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Against Small Pox, by T. M. Greenhow

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Title: An Estimate of the True Value of Vaccination as a Security Against Small Pox

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Release date: July 18, 2015 [EBook #49475]

Language: English

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*** START OF THE PROJECT GUTENBERG EBOOK AN ESTIMATE OF THE TRUE VALUE OF
VACCINATION AS A SECURITY AGAINST SMALL POX ***

An Estimate of the True Value of Vaccination
as a Security Against Small Pox

AN
ESTIMATE,
&c. &c.

Newcastle; Printed by T. & J. Hodgson,
Union Street

AN
ESTIMATE
OF THE TRUE VALUE OF
VACCINATION

AS A
SECURITY AGAINST SMALL POX.

BY

T. M. GREENHOW,

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SURGEON TO THE LYING-IN HOSPITAL, TO THE CHARITY
FOR POOR MARRIED WOMEN LYING IN
AT THEIR OWN HOUSES, AND TO THE
INFIRMARY FOR DISEASES OF
THE EYE, NEWCASTLE.

“And in order to stimulate the wise and good to aim strenuously at this consummation (the total extirpation of Small Pox), let it be constantly borne in mind, that the adversary they are contending with is the greatest scourge that has ever afflicted humanity. That it is so, all history, civil and medical, proclaims; for though the term Plague carries a sound of greater horror and dismay, we should probably be within the truth, if we were to assert, that Small Pox has destroyed a hundred for every one that has perished by the Plague.”

Sir Gilbert Blane.

LONDON:

PRINTED FOR BALDWIN, CRADOCK, AND JOY; AND
EMERSON CHARNLEY, NEWCASTLE.

1825.

Preface.

My design, in entering upon the following little work, has been to collect, and to compress within as narrow a compass as possible, the principal facts and evidences upon which the claims of Vaccination are founded; that the public may be furnished, in a concise but comprehensive form, with the information which is essential to their forming a correct judgment on this momentous question.

That much misapprehension and some prejudice prevail on this subject, my recent observation and experience have convinced me; and when I reflect on the pernicious effects, which, in Newcastle and its neighbourhood, are at this time taking place in consequence of them, and which they must continue to produce while they are permitted to exist, I feel that a collective detail of the evidence calculated to remove them is much needed, and that, being sensible of this, it becomes a duty incumbent upon myself to endeavour to supply so important a desideratum.

In making this attempt, I have been desirous of avoiding any unnecessary delay, and have therefore, perhaps, been obliged to collect facts, and to deduce arguments from them, with a degree of haste, which, while it must have occasioned many imperfections in the execution of my design, will, I trust, be admitted as some apology for such defects: I am willing, however, to hope that they will not be found of sufficient magnitude materially to interfere with the useful tendency of the estimate.

The works of those writers whom I have consulted, and whose authority I have quoted in support of the efficacy of Vaccination, are familiar to the Medical Profession, and, with scarcely an exception I believe, its members have drawn the same satisfactory conclusion from the facts which are detailed in them. But as these works, are, for the most part, strictly professional, they have not come before the public in general, who have not, in consequence, had equal opportunities of convincing themselves of the true value of Vaccination. It is, however, manifestly more important, in proportion as their relative number is greater, that the latter should be convinced of this, than the former only. The present estimate, therefore, is more particularly intended to satisfy the doubts, and to remove the apprehensions of the community at large; though I trust, should I in any degree have succeeded in the attempt, it may also be read by my professional brethren not without some portion of satisfaction and of approbation.

But, after all, should my object in endeavouring to convince the more enlightened parts of the community, (from whom alone I can hope for a proper consideration of the evidence I have adduced,) be attained, much will yet remain to be done: and I have endeavoured to point out the necessity of a general co-operation, in order to give the fullest effect to the paramount capabilities of Vaccination.—Amongst the poorest and least informed classes of society, a written evidence of this description, can scarcely be expected either to gain access or to meet with the requisite consideration; and the ignorance, the prejudices, and the *apathy*, which have been found to exist in some of them, must therefore be overcome by other means. It is my wish to direct attention more especially to the *latter* difficulty, having myself witnessed some instances, and having been informed of many others, wherein the parents have regarded the health and lives of their children so little, as not only to despise the security afforded by Vaccination, but to omit the most ordinary precautions against Small Pox infection, and to reject the gratuitous medical assistance which was within their reach.^[1]

1. Mr. Wilkie (the respectable resident apothecary at the Dispensary in this town) lately informed me that a woman, who resides in Sandgate, after losing *three children* from Small Pox, during the present prevalence of that disease, would yet neither use precautions nor remedial measures for the preservation of the remainder; although she daily witnessed the efficacy of Vaccination among her neighbours, even when performed during the existence of Small Pox itself in other members of the same families.

But there are links by which all the various classes of society, from the highest to the lowest, are connected; and it is through the medium of these that we must hope for the removal of the

difficulties referred to. There are few of the rich, who have not the power of influencing some of the poor, nor do I believe there are any of the latter who may not be influenced by some one or other of the former. Whether this influence may be exerted through interest, through persuasion, or through the conviction of reason, is a matter of less moment than the attainment of the end in view—namely, *to induce all, without exception, to have their children vaccinated during infancy*—and were it employed in its fullest extent, this end might certainly be accomplished.

It hence becomes of the utmost importance, that those should themselves be convinced of the true value of Vaccination, who may possess the power, by whatever means (never omitting, however, when possible, to do it through the medium of *reason*) of extending the operative influence of their conviction to others. From the wealthy, the intelligent, and the educated parts of society then, I venture to hope that the following Estimate will meet with some serious consideration, and that, in whatever degree it may directly contribute to remove doubt, it may, at least, excite such a spirit of candid and deliberate enquiry into the subject of Vaccination, as may ultimately render its great value universally acknowledged, and its practice in every instance adopted.

Westgate Street, Newcastle,

November 20th, 1824.

AN
ESTIMATE,
&c. &c.

INTRODUCTION.

What reliance may safely be placed on Vaccination as a means of exemption from Small Pox?

It may be affirmed, without hazard of contradiction, that no question connected with the physical well being of mankind involves considerations of more serious interest, or consequences of more vital moment, than that which has just been proposed. During the last quarter of a century, it has engaged a degree of attention, both from medical practitioners and from society in general, proportionate to the great importance of the subject; and though among the former, with very few exceptions, one pretty uniform opinion may prevail respecting the true value of the Jennerian discovery, I have reason to know, that many doubts and apprehensions still linger in the minds of not a few of the latter. These have been cherished or revived by circumstances, of a nature, it must be admitted, well calculated to shake their confidence in Vaccination as an absolute preventive of Small Pox; which, unfortunately for the cause, on its first introduction into practice, it was generally believed and asserted to be; but which subsequent experience has proved can no longer be contended for. I trust, however, to be enabled to prove, to the satisfaction of every impartial enquirer, that the value of Vaccination is not essentially diminished on that account; that an imperfect knowledge of its effects can alone have given rise to the doubts and apprehensions referred to; and that nothing is required for their entire removal but a more intimate acquaintance with the subject. It is the purpose of the present Essay, then, to bring under review the principal facts connected with the history of Small Pox and of Vaccination which, in any way, bear upon the question proposed; to arrange them in such order, and to place them in such lights, as may best elucidate the subject, and enable those, who have children not yet protected in any way from the infection of Small Pox, to form a clear and satisfactory judgment; a judgment unbiassed by prejudice, matured by a serious and candid consideration of the evidence that will be laid before them, and on which may depend life itself, or much that renders life desirable.

I have been led to believe that such an attempt may at this time prove of considerable service, in consequence of facts which have lately come under my own observation, and which have induced me to pay more attention than I had previously done to this singularly curious and interesting subject.

The facts to which I allude are—1st. The prevalence of Small Pox to a considerable extent in the town and neighbourhood of Newcastle, by which a number of deaths among children, *who had not been vaccinated*, has been occasioned.—2dly. The occurrence of the disease in many individuals, who had gone through the process of Vaccination; though in every instance as far as I have been enabled to ascertain, it has been so mitigated in the violence of the attack as to preclude any degree of danger, and has never run the regular course of the genuine Small Pox.—3dly. The impression, which these occurrences have made upon the minds of those in whose families they have taken place,—an impression not only unfavourable to Vaccination, but which has induced some to entertain the idea of again having recourse to inoculation for Small Pox.—And, 4thly. The occurrence of Small Pox itself a second time in an individual, who bore ample marks of having already gone through that disease, which she stated to have taken place naturally when young: this patient was a servant in a family where three instances had occurred after Vaccination, and, as in them, the disease was of a mild and modified character.

