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THE
VACCINATION
QUESTION

ARTHUR WOLLASTON HUTTON

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General Phelps
23 Augustus Rd.
November 1894



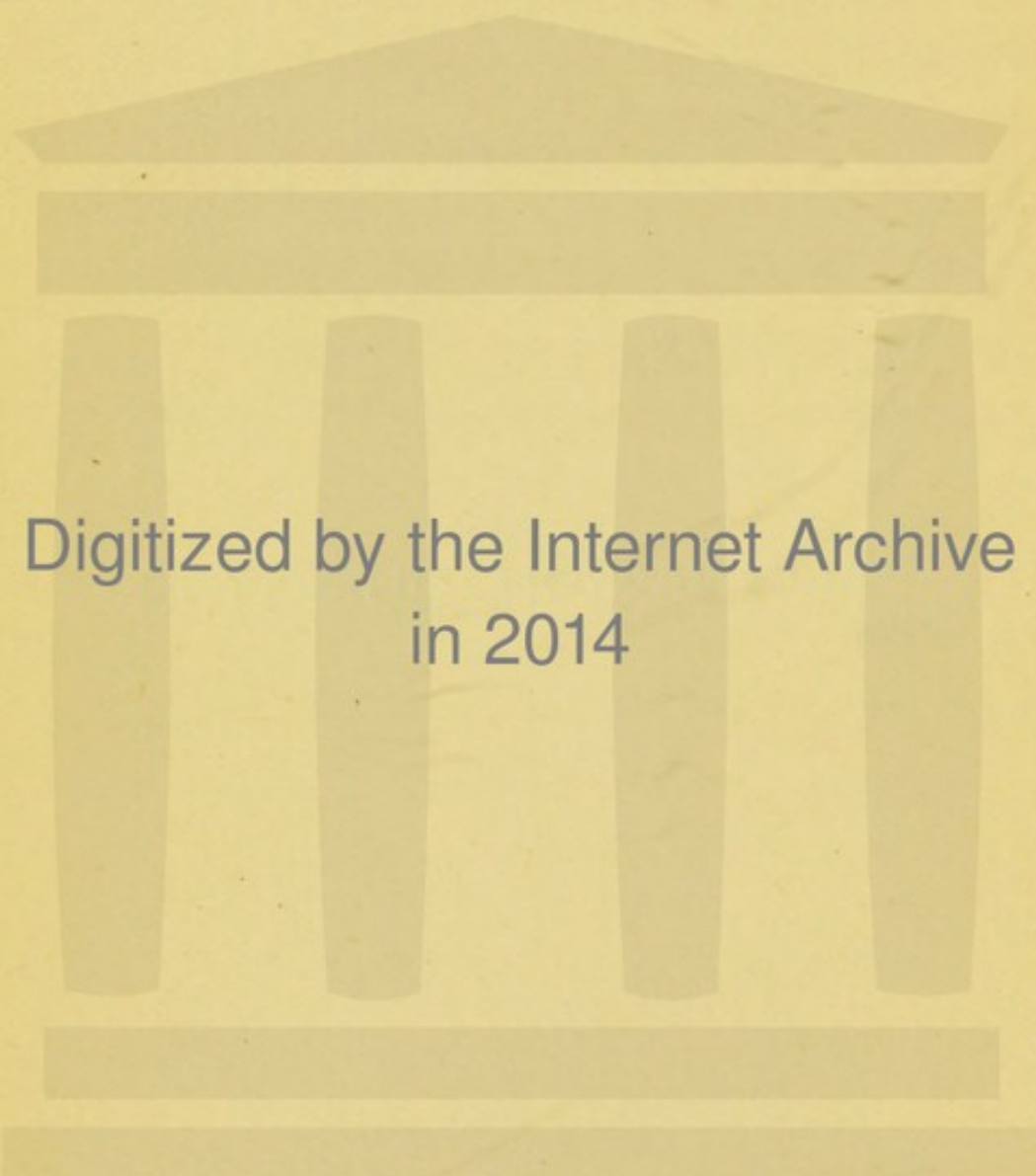
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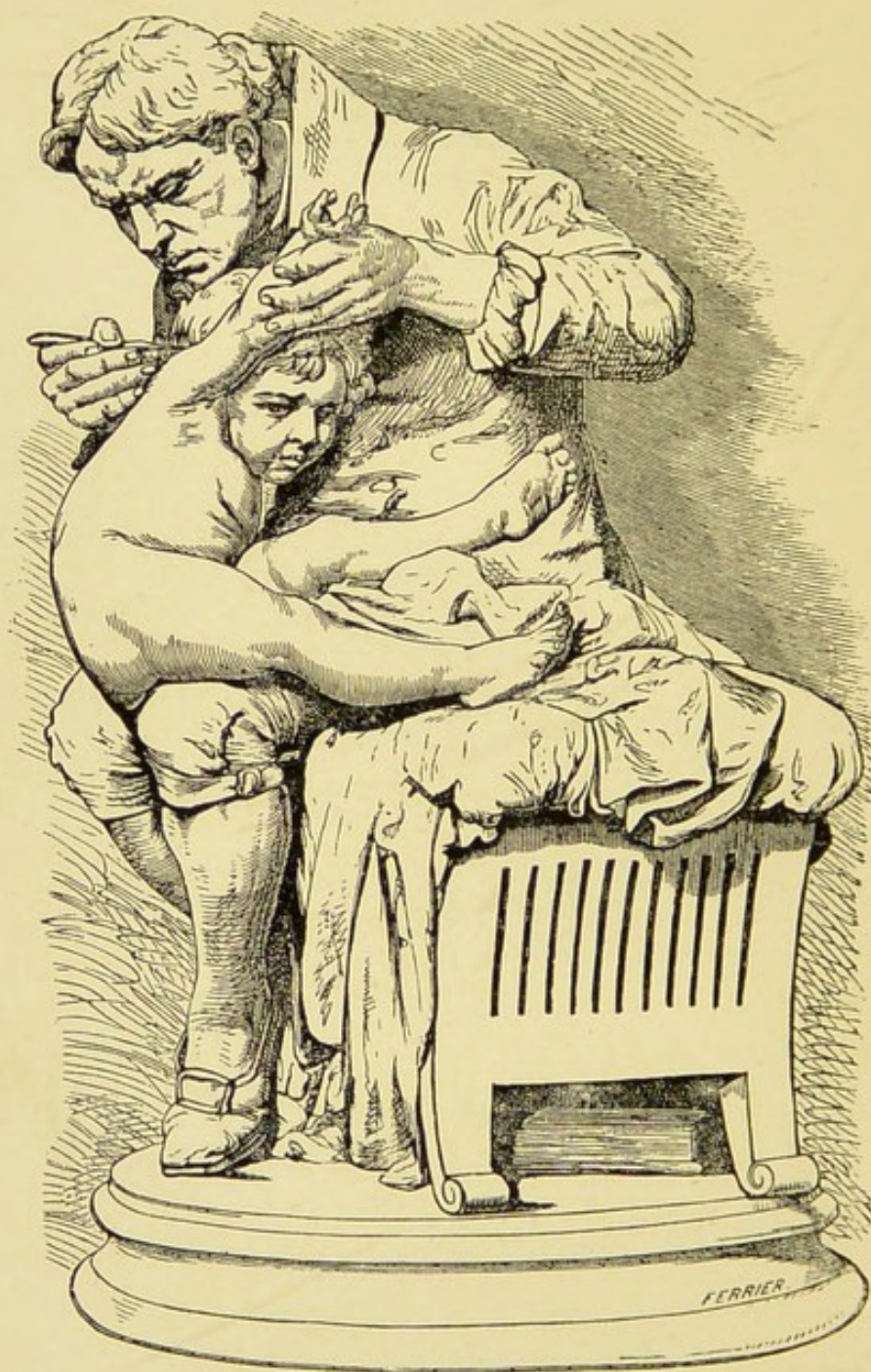
THE VACCINATION QUESTION



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EDWARD JENNER VACCINATING HIS SON

From the Statue by Monteverde

THE
VACCINATION QUESTION

A LETTER ADDRESSED BY PERMISSION TO THE
RIGHT HON. H. H. ASQUITH, Q.C., M.P.
H.M. Principal Secretary of State for the Home Department

BY
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THE VACCINATION QUESTION.

DEAR MR ASQUITH,—AT a select social club in the West-end of London vaccination is, I am told, one of four subjects (the other three being politics, religion, and Wagner) which members are forbidden to discuss, on the ground that such discussion leads nowhere, and only ends in irritation. Nevertheless, although this question is a vexed one, and in some aspects a disagreeable one, I am disposed to hope that the present moment is favourable for calling attention to it, and that some few people at any rate may be willing to reconsider their judgment concerning it, especially since, as I think I shall be able to make clear, the question itself has had much fresh light thrown upon it during the last ten years, and the authority of great names can no longer be quoted wholly on one side. I shall make no attempt to conceal the facts that my convictions are on the side of those who doubt and distrust vaccination, and that consequently I advocate the total and immediate repeal of the compulsory laws ; and, as it would, I suppose, lie with you, Sir, to introduce such a measure, should the Government decide to adopt that policy, I wish to express first of all my indebtedness to you for permitting me to address you on the subject, though I have no reason to suppose that you have at present any sympathy with the view that I take. But I am not without hopes that, if you will give a fair

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consideration to the points which I urge, you will be prepared to admit that the compulsory law, as it stands, is indefensible, and ought to be repealed without delay.

THE QUESTION NOT ONE THAT MEDICAL SPECIALISTS
ALONE ARE QUALIFIED TO DISCUSS.

At the outset I anticipate the objection that a layman has no business to discuss the vaccination question at all ; that it is one on which professional men should lay down the law, which the rest of us have only to hear and obey. To that objection there is more than one sufficient answer. I will not content myself with the rhetorical reply—obvious as that is—that where doctors disagree the decision must lie elsewhere. Nor shall it be enough to point out that the question, as it now stands, is by no means a purely medical one ; that, even though it were admitted on all hands that vaccination is a harmless operation affording permanent protection against small-pox, the question whether it should be enforced by law is a further and a political one, involving the consideration of a number of points that have nothing to do with medical science at all. And, even beyond this, supposing the right of the State established to enforce a medical dogma or a particular form of medical treatment, there would remain the question of the wisdom and the policy of compulsion ; or, further, of its necessity at any given period. But I maintain that even in its purely medical aspect the value of vaccination is a point which any educated layman can easily qualify himself to discuss ; and that to think otherwise is, either to attribute to medical men, as such, some mysterious esoteric wisdom, which they do not and cannot reasonably claim to possess, or else to confuse between what is and what is not within the reach of the intelligent outside observer. No doubt, in

so far as medicine is an art, it belongs wholly to professional men, and a layman necessarily lacks that experience which alone can guarantee an accurate diagnosis—the one thing of first-rate importance in the physician's art. And in the art of surgery experience belongs even more exclusively to professional men. But, in so far as medicine is a science, what is there to prevent any educated man from learning all that is known about physiology, pathology, and pharmacy? Indeed, if he devotes his attention to any one special field of enquiry, he may easily be better informed in regard to it than a professional man, whose five years of technical training afforded him no special facilities for that particular study, and whose duties since he began to practice have left him little or no leisure for scientific studies at all. This is especially true of the vaccination question. I am informed on the best authority that medical students are taught nothing about the supposed scientific basis of the practice, and nothing about its origin and history. They are taught how to do it—and a child can do it—and how to watch, and, if necessary, alleviate its immediate effects. But its pathology is left out of account, and its prophylactic power is taken for granted, as if it were as indisputable as the purgative power of castor oil. Nor does subsequent experience do much to remove this ignorance; for that experience in the majority of cases, and in the case of nearly all medical men who have begun to practice since 1872, is of necessity extremely limited.* For, although the country is

* How little familiar some medical men are now with small-pox is seen in the fact that, during the slight epidemic of small-pox in London in 1892, out of 299 cases sent to the small-pox hospitals of the Metropolitan Asylums Board, 23, or nearly 8 per cent., proved on arrival to be not suffering from small-pox at all. These figures are taken from the Report for 1892 of the London County Council's Medical Officer of Health. The Metropolitan Asylums Board Report for 1893 shows some improvement, only 81 cases out of 2441 being sent in error to the

now less thoroughly vaccinated than it was at the date just named, the vaccinated are still probably some 90 per cent. of the population; and this proportion, while there is so little small-pox about, gives medical men very few opportunities for studying the alleged susceptibility of the unvaccinated as compared with the alleged immunity of the vaccinated. This of course does not apply to those who have the care of patients in small-pox hospitals; and the evidence of these doctors consequently deserves the closest attention. My only point at present is this, that there is no occasion to defer to the opinion of the average medical man on this question of vaccination; for, so far from being an expert, he may know, of his own experience, little or nothing about the matter; while the sources from which he can obtain information at second-hand are equally open to laymen. No doubt, if a medical man, with his mind as free as possible from bias, makes a searching study of this question, scrutinising its history and pathology with all the apparatus that libraries and laboratories afford, his judgment should be treated as of corresponding weight, and should be preferred to that of a non-professional man working with less technical training in the same field. It is in fact on the judgment of such men that my own has been based, so far as the purely medical aspect of the subject is concerned. The great majority of the profession are, I know, on the other side; but it is not in the vote of the majority that scientific truth and progress are to be sought.

The point is an important one, and I may be pardoned if I pursue it a little further. A doctor may "successfully

small-pox hospital ships. The diseases mistaken for small-pox were mostly chicken-pox and syphilis; but fifteen other diseases were represented by nineteen cases in all; and four patients were sent who showed no symptom of any disease at all! This does not promise well for the advocates of compulsory removal.

vaccinate" hundreds and thousands of children, and yet never have any real evidence in any single case that the operation has averted or modified an attack of small-pox. People are perhaps misled in this matter by the use of the word "successful." When a doctor certifies that he has "successfully" vaccinated a child, he does not mean that he has succeeded in protecting it against small-pox, though it may be his opinion that he has done so; he merely means that he has "succeeded," by the subcutaneous insertion of the cow-pox virus, in raising the small bladder-like structure known as the vaccine vesicle, which contains a further supply of the virus, or "lymph," that may be used in subsequent operations. That is all he knows about it at the time, and, in the vast majority of cases, all he ever does know about it. Occasionally a family doctor, who has his eye on his patients from infancy to mature age, has the opportunity for inferring more, should a small-pox epidemic happen to invade his district. But even then, since immunity from small-pox was known before vaccination had been invented, and since, moreover, contact with the infection cannot be taken for granted without proof, his inference would fall far short of a demonstration of the value of vaccination, unless he could adduce a variety of cases in which, amidst other differing circumstances, vaccination was the condition of escaping and non-vaccination the condition of catching the disease. Such evidence, it need hardly be said, may be sought for in vain.

The question is, in fact, far less easily disposed of than people are ready to imagine, if it is treated as a scientific one, and not as one settled long ago in the affirmative by authority. The critic's first difficulty is to establish the proposition that there is any question at all; so prone are the majority to treat vaccination as a simple subject, perhaps of no great importance, but anyhow one on which

no one even pretends to have any doubt, save a few *mauvais sujets*, who will never accept anything on the authority of duly qualified men, and who, as individualists, are always making a fuss about their personal liberty being interfered with by the State. If this were all that could be urged against the practice, I should certainly not be writing to you, Sir, as I am now; for though, as an old-fashioned Liberal, I have misgivings about some of the doctrines of the new school, I still hold that, if the grounds on which compulsion was originally established were true, viz: that vaccination is the only generally available security against small-pox, that its performance involves no appreciable risk, and that a single vaccination in infancy secures life-long immunity, a strong case on behalf of compulsion would have been made out. But, as I hope shortly to show in detail, every one of these propositions is now questioned, even the warmest advocates of the practice admitting that the protection afforded by vaccination extends only for a period variously reckoned at from one to ten years, an admission which is of course fatal to the *raison d'être* of a law which enforces the vaccination of infants only.

