of life effected by this invaluable discovery must be im­mense.

Though the benefits of vaccination were thus clearly proved, the public confidence in it has been attempted to be shaken by raising the outcry, that the vaccine virus, if it really possesses anti-variolous powers, loses them as life ad­vances; so that, at the end of a few years, those vaccinated individuals are as liable to the attack of small-pox as if they had never been affected by the disease. It is fortunate­ly an easy matter to trace such an opinion to its true sources; namely, to a disbelief in the fact, that small-pox can occur twice in the same individual ; and to a disbelief in the iden­tity of small-pox and cow-pox. Those holding such opi­nions as these, see every thing through the mist of prejudice, and represent every instance of the occurrence of small-pox after vaccination as an additional proof of the correctness of their theory ; shutting their eyes to the facts daily happen­ing around them, that a second attack of small-pox is not only by no means a very rare occurrence, but that it is a much more dangerous and fatal disease than small-pox af­ter vaccination, cutting off at least three times as many vic­tims.

As the first of these objections has. It is conceived, been satisfactorily shown to rest on no solid grounds, we are next to examine whether the second stands on any better founda­tion.

Every writer who has opposed vaccination, whatever may have been his other grounds of objection, has constantly set out with the proposition, that there are certain diseases which oc­cur but once in the course of life, and which effect some un­known change on the constitution, rendering it unsusceptible of a second attack of the same disease. As they regard small­pox and cow-pox as two distinct diseases, they cannot ima­gine how the one disease should guard the human frame from the ravages of the other ; and one of the latest writers on the subject of vaccination, Dr. G. Gregory of the Small-Pox Hospital, London, actually declares, that “ vaccination is not small-pox, but just the reverse—the antagonist prin­ciple.” In order to answer such an objection, all that is re­quisite is, to show that small-pox and cow-pox are really identical, the latter only modified by having passed through the system of the cow, as originally advanced by Dr. Jen­ner, the father of vaccination.

It was announced so early as 1802, by Professor Viborg of Copenhagen, that, at Berlin, small-pox was communi­cated to the cow by inoculation ; but the details of these experiments do not appear to have reached this country, and all attempts to repeat them here have failed. It was not till 1830, that any detailed account of successful expe­riments of this kind were published, when Dr. Sonderland of Barmen announced that he could produce the true vaccine disease in the cow at pleasure, by covering the animal with the blankets from the bed of a patient who had died of small­pox, and by hanging them up around it, that it might breathe the effluvia arising from them. In a few days, he says, the animal became sick, and pustules appeared on the udder and other parts, precisely similar to the cow-pox vesicles, and filled, like them, with lymph. This lymph, transferred to the human subject, he found to produce the genuine vaccine vesicle, together with the usual constitutional dis­turbance, and to protect the individual from the small-pox virus or contagion. In fact, such a change was effected on the small-pox matter, during its transit through the system of the cow, that it was converted from a virulent and fatal into a mild and safe disease.

The announcement of this curious experiment incited others to repeat it, though without success; and it was not till 1839 that Mr. Robert Ceely, surgeon to the Bucking­hamshire Infirmary, succeeded in proving the identity of the two diseases, by communicating small-pox by inocula­tion to the cow, and finding it produce the true cow-pox

disease. He however failed to communicate small-pox to the cow after the manner found successful by Dr. Sonderland. Mr. Ceely inoculated heifers with the matter of small­pox, and found it to produce genuine vaccine vesicles, which ran their course like the natural or inoculated cow-pox, and furnished limpid lymph for vaccination. The lymph was employed in vaccinating many children, and dif­fered in no respects from that obtained from the natural cow-pox vesicle of the cow. It ran the same course when introduced by punctures on the arm; did not give rise to any eruption on the skin, any more than primary vaccine lymph; and afforded equal protection against small-pox, as found by exposing the children to the small-pox effluvium, and also by inoculating them with small-pox virus; in fact. It did not in any respect differ from ordinary vaccine lymph, as obtained from the natural vaccine vesicle.

Nothing could be more satisfactory than the result of such an experiment. For here it is proved, beyond the possibility of a doubt, that small-pox and cow-pox are but varieties of the same disease. It is therefore no longer to be regarded as an anomaly, that cow-pox should protect the system from an attack of small-pox, but it is in beau­tiful accordance with what has been generally admitted to be a law in nature, that certain diseases, once undergone, protect the system from a subsequent attack.

The chief objection to vaccination having been. It is hoped, answered satisfactorily. It only remains to show, that the protective powers of vaccination do not wear out of the system as life advances, any more than those of small-pox itself. This is a most important inquiry; as nothing is more likely to prove hurtful to the cause of vaccination, and render the public careless of securing to themselves its benefits, than the belief, that they would require to submit to revaccination every ten or fifteen years, and that at no period of their lives they could with certainty reckon on escaping the small-pox.

Starting from the point which has been proved, that the cow-pox and the small-pox are the same disease, all analogy shows that the system having once passed through this disease, is not in general susceptible of a second attack. More than forty years have now elapsed since vaccination was introduced; and if, as the opponents of vaccination assert. Its anti-variolous powers wore out of the system in a few years, why does it happen that small-pox is not now as deadly a scourge among the grown popula­tion, as it was before the introduction of vaccination ? It has not been for want of epidemics of small-pox that the grown population has escaped for so many years. At Mar­seille, after a lapse of twenty-five years. It was found that the protective powers were not in the least diminished. Of the 30,000 who had undergone vaccination in that city, only twenty fell victims to the small-pox, or one out of every 1500 individuals : while of the 8000 who had not been vaccinated, no fewer than 1000 died, or one out of every eight persons. Here was no falling off of the protective power of vac­cination after twenty-five years. Nay, the security afforded by vaccination was even greater than that of small-pox itself, for out of a population of 2000 who had had small-pox, no fewer than four died, or one out of every 500 individuals ; exactly three times as many as those who had been protect­ed by vaccination. But this is only one of many similar instances which might be produced.

It having been found, that from a sixth to a third of those who have been vaccinated are capable of receiving vaccination a second time, after the lapse of a greater or lesser number of months or years, the opponents of vaccination ad­duce this as an additional argument to prove that its anti- variolous powers wear out of the system. But such asser­tions will not bear a moment’s serious reflection. Allowing, for the sake of argument, that all those who could be re­vaccinated successfully, would be equally liable to an attack