In all the cases of Small Pox after Vaccination which I have myself witnessed, or of which I have been enabled to obtain any distinct account, the disease has been of so mild a character, and so curtailed in its duration, that could it have been separated from the terrific name of *Small Pox*, it would have excited no apprehensions in the minds either of the patients themselves or of those around them. But it unfortunately happens that this disease is associated in our minds with so many terrific accompaniments (which were once indeed its constant attendants and consequences, and which belong to it in its natural form, but which, after the employment of Vaccination, have no existence whatever), that it is difficult for the mind to break through this association, and to feel satisfied that though Small Pox may still appear as an occasional visitor, yet, to the *vaccinated*, it is completely stripped of all that rendered it dangerous in its attack and serious in its effects.

I have had repeated opportunities lately of pointing out this satisfactory distinction to the parents of children who were affected with Small Pox, both after Vaccination and when no such protecting influence had been employed. The contrast between the characters of the disease, as evinced in these different individuals, was too striking not to carry immediate conviction to the minds of all present; and I believe it has been of considerable service in inducing many to have their children vaccinated, who would otherwise have omitted it altogether. These cases occurred among the lower orders of society; and I feel assured that this demonstrative proof of the utility of Vaccination will do more to remove the prejudices of these people than any abstract reasoning from facts of which they have not themselves been witnesses, however numerous and well authenticated. I should, therefore, strongly recommend it to every practitioner to take advantage of any opportunities that may be afforded him of pointing out this most marked distinction between the natural and modified Small Pox.

We shall best estimate the value of any means of removing an evil, by enquiring, in the first place, into the extent of the effects of the evil which it is our object to remove. And we shall also form the most correct estimate of the value of the means which have been employed for its removal entirely, or in part, by reverting to its extent previous to the employment of such means, and comparing the amount of its former ill consequences, with those which are still produced by it.

To satisfy ourselves on the subject of the present enquiry then, it will be useful to put the following queries:—1st. What were the destructive consequences of Small Pox previous to the introduction of Vaccination? And, 2ndly, What influence has Vaccination exerted over these consequences—1. by extensively superseding the cause—and 2. by essentially interfering with the effect?

To answer the former question satisfactorily, it will be necessary to enter, at some length into the history of Small Pox, before Vaccination was proposed as a means of prevention. But it will be remembered, that previous to that era, a means had been already long in use, for the purpose of diminishing, at least, the danger of this terrific disease; and that for half a century the Small Pox had been communicated to thousands annually by inoculation, with the view of accomplishing this very desirable end. This will naturally give rise to a second division of the history of Small Pox. Our first enquiries will therefore be directed to the time antecedent to the use of inoculation for Small Pox, when no artificial measures were adopted for protecting mankind from its fatal attacks.

Although from the vague accounts which earlier European writers have given of the diseases which came under their notice, it is not always easy to distinguish very accurately the precise extent to which Small Pox proved fatal among the nations of Europe, it is yet pretty certain that for a thousand^[2] years before inoculation was introduced, it was one of the most destructive scourges of the human race, frequently destroying thousands and tens of thousands, in any district where it occurred. It was at this time frequently included under the general term plague or pestilence, which was applied to every destructive epidemic that took place. It is not necessary, however, for my present purpose to go back to these remote ages; for, independent of the impossibility of obtaining sufficiently authentic information whereon to found any accurate argument, it is not to be doubted that the fatality of Small Pox, in common with that of every other disease, would then be materially greater than in the present day, in consequence of the want of cleanliness and ventilation in our cities and houses, and of good medical treatment. It will not be difficult, however, to produce ample proof of the great mortality occasioned by this disease, at a period when these disadvantages were less felt, and when the nature of it was sufficiently certain. For this purpose I have drawn up tables from the bills of mortality of London, comprising a period of 120 years, viz. from 1703 to 1823, which will form the basis of my arguments.

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2. According to Mr. Moore, (History of Small Pox, p. 66-7) the Small Pox was first introduced into Europe during the invasion of Spain by the Saracens, in the commencement of the eighth century: after which, the infection rapidly spread into France and other countries.

Mr. Moore, in his History of Small Pox, (p. 243) tells us that “Dr. Jurin took the lead in replying to the opponents of this practice (inoculation for Small Pox): and being a calm man, well skilled in calculation, his writings were composed with great good sense and good temper. He drew his arguments chiefly from an accurate examination of the London bills of mortality for forty-two years, and from accounts collected from a few large cities: and he compared the numbers who died of the Small Pox with the general mortality. From all which he concluded,

“That of all the children that are born there will, some time or other, die of the Small Pox, *one in fourteen.*” And “that of persons of all ages, taken ill of the natural Small Pox, there will die of that distemper *one in five or six.*”

In other countries this disease appears to have been yet more fatal than in England. I shall, however, revert to the documents which I have myself collected on the subject.

The tables, which I have constructed, embrace a period of 20 years before inoculation was at all employed in this country—the whole period during which it was in use—and the time which has elapsed since the introduction of Vaccination. We shall thus be enabled, at a single glance, to compare the mortality of Small Pox under each of these several circumstances. In the first column of the table (No. 1.) is shewn the total number of deaths which occurred within the bills of mortality during each successive year, and in the second column, the number occasioned by Small Pox alone.

The table (No. 2.) is divided into periods of five years each—it consists of four columns—the first of which exhibits the total number of deaths during each period of five years—the second the number of deaths from Small Pox—the third shows the proportion of the latter in each thousand of the former—and the fourth points out the relative proportion of deaths from Small Pox compared with the whole. I am aware that the two latter columns may be considered as a repetition of the same statement, but I think it may appear more striking when placed in this double form.

When we compare the calculation of Dr. Jurin, which has been quoted above, (published I believe about the year 1723,) with the first twenty years of these tables, we shall find, that, with the exception of the first five years, it is rather below than above the results which they exhibit; that, according to them, for the fifteen years from 1708 to 1723 inclusive, the deaths from Small Pox exceeded one in twelve of the whole,—that in 1710 it was about one in seven, and that in 1719, although the relative number was not quite so great, being in the proportion of one in eight only; yet

that the actual number was greater than in 1710, amounting to no fewer than 3229, the total number of deaths being 28,347.

Such was the destructive nature of Small Pox before the introduction of inoculation. Its ill effects, however, were not confined to those whom it precipitated into the tomb. A very large proportion of the living, who were fortunate enough to escape its fatal effects, yet suffered essentially for the remainder of their lives from its injurious attacks, not only in the loss of that beauty of countenance which we all value both in ourselves and in our friends, but frequently in the serious injury or total destruction of one or both eyes,^[3] or of the general health of the constitution, which was, in many cases, never afterwards entirely restored, although death was not the immediate result.

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3. "It appears, by a report of the Hospital for the Indigent Blind, that two-thirds of those who apply for relief, have lost their sight by Small Pox,"—*Sir G. Blane on Vaccination, p. 9.*

Instances, wherein the beauty of the human countenance has been materially injured by the occurrence of Small Pox in the early stages of life, are now happily much more rare than formerly, especially in the higher ranks of society, and I trust will, in the course of another age, become entirely unknown. There are few of us, however, who are not still acquainted with some, and who cannot recall many more: and we every now and then meet with cases of blindness, which had succeeded to this formidable disease. I have myself had opportunities of seeing several such instances; and it is but a few weeks since my opinion was asked respecting a child, who was recovering from the Small Pox in its worst form, with a countenance dreadfully disfigured, and one eye entirely destroyed.^[4]

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4. Since this was written, I have been consulted on account of a little girl, of seven years of age, who has just sustained the same very serious deprivation, in consequence of an attack of Small Pox.

That a disease so destructive of human life, and which frequently entailed on the living such indelible proofs of its severity, should have been anticipated with peculiar feelings of dread and apprehension we can well believe, and it was natural that any method, which afforded a probability of diminishing its danger, and of rendering its attacks of a milder character, should excite no ordinary degree of public attention.

How far these ends were accomplished by the artificial communication of Small Pox by inoculation, we shall now proceed to inquire.