On the other hand, it is fair to admit that, when once the question has been entrusted to the scientific crucible, the critic's task is an easier one than the advocate's. It is impossible rigidly to prove in any individual case that immunity from small-pox is due to vaccination; whereas in every case of the failure of vaccination to secure immunity we have a distinct contradiction of the theory of its prophylactic virtue. And, what is true of single cases is no less true of communities. If a well-vaccinated country enjoys for a long period immunity from small-pox, you cannot prove that vaccination was the cause of that immunity, unless you can show that there can have been no other cause. *Post hoc, ergo propter hoc* is a familiar fallacy

which, I believe, has never been so fruitful of error as in this particular controversy. Whereas, unless, in a well-vaccinated country, small-pox invariably selects the unvaccinated minority for its victims, the argument against the value of vaccination is a sound one. Vaccination, I do not deny, stands firmly established by law, by custom, by interest, and by the sincere belief of hundreds and thousands of persons; but for its establishment scientifically something very different is needed. A sound theory, verified habitually, and under circumstances so varied as to leave no reasonable opening for doubt—this would amply meet the case; but that these conditions are very far from being fulfilled is what I think I shall be able to show.

APPARENT STRENGTH OF THE CASE AS USUALLY
STATED IN FAVOUR OF VACCINATION.

I have been anxious to make these preliminary observations, because it is only when people see that, in regard to scientific proof, the question, so far from being settled long ago in the affirmative, is almost of necessity an open one, that they are likely to be willing to give a fair consideration to a statement of the case which contradicts their prepossessions. For myself, I will frankly confess that up to about 1887 I shared those prepossessions as fully as any one, and shrank from the anti-vaccinists as "faddists." Indeed, the case in favour of vaccination, as usually stated, seems at first sight almost unanswerable. It is not only to the comparatively steady prevalence of small-pox in the last century and to our ordinary freedom from it now that you can point. The conversion by Jenner of the medical profession (with but few exceptions) within five years of his announcement of the virtues of cow-pox inoculation, is a most remarkable fact; but not more remarkable than the acceptance of the

new doctrine, in spite of national jealousies, by the mass of medical men throughout the world. It is difficult to believe that so intensely conservative a profession could so rapidly have been converted to a delusion ; but it is even more difficult to believe that nearly a century should have been needed for the detection of the delusion. Then we have the extraordinary phenomenon of State after State, beginning with Bavaria in 1807 and ending with Italy in 1892, being so impressed with the immense value of the operation, that, although medical treatment had never before been thought a fit subject for legislative enforcement, they have insisted on vaccination by the imposition of penalties, which in our own country have gradually been made more severe. Surely, if ever there was a case in which the judgment of the civilised world might be reckoned as certain and secure, this would be the one. Such, at any rate, is the opinion one is apt to form after a superficial view of the circumstances of the case. What, in criticism of this view, I shall endeavour to point out in detail is, that the practice originated in what can now be clearly recognised as a mistake ; that there were reasons at the time for this mistake being honestly accepted with enthusiasm ; and that fashion, authority, custom, and interest are responsible for the establishment of the practice, and not the sober judgment of medical science. The key to the whole controversy will, I believe, be found if we strictly bear in mind that the history of vaccination corresponds rather to that of a religious dogma than to that of a scientific discovery ; and that the imposing terms in which its virtues are asserted are imposing in more senses than one, and no more prove the medical doctrine of cow-pox prophylaxy than the silver trumpets at St Peter's prove the theological doctrine of transubstantiation. A selection from official statistics is, no doubt, enough to satisfy those who have already made up their minds to be

satisfied ; but, so far as I know, no one who has studied the history and pathology of vaccination has retained his faith in its alleged power.

SMALL-POX IN ENGLAND BEFORE THE USE
OF INOCULATION.

The popular notion that in old times small-pox was a veritable plague, against which there was no protection, until in the eighteenth century the practice of inoculation afforded some relief, while the later discovery of vaccination provided an infallible defence against it, has little or no foundation in fact. It is only during the last two or three centuries that the disease has been thought of much account ; and it would almost seem that the special prominence given to it now is due to the interested advocacy of prophylactics against it, in respect to which it holds an unique position in the history of medicine. It is apparently of foreign origin, and has doubtless existed in India and in the East generally from a remote period. Probably it reached England, either through the medium of the Saracens at the time of the Crusades, or else through the Moors in Spain. John of Gaddesden, priest and physician, who died in 1361, wrote on it, and advocated its treatment by the use of red cloth. He asserted that by this method he had cured a son of Edward I. of the disease, which left no marks behind (*sine vestigio variolarum*)*.

* This red cloth treatment was doubtless oriental in its origin, as well as the disease itself ; and it had at the first a religious significance, though later a therapeutic power, in bringing the disease to the surface, was attributed to it. The patient was wrapped in red cloth, and bed and window curtains of the same colour were used. The practice had not died out within the memory of persons still living ; and it has quite recently been revived by a Norwegian physician, Dr Svendsen of Bergen, who claims to have cured in this way four unvaccinated patients. See *British Medical Journal* for February 17, 1894. If it again becomes fashionable it will prove a formidable rival to vaccination.

Little, however, is said about it before the seventeenth century ; indeed, until the time of Sydenham (died 1689) small-pox, measles, and scarlet-fever were frequently confused together. Two things, however, are clear, one being that the epidemics varied in old times, much as they do now, in severity as well as in extent ; and that, under ordinary circumstances the disease was recognised as being by no means extraordinarily fatal, though that character is ascribed to the "flox," which was probably small-pox in its confluent form. Thus, Dr Plot, writing of an epidemic in Oxfordshire in 1677, says that it was "so favourable and kind, that, were the nurse but tolerably good, the patient seldom miscarried."* And immunity of those who attended to the sick was also not unknown in pre-vaccination days ; we are told, for example, that, during an epidemic in New England in 1633, which was fatal to whole settlements of the native Indians, "only two families of the English who ministered to them took the infection."†

In the eighteenth century, however, both in this country and on the Continent, small-pox was recognised as a generally prevalent and very serious scourge,‡ and it was especially and very naturally dreaded by ladies, on account of its disfiguring effects. Yet it does not appear to have been more fatal than it ordinarily is now ; the proportion of

* Creighton's "History of Epidemics in Great Britain," Vol. I., p. 467.

† Creighton, *ubi sup.*, Vol. I., p. 613. This incident is clearly parallel with a similar experience during Stanley's last African expedition, evidence concerning which was given by the late Surgeon Parke before the Royal Commission.

‡ The prevalence was not, however, universal. Thus it is recorded that at Boston, America, the disease died out in the early part of the eighteenth century, and that there was not a single case of it for nineteen years.

deaths to cases being then, as now, according to a variety of authorities from 18 to 19 per cent., or less than one in five. But it was undoubtedly more constant in its presence than it has been in our own century; insomuch that it came to be regarded as one of those things that must be gone through—just as measles are still regarded in many old-fashioned families—and everyone's anxiety was consequently to get through it as easily as possible and to escape disfigurement. Probably better nursing and more rational treatment would in most cases have secured exemption from "pitting"; but it was difficult to escape contact with the disease altogether when the sanitary conditions, under which even Royalty in those days lived, encouraged the prevalence of the infection. Anyhow, the state of mind which regarded small-pox as almost inevitable was favourable to the reception of an operation which promised alleviation where exemption was impossible. Only in this way can we understand how the practice of inoculation, or of grafting the disease on to a healthy person, a practice in itself so revolting and so contrary to our natural instincts, which bid us keep scrupulously clear of the foul matter which a zymotic disease produces, obtained rapidly a wide acceptance, and so paved the way for vaccination.

SMALL-POX INOCULATION.

It is a singular and a suggestive fact that the practice of small-pox inoculation, the parent of vaccination, and the grand-parent of the modern theories of Pasteur and of Koch, was not the outcome of any scientific investigation, though for years it enjoyed the almost unanimous approval of medical men.

Superstition invented it, and fashion insisted on it: the doctors merely bowed to the fashion, and then found

reasons for defending it. Its origin in India in about the sixth century was undoubtedly religious. It was a way of worshipping Matah, the goddess of small-pox, the devotees trusting that, by thus submitting themselves to her will, they would get off with a mild attack, as no doubt they frequently did. Presumably the origin of the practice in other parts of the world, as among the poor in Wales and Scotland, where it had been known from time immemorial when it first became fashionable in England about the year 1720, was also religious; but no records appear to exist. The superstition spread westwards in a Christianised form; and an interesting account of the contemporary practice in Georgia is given in the *Gentleman's Magazine* for October, 1755, in a letter from Mr Porter, then English Ambassador at Constantinople. He says:—

“With regard to the practice of inoculation in Georgia, a physician of that country, who, though mighty ignorant, picks up a handsome living by his practice here, asserts that among the professors of the true Georgian worship [an earlier correspondent had denied that inoculation was practiced among the Catholics in Georgia] the operation is common, but that its rise is owing to mere superstition. He says it is the tradition and a religious opinion of the inhabitants of the country that a certain angel presides over this disease. That it is to evince their confidence and to bespeak his favour that the Georgians take a small portion of the variolous matter, and, by means of a scarification, introduce it between the thumb and the forefinger of a sound person. The operation never misses its effect, and the patient always recovers. To secure beyond all uncertainty the good-will of the angel, they hang up scarlet cloths about the bed, that being the favourite colour of this celestial inhabitant. Our physician has himself assisted at the operation, and avers it to be a common practice. If so,

it is perhaps the only good effect that the monster superstition has ever produced."

It was from Adrianople, in 1717, that Lady Mary Wortley Montague wrote the famous letter in which she declared that of thousands who were there inoculated year by year not a single one died of the disease. She had her son inoculated, and she took much pains to introduce the practice on her return to England. The physician of the Embassy, Mr Maitland, inoculated under her patronage; and, as soon as two children of the Princess of Wales had been operated on, inoculation became the rage; and, as early as 1724, Steele congratulated Lady Mary on her "godlike delight" in saving "many thousand British lives" every year. Voltaire was in England at the time, and caught the inoculation-fever; and, touching his countrymen in a very susceptible place, he explained that the charms of the ladies of Circassia were due to the practice, and that thousands of English girls had learned in this way to preserve their health and beauty. It is true that the number he gave exceeded the total number of persons who had been inoculated when he wrote; but the student of medical nostrums soon becomes accustomed to statistics of that kind.

The history of inoculation in this country is well worth a study, on account of the singularly exact parallels it furnishes with the history of vaccination. With few exceptions the medical men of the day warmly encouraged the practice. They made light of its risks, and insisted on the security which it afforded. They pointed out that, whereas of those who took small-pox in the natural way 18 per cent. died, of the inoculated only 1 in 91 died; and similar statistics, issued or approved by medical men, could be quoted at great length. Small-pox inoculation was never compulsory, nor was it during the eighteenth century

commonly practised among the poor ; but it was authorised by fashion among the upper classes, and, in a sense, it was enforced by the frown of Mrs Grundy. It is often said that the domestic literature—the memoirs and correspondence—of the eighteenth century is darkened by the dread of small-pox which it so frequently records. This is true ; but it is also true that it contains nothing more pathetic than the agonising cries of doubt which arose from those who dreaded the introduction by inoculation of a horrible disease into their households, and who did from time to time lose a loved child by their rash procedure ; contrasted with the confident and cruel assertions of those to whom they appealed, to the effect that such was their duty, and that it could be done without perceptible risk.*

In the early years of the present century, when medical men, with almost complete unanimity, were seeking to replace the variolous inoculation by the vaccine inoculation, they confessed, or rather urged, that the earlier practice had destroyed more lives than it had saved. And this was undoubtedly true. For not only did the practice inflict the disease on the person inoculated, but that person became a new centre of infection, from which small-pox could be and was occasionally “caught” in the natural way ; and the advocates of inoculation had no right to assume that anyone must, sooner or later, suffer from small-pox or from any similar disease ; for he might be naturally insusceptible of it, or, in the ordinary course of things, the infection might never reach him. No one, in fact, now denies that the prevalence of small-pox in the eighteenth century was to some extent due to the practice of inoculation ; indeed this was partly recognised thirty years before the comparatively

* See, for example, the letter of “A Country Gentleman” in the *Gentleman's Magazine* for 1752, vol. 52, p. 126 ; and the death recorded in Boswell's “Life of Johnson,” Vol. IV., p. 293, ed. G. Birkbeck Hill.

safe vaccination came to the relief of the doctors, providing them with a colourable substitute which at any rate was not infectious. In 1764 the Suttonian system considerably reduced the risk of the operation; as did also the system of later inoculators, who used virus taken at such an early stage of the disease that it often did not communicate small-pox at all. We talk of small-pox inoculation, as if it were an uniform practice; whereas it really varied as much as vaccination does now. It might communicate the disease in its most deadly form, or it might do just nothing at all, beyond making a slight sore, which proved, if tested, no defence against subsequent exposure to the infection of small-pox. Disastrous, however, as the practice was—and so clearly is that now recognised that for the last fifty years the practice has been penal—it may be admitted that there was “something in it,” and that, in the special cases of medical men and of nurses, it might still be resorted to with advantage, if performed in isolation hospitals. For although some constitutions are so susceptible of small-pox (as others are of other fevers) that one attack does not afford security against a second or even a third, the general rule is that one attack does confer subsequent immunity; and a person inoculated when in good health, and when there is no severe epidemic about, might conceivably pass through the ordeal with less risk than if a natural attack of the disease had been waited for and incurred. On the other hand, there seems no good ground for concluding that, in the case of a person constitutionally liable to a severe attack, a slight attack only would result from inoculation, or that, if a slight attack did result, it would afford immunity from a subsequent attack. It might be hoped, but it certainly could not be proved, that the less would prevent the greater. And so, amidst so much uncertainty, it is doubtless well that the practice of small-pox inoculation should have been dropped;

nor would it have been necessary to refer to it here, were it not that, without the preparation which it had effected in the public mind, the practice of vaccination could never have been introduced.

JENNER AND THE INTRODUCTION OF VACCINATION.

The popular notion that a learned and acute physician, after careful experiments, extending over a long period of years, discovered and proved that the disease popularly known as "cow-pox," if inoculated on to the human subject, was a specific defence against a subsequent attack of small-pox, has been so completely disposed of by the historical researches of Dr Creighton and Professor Crookshank that it will not be necessary here to do more than to state such facts as really do underlie the Jenner myth.* Whatever Jenner's merits may have been, he was certainly not a specially learned man, nor was he a patient, nor for that matter even an honest observer. He was an amiable and attractive man, with a faculty for writing verses and also for making fast friends; he had, moreover, a taste for natural history, and he was very anxious to push his way in the world. Undoubtedly he was the first medical man who had the courage to commit himself to a theory—perhaps we should say a "fad"—that had for some years been in the air, to the effect that the diseases of animals might prove of service as prophylactics against the diseases of man. But his professional acquirements were but slender; his medical degree was the outcome of no examination or scientific

* See "Jenner and Vaccination, a Strange Chapter of Medical History," by Charles Creighton, M.D., London, 1889; and "The History and Pathology of Vaccination," by Edgar M. Crookshank, Professor of Bacteriology in King's College, London. 2 vols. 1889. Cheaper issue, 1894.

work, but merely of a fee of fifteen guineas paid to the University of St Andrews; while his other and more important distinction, his Fellowship in the Royal Society, was obtained by what even Dr Norman Moore, his latest biographer and apologist, is constrained to admit was little else than a fraud.* But presumably, if Jenner had not thus been able to publish his "Inquiry into the Causes and Effects of the *Variolæ Vaccinæ*," with the authority that belongs to a Fellow of the Royal Society, the matter might never have gone further. And, as to the claim made for that paper that it was the fruit of twenty years of observation and experiment, it is worth noting that Jenner's first cow-pox inoculation was made in 1796, and that the paper was written the same year, though not printed (in an amended form) until 1798; and that the application to Parliament for a monetary grant to the "discoverer" was made in 1802; so that a period of only six years elapsed between Jenner's first operation and the application for State recognition of his services.† Such a period was far too short to test the permanent value of the operation; and the State subsidy, which of course practically settled the question, so far as the official world was concerned, in favour of vaccination, was altogether premature.

So far from having had cow-pox inoculation before him steadily for some twenty years, Jenner, as recently as 1792,

* See the notice of Jenner in the *Dictionary of National Biography*, and compare what is there said about his alleged observations on the cuckoo with Jenner's own assertions in the *Philosophical Transactions*, Vol. LXXVIII. The paper was read in March, 1788. The whole story is well summarised in a tract entitled "*The Bird that laid the Vaccination Egg*," by J. H. Levy, published by P. S. King & Son.

