness and deformity; and not a few only,—from death.\*

FINIS.

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\* The Bills of Mortality for 1835 report 863 Deaths in that year, by Small Pox, and these Bills extend to part only of this Great Metropolis.

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*The days for Public Vaccination, are Mondays, Wednesdays and Fridays, from the hours of Ten till Eleven, when poor persons attending at No. 16, Baker Street, Portman Square, may receive (gratis) all the benefits to be derived from fluid virus, &c.*

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\* The Bill of Mortality for 1835 reports 803 Deaths in this year, by Small Pox, and these bills extend to part only of the Great Metropolis.



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