The first individual in England on whom the operation of inoculation for Small Pox was performed, was the daughter of the celebrated Lady Mary Wortley Montague. She had witnessed, when in Turkey, the mildness of this disease as produced by inoculation, and her son had already passed through the process with safety. "The engraftment of her son having succeeded; after Lady M. W. M. returned to London in 1722, she sent for Mr. Maitland, the surgeon, who had attended the boy at Constantinople; and desired him to engraft her daughter with Small Pox. He solicited a delay, on account of the weather, and entreated that two physicians should be consulted. These requests were refused, yet he obeyed her Ladyship's injunctions; but when the fever commenced, an old family apothecary and three physicians were permitted to witness the process. As the success was complete, Dr. Keith, one of the above physicians, was tempted to request Mr. Maitland to engraft his child also, which likewise succeeded; and these cases were rumoured through the town."^[5]—An experiment was afterwards tried, at the request of the Princess of Wales, upon "six condemned felons" with success, and her own children passed through the operation with safety. After this, inoculation was partially employed for some years, and was again discontinued—but, about the middle of the last century, great exertions were made to bring it into general use, and with a considerable degree of success. We shall presently endeavour to ascertain what influence it exerted over the prevalence and fatality of Small Pox. But, in the first place, I think it will be useful to enquire into some of the arguments which were adduced in support of the practice; and, it may be, to allude to a few which were opposed to it.

5. Moore's History of Small Pox, p. 228-9.

The principal arguments, on which the employment of inoculation for Small Pox was supported, appear to have been the following:—

1. The infectious nature of the disease, which was so virulent as to permit few individuals to pass through life without being at one time or other affected by it.
2. Its fatality—destroying at least one in five or six of those attacked by it.
3. The generally received opinion that no individual could be affected by it oftener than once. And
4. That, when communicated by inoculation, it was rendered comparatively mild and devoid of danger, while it afforded equal security against any future attack of the disease.

The two former of these positions need not engage our attention in this place—the highly infectious nature of Small Pox has always been admitted; and I have already brought forward sufficient proof of the danger to human life which it occasions.

The third proposition is of most material importance; for I am well convinced that upon a proper understanding of this question depended the true value of inoculation as far as regarded *individuals*; and on it also rests the true value of Vaccination as regards *society in general*.

It was unfortunate for the cause of inoculation that its early advocates maintained the absolute impossibility of Small Pox occurring a second time in the same individual. They thus furnished their opponents with weapons against themselves, in the cases, which repeatedly occurred, of those who had passed through the process of inoculation being afterwards affected by the natural Small Pox; and were put to the necessity of having recourse to expedients equally unmanly and uncandid—either of denying that the second disease was genuine Small Pox, or of asserting that the inoculating process had been imperfectly performed. Whereas a little attentive observation and research into the former history of Small Pox, might have satisfied them, that although in a great majority of cases this formidable disease did not occur a second time in the same person, yet that repeated instances took place wherein it did so occur. And that while it might be assumed as a general rule that the same individual would be affected once only with Small Pox—it was a rule admitting of exceptions.

That a second attack of Small Pox may take place in the same individual, may be proved by a mass of evidence which appears to me to be perfectly irresistible; and as I consider it very important to the object of this enquiry that every doubt should be removed on the subject, I must be permitted to dwell on it longer perhaps than may at first sight appear necessary. I have great pleasure in acknowledging my obligation to the valuable "Historical Sketch of Small Pox," by Professor Thomson of Edinburgh, for a large share of the evidence which I shall lay before my readers, to prove the frequency of the recurrence of Small Pox. Soon after the introduction of inoculation into France, "a son of M. Delatour, about nine years of age, was inoculated in 1756 for Small Pox, by Surgeon Martin, under the inspection of M. Tronchin, and passed through the disease in a satisfactory manner. This boy remained in good health for upwards of two years, when an eruption, supposed by some to be Small Pox, appeared upon him, as well as upon four of his companions in the same boarding-school. The different opinions formed of the nature of this eruption by the medical practitioners who saw it, and who seem to have judged of it according to the preconceived notions they entertained with regard to the possibility of the recurrence of Small Pox, present (says Dr. Thomson) so true a picture of what has occurred in similar cases since the introduction of Vaccination, and of the manner in which doubtful cases of varioloid eruptions continue still to be judged of, that I cannot avoid giving you an abstract of the discussions to which this case gave rise."^[6]—Dr. Thomson goes on to say, that "M. Gaulard, Physician in ordinary to the King, was called to see the son of Delatour on the third day of the eruption, which he declared to be a mild case of Small Pox, of the kind commonly called, he says, though improperly so, Chicken Pox, and the disease

in the boy's companions he considered of the same nature."—Four physicians were called in to consult with Mons. Gaulard, who⁷ "gave an account of the progress of the disease which contains a description of varioloid eruptions, very similar to those which have of late been described under the denomination of modified Small Pox.

6. Dr. Thomson's Sketch, &c. p. 53.

7. Dr. Thomson's Sketch, &c., p. 54.

"These gentlemen mention also, that *two* of the other children affected, had previously passed through natural Small Pox; and conclude with declaring that, from these circumstances, they believe that the disease in Delatour and his companions, *was neither the Small Pox nor the Chicken Pox, but a chrystalline eruption, with which they were well acquainted.*"

It is, I think, from this sufficiently evident, that nothing but the preconceived opinions of the physicians consulted in these cases could have prevented their acknowledging the true nature of the disease; and there cannot, I conceive, be a doubt, that it was no other than Small Pox rendered milder in its character by the previous occurrence of it in these children. It is of importance too to remember that they afford examples of the recurrence of the disease after both *natural* and *inoculated* Small Pox. Delatour had been inoculated upwards of two years before, and "two of the other children affected had previously passed through natural Small Pox." I shall here adduce some further extracts from Dr. Thomson's work. He tells us that "M. Hosty, who had been sent over to England in 1755, to acquire information upon the subject of inoculation," "enters into a discussion with respect to the recurrence of secondary Small Pox, in which he allows that there are several eruptive diseases with which a person may be affected, *so like the Small Pox, as scarcely to be distinguishable from them*, and, on that account, liable to give rise to many mistakes; and he states, that although he does not deny absolutely the possibility of the recurrence of Small Pox, he believes this to be rare," (p. 55-6). "To Hosty's opinion, with regard to the unfrequency of the occurrence of secondary Small Pox, Gaulard replied, that he had at that time under his charge two unequivocal examples of secondary natural Small Pox, and that a nephew of the Archbishop of Paris, had a month before passed through the Small Pox, under the care of the celebrated M. Astruc, although he bore marks on his body of having formerly undergone the disease."—(p. 59.)

Gaulard then declares, "that though reason dictates, and *experience actually demonstrates*, that this process (inoculation for Small Pox) does not infallibly afford protection against a subsequent attack of natural Small Pox, he was still disposed to believe that it may be possessed of some real advantages" (p. 59). "Dr. Cantwell, in 1755, published a dissertation upon inoculation, the avowed object of which was to *undeceive* those who believed in the efficacy of that practice. In this Essay, a great number of cases of Small Pox, which had occurred both after natural and inoculated Small Pox, are mentioned" (p. 64). "He (Dr. Cantwell) seems to have been well acquainted with those varioloid eruptions which, previous to the introduction of inoculation, had received a variety of names, such as Swine Pox, Chicken Pox, &c. and which were considered not as specifically different from Small Pox, but as spurious and bastard species of that disease. These eruptions, in his opinion, were nothing else than mild varieties of the true Small Pox. His own words are" (p. 37), "after all, what are the Swine Pox, the Duck Pox, and the Chicken Pox, which are observed among the English and the Irish? What is the *petite verole volante* which is seen in France? Many distinguished authors attest, that they have seen Small Pox occur twice in the same individual; and have not we reason to believe that, in these cases, the second attack was true Small Pox, of which the infection was slight, and in which the vital actions were too weak to carry it to a certain extent?" All this appears to me most strictly consistent with truth. But Dr. Cantwell was arguing against the use of inoculation. How then did he account for the fact that "the infection was slight," and that "the vital actions were too weak to carry it to a certain extent," if it did not arise from these individuals having already passed through the disease of Small Pox?

"De Haen (a celebrated physician of Vienna,)" says Dr. Thomson (p. 68), "collected into a body the numerous cases of secondary Small Pox, which are to be found in the writings of physicians, who lived previous to, and in the infancy of, the practice of inoculation in Europe. Had the number of these cases, and the respectability of the individuals by whom they are related, been duly considered, they surely were more than sufficient to have satisfied the minds of the most incredulous, of the possibility, and even of the frequency of secondary Small Pox." De Haen, however, was an opposer of inoculation, and the facts he adduced were not permitted to have the weight which they merited, in consequence of the arguments he deduced from them.