† It was on May 14, 1796, that James Phipps, a boy of eight, was vaccinated; and on July 1, the same year, he was inoculated with small-pox without effect. This was Jenner's original proof.

had inoculated his own eldest child with swine-pox, which operation was reckoned as protective as any of the subsequent ones with cow-pox. And it was merely due to Jenner's recognition of the fact that swine-pox had associations too disgusting to allow of its ever securing popular approval, that he did not advocate "porcination" instead of "vaccination." This shrewdness in recommending the new inoculation to the public is very apparent to anyone who will compare (and Professor Crookshank's edition renders the comparison very easy) the first draught of his paper on cow-pox with the later issues. In the original statement, the manuscript of which was discovered by Crookshank in the Library of the Royal College of Surgeons, the account of the disease is more frank and vastly more offensive than it is in the printed editions; and a comparison of the various modifications of Jenner's statements may be recommended as an interesting study, both of inconsequent reasoning and of shiftiness for the sake of plausibility. The second edition, it should be noted, as showing how this "scientific discovery" was on its way to gain acceptance, was dedicated to the king, whose "gracious patronage" was solicited in his behalf.*

It is, moreover, inaccurate to describe Jenner as the "discoverer" of vaccination. That persons—mainly of course milkers—who had had the cow-pox, were afterwards insusceptible of small-pox, or, more correctly, did not "take" small-pox inoculation, was one of those bits of farm-yard medical gossip, affirmed by some and denied by others, which, whether true or not, certainly rest on no scientific

* While Jenner was engaged in writing up this unfortunate delusion, the "candid and accurate" John Haygarth (1740-1827) was engaged on a truly scientific "Letter to Dr Percival on the Prevention of Infectious Fevers" (1801), in which, as his biographer justly remarks, "he embodied the principles of isolation, ventilation, and cleanliness, which can never go out of date."

basis. Years before Jenner took the matter up (in 1774) a Dorsetshire farmer named Jesty inoculated his wife and his two sons with the cow-pox, in the belief that they would thus obtain protection. And, when Jenner referred to the alleged protection at a local meeting of medical men, they all professed to have heard of it, but denied the fact from their own experience. Jenner's own contribution consisted in an attempt to establish a scientific theory of vaccination; and this attempt of his is the really important matter; for it gives the key to the whole controversy. Unlike some modern advocates of vaccination, who are satisfied if the practice holds its ground by law, custom, and authority, without any scientific basis at all, Jenner saw that, if vaccination was to become, as he hoped, a regular incident of medical practice, it must have a scientific foundation; and that is what, by the title of his paper, "*Variolæ Vaccinæ*," he mainly attempted to establish; and with marked success, for the time.

THE NATURE OF COW-POX.

Jenner saw that if one disease is to be accredited as a specific prophylactic against another, there must be some pathological relation between the two. In this he was of course perfectly right. Where we can now see that he went astray was in assuming this relationship on the slenderest evidence, instead of establishing it, if he could, by a series of scientific observations and experiments. His theory was that the disease of the horse's hoof, known as "horse-grease," was the source of human small-pox and also of cow-pox; and in this way the relationship was established to his own satisfaction. Neither proposition is true; nor indeed did Jenner care to maintain the truth of either proposition when the merits of vaccination had once become established in

people's minds ; but the theory justified or seemed to justify him in describing cow-pox as *variola vaccinae* or "small-pox of the cow" ; and it is really this theory which has mis-directed pretty nearly all the observations that have been made on vaccination right down to the present day. Sir John Simon, a living authority on the subject, explains that persons vaccinated cannot take the small-pox, because they have had it already ; and this belief is still shared by hundreds and thousands of people.

But what is in truth the nature of cow-pox ? It is an ailment, not of cattle, but of the cow, as its name implies, exclusively, and of the cow only when she is in milk ; and it is further a disease of civilisation. It does not occur when a cow suckles her own calf ; nor, for that matter, does it occur where cow-stables are kept decently clean. Jenner observed that it did not occur when the milkers were women only ; and hence his theory that the disease originated in "horse-grease" ; his assertion being (first stated as an hypothesis, and then, a little lower down, as a thing which "commonly happens") that the disease was communicated to the cow's teats by a man-milker who had just dressed the diseased horse's heels. Other observers also professed to have noted that the disease only occurred where there were both men and women milkers ; but they drew another inference as to its origin, for which they found confirmation in the disease's popular name. Apparently it is in some way due to the friction of the teats by the milker's hands ; it occurs spontaneously (*i.e.*, apart from inoculation) only where cows are milked ; and its name had reference not to small-pox but to great-pox, with which its analogy was popularly and correctly discerned. Presumably it is a consequence of its partly human origin that it is so easily (and ordinarily without danger) inoculable on man, which other diseases of animals are not. That,

however, is mere conjecture; what is now certainly established beyond all reasonable doubt is that cow-pox bears no pathological relation to small-pox. The similarity in name is the only connection; for, though there is a superficial resemblance between the vaccine vesicle and the variolous pock, the two diseases are really quite distinct.* The definite establishment of this fact, which of course upsets the whole alleged scientific basis of vaccination, is due to the labours in recent years of Dr Creighton and Professor Crookshank, though the real character of cow-pox had long ago been suspected.

Omitting brief and incidental remarks of earlier writers, the conclusions of Dr Auzias-Turenne, communicated in 1865 to the *Académie de Médecine*, are deserving of attention. Unfortunately his investigations did not include any examination of the prophylactic virtue of vaccination. That he took for granted, although he admitted that he preferred "equination" (still much practised in France) to vaccination, properly so called. So that, after drawing out with much elaboration the specific differences between cow-pox and small-pox, he drew the somewhat lame conclusion that other animal diseases might be found preventive of other human diseases, since no specific identity but only an analogy or a superficial resemblance is all that seems necessary. He came, however, very near to laying his finger on the crucial point when he went on to say:—"Between syphilis and cow-pox the analogy may be a long way followed up, . . . but, happily for the vaccinated, cow-pox passes through a rapid evolution, and does not

* Jenner's doctrine was however still maintained before the Royal Commission by Sir John Simon, who asserted that "small-pox and cow-pox are variations of the same disease." But he could give no pathological evidence in favour of this view.

leave virulent remains for so long a time or so frequently as syphilis." *

Dr Creighton, in his work on "Cow-pox and Vaccinal Syphilis," published in 1887, was the first in this country to call attention to Jenner's fundamental mistake, and to its immense importance in the vaccination controversy. The object of his enquiry was to find some explanation for the complaints so frequently made as to the communication of syphilis by vaccination. In his judgment such communication of two diseases by one and the same act was most improbable; and yet the evidence in case after case was overwhelming.† His conclusion was,—and it is now pretty generally accepted, though little is said about it,—that these syphilitic symptoms are a part and parcel of the cow-pox itself, which is bound thus to indicate its presence if it is inoculated in, or if it reverts to, its natural strength, and is not (as is so often the case with vaccination) a mere formality.

In the year that this book was published (1887) Professor Crookshank undertook, on behalf of the Agricultural Department of the Privy Council, an investigation into the micro-pathology of a cow-disease in Wiltshire, which it was thought might bear some relation to scarlet-fever in man. This investigation led him also to enquire into the nature and origin of cow-pox, with the result that his independent researches fully confirmed all Dr Creighton's conclusions. In fact, the syphilitic nature of cow-pox is the theory which now holds the field; and it is hardly contested

* The analogy between, if not the identity of, the two diseases was first definitely pointed out by a Belgian physician, Dr Hubert Boëns-Boissau, in his work, *La Vaccine au point de vue historique et scientifique*. Charleroi, 1882.

† Dr W. J. Collins, in his able pamphlet entitled "Sir Lyon Playfair's Logic" (1883), mentions 478 cases of "vaccino-syphilis," details of which have been published by various medical men, English and foreign.

by the advocates of vaccination, who are content to rely solely on the evidence of statistics. But anyone who at all appreciates the immensely important part which theory plays in scientific investigations will see that this final refutation of Jenner's theory, which held the ground so long, puts the whole question in quite a new light. As Dr Bridges well says :— " To observe without a theory, avowed or implicit, to connect the observations, is all but impossible ; and yet, if the accepted theory be false, the observation will be warped." *

So long as a theory held the field, in accordance with which vaccinated persons *ought* not to have the small-pox, because they had already had it, statistics collected under that belief would naturally confirm that belief, while instances to the contrary would be denied, ignored, or explained away. Events that follow purely as a matter of chronology will, when a theory that connects them is in possession, assuredly be in danger of being reckoned as related by way of cause and effect. Hence, it is important, if the view of disbelievers in vaccination is to be given a fair hearing at all, to insist on the fact of Jenner's pathological error, before proceeding to a sketch of the history of the adoption of the practice of vaccination ; for it was certainly the most important factor in the process which led to the extraordinary triumph of the new system of inoculation.

VACCINATION GENERALLY ACCEPTED.

Other circumstances, besides the fact that a medical man, who was a Fellow of the Royal Society, had announced the discovery that cow-pox was "small-pox of the cow," were

* Article on Hippocrates, in the "New Calendar of Great Men," p. 131.

favourable to the acceptance of vaccination. To many who had long advocated and practised the older form of inoculation it came as a welcome relief. The risks of that practice were already pretty generally recognised ; but, such is the tyranny that custom has, and that not least in the medical world, that it was impossible for the practice to be dropped, except by the substitution of some other practice, which could be recommended as an improvement. And, if Jenner's account of vaccination were correct, it was undoubtedly an improvement ; for the disease communicated was ordinarily less severe, while the risk of infection was *nil*. And, as there was at the time a decline in the prevalence of small-pox, it was natural to attribute this to vaccination. The decline, such as it was, needed no such explanation ; for, when the figures are examined, it will be seen that, while the concurrent disuse of small-pox inoculation might account for part of it, the disease being no longer spread so widely by the artificial diffusion of the infection, the natural dying out of a foreign disease, checked by revival in epidemics at irregular intervals, is a more obvious explanation of the decline ; and this indeed is true of the whole history of small-pox throughout the nineteenth century. The abatement was most marked for some years before vaccination was practised. Whether it be ascribed to sanitation, or to improvements in diet, or to what one may call an exhaustion of the soil, there is no doubt whatever about the fact. We have, unfortunately, no statistics for the country as a whole at this date ; but from the London Bills of Mortality we learn that, whereas from 1760 to 1779 the annual number of deaths from small-pox in the metropolis had averaged 2323, from 1780 to 1799 they averaged 1740, or nearly 600 less in each year. The decline continued after vaccination had been introduced, but, as it happened, it was less marked, the average from 1800 to 1810 being

1358, or nearly 400 less per annum than it had been in the previous period.

In a brief statement of the case, such as that on which I am now engaged, it is not of course possible to present statistics with that fulness which is necessary for an exhaustive examination; and, as the mortality varied very considerably from year to year, one must be on one's guard against the arbitrary selection of a few figures which do not bear out the conclusion indicated by the whole series. Thus, for example, it has been pointed out by Baron, Jenner's enthusiastic biographer, that in 1798, the year in which Jenner published his paper, the deaths from small-pox in London were as many as 2237, whereas in 1804, the year after that in which Parliament had voted him £10,000, they had fallen to 622. This is perfectly true; but we can see how rash it would be to infer from these figures any conclusion as to the value of vaccination, when we find that in 1805 they had again risen to 1685, whereas in 1797 they had been as low as 522. I shall have something more to say later as to the precariousness of the argument from statistics.

The series of experiments made by Jenner and others, who followed up vaccination by small-pox inoculation, or by other forms of exposure to small-pox infection, with the uniform result, as they claimed it, that in no case did susceptibility to the disease remain, certainly cannot readily be made to square with that theory of the nature of vaccination which I am now advocating. If the experiments had been made by Jenner only there would have been less difficulty; but they were made also by Woodville, Pearson, and others; and apparently with uniform results. The matter has been looked into by Dr Creighton and by Professor Crookshank, so far as its pathological aspect is concerned; and the conclusion towards which we are

pointed is this, that while vaccination is not, and from the nature of the case cannot be, a specific prophylactic against small-pox, yet a severe attack of cow-pox, or, in other words, vaccination followed by considerable constitutional disturbance, is likely to prove, while the febrile symptoms still last, antagonistic to the small-pox infection, and, so far, affords a temporary protection against it. Probably the same is true of any other disease that produces constitutional disturbance with febrile symptoms. We must, moreover, bear in mind that many persons, apart from vaccination, had been known to show constitutional insusceptibility to the variolous inoculation, and that that inoculation itself was often enough a mere formality, producing no results; and this was extremely likely to be the case when the operators were anxious that no results should be produced. Add to this the enthusiasm for the cause, which, unless Jenner and his fellow-workers had been more than human, would lead them, without conscious dishonesty, to make no record of experiments that failed, and we have perhaps a fair explanation of the whole business; but it is not altogether a satisfactory one; and it is difficult not to regret that similar experiments cannot be repeated now under conditions involving publicity, as that would really settle the whole controversy.

Certainly the times were not favourable for a calm and scientific investigation; and official sanction was given to vaccination before there had been anything like time enough for a careful observer to form a judgment on the permanent value of the operation. It was early, in 1802, within four years of the great "discovery," for Jenner to petition Parliament for money on the strength of it, because, as he claimed, vaccination rendered people "secure *through life* from the infection of small-pox." Yet a Select Committee of the House of Commons, composed of persons mostly favourable to his claim

was promptly appointed, and reported in his favour in 1803; and in this way, after a very easy-going and unscientific enquiry, and before the new doctrine was eight years old, the whole official world was, by the action of Parliament, committed to its value; and there began at once the building up of that great vaccination establishment, supported out of public funds, which, by creating interests of one kind or another, has all along formed the main support of the belief in the operation.*

There was much aptness in the motto from Terence: "*Ego amplius considerandum censeo; res magna est*," which a Bath physician, who wrote anonymously in 1800, prefixed to a thoughtful but ill-written pamphlet, entitled "A Conscious View of Circumstances and Proceedings respecting Vaccine Inoculation."† He perceived that fashion was setting strongly in favour of the new operation, and he decided to preserve his anonymity so as to escape the personalities he dreaded from the "bigots" devoted to the "present rage." But, to the permanent injury of the reputation of the medical profession for scientific judgment, he and all the other critics of vaccination were shouted down; and, for a long while after official sanction had confirmed the conclusion arrived at so rapidly by enthusiasm and fashion, their voices were no more heard in the land.‡

* The essential baselessness of the current belief in vaccination, as it appears if historically examined, aptly illustrates a sentence of Bacon's:—"It often falls out that somewhat is produced of nothing; for lies are sufficient to breed opinion, and opinion brings on substance." Substitute "mistakes" for "lies," and it is the history of the origin and growth of the practice of vaccination in a nutshell.

† Reprinted in Crookshank's "History and Pathology of Vaccination," Vol. II., p. 203.

‡ Among those who uttered a protest against the unscientific use of a zoogenous disease as a prophylactic was the venerable Immanuel Kant, whose eminence as a physiologist and an observer of natural phenomena has been overshadowed by his eminence as a philosopher. See the

That I am not exaggerating the temper in which vaccination was advocated in the early years of this century, is clear from an article in the *Edinburgh Review* for October 1806, written by Jeffrey, the editor, who was himself a convert to the new faith. This is how he characterises the discussion: "In the whole course of our censorial labours we have never had occasion to contemplate a scene so disgusting and humiliating as is presented by the greater part of the controversy ; nor do we believe that the virulence of political animosity, or personal rivalry, or revenge, ever gave rise among the lowest and most prostituted scribblers to so much coarseness, illiberality, violence, and absurdity as is here exhibited by gentlemen of sense and education discussing a point of professional science with a view to the good of mankind." *

Meanwhile, in spite of occasional injuries and deaths resulting from the inoculation of the cow-pox virus, and in spite of cases of small-pox following vaccination, the operation itself, enjoying the sunshine of Royal favour, seemed already in a fair way to become compulsory. But compulsion, though it is a legitimate corollary to State endowment, was slow to gain a footing in this country. Germany was, as might have been expected, far more prompt than England in legislating about vaccination. The practice was made compulsory in Bavaria in 1807 ; and in 1835 the re-vaccination of children attending the public schools became obligatory in Prussia. Possibly the

reference in Buckle's "Miscellaneous and Posthumous Works," ed. H. Taylor, Vol. III., pp. 425-6. Kant died in 1804.

* A second article on the subject, in the *Edinburgh* for Jan. 1810, is also interesting as showing how extravagant were the hopes entertained at that time. The question of compulsion was even discussed ; but the writer concluded that it would not do :—"An official body of vaccinators would never be tolerated, either by the public or by the profession, and would soon degenerate into a scene of jobbery and intrigue."