I shall conclude my extracts from the fund of evidence collected in the work of Professor Thomson, with the following:—

"M. Strack, professor of medicine at Mayence, in a letter upon inoculation, addressed to M. Roux in 1765, (Journ. de Med. tom. xxii.) maintains that natural Small Pox do not, any more than the artificial, protect against a second attack. In proof of his opinion, he mentions six cases of secondary Small Pox which he himself had attended. The argument which he uses in support of inoculation, in opposition to those who were hostile to that practice, and who asserted that it does not protect against a subsequent attack, though novel at the time it was employed, has since been sufficiently confirmed by repeated observation. He says, that those who have passed through the Small Pox twice, whether naturally or artificially, have, in general, escaped without danger; those patients, he adds, who have had the Small Pox at two different periods, are fortunate, because if the variolous miasma had operated with its full force during the first attack, they probably would have fallen victims to the disease" (p. 77).

Mr. Moore remarks (Hist. of Small Pox, p. 278) that, "besides the foreign authorities, the English Medical Journals contain several authentic examples of persons whose faces were strongly pitted with Small Pox, and who were afterwards destroyed by a second attack of that disease,"—he goes on (p. 279) to relate "an incident frequently repeated by the late Dr. Reynolds, Physician to his Majesty, who was sent for by a lady unknown to him, and conducted by her maid, rather mysteriously, into a handsome bed-chamber; where he saw, lying in a splendid bed, a lady masked. Being a good deal surprised, the maid stifled a laugh, while her mistress, in a soft toned voice, apologised for concealing herself even from a professional gentleman. This (she said) had become proper, from the peculiarity of her situation. At present she stood greatly in need of his superior medical talents, and was extremely anxious for his opinion on her case, which she understood from others, was a very rare one. The doctor being thus put upon his guard, enquired minutely into all the symptoms, and examined critically a pustular eruption which was spread over the lady's person: he then pronounced the disease to be, without all doubt, the Small Pox. On which the patient unmasked, and displayed features seamed with the disorder."

Dr. Thomson (in his Historical Sketch, p. 279) informs us, that out of *eight hundred and thirteen* cases of Small Pox, which had come under his notice since June, 1818, "*seventy-one* had previously passed through Small Pox." And in the sequel many other instances will be referred to.

In a late number of the London Medical Repository, Dr. Carter, of Canterbury, gives the details of a case of secondary Small Pox occurring in a girl, which proved fatal. And a young lady (a family connection of my own), who had satisfactorily passed through the disease, from inoculation, when young, had a second attack of Small Pox, when on a visit at Liverpool, to which she very nearly fell a sacrifice. To this mass of evidence I shall add the case to which I have before alluded, as having come under my own notice. In this young woman the eruption was confined to the shoulders and face, and was not numerous, but it was preceded for several days by considerable feverishness and head-ache; and although it did not proceed beyond the fourth or fifth day, I consider the nature of the disorder as quite unequivocal; if what I conceive to be the only true test of this be admitted, namely, that it was produced by Small Pox infection, and was capable of communicating it to others. Fortunately this test was left incomplete in this instance, no other individuals having become infected in consequence; but the following facts which have since come to my knowledge, seem to warrant the inference, that this might have happened had any unprotected persons been allowed to have communication with the patient.

A lady, residing at Gateshead, who passed through inoculated Small Pox many years ago, became lately (during her confinement) affected a second time with this disease. And notwithstanding that it was of the same mild character as in the last case, and that the eruption turned on the eighth day, her infant caught the infection. The eruption in the child was of the confluent kind, and occasioned its death eight days after the appearance of the disease.

Having succeeded, I trust, in proving to the entire satisfaction of every candid enquirer the possibility, if not the frequency, of the occurrence of Small Pox a second time in the same individual, it would be both interesting and useful, were it possible to ascertain what proportion such cases bear to those who escape a second attack; but many insurmountable difficulties present themselves in making such a calculation. Dr. Thomson tells us (p. 67), that "according to Tissot, the proportion of cases of secondary Small Pox, is as 1 in 100; according to Heberden, as 1 in 5000; and, according to Condamine, as 1 in 10,000. How uncertain the data!"—It is, however, enough to know, that while the relative number is sufficiently great to prevent the rule, That no individual can be affected by Small Pox oftener than once,—from being considered absolute, it is yet too small reasonably to shake our confidence in the fact, that a very large proportion will escape a recurrence of that disease. One other fact of considerable importance has, I trust, been also established by the preceding enquiry—That when secondary Small Pox does take place, it is usually a very mild disease, unattended with danger.

The fourth argument in support of the employment of inoculation for Small Pox,—that it was rendered comparatively mild and devoid of danger, while it afforded equal security against any future attack of the disease with natural Small Pox itself, need not detain us long.—The latter part of the proposition has been generally admitted; and its truth or falsity will not affect the object of our present enquiry. Mr. Moore (History of Small Pox, p. 302) tells us, that "at the commencement of inoculation in England, the proportion of fatal cases appears to have been fully one in fifty. But after the last improvement in treatment had been established, probably not more than one in two hundred were lost."—Mr. Moore continues—"of those who contract the casual Small Pox, and are treated with medical care, it has been admitted that generally about one in six are lost: but in countries where the medical arts are unknown, the Small Pox is so fatal a disease that few of those who are seized with it survive its malignity." The immense difference between these proportions is amply sufficient to prove the great advantage derived from inoculation by those on whom it was practised.

Such then were the data on which the practice of inoculation for Small Pox was established. But it will be remembered, that on its introduction, and for many years after it had been extensively used, it met with a very warm opposition both from medical men and others, especially from some zealous divines, who stigmatised it as "a diabolical invention of Satan," and uttered anathemas against all who should practise it. I shall not enter into any examination of the arguments made use of by the opposers of inoculation; some of them have been already alluded to, and their fallacy pointed out. Taken altogether, it is remarkable how nearly they resembled those which have been opposed to the introduction of Vaccination. Now, that distance of time has enabled us to view the facts of the case with coolness, and to reason upon them without prejudice, while we admit the individual security which arose from the practice of inoculation, we must in candour confess its tendency to encrease the general destruction of life from Small Pox, by forming so many new sources of infection. This was

the only rational argument against inoculation, but it was certainly one of great force, and the actual encrease of deaths from Small Pox during the prevalence of inoculation, seems to prove that it was never sufficiently considered. The encreased number of deaths from Small Pox in 1723 and 1725, might fairly be imputed to this cause, although it was denied at the time by Dr. Jurin. Mr. Moore (History of Small Pox, p. 243) very satisfactorily replies to Dr. Jurin's argument in the following extract. "And as in the year 1723 a great increase of the mortality by Small Pox took place in London; Dr. Jurin expressed his opinion that this ought not be imputed to inoculation, as the numbers who had been inoculated did not exceed sixty. This was a very inadequate answer. A single person may bring the plague into a town or into a nation, and be the cause of the destruction of an innumerable multitude. The Small Pox is fully as infectious a disease as the plague; and sixty inoculations were more than sufficient to account for the augmented mortality, and were probably the cause of it."

If we refer to the tables (No. 1 and 2), we shall find that from the years 1752 to 1798 inclusive (the period during which inoculation was most extensively employed in this country), the average mortality from Small Pox, during periods of five years each, was occasionally so high as one in eight of the whole, and rarely less than one in ten. And that during individual years, it three times (in 1752, 1781, and 1796) amounted to nearly one in five; and in 1772 was little less than one in six. This is surely a fearful encrease on Dr. Jurin's calculation—"That of all the children that are born, there will some time or other die of Small Pox *one in fourteen*." There can be no doubt, however, that this immense encrease of mortality from Small Pox was owing to the extended practice of inoculation; and until this could have been pursued more generally, and with greater precautions, so as at once to diminish the numbers capable of being infected by the inoculated, and the hazard of the latter coming into contact with the unprotected, I am disposed to think this fact was in itself sufficient ground for discontinuing inoculation for Small Pox altogether. Could every child have been subjected to the process of inoculation, before any exposure to the infection of natural Small Pox had taken place, the case would have been widely different: but it can scarcely be considered either just or politic to render one individual secure at the risk of endangering many, or with a certainty of destroying some. It may fairly be concluded, then, that inoculation for Small Pox, as practised for the last fifty years of the eighteenth century, although certainly a *great individual good*, was, in reality, without a doubt, a *most serious general evil*.