Germanising wave, which was a result of the Queen's marriage, had something to do with vaccination first being made compulsory in this country in 1853; and the provisions were made more stringent in 1867, 1871, and 1874.

But as early as 1810 the enthusiastic writer in the *Edinburgh Review*, already referred to, had declared that, by vaccination, small-pox had been "entirely banished from the higher and middling classes of society," and that the operation had "achieved its total extinction in whole countries." Even in the East Indies he declared its success had been "astonishing," and in the settlements of Bombay the disease had been "altogether exterminated." We can smile at this extravagant language now; but it is worth quoting, as an illustration of one form of the delusion under which compulsory vaccination was advocated. A soberer judgment, made in recent days, on the value of vaccination in India, will be quoted later on (p. 72); and, as to small-pox having been nearly banished from England as early as 1810, we have imperfect records of severe epidemics (notably that of 1825) since that date, and accurate records of others which have occurred since 1837, namely in 1852, 1858, 1863-4-5, 1871-2 (very severe), 1877, and 1881.

Compulsion was thus first advocated because of the great decline in small-pox in the early years of this century; it has since been urged because of the recurrence of epidemics; indeed it has been in the panic of these epidemics that compulsion has become the law, or that the law has been made more stringent. The history of the growth of compulsion in this country is important and instructive, and deserves more detailed consideration.

VACCINATION COMPULSORY.

The passing of the first coercive measure in 1853 is certainly remarkable, because there were at the time

circumstances which pointed rather towards the abandonment of the practice of vaccination than towards its enforcement under penalties. The great decline in small-pox which had marked the first years of the present century (and was, as we have seen, a continuation of the decline which had marked the last twenty years of the eighteenth century) had not been maintained; and cases of the disease following vaccination were reported from all sides; as, indeed, they had been from the first, though not in such numbers. A minority of disbelievers in the efficacy of the operation there had always been; but, about the time of the Queen's accession, the faith even of the majority was growing weak; and, as it was of course impossible to admit that the medical profession had committed itself to the advocacy of a delusion, the cry went forth that vaccination was losing its power because of its repeated transference through human subjects; and "back to the cow" was the policy recommended. Thus, Ceeley and Badcock procured a fresh supply of the precious "lymph" by passing small-pox virus through the cow—a practice which is now strictly prohibited, as being in fact nothing less than a revival of the old and dangerous small-pox inoculation; and, writing, in 1842, "Further Observations on the *Variolæ Vaccinæ*," Ceeley confessed that the knowledge of the subject was at that time imperfect, and that its difficulty demanded "the continuance of vigilant, patient, and diligent inquiry." These modest statements contrast strikingly with the bold assertions made by Jenner and his friends forty years earlier, and show that their anticipations had by no means been realised. The credit of vaccination was however saved by the fact that the then recent epidemics of small-pox had been mainly among the poor, while the well-to-do classes had enjoyed comparative freedom. The rational explanation of this

would have been, that the well-to-do enjoyed the advantages, which the poor at that time did not, of better sanitation, better nursing, and of better living. Small-pox is known to be a dirt-disease, one that haunts ill-drained, ill-ventilated, and uncleansed tenements—"the beggar's disease" is, I believe, its popular name in Austria; and so it was not necessary to seek the explanation in what was also no doubt the fact, that in the first half of the century vaccination was very little practised among the poor in this country, who have indeed always shown themselves less ready to take up with the last medical fad than their more impressionable superiors. But it was very easy and convenient to lay the blame for the recurrence of small-pox epidemics on the unvaccinated poor; and there was the precedent of Germany for employing compulsion to secure the vaccination of the whole community.

There was also another reason why the medical profession should at that time regard compulsion with a favourable eye. In the early days of vaccination the operation had been performed by anyone and everyone, especially by clergymen and clergymen's wives. As early as 1806 Dr Willan estimated the number of amateur practitioners at upwards of 10,000; but this was probably only one of the many exaggerations which characterised all references to vaccination in early times, and indeed in later times as well. Anyhow, the practice was not by any means confined to professional medical men, even as late as 1850; but a compulsory law would of necessity place it exclusively in their hands, and so would involve the State recognition of "duly qualified" men exclusively. It would be the first step towards the establishment of a kind of State Medical Church, which has been, and is still, the dream of not a few professional men.

So a Bill, modestly entitled "Vaccination Extension,"

was introduced in the House of Lords, February 15, 1853, and was read a second time on April 4; and, after a short debate in Committee, in which Lords Lyttelton and Shaftesbury showed how well they had been coached by some medical enthusiast in the now well-known and illusory statistics, it was sent down to the Commons, where the second reading was carried *nem. con.*, and almost without debate, on July 19; the remaining stages being passed without any discussion at all. It may be doubted whether any measure of such grave consequence was ever hurried through the Legislature so lightly; and the explanation doubtless lies in the fact that, when Parliament is guided by the opinions of professional experts, it loses sight of its own responsibilities; and in this particular instance it certainly bowed to "doctor's orders" without a word; and, except for a brief protest from Sir George Strickland, seemed to think nothing of this novel application of the "principle of compulsion." The assertion that the medical profession was unanimous in its belief in the protective power of vaccination rendered all other argument superfluous. The medical enthusiast who really passed this Act through both Houses was Dr Edward Seaton. Under the *alias* of "The Epidemiological Society," then founded and dominated by him, he furnished the statistics which were printed as a Parliamentary paper; and certainly, if these statistics were a fair presentation of the case, there was nothing more to be said, assuming that blessings ought to be compulsory. Sir Robert Peel indeed had urged, not many years before, that "to make vaccination compulsory, as in some despotic countries, would be so opposite to the mental habits of the British people, and the freedom of opinion in which they rightly glory, that I never could be a party to such compulsion." But Peel died in 1850; and, in 1853, there already existed strong and exaggerated notions as to the preventibility of disease, which

made short work of the old-fashioned doctrine as to the "liberty of the subject"; and it was in that temper that the Act of 1853 was passed. It was not so much designed to crush out opposition as to stimulate indifference. That there could possibly be wide-spread opposition, grounded on disbelief in the efficacy of vaccination and on dread of its risks, does not appear to have occurred to anyone; and yet, if a fair and open enquiry had preceded this legislation, it would have been impossible to ignore that prospect. That there were plenty of materials for such an enquiry is clear from the letter of John Gibbs, which Parliament had the grace to print as an official paper in 1855; and that there was at that date a more tolerant spirit abroad than prevails now is equally clear from the fact that even the *Lancet* used then to print admissions of the risks which vaccination involved. But, unfortunately, organised opposition came too late. The mischief was already done; and, Parliament being now as impotent to undo its work as it is to do it, repeal is only possible when an Act has either become obsolete through neglect, or unworkable through persistent and wide-spread opposition.

Into the history of subsequent legislation I do not propose to go; but two points deserve mentioning before I proceed to another aspect of this many-sided question.

Repeated penalties in respect of the non-vaccination of a child were first authorised by section 31 of the Vaccination Act of 1867, which to all intents and purposes is the one now in force. A parent is liable under this section to be proceeded against from time to time until the child is fourteen years of age. This was of course a departure from the original idea of compulsion, which was mainly to stimulate the indifferent. The new procedure inflicted punishment on the unbeliever; and a few moments' reflection will suffice to show that it is really for his heretical

belief and not merely for his inaction in not having his child vaccinated that he is repeatedly punished. For, if a parent, either from the experience he has had in his own family, or from what he has seen in the families of others, or from what he has read in the writings on vaccination of competent medical men, is convinced that the operation is not only useless but one that involves serious risk to his child's health and life, it would be in him an immoral act to present the child to be vaccinated; and to suppose that the law compels a man to act immorally is absurd. So it punishes him for holding an opinion which, in the judgment of the majority, is erroneous. It was prophesied, when this Bill was before Parliament, that this vexatious provision would provoke an agitation that would not cease until compulsion had been entirely repealed; and it had not been in force four years when a Select Committee (of which Sir Lyon, now Lord, Playfair was a member) unanimously recommended that repeated penalties in respect of the same child should be abolished. Yet the section is in force still to-day, and is likely to remain in force, until an enlightened and indignant people make short work of the whole foolish business. It is a striking instance of the impotence of the Legislature to correct its own mistakes.

The recommendation of the Select Committee, that repeated prosecutions should be abolished, was approved in the Commons by a majority of five to one (57 to 12) but was rejected in the Lords by a majority of one (7 to 8), after a brutal speech by the late Lord Redesdale, who entirely mistook the issue, and compared a parent, who for love of his child refuses to allow it to incur the risks of vaccination, to a man who repeatedly gets drunk. Grouse-shooting was already a week overdue when the Bill came back to the Commons (August 19th, 1871); and the Lords' amendment was accepted by the House on

the recommendation of Mr Forster, who nevertheless could not avoid commenting on the absurdity of the unanimous recommendation of the Select Committee, arrived at after a patient enquiry, being thus rendered nugatory by the vote of a single uninformed peer. To that vote is due most of the bitterness and cruelty that have accompanied the administration of these Acts. While no single child, so far as I can ascertain, has ever been vaccinated in consequence of the infliction of repeated penalties, numbers of conscientious parents have submitted to imprisonment (in addition to the thousands who have been fined), because that seemed to them the more reasonable penalty to incur, rather than to be fined again and again for fourteen years on account of the same offence ; and also because the incurring of such a punishment as imprisonment for such a cause seemed more likely to bring about the ultimate repeal of the law. Yet, so deeply has the prejudice in favour of vaccination sunk into John Bull's mind, that, while at the present day the sins of the House of Lords are repeatedly collected and published to serve a political end, no one, so far as I know, has so much as mentioned this vote of August, 1871 ; though no other action of theirs has brought such bitterness and distress into hundreds of otherwise happy homes.

In 1880, a Liberal Government timidly attempted to repeal this odious provision ; but it retreated so soon as the medical corporations protested against such a sacrifice of their darling "principle of compulsion." And, as lately as 1893, we have had a fresh illustration of the way in which the bigotry of a handful of professional men can reduce the Legislature to impotence ; for, after the Royal Commission had sat for three years, and had heard evidence from both sides, although it contained a phalanx of devout believers in vaccination it went out of its way to report as a matter of urgency, for which it was not well to wait

until its final Report, that these repeated prosecutions ought no longer to be possible. That was the conclusion at which they arrived "unanimously"; but the late Government declined to act on the Report, because, forsooth, they had not yet read the evidence on which it was based; and you, Sir, when you introduced a Bill to give effect to their recommendation, found that its progress was blocked, week after week, until there was no time left to proceed with it, by the action of a Scotch member, on behalf of the British Medical Association. Perhaps ultimately some advantage will come from this exhibition of professional bigotry and of Parliamentary impotence. Repeated prosecutions are in some sense the logical outcome of compulsion; for the policy of fining a disbeliever in vaccination each time he has a child born, and then leaving him alone, is rather the policy of a Dogberry. So that when the public realises, as no doubt eventually it will, that no body of men can enquire into this vaccination question without coming to the conclusion that a thorough-going policy of compulsion is impossible and defeats its own ends, the public will perhaps see that, instead of mending compulsion, it will be better to end it altogether.

In another way the amending Act of 1871 deprived us of a safeguard of reasonable liberty which had before existed. So far as I know, attention has never been adequately called to the grave accentuation of the burden of compulsion which was the result of the repeal in its schedule of section 27 of the Act of 1867. Under that section the Guardians had been directed that, after they had received from the Registrar a list of the persons in default, they were "forthwith to make enquiry into the circumstances of the cases" contained in the list, and to prosecute if they found that the provisions of the Act had been neglected. This gave them the opportunity, after

the enquiry had been made, to select such cases for prosecution in which there did not appear to have been that "reasonable excuse" for not having the child vaccinated, which was also provided for in section 29 of the Act—a section which, by the way, remains unrepealed, though it is practically inoperative without the earlier one. As the procedure in vaccination cases is invariably summary, and the accused has no refuge in the common-sense of a jury, but is entirely at the mercy of the magistrate, who is naturally disposed to take what I may term a Churchman's view of the enormity of this heresy, there was a reasonableness in the cases being thus first sifted by a popular tribunal, the members of which might be expected to know something of the circumstances of the recusants, and so not to send up for certain conviction parents whom they knew to have grave cause for dreading the effect of vaccination. That is precisely how the law in some districts was at first carried out; and this reasonable administration prevented much hardship and discontent.

But this did not at all satisfy the medical officials of the Local Government Board, who, secure in their fortress at Whitehall, have acted, I fully believe, in the sacred name of Public Health, precisely, *mutatis mutandis*, in the same spirit as that in which mediæval ecclesiastics acted in the sacred name of Mother Church; and so the repeal of the section referred to was provided for in the schedule of the Bill; and the astonishing thing is that the whole measure passed through all its stages in the Commons without a single word of debate; such was the panic which possessed the House in consequence of the epidemic of small-pox then prevailing. Presumably this would not have been the case had the Bill been before the Commons in the shape in which it ultimately became law. Section 10 of the original Bill—the section struck out by the Lords, as noted above—provided

for the cessation of repeated prosecutions ; and this was a set-off against the aggravation of compulsion involved elsewhere in the measure. But, when the Bill had become an Act, no such mitigation was in it. Besides establishing throughout the country a new body of officers to prosecute defaulters, its chief effect was to deprive the Guardians of this reasonable liberty of enquiry, and to insist on their sending up to the magistrates everyone who was reported in default. For the last twenty-three years this has been the law ; though its odious character has caused it to become inoperative in a large number of Unions ; and from 1875 onwards the proportion of vaccinations to births has steadily decreased ; latterly at an increasingly rapid rate.*

In practice compulsion has thus become a purely mechanical process. Both Guardians and magistrates protest that they have no option but to "carry out the law," which means, in the case of the former, no option but to prosecute, and in the case of the latter, no option but to convict and to inflict the full penalty. Of course there are exceptions ; there are a few magistrates who admit a "reasonable excuse," such as the Act makes provision for ; and there are others who are satisfied with merely nominal

* Even the stringency of the Act of 1871 did not satisfy the Local Government Board officials, who apparently desired to have quite a free hand in the administration of the law ; and so, in 1874, another little Bill was introduced, "to explain the Act of 1871" ; and this empowered the Local Government Board "to make rules, orders, and regulations with respect to the proceedings to be taken by the Guardians or their officers for the enforcement of the provisions of the Vaccination Acts of 1867 and 1871." This measure also passed through all its stages with barely any discussion. Its importance at the present time lies in this, that the powers thus entrusted to the President of the Local Government Board may very possibly allow of his putting an end to compulsion altogether by the issue of new rules. But such an administrative act would perhaps not be practicable, unless preceded by a resolution of the House of Commons hostile to the existing system.

finer ; * while over very large areas prosecutions have ceased altogether. So that the administration of the law, where not mechanical, is arbitrary, or has lapsed altogether ; and it is this inequality which is one of the scandals of the situation. In one district refusal to have a child vaccinated is punished severely, as a gross act of insubordination, hard labour in some cases having been illegally added to imprisonment. In another, the law has been practically repealed for years. And further, there is no law in the statute book which is so obviously one that touches the lower classes exclusively. Why it is that the well-to-do have but seldom to complain of the injurious effects of vaccination is a point I will deal with later. My contention now is that, even if they decline to have their children vaccinated, they have rarely any occasion to complain about the compulsory law ; because in their case it is not enforced. The highest game at which a vaccination officer ever flies his kite is a Nonconformist minister ; the squire and the parson, and the dwellers in Belgravia or Mayfair, he regards as exempt from his jurisdiction. The officer can easily be "squared," if the parents are determined that there shall be no pretence even of the operation being performed ; but there is another loophole for escape, for the private medical practitioner is free to certify that he has "successfully vaccinated" the child, when he has done no more than produce a slight sore by touching the abraded skin with a drop of glycerine ; for there is no legal definition of what "vaccination" is. More will be said later on as to the variety of operations which the term covers.

On the whole, the administration of the law is such,

* Some few magistrates, who have come to realise the folly of enforcing such a law, adjourn the hearing *sine die* ; or else, after formal conviction, bind over the defendants to come up for judgment when called upon.

mechanical here and null there, strict here and lax there, that, if the Government should decide to retain compulsion in so far as it affects the careless and indifferent, but not to insist on it in the case of parents, who, so far from being indifferent, decidedly object to the operation being performed at all—and this really is the policy of those who advocate the cessation of second prosecutions on account of the same child—I would suggest, as a practical solution of the controversy, that, when the birth of a child is registered, the parent should be empowered to make a declaration that he objects to its being vaccinated, and should thereupon be free from further proceedings under the Vaccination Acts, he there and then paying a fine, assessed on the rateable value of his house, say at twopence in the pound, with a minimum of one shilling, and a maximum of twenty. Similar certificates of exemption ought to be obtainable at the same rate for other unvaccinated children under fourteen years of age; and in this way the majesty of the law would be vindicated, and a vast amount of irritation would be saved—guardians and magistrates sharing no less than parents in the general relief; and the funds thus obtained, which in some districts would be considerable, might be administered as compensation to those medical men who have suffered pecuniarily from the disuse of vaccination.

VACCINATION NOT SCIENTIFIC.

The primary scientific objection to vaccination, that it is a futile effort to guard against one disease by the implantation of another with which it has no pathological relation, has been brought into special prominence of recent years, because attention has been called to it by the important publications of Dr Creighton and Professor Crookshank; and it is by itself, when fairly considered, enough to dis-

credit the whole business. But it by no means stands alone. The use of one disease as a prophylactic against another, even where there is a pathological relation, is a mode of treatment that is in many ways questionable, and the advocates of such treatment really trade mainly on the assumption that vaccination is a secure precedent for them. When that delusion has been dissipated, their theories will need reconsideration; and experiments performed in a new light may very likely yield other results. Not that there has been anything hitherto to lead one to suppose that vaccination (apart from its own alleged success) has opened a new era of preventive medicine.* It is a wide subject, and one on which I can only just touch in passing. But it is clear that the methods for treating phthisis and cholera, which at one time made the name of Koch famous, and were within a little of receiving premature official recognition, as vaccination did, have ended in a fiasco; though whether they would have so ended, had the State committed itself to the value of the operations, may be doubted. As things are, however, apart from certain so-called "chemical vaccinations," mainly the experiments of continental pathologists, which have attracted but little attention in this country, but are nevertheless of some interest, and are at any rate free from the risks which attend the inoculation of zoogenous poisons, there survives only Pasteur's treatment of hydrophobia, as offspring of the alleged success of vaccination; and whether that treatment is successful or not it is at the present time impossible to say. Of course there are the statistics issued by his friends

* In this connection it is worth pointing out that Auguste Comte found no place for Jenner in his Calendar, as he assuredly would have done had he believed in vaccination. Vaccination is either a mistake, or it is the most important and the most epoch-making discovery in the history of medicine. And Comte was familiar enough with medicine to have this alternative quite clearly before him.

and employees, which shew a marvellously low percentage of deaths in the cases that have passed through his hands ; but there exist no statistics to place by their side, showing what is the percentage of deaths in the cases of those who, after being bitten by dogs presumably rabid, have enjoyed no such treatment ; while M. Pasteur's critics further call attention to the fact that, whereas, in France, before 1883, the deaths from hydrophobia averaged annually twenty-three, that average has since that date (*i.e.*, since he commenced operations) increased to thirty-nine ; while in England they have decreased from an average of twenty-six in the three years 1887-8-9 to an average of seven in the three years 1890-1-2, in consequence, no doubt, of the muzzling order, dated August 15, 1889, which effected a form of isolation, and was, so far, a genuinely scientific protection.

On the whole, the impression one carries away is that (vaccination apart, for the sake argument) there is reason to anticipate that a century hence all these schemes of prophylaxy by the inoculation of disease will be regarded as a bad dream in the history of medicine ; and that the future professors of that art will no more desire to call attention to them than its present professors do to the exploded methods of treatment by bleeding, blistering, salivation, and so forth. Medical science should be free, like all other branches of science, to revise its judgments ; and it is just the lack of freedom in respect to vaccination which the compulsory law involves, that makes its place in medicine unique and perhaps a little ridiculous.*

* Five and twenty years ago, *i.e.*, just before the great epidemic of 1871-2, there were enthusiastic medical scientists who dreamed that preventive medicine had a splendid career before it, and that, after a dozen or so specific "vaccinations," all of course to be made compulsory in due time, none of us would die save of old age or accident. No one

That the enforcement of vaccination on every child or adult, irrespective of constitution or of other special conditions, is a thing apart from scientific medicine, needs only stating in order to gain acknowledgment. It is a commonplace in the art that treatment suitable for A is unsuitable for B ; and it must also be familiar to practitioners, who honestly note the immediate effects of vaccination, that, while in one case it has hardly any perceptible result, in another it produces severe constitutional disturbance.† This may in some cases be due to a difference in the virus used, as will be noted in a later paragraph ; but the fact that the children of one family will suffer severely, though vaccinated in different years and from different sources, while the children of another family, under similar conditions, will not suffer at all, indicates in the former case a constitutional susceptibility to the effects of cow-pox, which ought to be taken into account by the family doctor. But the law, as it stands, will not permit him to take it into account. He is permitted only to postpone the operation for two months, if the child is suffering from some specific disease ; he is not at liberty to certify, as he certainly should be, that in the case of such and such a child it is desirable to exempt it from vaccination altogether, on account of its constitutional liability to

has such dreams now. On the contrary, since cow-pox is at any rate a preventible disease, so far as human beings are concerned, it is more rational to hope that the "British Institute of Preventive Medicine" will justify its title and prove its scientific character by condemning vaccination as we now know it. In no other way is it likely to score any considerable or legitimate success.

† It is in fact the ordinary excuse that a doctor makes when it is complained that a certain vaccination has produced very severe results, possibly death, that other children were vaccinated about the same time with the same lymph, and that no harm came of it. Another familiar excuse is to assert, without a particle of evidence, that some "poisonous rag" must have been laid on the open wound.

suffer severely. The children of nervous and highly-strung parents are undoubtedly liable to such risk ; and it is just because doctors cannot legally in their case get free of the operation altogether, that they are driven to such shifts as have above been noted, which may mean the certification as "successful vaccination" of an operation which has been a mere formality.

Surely too it is rash and unscientific to inflict a disease, even if it be a mild one, on infants of but a few weeks old, whose life is in any case a precarious one. In this country at the present time about fifteen per cent. of the children born die within the first twelve months. I am not contending now that this high rate is partly due to vaccination, for I propose to deal later with the risks of the operation, as admitted even in the official statistics. But in relation to medical science, which is supposed to have for its aim the preservation of human life, is it reasonable to lay this additional burden at an age when the risk from various familiar causes is already so great, while the risk of small-pox infection, a few exceptional cases apart, is practically *nil*? It is of course useless to argue about the slightness of this risk with people who are so ignorant as to suppose that an unvaccinated child can start small-pox on its own account. But it is worth while to remind those who know that the infection must come from outside, how infinitesimal is the chance of coming into contact with it, except of course at the actual place or places where an epidemic at the moment may prevail. Of catching measles, scarlet-fever, or whooping-cough—diseases of which thousands of children die every year—there is no doubt some risk. But small-pox, in spite of all the fuss that the medical papers make about it, is pretty nearly as extinct as the plague. The average annual number of deaths from it in England and Wales during the six years, 1887-92, the Sheffield

epidemic of 1887-8 being included, was only 318; and in 1890 the total number of deaths only amounted to 16; being not one-third of the number of those that are admitted to be annually caused by vaccination. Taking the number of cases to be, as usual, about five times as many as the deaths, and supposing each case to last a month, we find that, at any given moment during the years 1887-92, there were in England and Wales, that is out of a population of nearly thirty millions, about 133 cases of this disease, or one case among 220,000 people. Anyone able to appreciate the force of these figures will see that infants, under ordinary circumstances, really run as little risk of catching small-pox as they do of being devoured by polar bears when they take an airing in their perambulators.

Doctors disagree on this question of age, as indeed they do on almost every point connected with the subject. By their advice a law has been passed making compulsory in England the vaccination of infants before they are three months old; and in workhouses the medical officers often vaccinate infants within the first week of birth. But in Germany the regulations, also the work of medical men, strictly forbid the vaccination of infants not yet three months old.* There is some lack of scientific consistency in these contradictory directions.

In another way vaccination is, as practised, an unscientific operation, viz., in the uncertainty which shrouds the nature and origin of the "lymph" or virus used. This uncertainty has existed more or less from the beginning. Jenner at one time advocated the exclusive use of matter obtained from cow-pox that had originated in horse-grease; and, when cases of persons vaccinated with other cow-pox were adduced, who subsequently were attacked by small-pox, he explained that such was "spurious cow-pox,"

* Palmberg, *Public Health and its Appliances*, tr. Newsholme (London, 1893), p. 366.

possessing no prophylactic power, and that the "true genuine life-giving fluid" must have its origin in horse-grease. This opinion he subsequently abandoned, when he found that it would be fatal to the general adoption of vaccination, if its origin in so offensive a disease were insisted on. Later operators obtained a new supply of lymph by passing small-pox virus through the cow; and other sources have been used in recent times. In fact, when Professor Crookshank instituted an enquiry into this all-important point, with a view to obtain a clear view of the pathology of vaccination as practised in England to-day, he found that the officials at Whitehall had no standard by which the lymph was judged. There was of course no doubt as to the immediate source of that obtained from the wretched calves exploited by the establishment in Lamb's Conduit Street; but of its ultimate origin, and of the origin of the "humanised lymph," sent to the office by practitioners in various parts of the country, there was no certainty at all. Some apparently could be traced back to genuine small-pox, though so weakened by transmission from child to child as to have lost the power of communicating that disease; while other lymph, with some amount of probability, could be traced to horse-pox (an undoubted variety of syphilis), other to sheep-small-pox, other to goat-pox, other to cattle-plague, and so on. Any kind of matter, in fact, that, inserted under the skin will raise a vesicle or a pustule, similar to that of the cow-pox, is good enough for what is called "vaccination"; and it is all equally protective. Indeed, a German doctor, Hufeland, has advocated the use of the drug popularly known as "tartar emetic," which produces a like effect, and is, he alleges, no less efficacious as a prophylactic. Its employment in lieu of any variety of animal lymph has this much to be said in its favour, that, being a mild,

inorganic poison, its injurious effects are strictly limited ; whereas any organic poison, such as the purest lymph actually is, may occasionally, by reproducing itself in the blood of the person inoculated, produce surprisingly severe results. No wonder that the offer of the Grocers' Company of a prize of £1000 to anyone who would discover a safe medium in which standard cow-pox lymph could be cultivated (so that in this way the danger of transmitting other diseases with the cow-pox might be avoided), has come to nothing, and that the prize has never been awarded. The law does not define what standard lymph is, nor can the officials who supply the lymph give inquirers any assistance. Surely there is some lack here of that precision which ought to be looked for in a scientific art.

There are other aspects in which vaccination, as practised, is not scientific. According to Jenner, a single operation in childhood secured life-long immunity from small-pox ; and our vaccination laws have no other basis than the assumption that this is true. It would be ridiculous to insist on the vaccination of infants, who are mostly keepers at home, if, by the time they are old enough to attend school, and so mix with other children, with perhaps a remote chance of encountering small-pox infection, the "protection" afforded them by vaccination is worn out. Yet that the protection is thus very "fleeting" is what the majority of medical men now affirm ; for indeed Jenner's proposition cannot be maintained in the face of notorious facts. Vaccination in infancy is an admirable protection, it appears, so long as there is no small-pox about for you to catch ; but, as soon as an epidemic comes, you are no better off than the unvaccinated. This has been proved over and over again, both in England and on the Continent, by the fact that, during epidemics, the small-pox hospitals contain about the same proportion of vaccinated patients to unvaccinated as

is found in the country generally. So "re-vaccination" became the cry a few years ago; and the cry has quite lately been extended to "frequent" or (what amounts to the same thing) "recent vaccination," which we are now assured is the only genuine and absolutely safe defence. Of course this doctrine drives a coach-and-four through legislation which insists only on vaccination in infancy; and it also renders a little ridiculous the horror which many advocates have professed to feel at the state of unvaccinated infants as "centres of infection"; for it is a confession that the vast majority of the population, including very likely the alarmists themselves, are in the same parlous state.

Re-vaccination formed no part of Jenner's plan for the extermination of small-pox. It was first practised in Würtemberg about 1829, but it was not heard of in this country until 1844; and, as recently as 1851, the National Vaccine Establishment officially declared it unnecessary. Dr Seaton recommended re-vaccination at puberty, but objected to a third repetition of the operation. On the other hand, Dr Collingridge, the active Medical Officer of Health for the Port of London, advocates "thoroughly efficient ~~annual~~ re-vaccination"; and Dr Bernard O'Connor supports the theory of Dr Warlomont, of Brussels, who holds that vaccination is not efficient unless it is "vaccinisation," that is, a repetition of the process every four months, until the unhappy victim will not "take" any longer.

It is a grotesque story; and it is wonderful that the advocates of these repeated operations do not see that their arguments destroy the basis of cow-pox prophylaxy altogether. Dr Pearson, the contemporary of Jenner, and the founder of the original "Institution for the Inoculation of the Vaccine Pock," in 1799, saw this clearly enough, and regarded re-vaccination not merely as unnecessary but as impossible. He put the case bluntly and frankly:—"If a

animal / *x*

** see Dr. G's letter in Times, 26 Dec 94*

child can be re-vaccinated, then it can take small-pox ; *ergo*, vaccination is not an equivalent for small-pox ; and where then is the good of it ?” Perhaps he stated the case a little too tersely for it to be quite clear. If cow-pox cannot protect against cow-pox, or, in other words, if re-vaccination is possible, how can cow-pox protect against small-pox ? In other words, vaccination is useless. The argument is perfectly sound, though it was urged in the belief that cow-pox was modified small-pox. If the modified form could not protect against the modified, how could it be expected to protect against the unmodified ? If you cannot resist the attack of a cat, how can you resist the attack of a tiger ?—to use the analogy between the two diseases which Jenner in his “ Inquiry ” employed. And the force of the argument is even greater—though, for that matter, it becomes superfluous—when, with modern knowledge, we have ceased to believe in there being any pathological relation between the two diseases. That re-vaccination, and, for that matter frequent vaccination, are quite possible, is now a matter of ordinary experience ; and it has also been pointed out by Professor Crookshank that persons who have had small-pox are none the less susceptible of vaccination,—a further proof of the absence of any scientific relation between the two diseases.

Another instance of the unscientific confusion in which the whole of this vaccination business is wrapped is the disagreement among doctors as to the necessity of vaccinating in more places than one, and of producing what are called “ good marks.” Jenner was satisfied with a single puncture in the skin ; and, according to his account, that secured life-long protection against small-pox. No one holds to that now. Four incisions are insisted upon by the Local Government Board ; and I have heard a public vaccinator declare that he was not satisfied with less than seven ; while a certain Dr Dixon, in his official report to the

authorities at Bermondsey, asserted that, to make things really safe, there should be as many insertions of the lymph as there would be pustules on the body in a mild case of small-pox.* Nor must I omit to notice an entirely new doctrine as to the value of what are called "good marks," put forth as recently as last October by Dr Dalton, of the Metropolitan Asylums Board, and based by him on the observation of a thousand cases of small-pox. We used to be taught that, when vaccination "takes" severely, and the anxious mother is expected to rejoice on account of the saving gravity of the symptoms, the child, if it survived, would at any rate be absolutely secure against small-pox. We were expected to admire a process which brought so much foul matter out of the child; as if it would have been there even if the poison which produced it had never been inserted. But now, alas! according to Dr Dalton, all this is a mistake. The gravity of the effects of vaccination proves, he says, not that life-long immunity has been secured, but that the child is highly susceptible of small-pox, and, unless re-vaccinated, and that shortly, will almost certainly catch it and have a severe attack, should the infection chance to cross its path. Such is the criticism of an experienced small-pox hospital doctor on the theory which has been made so much of in recent years, and has been well supported by statistics, which showed that the vaccinated with "good marks" were, if under two years of age, absolutely immune from death from small-pox, and that at all ages only three per cent. of the cases of such persons proved fatal.†

* Why make this limitation of "mild"? Would it not be more reasonable to say "as many insertions of the lymph as the person in question would have pustules, if he caught small-pox"?