From what has been hitherto stated, I conceive, we are authorised in assuming the following as facts, which will furnish a satisfactory answer to the first of the questions proposed, What were the destructive consequences of Small Pox previous to the introduction of Vaccination?

1. Small Pox is a disease of so infectious a nature, that few individuals passed through life without suffering from an attack of it.
2. It was attended with so much danger as to occasion the death of one in five or six of those affected by it in the natural way; and previous to the use of inoculation, one in fourteen of the whole number of children born, at one time or other, died of the Small Pox.
3. Of those who recovered, many suffered materially from its effects, not only in the disfigurement of countenance occasioned by it, but frequently in the loss of one or both eyes, or in irreparable injury of their constitutions.
4. After having been once affected by Small Pox, a very considerable proportion of individuals resist entirely a second attack: but still in very many instances a recurrence of the disease is proved to have taken place.
5. Secondary Small Pox is, for the most part, very mild in its symptoms, and of shorter duration than a first attack, insomuch as to have frequently given rise to doubts respecting the real nature of the disease.
6. Secondary attacks of Small Pox have, nevertheless, occasionally proved fatal.
7. When artificially produced by inoculation, the Small Pox is rendered materially milder in its character, so that one in two hundred only of those to whom the disease has been thus communicated, have been found to die in consequence.
8. The Small Pox, when communicated by inoculation, is probably as secure a preventive of any future attack of the disease as when it has taken place naturally.
9. Notwithstanding the undeniable advantages which accrued to those who passed through the process, it was, nevertheless, the direct effect of inoculation, by multiplying the sources of infection, materially to encrease the aggregate mortality occasioned by Small Pox.

Such having been proved to have been the destructive consequences of Small Pox, previous to the introduction of Vaccination, we are fully prepared to enter upon the second query proposed,—What influence has Vaccination exerted over these consequences—1. by extensively superseding the cause—and 2. by essentially interfering with the effect?

The name of Dr. Jenner is too intimately associated with the subject of Vaccination to admit of the latter being referred to without some allusion being made to the former; and I should ill testify my sense of the truly valuable blessing which Jenner has been the means of conferring upon mankind, were I altogether to omit any expression of my admiration of the superior perception which enabled him to infer the probable consequences of facts, which must have been long familiar to hundreds without having given rise to any important suggestion, and of the zeal and ability with which he prosecuted his enquiries on the subject, or my high esteem for the generous disinterestedness with which he made known to the world his most useful discovery. "It will," (to use the words of Sir Gilbert Blane,) "in the eyes of future ages, be deemed an epocha in the destinies of the world, and one of the highest boasts of the country in which it took its rise, with a sense of unrequitable obligation to the individual who first disclosed and promulgated the secret, by drawing it from the dark recesses of rural tradition, and rendering it available to the whole human race."

It is not, however, my intention to enter into any detail of the mode in which Vaccination originated, or of the circumstances which accompanied its introduction into practice. It will suffice to state, that its supposed efficacy in preventing the occurrence of Small Pox, was founded upon repeated observation, that the milkers employed in the great dairies of Gloucestershire and the neighbouring counties, who became affected with a disease which prevailed among the cows, and to which the name of Cow Pox had been given in consequence, were very generally rendered insusceptible of the Small Pox infection, even when attempted to be communicated by means of inoculation. Dr. Jenner put this fact to the test of repeated experiment, and finding it thus confirmed, proposed introducing the Cow Pox into the human constitution artificially, as a means of securing it against the dangers of Small Pox, and, in the end, of entirely exterminating the latter disease; for it must appear very evident, that if every individual could in any way be rendered incapable of being infected by Small Pox, the infection itself must necessarily become entirely extinct.

In prosecuting my enquiries into this part of my subject I shall, as far as may be, confine myself to an examination of facts calculated, as I conceive, to remove every reasonable doubt respecting the true value of Vaccination.

The first essential fact, to which I would direct the attention of my readers, is the very striking diminution in the number of deaths from Small Pox, which has taken place within the bills of mortality of London, since the introduction of Vaccination. This diminution is equally remarkable, whether we refer to the actual number of deaths from this cause, or to the relative proportion which they bear to the whole amount of deaths occurring in any given year or number of years. Thus taking the averages calculated on periods of five years each, as is shewn in the table (No. 2), it will appear evident not only that the amount of diminution has been most gratifying and satisfactory, but that, in proportion to the increasing employment of Vaccination, it has been regularly progressive; so that the number of deaths from Small Pox, instead of amounting to one in ten of the whole, as was the case for the ten years which preceded the introduction of Vaccination, has during the last ten years, actually amounted to less than one in twenty-eight, or little more than one-third of the former proportion.

If we compare the number of deaths from Small Pox, which took place during the twenty-five years (from 1784 to 1798 inclusive) which immediately preceded Vaccination, amounting to 46,996, with the number which has taken place during the twenty-five years which have elapsed since its introduction (from 1799 to 1823 inclusive), amounting to 25,869, we shall find that an actual diminution has taken place of no fewer than 21,127, or nearly one half of the whole. It may, therefore, be confidently assumed, even upon this very simple calculation, that a number of lives equal to this diminution has been saved by Vaccination, within the bills of mortality alone. And as this diminution in the amount of mortality from Small Pox is going on in a progressive ratio, it is probable that the next twenty-five years will afford a yet more striking result.

If we extend this calculation to the whole of Great Britain and Ireland, assuming that the ratio in the diminution of deaths has been the same over the united kingdom as within the London bills of mortality—and there are various good reasons for believing that it has been greater—we cannot but be struck with the immense saving of human life which has already taken place. Sir Gilbert Blane and Dr. Letson separately calculated the annual loss of lives from Small Pox, in Great Britain and Ireland, during the last thirty years of the eighteenth century.—One of these eminent physicians estimated them at 34,260, and the other at 36,000 (Moore's History of Small Pox, p. 300): For our present purpose, we will take a medium number, as being probably nearest to the truth. Assuming then, that the number of deaths from Small Pox, in the United Kingdom, during each of the twenty-five years which preceded the introduction of Vaccination, amounted to 35,000, the amount, during the whole of that period, must have been 875,000. But if the diminution on the whole of this number has been equal to that which is proved to have taken place within the London bills of mortality, during the last twenty-five years, it must have been reduced to 481,644 only, and an actual saving of the lives of 393,356 individuals must have been accomplished.

These calculations agree pretty nearly with estimates published in the year 1820, by Sir Gilbert Blane, founded on similar documents. His calculations extend to the parishes not included within the bills of mortality, and he comes to the following conclusion on the subject:—"It appears, therefore,

that even under the very imperfect practice of Vaccination, which has taken place in the metropolis, 23,134 lives have been saved in the last fifteen years, according to the best computation that the data afford"—(Sir G. Blane on Vaccination, p. 7). But however remarkable and satisfactory this immense saving of human life, in the country where Vaccination originated, may appear, as an unanswerable evidence of its efficacy, the result has been still more decisive in many foreign countries, where it has been much more generally employed. In proof of this, I shall again quote the very valuable little work of Sir Gilbert Blane, (which, by the way, I should strongly recommend to the attention of the public, as containing much valuable matter and sound argument within a very small compass). He states, (p. 7-8) "In the summer of 1811, the author was called to visit, professionally, Don Francisco de Salazar, who had arrived a few days before in London, on his route from Lima to Cadiz, as a Deputy to the Spanish Cortes. He informed him, that Vaccination had been practised with so much energy and success in Lima, that for the last twelve months there had occurred not only no death from, but no case of, Small Pox: that the new born children, of all ranks, are carried as regularly to the Vaccinating house as to the font of baptism; that the Small Pox is entirely extinguished all over Peru; nearly so in Chili; and that there has been no compulsory interference on the part of the government to promote Vaccination."