† It is a proof of the slowness with which criticisms on vaccination come to the knowledge of medical men that Dr Hugh Jones, in reading before the Royal Statistical Society, on December 19, 1893, an elabor-

At a meeting of the British Association some ten or twelve years ago, Dr W. Balthazar Foster (now better known as Sir Walter B. Foster, M.D.) is reported to have said that "it was incomprehensible how the virtue of vaccination could be regarded as an open question by any scientifically educated mind." In 1889, Professor Crookshank, a medical scientist of European reputation, concluded his study of the "History and Pathology of Vaccination" (Vol. I., p. 465) with the words, "Unfortunately a belief in the efficacy of vaccination has been so enforced in the education of the medical practitioner that it is hardly probable that the futility of the practice will be generally acknowledged in our generation, though nothing would more redound to the credit of the profession, and give evidence of the advance made in pathology and sanitary science." Clearly, in the case of vaccination, as elsewhere, science is by way of revising her judgments.

THE EMPIRICAL ARGUMENT.

In the art of medicine empiricism has at times to do duty as science. Nor is it unreasonable that, when an explanation of phenomena is impossible, uniform experience of the regularity with which events succeed one another should give a quasi-scientific value to our conclusions as to their cause and effect. In other words, although no sound theory as to the relation between vaccination and infant life, Dr Dalton, in his paper on "The Perils and Protection of Infant Life," thought it enough to say in passing, "It is unnecessary to discuss the prophylactic value of vaccination," and quoted the usual table showing the immense value of "good marks," apparently quite in ignorance of the facts that Dr Dalton's conclusions were inconsistent with that table, and that within the last seven years scientific and historical investigations, made by competent men, had indicated that vaccination has no specially prophylactic value at all, an inference which no one questions on scientific grounds.

tween cow-pox and small-pox warrants us in anticipating that the former should prove a prophylactic against the latter, if experience shows that, under varying circumstances, cow-pox inoculation is invariably followed by immunity from small-pox, the conclusion that vaccination has the protective power that is claimed for it would be adequately, albeit only empirically, established.

Very few persons have the opportunity of observing at first hand whether these things are so ; and it is unnecessary to point out that the conclusions that the mass of people draw from experience which is necessarily on a very limited scale, are largely coloured by the prepossession with which they approach the subject. Any scrap of evidence that tells in favour of the opinion they hold is treasured in the memory and stated for the benefit of others from time to time ; any amount of evidence that tells the other way is ignored, denied, forgotten, or explained so as to make it consistent with the view that is so tenaciously adhered to. It is not dishonesty but unconscious bias. I know, for example, an eminent journalist, to whom the value of vaccination has for years been as certain as the propositions of the multiplication table. He was vaccinated and re-vaccinated, and then had a severe attack of small-pox. Did it modify his opinion? Not a bit of it ; he is more devoted to vaccination now than ever, for he is certain that, but for vaccination, he would have died ; and it is useless to point out to him that this assumption of his is quite groundless. Of course, when the failure of vaccination thus affords fresh reasons for believing in it, very slight evidence is enough to render convincing its apparent success. And this is why it is so difficult at the present time to form a fair estimate of the force of the empirical argument. Immunity from small-pox subsequent to vaccination is almost necessarily accepted as consequent on vaccination

by those who believe the official and professional doctrine ; though to those who take a wider view, and who have observed that no other infectious or epidemic disease is even supposed to have temporarily subsided or to have died out altogether in consequence of a prophylactic against it being adopted, there appears no necessity to accept vaccination as the cause.

The advocates of vaccination ought first to prove that nothing else could have brought about that diminution in the ordinary prevalence of small-pox in which we as well as they rejoice. They ought to prove to us that, when in London, a hundred years ago, the soil was honeycombed with cesspools, and there was an annual death-rate of 70 or 80, as compared with 20 per thousand now, small-pox was only more prevalent because of the absence of vaccination. They ought to convince us first that neither sanitation, nor improvements in diet, nor the natural tendency of an exotic disease to wear itself out, can account for our comparative freedom from a disease, which is known to be specially deadly in the slums, among the ill-fed, and where it makes its appearance either for the first time or after a long period of immunity. Until these things are done, the argument from statistics will only serve to convince those who were convinced already ; and it certainly will not make much impression on those who have taken the pains to examine the figures, and who see that the argument itself falls to pieces unless it is deftly handled.

It never was more deftly handled than by Sir Lyon (now Lord) Playfair in his speech in the House of Commons, on June 19th, 1883,* a speech which is said to have turned

* The occasion was a resolution proposed by the late Mr P. A. Taylor, to the effect that "it was inexpedient and unjust to enforce vaccination under penalties upon those who regard it as inadvisable and dangerous." The extraordinary rhetorical effect of Sir Lyon Playfair's speech may be gauged by the fact that, whereas, in 1871, a

more votes than any other ever delivered in Parliament, and which, in that case, brought about the continuance of the compulsory law for at least another decade. There is no reason to suppose that the speaker had any thought of using figures unfairly. The speech is that of a man genuinely anxious for the public welfare, and inspired by the belief, which fifty years of experience have done much to discredit, that legislation directed by modern science is able to "stamp out" infectious diseases.* Thus, one sentence ran as follows:—"Parliament in 1853 passed an obligatory law, which remained without administrative means of enforcing it till 1871; but still, during this period of obligatory vaccination (1854-71) small-pox mortality fell (from 305 per million as it had stood in the preceding period of seven years) to 223 deaths per million. In that year (1871) a law was passed making it compulsory on Boards of Guardians

clause abolishing repeated penalties had been accepted by the House by a majority of 57 to 12, Mr Taylor's resolution was rejected by the enormous majority of 270 (286 to 16). The House had resumed a more rational temper by May 12th, 1893, when Mr Hopwood's resolution, "That the law compelling vaccination of infants and young persons is unjustifiable, and ought to be repealed," was rejected by a majority of less than two to one (136 to 70).

* The whole speech was given and was answered in detail by the late Mr William White, in a pamphlet entitled "Sir Lyon Playfair taken to pieces and disposed of." London, 1884. The title was gratuitously offensive, and probably hindered the criticism from being widely read; which is the more to be regretted, since, as an answer, it was complete. Doubtless Lord Playfair had suffered from the disadvantage common to statesmen who have to speak in Parliament on a great variety of subjects which they have no leisure to study. A secretary is employed to get up the facts. He naturally takes it to be his business to collect and marshal only such facts as go to make a defence of the official position; the result being that a specious case is made out, which falls to pieces when subjected to criticism. It will be the special advantage of the present Cabinet in dealing with this subject, that it contains in Lord Herschell an informant who has himself heard at least some of the evidence on the other side.

to appoint Vaccination Officers ; and since that time the average small-pox mortality has been 156 per million."

Nothing could have been more gratifying to the members of the Legislature, who heard this speech, than thus to learn, on such excellent authority, how potent is the arm of the British House of Commons. For the speaker did not assert that these successive Acts of Parliament had resulted in an increase in the number of vaccinations, and that the decrease in the rate of small-pox mortality had in that way been secured. No doubt that was taken as implied ; but it was not so stated, nor indeed would such a statement have been precisely true, so far as a comparison between the second and third of these periods is concerned. As a comparison between the first and second periods it would doubtless be true, but there are no statistics to produce. We have, however, the figures from 1852 onwards ; and it is the fact that, from that date until 1876, the number of vaccinations did not quite keep pace with the increase of population ; while, since 1876 up to the present day,—the period that has been freest from small-pox,—they have steadily decreased.* So that it is, apparently, the terror inspired by Acts of Parliament, and not vaccination itself, which causes small-pox to behave in this exemplary and docile way.

A further inspection of Sir Lyon Playfair's figures discloses the fallacy of the argument, which so profoundly impressed

* The year 1875 may be reckoned as the "high-water mark" of vaccination. The percentage of children who in that year escaped vaccination was only 3·8, and the number was under 5 per cent. until 1884. The steady increase of the number now escaping is best seen by the following table :—

1885	1886	1887	1888	1889	1890
5·8	6·4	7·1	8·5	9·9	11·3

and in later years, for which the returns are not yet to hand, the increase will probably be found to have been by "leaps and bounds." In London the percentage of children escaping vaccination has risen from 5·7 in 1881 to 13·9 in 1890.

the House of Commons. He was maintaining that increased stringency in compulsion resulted, time after time, in a substantial reduction in the death-rate from small-pox. But the Act of 1867, (which was the first to impose repeated penalties, and was thus the most severe of all the measures that have dealt with vaccination in this country—so severe and so odious in fact that it had not been in force four years when a Select Committee unanimously reported in favour of its repeal in that particular,) is not noticed at all; nor is the Act of 1874 noticed, which empowered the Local Government Board to keep a firm hand over the administration of the law. Surely these two brave blows in the cause of vaccination deserved honourable mention; and surely they inaugurated new periods in which the beneficial effects of the operation thus vigorously enforced would be displayed. Why are we not shewn that the decrease in the small-pox death-rate was continuous from 1853 to 1867, from 1867 to 1871, from 1871 to 1874, and from 1874 up to the date for which figures in 1883 were available? And why was 1847 selected as a date to start from, when there was no legislation at all in that year? These questions reveal the cleverness displayed in the selection of the periods; for the great epidemic of 1871-2 is in this way divided into two, the great number of deaths (over 23,000) in the year 1871 being thus diluted by being merged in the long preceding period of seventeen years, in which the mortality had been comparatively low, while a similar refuge is secured for the deaths (over 19,000) in 1872. Had the periods been really coincident with the dates of each increase in the stringency of compulsion (1853-67, 1868-71, 1872-74, 1875-80) the figures would have told a very different story.

As an illustration of the ease with which statistics can thus be played with, and made to prove anything you please, I commend to students of this controversy the following

sentence, which is *not* from Sir Lyon Playfair's speech, but is nevertheless literally and strictly true:—"In the years 1861-2 the deaths from small-pox throughout England and Wales amounted to less than 3000. In 1867 an Act of Parliament was passed which made vaccination for the first time really compulsory, repeated penalties on account of default being now insisted on until the child should reach the age of fourteen years. *And what followed?* In the years 1871-2 the deaths from small-pox exceeded 43,000, being an increase of more than 1400 per cent. on the earlier period."

This epidemic of 1871-2 has always been the great crux of the advocates of vaccination, and Lord Playfair has not been alone in his efforts to slur over its disastrous testimony. The late Dr Guy, who read a paper on "Two Hundred and Fifty Years of Small-Pox in London," before the Statistical Society, on June 20th, 1882, proved to his own satisfaction, and doubtless to that of his hearers, that, thanks to vaccination, there had been no epidemic of small-pox at all in London during the nineteenth century; and this was done by assuming an epidemic to mean 10 per cent. of the deaths from all causes being due to the one particular disease in question, whereas in the year 1871 the ratio was only 9.837 per cent (Journal of the Statistical Society, Vol. XLV., p. 404). The paper is a very laborious one, and contains much valuable information; but when a writer plainly asserts (p. 414) that the question of the preventive power of vaccination is exclusively one of statistics, thus leaving out of account altogether, although himself a physician, the pathological side of the subject, which is more strictly allied to medical science, we have a right to expect that he shall not use the figures thus arbitrarily.*

* The kind of stuff that a learned man can acceptably lay before a learned society is illustrated by a phrase used by Dr Guy in this paper (p. 415)—"such fatal maladies as the 'Parish Infection,' " The

No one desires, and least of all have disbelievers in vaccination any desire to deny, that small-pox is now ordinarily far less prevalent than it was a hundred years ago. It is the absence of any definite relation between the decline of small-pox and the use of vaccination which we affirm ; and this absence of any definite relation is illustrated as clearly as anything can be by the reckless disregard for vaccination, and even for Acts of Parliament, which epidemics are found to manifest as they come and go, if only the figures are allowed to tell their own tale. That is the sole aim of our criticism of the statistics put forth by advocates of vaccination,—to protest against their being so cooked and marshalled as to indicate a relation where none really exists. No doubt some entirely trustworthy statistics can be quoted to show that where vaccination is the rule small-pox is rare ; but other statistics, no less trustworthy, can also be quoted, and will be quoted shortly, which show just the reverse. The only safe conclusion in such a case is a purely negative one, that the one set of figures does not depend on the other.

FURTHER NOTES ON THE ARGUMENT FROM STATISTICS.

How comes it that the disparaging remark is so commonly made about statistics, that they can prove anything? It is because they are, often enough, merely a mask behind which a strong prepossession is striving mightily to establish its case. When confronted with statistical evidence that name hardly sounds like that of a disease recognised as such in the seventeenth and eighteenth centuries ; and it is in fact a mistake (copied apparently from a statistical work of John Marshall), the number of “paroch. infect.,” or “parishes infected,” being taken as the number of deaths due to an otherwise unknown disease ; and, when the weekly lists of these are added up for a whole year, a considerable figure is the result. See Creighton’s “History of Epidemics in Britain,” Vol I. p. 396.

points to a conclusion unlikely for other reasons to be true, it is necessary to enquire from what sources these statistics have been drawn, whether there was any bias in those responsible for the original details, and whether there is any method of checking the returns. Especially is this the case when a double set of statistics comes from the same hand, and the bearing of the one series of figures on the other points towards some conclusion in which the person furnishing the statistics is known to be interested. Statistics of this kind are alive with prepossession; really trustworthy statistics should be innocent of all motive; they should state but the bare facts; they should be, so to speak, dead. The "live" statistics, on the other hand, must be treated as definitely controversial, and should only be accepted without hesitation when they perforce serve to tell against the known prepossessions of those who have prepared and issued them.

Thus the statistics issued by the Registrar General, showing the actual number of deaths from small-pox, are quite trustworthy, apart from occasional errors of diagnosis, which are probably too few to make much difference; and the same is true of the statistics of vaccination issued by the Local Government Board. Each department does its own work without reference to the other; and we may be tolerably sure that the records are strictly records of facts.

But it is impossible to have the same confidence in the statements as to vaccination which medical men are requested to append to certificates of death from small-pox. So great are their prepossessions in favour of the prophylactic value of vaccination, that it is perhaps hardly fair to expect them to certify that it has failed; and, in point of fact, in spite of the urgent and repeated requests of the Registrar General, they do usually omit any reference to vaccination. The following table illustrates this;—

Deaths from Small-pox in England and Wales.

	1887.	1888.	1889.	1890.	1891.	1892.
Vaccinated .	42	91	4	4	3	55
Unvaccinated .	111	269	2	0	17	106
No statement .	353	666	17	12	29	270
Total .	506	1026	23	16	49	431

With regard to this table, the cases about which no statement is made (about two-thirds of the whole number) may for the sake of argument be taken as vaccinated cases. This cannot, of course, be stated as a certainty; but it goes without saying that a medical man would readily certify an unvaccinated case as such, but would be unwilling to be equally frank in regard to a vaccinated one. Nor need the advocates of vaccination fear to grant this, as an hypothesis for the sake of argument; for even then, as the returns stand, the deaths of vaccinated patients would only be about three times as many as those of the unvaccinated; whereas the proportion of the one to the other in the population generally may be taken as eight or nine to one. Disbelievers in vaccination are not unwilling to admit that, in a population vaccinated to the extent of 90 per cent., the deaths of vaccinated persons from small-pox might be not more than 80 per cent. of the whole number; for the reason that the lack of vaccination is not the only condition that differentiates the unvaccinated from the rest of the population. Generally speaking the unvaccinated, if regarded as a class, would include very young children, who more readily succumb to infection, should they be brought into contact with it; but, what is more important, unvaccinated adults are mainly found among the waifs and strays of society, tramps, and the like, whom the compulsory law does not reach; and such persons, from their habits of life, are far more liable than others to encounter small-pox infection, and, if they take

it, to succumb to the disease.* So that a somewhat higher proportion of cases of small-pox, and of deaths from the disease, is to be looked for among the unvaccinated, without any need to regard their lack of vaccination as the factor in the situation.

Nevertheless, the disproportion, as shewn in the statistics of small-pox hospitals, or even in the Registrar General's returns interpreted as above, is too considerable to be accounted for satisfactorily in this way; and a further and fuller explanation, disastrous no doubt to the trustworthiness of the statistics in question, but proved to be correct in a sufficient number of instances, has been provided by the careful investigations of Dr Alfred Russel Wallace, F.R.S., Mr Wheeler, of Darlington, and Major-General Phelps, of Edgbaston.†

Briefly stated their criticisms amount to this :—

That there must be something wrong with the small-pox hospital statistics is clear from the extraordinary high ratio of deaths to cases which they indicate among the unvaccinated. The enthusiastic believer in vaccination finds no difficulty in believing that every unvaccinated person, brought into contact with small-pox infection, of necessity takes the disease and dies of it. Consequently, if the small-pox hospital returns show a ratio of 30, 40, 50, or even, of 60 per cent. of deaths to cases among the unvaccinated, he is surprised, if at all, at its moderation. But a person of wider information and of more sober judgment, knowing that in the eighteenth century, before vaccination was thought of, the proportion

* They are ordinarily also the vehicles by which the infection is carried from place to place. Legislation to check the spread of disease by tramps is urgently needed.