Sir Gilbert goes on to say, that "it is now matter of irrefragable historical evidence, that Vaccination possesses powers adequate to the great end proposed by its meritorious discoverer, in his first promulgation of it in 1798, namely, the total extirpation of Small Pox. The first proof of this was at Vienna, where, in 1804, no cases occurred, except two strangers, who came into the city with the disease upon them. In 1805 there did not occur a single death from it in Copenhagen. Dr. Sacco, the indefatigable superintendent of Vaccination in Lombardy, stated in his annual report, 3d January, 1808, that the Small Pox had entirely disappeared in all the large towns in that country; and that in the great city of Milan it had not appeared for several years. Dr. Odier of Geneva, so favourably known for his high professional, scientific, and literary acquirements, testifies that, after a vigorous perseverance in Vaccination for six years, the Small Pox had disappeared in that city and the whole surrounding district; and that, when casually introduced by strangers, it did not spread, the inhabitants not being *susceptible*. The central committee in Paris testify, in their report of 1809, that the Small Pox had been extinguished at Lyons and other districts of France."

"These are selected as some of the earliest and most remarkable proofs of the extirpating power. But it is demonstrable, that if at the first moment of this singular discovery, at any moment since, at the present or any future moment, mankind were sufficiently wise and decided to vaccinate the whole of the human species, who have not yet gone through the Small Pox, from that moment would this most loathsome and afflicting of all the scourges of humanity, be instantaneously and for ever banished from the earth." (p. 8).

These, and such as these, then are the great, the undeniable facts, which must, I think, carry irresistible conviction to every reflecting and unprejudiced mind respecting the true value of Vaccination. And it is these facts which furnish us with an answer to the second question proposed—What influence has Vaccination exerted over the destructive consequences of Small Pox? which it must be truly gratifying to every philanthropic mind to contemplate. In the course of twenty-five years, in our own country, where it has been very partially employed, it has actually been the means of saving a number of lives, amounting to 393,356; and if it be true, as supposed by Sir Gilbert Blane, that Small Pox induced "blindness, deformity, scrofula, or broken constitutions," in as many who recovered from the disease as died in consequence of it, then have an equal number been saved from these dreadful calamities. But abroad, where it has been more generally employed, Vaccination has, in many places, actually exterminated the Small Pox altogether.

From what has already been said, it will be evident, that Vaccination has produced these very beneficial consequences in two ways. 1. By superseding an efficient cause of the spread of infection, namely, the practice of inoculation for Small Pox. And 2. by essentially interfering with the effect of the infectious virus.

The increased number of deaths, which took place during the period when inoculation for Small Pox was generally employed, is sufficient to prove the influence of Vaccination to have been considerable in the former way; but a formal application having been made to me to inoculate a child for Small Pox, since I commenced these remarks, I think it right to call the attention of the public more decidedly to the pernicious tendencies of the practice.

The attention of the medical profession, and of the public generally, was soon excited by the increasing number of deaths after the introduction of inoculation, and exertions were made to check it, particularly by the establishment of the Small Pox Hospital. This, no doubt, had some effect, by separating a part at least of those to whom Small Pox was artificially communicated from the rest of the community; but the event proved that this was by no means an adequate defence against the factitious causes of infection, which were daily called into action. The Small Pox Hospital still exists, and it is a very remarkable fact, that, for several years after the discovery of Vaccination, out-patients continued to be inoculated at that institution. This, no doubt, contributed to prevent the proportion of deaths from Small Pox in London from diminishing so rapidly as would otherwise have been the case, and as has been the case, since this "unaccountable infatuation," as Sir Gilbert Blane very justly calls it, has been discontinued. But, as the same eminent physician properly remarks (p. 6), "it was in the rural population that the effect of inoculation in diffusing Small Pox was chiefly felt. In this situation, there is much less intercourse of persons with each other than in towns, so that not only many individuals escaped, from their not being exposed to infection during their whole lives, but whole districts were known to have been exempt from it for a long series of years before it was universally diffused by inoculation." We may, therefore conclude, that while the number of deaths from Small Pox, within the bills of mortality, was increased in the proportion exhibited in the tables

by means of inoculation, in the country the increased mortality from this cause was in a much greater ratio. This supposition is in a great degree confirmed by the effects occasioned by a renewal of the practice of inoculation, in Norfolk, in the year 1819, as recorded by Mr. Cross, in his History of the Epidemic Small Pox, which at that time prevailed in the city of Norwich and the county of Norfolk. Mr. Cross mentions many instances of the disease being introduced into parishes, in which it did not before exist, by means of inoculation, the contagion afterwards spreading in all directions; and affirms (p. 272), that "thirty-eight surgeons, who from various motives, practised it, lost among those to whom they had thus given the disease, twenty-one patients; fourteen surgeons reported, that fifty-five deaths had been occasioned in the same way within their knowledge; and five other surgeons observed, that they had known several who fell a sacrifice to the practice." It admits then of the most incontestable proof, and it is a fact, which cannot be too deeply impressed upon the minds of the public, that inoculation for Small Pox is a practice attended with very considerable danger to the individual who passes through it, while to society in general, it has been productive of the most pernicious consequences. Is it too much then to affirm, that it cannot be employed without great moral guilt being incurred both by those who may require its performance, and by the medical practitioner who shall be induced to practise it?

But by far the most important mode in which Vaccination has been productive of the equally astonishing and gratifying consequences, which have been proved to have resulted from it, has been by its essential interference with the effect of the infectious matter of Small Pox, either by entirely preventing the occurrence of that disease, or by stripping it of all its dangerous and formidable characteristics—rendering it, in the comparatively few instances in which it has taken place at all after Vaccination, mild in its attack, and perfectly harmless in its consequences.

It very generally happens, when a discovery is made which promises to exert any considerable influence over the happiness of man, that its capabilities cannot for some time be very accurately defined; and that the effects, which a few years' experience shall prove it to possess the power of producing, will, at the commencement, be either undervalued or overrated. It would not, perhaps, be difficult to adduce instances of both. And it can scarcely excite surprise, that something like this should have been the case with incomparably the most important discovery of modern times, for such we may truly esteem Vaccination, whether we consider it as a means of preserving life, or of obviating effects, perhaps, even more deplorable than the loss of life itself.

If then, the first promoters of Vaccination were led, from their ardour in a cause of such vital interest to the whole human race, and before time had been allowed to afford sufficient data whereon to found a more correct opinion, to conclude that Vaccination would, in every instance, prove an absolute and infallible preventive of future susceptibility of Small Pox infection, let us not, on that account, run into an error incalculably more dangerous in its tendency, and underrate or deny altogether the degree of security which it actually affords. That this is more than sufficient to render it worthy of universal adoption, there cannot be any reasonable doubt; but it would have been strange indeed, if, in the undeviating uniformity of its effects, Vaccination had formed a *single* exception to the *law of uncertainty* that attaches to every other agent, which it has, at any time, been permitted to mankind to employ for the promotion or preservation of the health of the human constitution: and, considering the innumerable varieties which prevail in the latter, we ought rather, perhaps, to feel surprise that the influence of Vaccination over all these varieties, should have been proved to be so similar as to have justified us in considering as a *general*, what was at first too hastily concluded to be an *absolute* rule.

That the great majority of instances in which Vaccination has afforded perfect security against any future attack of Small Pox, fully warrants this conclusion, the results already detailed are sufficient to prove. What proportion these cases bear to the comparatively few, wherein the protection has been less perfect, it will not be possible to discover, because we are unable to ascertain how many hundreds of thousands or millions have passed through the vaccinating process. But little difficulty would be encountered, however, in ascertaining the full amount of the few who have had any thing bearing the slightest resemblance to an attack of Small Pox after Vaccination: these, for the most part, have been carefully recorded, and a degree of importance has certainly been attached to them greater than is warranted, either by their number, their severity, or their results.

It is of still more importance, however, to know, that when Small Pox has occurred after Vaccination, it has been so essentially altered in the severity of its symptoms, and in the degree of danger arising from it, as to have rendered it entirely harmless in almost every instance; and although fatal cases have taken place in a few insulated and peculiar examples, they have been very much more rare than those which have occurred in consequence of inoculated, or even of secondary Small Pox. Sir Gilbert Blane, after describing (p. 10-11) the mild character of the disease as occurring after Vaccination, continues thus—"What forms the strong line of distinction from proper Small Pox is, that, with a few exceptions, it does not advance to maturation and secondary fever, which is the *only period of danger*. I am not prepared to deny that death may have occurred in a few instances; nay, there seems sufficient evidence that it actually has; but then adverse cases are so rare as not to form the shadow of an objection to the expediency of the general practice. A few weeks ago, at a meeting of this (the Medical and Chirurgical) Society, at which forty members and visitors were present, I put the question, whether any of these eminent and extensive practitioners had met with any fatal cases of this kind. Two gentlemen had each seen a *single case*, and two other gentlemen took occasion to say, that they had each seen a case of *second Small Pox*—both of which proved *fatal*." And Dr. Thomson tells us (Historical Sketch, &c. p. 279), that "since the publication of my 'Account of the Varioloid Epidemic,' I have seen above *two hundred* additional examples of Small Pox in Edinburgh, making in all *eight hundred and thirty-six* cases of this disease, which have come under my observation since June, 1818. Of the whole number, *two hundred and eighty-one* have occurred in

individuals who had neither had Small Pox nor Cow Pox, and of these fully more than *one* in *four* died; *seventy-one* had previously passed through *Small Pox*, and of these *two* have died; and *four hundred and eighty-four* had undergone the process of *Vaccination*, and of this number *one* only died; results (adds Dr. Thomson) which evince, beyond the power of cavil, the beneficial effects of *Vaccination* in protecting the human constitution from the dangers of Small Pox, and the great advantages which must ultimately arise from the universal adoption of this practice."—Perhaps the most fatal epidemic Small Pox, which has occurred of late years, was that which took place at Norwich in 1819. A history of it was published in the following year by Mr. Cross, and the general result was in perfect accordance with Dr. Thomson's experience of the epidemic at Edinburgh.

Mr. Cross relates that *two* deaths only took place after *Vaccination*, and justly observes, that "these can have no weight against the practice of *Vaccination* compared with 10,000 vaccinated individuals, living in the midst of a contaminated atmosphere; with 530 deaths among little more than 3000 who had neglected to be vaccinated; and with the occasional occurrence of regular Small Pox in those who formerly had the disease." Of the 10,000 persons thus protected by *Vaccination*, the Reviewer of Mr. Cross's History, &c. observes (Edin. Med. and Sur. Journal, Vol. xvii. p. 127), "Had these persons been protected by variolous (Small Pox) inoculation, conducted in the best manner, and in the most favourable circumstances, at least 33 of them (1 in 300) would have died of the process intended to protect them; so that in comparing the advantages of the two methods of protection, we have to weigh 33 deaths *certain*, against *two contingent on the invasion of an epidemic Small Pox*, and then we have to consider, whether there might not be nearly as great a chance of *two persons* out of 10,000 inoculated for Small Pox, taking a fatal Small Pox on exposure, at a subsequent period of life, to a virulent contagion." I shall conclude the evidence I think it necessary to bring forward on this part of my subject with the following extract from the Report of the National Vaccine Establishment for 1820. In reference to the occasional cases wherein the protection from *Vaccination* is not quite complete, the Board observes,—“Yet the value of this important resource is not disparaged in our judgment; for after all, these cases bear a very small proportion to the number of those who are effectually protected by it. The reports of the Vaccinators at the several stations in the metropolis, give only *eight* cases of Small Pox out of nearly 67,000 vaccinated by them, since the first establishment of this board; and as the Small Pox has prevailed extensively in London, these persons so vaccinated, must have been frequently exposed to contagion, and consequently the protecting effect of *Vaccination* must have been submitted to as severe a test as can well be imagined. Moreover, we have the most undoubted proofs from experience, that where *Vaccination* has been performed perfectly, Small Pox, occurring after it, is almost universally a *safe* disease; and though ushered in by severe symptoms, has hardly ever failed to be cut short before it had reached that period at which it becomes dangerous to life.”

I shall not weaken the force of this evidence by entering into any minor question connected with this great subject—such as the probability of many of those, in whom Small Pox has succeeded to *Vaccination*, having passed through the latter process imperfectly, either in consequence of the matter employed not having been genuine; of the constitution not having shown adequate signs of being properly influenced by the process; or of the latter having been interfered with in its progress, by the accidental injury of the pustules, &c. No doubt all these causes may have had some effect, in consequence of the carelessness of parents, or of the practice of non-professional inoculators: in a matter of so much importance then, it behoves parents to guard against these causes of failure, which it is now certainly within the power of the poorest to do. Nor shall I detail the arguments by which Professor Thomson has rendered it probable that the pustular eruption, which has been so long known in this country under the name of Chicken Pox, is very nearly related to Small Pox itself, and is in reality the effect of the same infectious virus modified by various incidental circumstances; such as season of the year, the previous existence of Small Pox or of Cow Pox in those affected by it, or some peculiarity in their constitution not sufficiently obvious to be recognised by our senses. When I rest my proof of the power of *Vaccination* over the destructive consequences of Small Pox on the results which have been detailed, I am satisfied that it is fixed upon a basis too firm to be shaken by argument, and which will long outlive the feeble attacks of ignorance or prejudice.

CONCLUSION.

The following are the important conclusions which may obviously be deduced from the satisfactory evidence which has been detailed.

1. That Vaccination has, within the space of twenty-five years, been the direct means of preserving, within the London^[8] Bills of Mortality alone, a number of lives amounting to 21,127; and that if we extend the ratio of calculation to the whole of Great Britain and Ireland, it will appear that not fewer than 393,356 lives have been saved by this most valuable discovery, while an equal number have been preserved from "blindness, deformity, scrofula, or broken constitutions."

8. The following is extracted from the London Medical and Physical Journal for the present month (December):—"Influence of Vaccination upon the mortality of Berlin. M. Casper has published a long paper, containing many curious details relative to the above subject; but we can do no more, at present, than give the result of his investigations. 1. The Small Pox formerly carried off from the 12th to the 10th of the population. 2. Formerly, at Berlin, one out of twelve children born, died of the Small Pox; now the deaths from the same cause are 1 in 116."—*Journal Comp. September*. In London, as has been already shown, the number of deaths from Small Pox has been diminished from 1 in 10 to 1 in 28. It is obvious, therefore, that, were Vaccination employed in the latter city to the same proportional extent as at Berlin, a further saving of more than 500 lives annually would be effected, within the bills of mortality.

2. That in accomplishing this result, Vaccination has acted in two ways,—1. by superseding the practice of inoculation for Small Pox, which (while it afforded a certain degree of security to the inoculated) has been proved to have materially increased the gross number of deaths, by creating, artificially, many new sources of infection,—and, 2. by rendering the vaccinated entirely insusceptible of Small Pox infection, or the disease produced by it, in almost every instance, mild, harmless, and devoid of danger.

3. That Vaccination is capable, if universally employed, of exterminating the Small Pox altogether, as has been proved by the experience of other countries.

That Vaccination is a process perfectly unattended with danger to the individual who passes through it, and incapable of communicating any noxious infection to those around him, are facts too well known and too generally admitted, to require more than a passing notice; nevertheless it is essential that they should not be lost sight of.

But if these be indeed plain and legitimate conclusions from the facts and arguments which have been adduced—and to myself they appear irresistible ones—then must Vaccination cease to be considered as a matter of policy, or of curious medical research only, for it plainly resolves itself into a momentous moral question. Let it once be admitted that it is capable of eradicating so great an evil as the infection of Small Pox, and it becomes the imperative duty of every individual to promote, to the utmost of his ability, an end so infinitely desirable. The question involves consequences so closely connected with the well-being of individuals and of society in general, and the actual existence of so many thousands annually, that ignorance, or doubt, will scarcely form an admissible apology for the omission of what is alike essential for private and for public security. If then any be ignorant on this momentous subject, let him not delay to obtain information; if any doubt, let him use every exertion to satisfy himself. If he hesitate to confer on his children the advantages, which Vaccination has been proved to be capable of bestowing, let him remember, that it has already been the means of preserving nearly four hundred thousand of his countrymen, and that, perhaps, he owes his own existence at this day, to its salutary influence; that but for Vaccination he might possibly himself, long ago, have fallen a sacrifice to the destructive disease from which it has rescued so many victims, and have been equally unable to call its efficacy in question, or to assist in consummating the grand object, which by means of it alone, appears capable of being accomplished.

It was in our own country, that this most remarkable discovery originated; it was our own countryman, who, with such noble disinterestedness, as soon as he had satisfied himself of its real value, disclosed it to the world, and who sacrificed every personal consideration of pecuniary gain, to the general welfare of mankind. As Englishmen, we have just cause to be proud of both—the discovery and the discoverer; but we may well feel humbled when we remember, that the merits of neither have been adequately acknowledged amongst us; and that while the latter has been more justly estimated and more highly honoured in almost every other part of the world, the former has also been more effectively employed, and with proportionally more decisive results.