† For details see "Vaccination Proved Useless and Dangerous from Fifty-five Years of Registration Statistics," by Alfred Russel Wallace, LL.D., and edited with notes by Alexander Wheeler, 1889.

of deaths to cases was a little over 18 per cent., or less than one in five, sees at once that (unless we are to suppose that the doctors kill unvaccinated patients so as to maintain the glory of vaccination) there must be a mistake somewhere. The otherwise specially unfavourable conditions of the unvaccinated minority at the present day might explain a higher ratio (say up to 25 per cent.) of deaths to cases; but ratios of 68 or of 83 (such as were reported from two Rochdale Hospitals in 1881-2), are really incredible, when placed side by side with a ratio of 18 in the eighteenth century, also of course exclusively among the unvaccinated. On enquiry it appeared that all patients received at the hospitals used to be set down as unvaccinated, unless the marks were clearly visible. In cases of confluent small-pox (the more serious kind) the marks are temporarily obliterated by the disease, and only re-appear in case of recovery. Thus, vaccinated patients who recovered would be placed to the credit of vaccination; but, if they died, they would be registered as unvaccinated. In this way, while the general proportion of deaths to cases remained pretty much what it was before vaccination had been invented, hardly any deaths among the vaccinated were reported; but those who died were on that account reported as "unvaccinated," whose ratio thus became incredibly high.

It sounds almost like a joke, but there is no doubt about the facts; and, though attention was called as long ago as 1885, by Dr Alfred Russel Wallace, to the delusive nature of statistics thus falsified at their very source, the thing goes on merrily still; and in a recent small-pox hospital report, issued at Warrington, we even find it naïvely admitted that several patients who died were registered as "belonging to the unvaccinated class," because they were "vaccinated too late." If they had recovered, the

recovery would have been credited to vaccination; so that this method of drawing up controversial statistics is distinctly a case of "heads I win, tails you lose." *

Occasionally, however, the small-pox hospital authorities do make admissions which shew pretty plainly the worthlessness of vaccination as a protection. Thus, in 1871, at the Highgate Hospital, 91 per cent. of the cases were reported as vaccinated, and, in 1881, 96 per cent.; and at Birmingham last autumn out of 117 cases 107 were vaccinated, 6 were unvaccinated, and 4 were doubtful. In all these instances the number of vaccinated patients suffering from small-pox would no doubt be greater in proportion to the unvaccinated patients than the proportion of vaccinated persons to the unvaccinated, taking the population as a whole; but this can only be accounted a mere accident. The excessive number of vaccinated patients is nevertheless a not infrequent phenomenon. Thus, to give further instances, there was an epidemic at Bromley in 1881, with 43 cases, all of them vaccinated. At Sunderland, in 1884, there were 100 cases, 96 of them vaccinated; and at Oldbury, in last year's epidemic, there were 123 cases of small-pox, of which all but 9 were vaccinated. Dr Gayton's evidence before the Royal Commission, that ordinarily the vaccinated patients are 80 per cent. of the whole number, corresponds accurately enough with what has been said above, that, while about 90 per cent. of the population may be

* See the letter of Mr Alfred Milnes in the "Times," September 9, 1892; Dr Birdwood's reply on the 13th, and Major-General Phelps' letter on the 19th. The death of a person from small-pox, who had been twice successfully re-vaccinated, was registered as if "no statement" about vaccination had accompanied the certificate; and other cases were set down as "unvaccinated," contrary to the fact. The Warrington report above referred to will be found in the "Vaccination Inquirer" for February 1894.

reckoned as vaccinated, the proportion of unvaccinated persons taking small-pox will probably be somewhat higher than their numerical proportion to the rest of the population, on account of other conditions, which render them more liable to the disease, and more likely to die if they have it.

The official returns in Italy of the epidemic of 1870 point to the same conclusion. Vaccination was then a common practice but was not compulsory, and it is hardly likely that more than 70 or 80 per cent. of the population were vaccinated. Yet, out of 55,897 cases of the disease, 76 per cent. were vaccinated.

That a small-pox epidemic does not pick out the unvaccinated persons, as believers in the operation would suppose, but takes people as they come, with a sublime disregard to their having been inoculated with the cow-pox or not, is further illustrated by sundry German statistics—and the German statistics may usually be relied upon as more straightforward than the English ones. Thus, at Bonn, in 1870, 41 vaccinated cases of small-pox were brought to the hospital before a single unvaccinated case was brought; at Cologne, at the same date, the number, under the same circumstances, was 173; and at Liegnitz, in 1871, it was 224; while at Neuss, out of a total number of 248 cases of small-pox between 1865 and 1873, not a single one was unvaccinated.*

These facts, and they are undisputed, certainly suggest the conclusion that, while vaccination gains a great reputation as a prophylactic from our ordinary freedom from the disease against which it is supposed to protect us, it is really quite useless when an epidemic makes its appear-

* *Encyclop. Britan.*, Vol. xxiv., p. 30. Further examples from Germany will be found in Dr Creighton's article, "Vaccination, a Scientific Enquiry," in the *Arena*—an American magazine—for September 1890.

ance. And that there is no relation between the use or disuse of vaccination and the presence or absence of small-pox, of such a character as to have any scientific value, is further shown by quite recent experience in our own country. There is, at any rate, this advantage to be gained from the comparative disuse of vaccination in sundry districts (in defiance of the law) that, whereas most of the statistics quoted above refer only to countries and periods where and when vaccination was uniform and universal, we can now see whether towns in which nearly all the children are unvaccinated do in fact suffer, as we had been led to anticipate, from their neglect of the great preservative; and we can compare them with other towns, similarly circumstanced in all respects save in regard to vaccination.

THE EVIDENCE OF SUNDRY TOWNS AND DISTRICTS IN ENGLAND.

I have recently taken the trouble to compare the tables issued by the Registrar General with those issued by the Local Government Board, independent, trustworthy, "dead" statistics, as I have above described them, taking for the vaccination statistics the period of six years, 1885-90—no detailed later ones have yet been issued—and, for the statistics of deaths from small-pox, the Registrar General's returns from 1887, which bring us, in the case of sundry large towns, up to the end of June this year; and they amply confirm what those who know that there is no pathological relation between small-pox and vaccination would have anticipated, viz: that neither is there any statistical relation. It is unimportant that the vaccination returns do not come down to date, because they vary far less markedly than epidemics do; and it may be taken as

certain that, where vaccination, as shown by the reports, was discredited and largely abandoned in 1890, there has been no subsequent return to the belief and practice, but rather a further departure from it. On the whole, we are pointed to the conclusion that where there is least vaccination there also is least small-pox; but this again must be accounted a mere accident.*

Thus, to compare large areas first, the four best vaccinated counties in England are Westmoreland, Huntingdon, Somerset, and Worcester, containing a population of about 865,000. The average vaccination default in these counties during the period named was very small, viz., 3·9, and the deaths from small-pox during the six years 1887-92 amounted to 14. The three least vaccinated counties are Leicester, Northants, and Bedford, with a population of about 1,050,000. In these the average percentage of default was as high as 28·3, and the deaths from small-pox, 12. The numbers of course are too small in both cases for any sound conclusion to be based on them; but, at any rate, they do not indicate any serious consequences from the neglect of vaccination.

Turning next to sundry towns, and comparing the statistics of vaccination with the statistics of small-pox, we find it equally impossible to establish from the figures any positive relation between the two. The tables which are here

* It should be pointed out that, while every effort has been made to render these figures, and those which are contained in the following tables, as accurate as possible, there may be in some cases a slight amendment required, as the Local Government Board and the Registrar General do not always follow the same boundaries: and in the Registrar General's preliminary reports deaths in small-pox hospitals are usually referred to the towns from which the cases came; whereas in his Annual Report they are placed in the districts in which the hospitals are actually situated. But the differences could hardly be of a kind to affect the general argument.

appended (pp. 68, 69) amply illustrate this. Table I. gives the twenty-two registration districts which have suffered most from small-pox during the seven-and-a-half years ending June 30th last. The table also shows to what extent vaccination had been neglected in these same districts during the six years ending December 31st, 1890. Later returns as to vaccination are not yet published; indeed those for 1890 have only just come to hand (on August 29th, 1894). Table II. shows the twenty-two poor-law unions (the boundaries of which correspond with sufficient accuracy with those of the registration districts) in which vaccination had been most neglected during the period above mentioned; and it shows also to what extent these districts have suffered from small-pox.*

Now, on the theory on which vaccination has been made compulsory—and it must be borne in mind that throughout I am criticising the reasonableness of a law which insists on the vaccination of infants for the supposed benefit of the community—these two tables ought to be pretty nearly identical. Special prevalence of small-pox ought to be the result of neglect of vaccination, which is popularly supposed to act as a kind of bulwark, shutting the disease out; and specially-marked neglect of the great preservative ought to be followed by a smart epidemic. But what are the facts? what do the figures show?

* Sundry unions are included under the names of the towns to which they really belong. Thus Barton Regis is included under Bristol, Ecclesall-Bierlow under Sheffield, Aston Manor under Birmingham, &c. London is omitted from these statistical tables, partly because vaccination varies so considerably over its huge and ill-defined area, that the figures would indicate nothing unless it were also pointed out in detail from what districts the cases come which are transferred to the hospitals of the Metropolitan Asylums Board at or near Dartford. But it may be noted, in passing, that the small-pox epidemic this summer in the neighbourhood of St John's Wood occurred in a district better vaccinated than London as a whole.

TABLE I.

Showing the 22 Towns or Districts (excluding London) which have suffered most from Small-Pox during the last 7½ years; and showing also how far they neglected Vaccination, 1885-90.

	DEATHS FROM SMALL-POX.									PERCENTAGE OF VACCINATION DEFAULT.						
	1887	1888	1889	1890	1891	1892	1893	1894*	TOTAL	1885	1886	1887	1888	1889	1890	AVERAGE†
Sheffield . .	282	409	...	1	...	14	5	...	711	4'6	3'7	2'4	4'0	4'5	5'4	4'1
Birmingham .	2	...	...	...	7	...	71	131	211	4'3	4'6	5'5	3'6	5'8	5'8	4'9
Bradford . .	...	3	1	...	...	4	115	26	149	7'1	8'0	10'5	7'3	20'6	24'3	12'9
Dewsbury . .	...	2	...	...	22	102	†	†	126	47'2	37'5	29'6	32'2	37'3	39'1	37'1
Bristol . . .	38	47	...	...	...	...	17	21	123	4'0	4'5	4'1	4'0	7'0	7'7	5'2
Oldham . . .	...	13	...	...	...	15	65	21	114	18'4	27'6	44'1	60'9	71'0	74'4	49'4
Walsall . . .	8	24	...	...	...	...	67	9	108	6'2	14'3	12'7	8'8	12'0	13'5	11'2
Halifax . . .	...	1	...	...	...	52	35	2	90	9'8	13'0	28'2	44'8	60'0	69'6	37'5
Warrington .	...	2	...	...	...	56	17	...	75	4'3	3'6	4'1	4'6	6'0	5'1	4'6
Manchester .	...	1	1	...	...	...	48	17	67	3'5	4'1	3'5	3'7	4'4	4'9	4'0
Grimsby . .	13	48	...	...	...	...	1	...	62	6'4	7'2	4'3	5'6	5'3	6'8	6'9
Wakefield . .	...	20	...	...	1	11	25	†	57	3'7	3'9	3'0	3'4	5'1	4'6	3'9
Preston . . .	1	52	...	...	...	...	...	1	54	7'9	6'4	8'2	7'1	10'9	8'5	8'1
Leeds	1	18	1	...	1	8	20	2	51	1'8	2'1	4'2	2'2	5'7	5'1	3'5
Prestwich . .	6	39	...	...	...	4	†	†	49	7'4	7'1	8'2	7'1	10'7	8'6	8'2
Rotherham .	29	16	...	...	...	1	2	...	48	5'1	3'9	2'8	4'6	5'4	4'1	4'3
Chesterfield .	3	30	...	...	...	9	†	†	42	4'0	10'3	9'2	5'8	9'2	15'4	9'0
Wortley . . .	17	17	...	...	...	5	†	†	39	3'8	3'6	2'4	3'9	5'5	7'0	4'5
Ashton-under-Lyne . .	...	34	1	...	...	...	...	...	35	7'4	7'3	8'1	5'9	11'6	12'9	8'8
Liverpool . .	2	2	2	...	2	15	9	2	34	4'7	4'8	5'7	4'7	4'3	4'4	4'8
Middlesborough .	18	5	...	...	...	2	7	2	34	3'0	2'1	2'6	2'8	3'9	4'1	3'1
Hull	2	19	...	3	...	...	8	1	33	9'1	13'5	10'1	10'6	10'4	10'6	10'7

* To June 30th.

† Official details not yet to hand.

‡ These averages may be compared with the averages for the country as a whole, given on p. 55.

TABLE II.

Showing the 22 Towns or Districts (excluding London) in which Vaccination was most neglected, 1885-90; and showing also how far they have suffered from Small-Pox during the last 7½ years.

	PERCENTAGE OF VACCINATION DEFAULT.							DEATHS FROM SMALL-POX.								
	1885	1886	1887	1888	1889	1890	AVERAGE†	1887	1888	1889	1890	1891	1892	1893	1894*	TOTAL
Keighley . . .	71'9	71'8	75'4	78'7	81'1	80'1	76'5	...	2	...	...	...	...	†	†	2
Leicester . . .	52'1	69'1	72'2	77'0	79'8	78'7	74'8	...	...	...	...	...	6	15	...	21
Gloucester . . .	10'6	18'1	18'8	79'3	83'2	83'2	55'5	...	...	...	...	...	...	...	...	0
Oldham . . .	18'4	27'6	4'1	60'9	71'0	74'4	49'4	...	13	...	...	...	15	65	21	114
Luton . . .	8'3	29'7	33'6	43'0	64'3	72'5	41'9	...	...	...	...	...	...	†	†	0
Eastbourne . . .	24'1	23'8	32'2	43'7	54'4	65'1	40'5	...	...	...	...	...	...	...	...	0
Halifax . . .	9'8	13'0	28'2	44'8	60'0	69'6	37'5	...	1	...	...	...	52	35	2	90
Northampton . . .	10'2	22'9	25'7	37'0	63'6	74'6	37'3	...	...	...	...	...	...	...	...	0
Dewsbury . . .	47'2	37'5	29'6	32'2	37'3	39'1	37'1	...	2	...	...	22	102	†	†	126
Barrow-on-Soar . . .	16'6	20'9	21'8	35'6	52'7	67'2	35'8	...	...	...	...	...	...	†	†	0
Kettering . . .	10'4	22'2	27'1	36'8	46'3	53'3	32'7	1	...	...	...	...	...	...	†	1
Banbury . . .	9'5	24'1	25'3	32'9	46'2	43'1	30'2	...	...	...	...	...	...	†	†	0
Billesdon . . .	14'0	18'3	23'5	31'5	32'6	40'3	26'7	...	...	...	...	...	...	...	†	0
Wellingborough . . .	9'2	10'4	13'2	20'3	32'1	72'1	26'2	...	...	...	...	...	...	†	†	0
Falmouth . . .	6'7	9'3	14'6	27'3	39'0	46'5	23'9	...	...	1	...	...	...	†	†	1
Thrapston . . .	4'9	7'5	9'5	26'1	36'6	51'1	22'6	...	...	...	...	...	...	†	†	0
Blaby . . .	10'4	13'2	13'3	19'7	24'3	47'7	21'4	...	...	...	...	...	...	†	†	0
Bath . . .	9'1	13'0	17'9	20'2	24'0	26'5	18'4	...	...	...	...	...	...	3	...	3
Cheltenham . . .	14'1	14'4	15'0	20'2	19'8	21'4	17'5	...	...	...	...	...	...	...	...	0
Dover . . .	12'2	17'4	18'2	21'6	12'8	16'8	16'5	...	5	...	...	...	3	...	...	8
Barnley . . .	7'7	12'2	14'0	19'4	25'3	20'0	16'4	...	2	...	...	...	...	...	...	2
South Shields . . .	11'9	13'1	13'9	23'1	18'8	16'0	16'1	...	1	...	...	...	1	...	...	2

* To June 30th.