It is true, that in some of the continental nations, where Vaccination has been most extensively and successfully employed, it has been made a matter of state policy, and legislative measures have been used to enforce its adoption; while, at home, it has rested with the public to adopt or reject it, as might be agreeable to their opinions or prejudices. Some writers have proposed that a similar mode of enforcing its general employment in England, by legislative compulsion, should be made use of; but, I conceive, such measures would be too little in accordance with the spirit of our government, and too repulsive to the feelings of Englishmen, to render them advisable, notwithstanding the paramount national importance of the object. That the time will presently arrive when this object will be fully accomplished, without any such unpalatable interference of the legislature, but by the irresistible force of truth alone, on the minds of the public, I cannot permit myself to doubt. Means of information on the subject, ample and satisfactory, are within the reach of all who are anxious to enquire; and it cannot be that they should long remain unexplored, or that they will fail to carry

conviction to the mind of every candid and intelligent enquirer. But, when I reflect that the early conviction of a single individual, who entertains a doubt of the protective efficacy of Vaccination, or a prejudice against the practice, may be the direct or indirect means of saving the lives of many, I cannot refrain from most earnestly exhorting every one to consider this subject maturely—to be strenuous and unremitting in his enquiries respecting it, until every doubt is satisfied. He will then see one straight forward path of duty before him, which he will feel himself compelled, by every moral and religious obligation, most perseveringly and undeviatingly, to pursue. He will feel that his own personal exertions, in promoting the general use of Vaccination in his own family, amongst his dependents and all those whom he can in any the slightest degree influence, are essential to the accomplishment of the great philanthropic end proposed—the total extinction of Small Pox: a consummation that would prevent a larger portion of human misery, and preserve a larger number of human lives, than any other which it is in the power of imagination to conceive, or of reason to contemplate.

TABLE I.

The first column of this Table exhibits the total number of deaths, and the second column the number of deaths from Small Pox, occurring within the London Bills of Mortality, during every successive year, for a period of 121 years.

<i>Year.</i>	<i>Total number of deaths.</i>	<i>Number of deaths from Small Pox.</i>
1703	20,720	898
1704	22,684	1,501
1705	22,097	1,095
1706	19,847	721
1707	21,600	1,078
1708	21,291	1,687
1709	21,800	1,024
1710	24,620	3,138
1711	19,833	915
1712	21,198	1,943
1713	21,057	1,614
1714	26,569	2,810
1715	22,232	1,057
1716	24,436	2,427
1717	23,446	2,211
1718	26,523	1,884
1719	28,347	3,229
1720	25,454	1,440
1721	26,142	2,375
1722	25,750	2,167
1723	29,197	3,271
1724	25,952	1,227
1725	25,523	3,188
1726	29,647	1,569
1727	28,418	2,370
1728	27,810	2,105
1729	29,722	2,849
1730	26,761	1,914
1731	25,262	2,640
1732	23,358	1,197
1733	29,233	1,370
1734	26,062	2,688
1735	23,538	1,594
1736	27,581	3,014
1737	27,823	2,084
1738	25,825	1,590
1739	25,432	1,619
1740	30,811	2,725
1741	32,169	1,977
1742	27,483	1,429
1743	25,200	2,029
1744	20,606	1,639
1745	21,296	1,206
1746	28,151	3,236
1747	25,494	1,380
1748	23,869	1,789
1749	25,516	2,625
1750	23,727	1,229
1751	21,028	998
1752	20,485	3,538
1753	19,276	774
1754	22,696	2,359
1755	21,917	1,988
1756	20,872	1,608
1757	21,313	3,296
1758	17,576	1,273
1759	19,604	2,596
1760	19,830	2,187
1761	21,083	1,525
1762	26,326	2,743
1763	26,143	3,582
1764	23,202	2,382
1765	23,230	2,498
1766	23,911	2,334
1767	22,612	2,188

1768	23,639	3,028
1769	21,847	1,968
1770	22,434	1,986
1771	21,780	1,660
1772	26,053	3,992
1773	21,656	1,039
1774	20,884	2,479
1775	20,514	2,669
1776	19,048	1,728
1777	23,334	2,567
1778	20,399	1,425
1779	20,420	2,493
1780	20,517	871
1781	20,709	3,500
1782	17,918	636
1783	19,020	1,550
1784	17,828	1,759
1785	18,919	1,999
1786	20,454	1,210
1787	19,349	2,418
1788	19,697	1,101
1789	20,749	2,077
1790	18,038	1,617
1791	18,760	1,747
1792	20,213	1,568
1793	21,749	2,382
1794	19,241	1,913
1795	21,179	1,040
1796	18,905	3,548
1797	17,014	522
1798	18,155	2,237
1799	18,134	1,111
1800	23,068	2,409
1801	19,374	1,461
1802	19,379	1,579
1803	19,582	1,202
1804	17,038	621
1805	17,565	1,685
1806	17,938	1,158
1807	18,334	1,297
1808	19,954	1,169
1809	16,680	1,163
1810	19,893	1,198
1811	17,043	751
1812	18,295	1,287
1813	17,322	898
1814	19,783	638
1815	19,560	725
1816	20,316	653
1817	19,968	1,051
1818	19,705	421
1819	19,228	712
1820	19,348	792
1821	18,451	508
1822	18,863	604
1823	20,587	774

TABLE II.

This Table is divided into intervals of five years each. It embraces the same period of 121 years, included in the former, and is intended to shew the increase in the average amount of mortality from Small Pox during the practice of Inoculation, and the striking diminution which has taken place since the introduction of Vaccination.

<i>Periods of 5 years including</i>	<i>Total number of deaths.</i>	<i>Number of deaths from Small Pox.</i>	<i>Number of deaths from Small Pox in 1000.</i>	<i>Relative number of deaths from Small Pox.</i>
1703 to 1707	106,948	5,293	49.4	1 in 20.2
1708 -- 1712	108,742	8,707	80.0	1 in 12.4
1713 -- 1717	117,740	10,119	85.9	1 in 11.6
1718 -- 1722	132,216	11,095	84.5	1 in 11.9
1723 -- 1727	138,737	11,625	83.6	1 in 11.9
1728 -- 1732	132,913	10,705	80.5	1 in 11.4
1733 -- 1737	134,237	10,750	80.0	1 in 12.4
1738 -- 1742	141,720	9,415	66.0	1 in 15.0
1743 -- 1747	120,753	9,484	78.0	1 in 12.7
1748 -- 1752	114,625	10,179	89.0	1 in 11.2
1753 -- 1757	106,074	10,025	95.0	1 in 10.5
1758 single year	17,576	1,273	72.4	1 in 13.8
1759 -- 1763	112,986	12,633	111.8	1 in 8.9
1764 -- 1768	116,594	13,630	116.9	1 in 8.5
1769 -- 1773	113,770	10,645	93.5	1 in 10.6
1774 -- 1778	104,179	10,808	103.7	1 in 9.7
1779 -- 1783	98,584	9,050	91.7	1 in 10.8
1784 -- 1788	96,247	8,487	88.2	1 in 11.3
1789 -- 1793	99,509	9,391	94.3	1 in 10.5
1794 -- 1798	94,494	9,260	96.9	1 in 10.2
1799 -- 1803	99,537	7,762	77.9	1 in 12.8
1804 -- 1808	90,829	5,930	65.3	1 in 15.3
1809 -- 1813	89,233	5,299	59.3	1 in 16.8
1814 -- 1818	99,332	3,488	35.1	1 in 28.4
1819 -- 1823	96,477	3,390	35.1	1 in 28.4

The first Bracket includes the period when Inoculation for Small Pox was in most general use. The second Bracket the period of Vaccination.

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Transcriber's note:

Page 4, 'in-instances' changed to 'instances,' "where three instances had occurred"

Page 14, 'recal' changed to 'recall,' "who cannot recall many more"

Page 24, double quote moved to after 'advantages,' "of some real advantages" (p. 59)."

Page 25, double quote inserted after 'are,' "words are" (p. 37),"

Page 59, double quotes added after 'results' and before 'which,' "results" (adds Dr. Thomson) "which evince"

Page 73, full stop inserted after table heading 'Year.'

Page 74, '8817' changed to '1788,' "1788 19,697 1,101"

*** END OF THE PROJECT GUTENBERG EBOOK AN ESTIMATE OF THE TRUE VALUE OF
VACCINATION AS A SECURITY AGAINST SMALL POX ***

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