† Official details not yet to hand.

† These averages may be compared with the averages for the country as a whole, given on p. 55.

It appears, then, that in only three instances out of twenty-two do we find that the tables correspond ; or, more correctly, only in three out of a total of forty-one places that come into the lists. Dewsbury, Oldham, and Halifax are these three ; and I have had their names printed in italics for the sake of clearness. The advocate of vaccination is undoubtedly at liberty to point to these three, and to urge that their aggregate of 330 deaths from small-pox since 1887 is the penalty they have had to pay for their temerity in neglecting vaccination during six years, up to an average of 41·3 per cent on the number of children born. But what, then, are we to say of Sheffield, with its 711 deaths in spite of a very low average of vaccination default ; and what of Birmingham, Bristol, Warrington, Manchester, and the other towns, which have also suffered considerably in spite of being vaccinated better than the country as a whole ? Or again, turning to the other table, what are we to say of Keighley, Gloucester, Luton, Eastbourne, Northampton, and a dozen others, which small-pox has either not touched at all, or not appreciably, in spite of their great and growing neglect ? But it is useless to pursue the subject. The figures, which, so far as I know, have never before been presented in a way which makes their significance unmistakable, tell their own tale ; and only those who "will not be learned nor understand, but walk on still in darkness," can be blind to it.

If these statistics prove anything, they show that neglect of vaccination has involved no special disaster, and that insistence on it has provided no special security. On the whole the best vaccinated populations have suffered most.

Before this part of the subject is quitted, a word should be said as to Leicester, the town which has played the most important part in this vaccination controversy. For more than fifteen years Leicester has openly rebelled against the Vaccination Laws, and a very small percentage of the

children born there are now vaccinated.* In 1871-2, when it was as well vaccinated as any other town in England, there were 358 deaths from small-pox; but from 1878 onwards there were not a dozen deaths from that cause, though the disease was imported on various occasions, until 1892; and when it then appeared that the prevalent epidemic had reached Leicester, the medical journals (which advocate vaccination with a peremptoriness and assurance such as no adverse experience has apparently any power to shake) displayed much excitement; and most of us felt some interest and curiosity, as we had been led to anticipate the most terrible epidemic of this or of any other century. But it did not "come off." Whether from carelessness about the isolation of patients, or from whatever cause, the disease lingered on for some months. Yet, during the whole period, in a town which numbers (including the suburbs) over 150,000 inhabitants, there were only ^{361 or 362} ~~446~~ cases and 21 deaths; and the disease has since 1893 entirely disappeared. On the whole, perhaps it is to the advantage of the cause of those who desire the abolition of compulsory vaccination that there has been this very slight epidemic, if such it can be called, in Leicester; for it is an excellent instance to adduce of the now undeniable fact that, even at a time of small-pox epidemic, the disease does not of necessity spread amongst an unvaccinated population.†

By way of commentary on the statistics presented in this section—which are I believe substantially accurate, though I do not pledge myself to every figure—I cannot do better than quote from the "Report on Sanitary

* On April 3rd, 1890, the *Times* reported that out of 1200 births only 23 children were vaccinated.

† A full account of the epidemic, by Mr J. T. Biggs, was printed in the *Leicester Daily Post* in June, and reprinted in the *Vaccination Inquirer* in July this year.

Measures in India, 1879-80.* "The vaccination returns in India show that the number of vaccinations does not bear a ratio to the small-pox deaths. Small-pox in India is related to season, and also to epidemic prevalence. It is not a disease, therefore, that can be controlled by vaccination, in the sense that vaccination is a specific against it. As an endemic and epidemic disease it must be dealt with by sanitary measures; and, if these are neglected, small-pox is certain to increase during epidemic times. Vaccination has no power apparently over epidemic small-pox. It would scarcely answer, in the face of these facts, to go on vaccinating the people to protect them from small-pox, while leaving them surrounded by such disease-causes as the Reports would show to exist in all the villages affected." Substitute in this memorable official confession, "England" for "India," and you have the truth precisely stated. Its application is indeed universal.

THE ALLEGED IMMUNITY OF RE-VACCINATED NURSES.

A favourite argument on behalf of vaccination is the alleged immunity of small-pox hospital nurses who have been re-vaccinated. Some years ago an official paper used to be distributed at the public vaccination stations claiming total immunity for such persons. The statement was inaccurate, and it has now been formally withdrawn in evidence before the Royal Commission, with the somewhat lame explanation that it was "a printer's error." No doubt such nurses do usually keep free of the disease; but that their freedom is due to vaccination or re-vaccination is at least "not proven." Constitutional immunity is a more reasonable hypothesis; in some cases protection is afforded by a previous attack; and the process of

* Vol. XIII., 1881, p. 142.

“seasoning,” not as yet satisfactorily explained,* may fairly be claimed as a cause of immunity from small-pox, no less than from other fevers, in the case of those who habitually attend the patients.† There are references to such immunity in the eighteenth century; while on the other hand we have recent testimony to there being no special security for re-vaccinated as compared with vaccinated nurses; and, though it is perhaps impossible at the present day, owing to the long-continued and almost universal prevalence of the practice of vaccination, to find unvaccinated nurses on whom experiments as to their immunity might be tried, I know of one unvaccinated doctor, who, so far, has not caught the disease while attending to his small-pox patients. On the whole, this argument from immunity, which, by the way is not so much used on behalf of vaccination as of re-vaccination, is not a very convincing one, when the facts are fairly and truly stated; but, as originally circulated by authority, it came no doubt with much rhetorical effect.‡

Unfortunately this is not the only misstatement that has persistently been circulated. Over and over again it has been publicly stated that, during the Franco-German war, the French, through having no compulsory vaccination law, lost 23,499 soldiers from small-pox; while the Germans, every man in their army being re-vaccinated, lost only

* An ingenious explanation, anticipating to some extent the conclusions of modern bacteriologists, occurred to the eminent discoverer Werner von Siemens in the course of a tour in the Caucasus in 1864. See “Personal Recollections” (1893), p. 297.

† Consumption also is now generally understood to be an infectious disease; but consumption hospital nurses enjoy absolute immunity from it.

‡ The Report of the Metropolitan Asylums Board for 1893, already referred to (p. 3), admits that several cases of small-pox occurred among the staff in that year.

3162.* It is highly probable that the defeated, depressed, and disorganised French did lose more by various diseases than the victorious and well-handled Germans; but that these particular figures must have been invented by some one (and invented for what end save for the glory of vaccination) is clear from the fact that it is admitted from headquarters on both sides that no records were kept during the war of the specific diseases from which soldiers died.

One other illustration may be given of the need that there is to use caution in accepting arguments based solely on statistics.

Mulhall states ("Dictionary of Statistics," p. 203) that in 1874 a law was passed in Germany making re-vaccination compulsory on all persons over twelve years of age. The wonderful effect of this law is illustrated by a table which shows that, whereas in the five years, 1871-4, the deaths in Germany from small-pox were 555 per 10,000 deaths from all causes, in the eight years, 1875-82, they were only 8. But the conclusion we are expected to draw from this is not warranted, for it is not the fact that re-vaccination was first made compulsory in Germany in 1874. The law then passed only consolidated and made uniform the vaccination laws already existing throughout the Empire. And, as early as 1835, re-vaccination of all children attending the public schools in Prussia had been made obligatory. Yet, in spite of the fact that re-vaccination had thus been the rule among the great majority of the population for thirty-five years, and that too among the poorer classes especially, for education was compulsory and so brought the children to the public schools, the deaths from small-pox in Prussia

* The number was given as 263 by Sir Lyon Playfair in the House of Commons, the figures apparently being quoted from Mulhall's "Dictionary of Statistics," in the new edition of which (1892) the statement still remains.

in the years 1871-2 amounted to the enormous number of 124,948.

Statistical evidence, if it is to be worth anything at all, must not consist of isolated facts, picked out here and there because they confirm a prepossession. True, in so vast a subject, involving a consideration of the effects of vaccination on hundreds of millions of persons, scattered throughout the civilised world, during a period which now extends over nearly a hundred years, it is impossible that all the facts should be got together and faced, even if we could rely (as we notoriously cannot) on the statistics not being falsified by those from whose pens they originally come. But there are in existence figures, not contested and doubtless substantially correct, which I submit prove adequately that there is no constant relation between small-pox and vaccination. Statistics on a large scale would by no means be necessary to prove the prophylactic power of vaccination, if only this constant relation could in a few well-ascertained instances be shown. "Show me" it has been publicly challenged in the newspapers, "twelve households into which, during an epidemic, small-pox gained entrance, but only in the case of the unvaccinated member or members of that household, and I will believe." Such evidence ought, *ex hypothesi*, to be easily producible, but such evidence has never been produced.

CONCLUSION ON THE ARGUMENT FROM STATISTICS.

A weakness discernible in the argument from statistics is the fact that the statistics of the day invariably support that particular form of the belief in vaccination which is at the time in vogue. In Jenner's day, when one insertion of the lymph through a single puncture in the skin was alleged to secure life-long protection, the statistics (at that date unofficial) amply proved the assertion. But, when the failure

of this mild kind of vaccination could no longer be denied, the cry was raised that it was "not properly performed," and laborious statistics were issued showing the immunity of those who had "good marks," and especially of those who had a large number of marks. These statistics are still often quoted, but they are likely to go out of fashion, now that Dr Dalton has shown that "good marks" prove susceptibility rather than immunity. Statistics proving the value and indeed the necessity of re-vaccination are just now more in vogue; and, last of all, it is "recent vaccination," involving of course frequent re-vaccination, and so plenty of work for the doctors, which the medical journals are advocating as the only really safe thing. A little scepticism is perhaps pardonable under such circumstances as these.*

But it may be questioned further, whether the argument from statistics can legitimately be used at all, except by those who employ it as subsidiary to a scientific theory of vaccination. Mere empiricism is usually taken as synonymous with quackery; and certainly vaccination would never have obtained recognition as a legitimate operation, if it had not originally been based on a plausible theory, which pointed towards prophylaxy against small-pox as its probable effect. Statistics confirming such an anticipation have no doubt a legitimate place in the argument; but, so long as the Creighton-Crookshank doctrine of cow-pox remains unfuted—and it has held the field now for some seven years, without even being called in question—the absence of any

* An interesting fact in relation to small-pox is that at the present time it is far more fatal to males than to females. Out of 2051 deaths from the disease in England and Wales in the six years 1887-92, 1231 were males and 820 females, the proportion being thus almost exactly 3 to 2. Yet re-vaccination is certainly more common among males than among females, being obligatory in the Army and Navy, and in some branches of the Civil Service.

scientific theory indicating a pathological relation between cow-pox and small-pox renders the appeal to statistics somewhat grotesque, and quite unworthy of the professors of a scientific art. The believers in the efficacy of any medical nostrum can produce testimonials (*i.e.*, statistics) to its value. Two men who believe that they have cured themselves of rheumatism by carrying a raw potato in the left-hand pocket of their trousers can issue statistics shewing that the remedy has, to their own knowledge, proved efficacious in 100 per cent. of the cases,—this use of magnificent percentages, when the actual numbers are very small, is a fallacious piece of rhetoric familiar to the students of this vaccination controversy—and it is obvious to add that, while testimonials to the curative power of this or that quack remedy are always to be had, even though there is some definite disease to be rid of first, testimonials to an alleged prophylactic power are far more readily obtainable, since nothing is necessary beyond keeping clear of the disease, which there may be no opportunity to catch; and the evidence is proportionately worthless and misleading.

The medical journals, which, with pathetic persistency, publish small-pox hospital returns proving the value of vaccination, forget that, not only are statistics prepared by enthusiastic advocates, without any critical check, unsatisfactory evidence in any case to lay before those whom they wish to convert, but further, that such statistics can hardly be regarded as admissible evidence at all by those who realise that the scientific basis of vaccination has been overthrown. An illustration may make this clear. There is a good deal of evidence that electricity, in certain cases, has a curative power, though the subject is as yet an obscure one. When therefore we read cordial and sincere testimonies borne by persons of repute to the value of “electropathic belts,” we are disposed to believe that such benefits might

result from an electric current induced by the wearing of such a belt; and additional evidence serves to strengthen that conviction. But when it has been shown conclusively that the belts in question are not constructed so as to induce any electric current at all, the scientific basis (such as it was) of the alleged cures is destroyed; and no amount of evidence avails to restore our faith. Without imputing dishonesty to anyone who still testifies to cures effected, we are satisfied that such persons are mistaken. The cure, if not a delusion, was due perhaps to the warmth of the belt, or to some other cause wholly unconnected with it. Certainly it was not due to a non-existent electric current. Scepticism of this kind, which is wholly natural, is precisely parallel with the disbelief in the prophylactic power of vaccination, which grows steadily whenever the real state of the case becomes known; and no carefully prepared statistics, nor, for that matter, all the king's horses and all the king's men, can avail to restore the operation to that honourable place which it occupied when it was believed to possess a truly scientific basis.

Whenever an argument in favour of vaccination is produced, which is based solely on statistics and not on any scientific theory, the question should always be asked, "But is vaccination or re-vaccination, as the case may be, the only differentiating condition?" If it is not, the argument at once loses nearly all its weight. Thus, Dr M'Vail, of Glasgow, perhaps the ablest writer on the other side, in his "Vaccination Vindicated," produces some striking comparative statistics of small-pox mortality in the armies of the German and Austrian Empires respectively, and he ascribes the superior immunity of the Germans to their being invariably re-vaccinated, which the Austrians are not. But are all the other conditions the same? Is Vienna in all respects as healthy a town as Berlin? and are not Austrian soldiers often quartered amidst Oriental filth, such as would

not be tolerated by Prussian officers in the neighbourhood of their barracks?

So, again, attention is sometimes called to the freedom from small-pox alleged to be enjoyed by the re-vaccinated soldiers of the British army. True, the mortality among them is, as one would expect among seasoned men, a little lower than the average throughout the country, so long as they remain in this country. But, when our re-vaccinated soldiers are sent to unhealthy quarters, as, for example, in India, the cases and deaths from small-pox, though they may not strike one as being very numerous, are yet such as, if stated as percentages to the total number of the British military force, would show a proportion that would mean a considerable epidemic if in London we had similar percentages of cases and deaths to the population.* Arguments based on figures alone are very misleading, unless care is taken to realise their true significance, and unless all the conditions on which they probably depend are given a fair consideration.

We, who disbelieve in vaccination, but hold that other causes beyond the natural dying out of an exotic disease have contributed to bring about our present comparative immunity from small-pox, are disposed to conclude that, if all the energy that has been spent in promoting vaccination had been devoted to really scientific prophylactic measures, sanitation, disinfection, isolation, and the like, the disease would probably have been banished from the country years ago; though, knowing the subtlety with which infectious diseases may gain an entry and re-establish themselves, we do not pretend that any such absolute immunity could be guaranteed. We admit that,

* This point is drawn out in detail in the *Vaccination Inquirer*, Vol. xvi. p. 71.

after all has been done, we may have to confess with the Friar in "Romeo and Juliet" that

"A greater Power than we can contradict
Hath thwarted our intents."

But we do maintain, in any case, that a fair study of the statistics, foreign as well as British, points to the conclusion that, where all rational precautions have been taken, unless the mysterious influence of an epidemic intervenes, there is really no work for vaccination to do; while, on the other hand, if an epidemic does come, vaccination is seen to be powerless, and it is on other measures that we have to depend for protection. So that, while vaccination in the one case is superfluous, in the other it is ineffectual; and in either case its value as a method of hygiene is *nil*.*

THE ALLEGED RISKS OF VACCINATION.

But yet, in spite of disbelief in the protective power of vaccination, the practice, as enforced by law, would never have encountered the fierce resistance that has rendered the Acts inoperative in many important districts, were it not for the accompanying belief that it does harm instead of good. A mere innocuous "rite," bearing no religious significance, could never have inspired such determined opposition.

Many people are unwilling to admit that vaccination ever does or ever can do any harm. So great is their

* It is worth noting that, while Dr Creighton and Professor Crookshank, both coming to the study of vaccination with the usual professional prepossessions in its favour, lost their faith in it when they examined its history and pathology, Dr Kolb and Dr Vogt, distinguished German and Swiss statisticians, also approaching the subject with prepossessions in its favour, lost their faith from a prolonged study of the statistics.

trust in a beneficent Legislature that they refuse to believe in injurious results as a possible consequence of a legally enforced operation. And there are medical men, who ought to know better, but who nevertheless profess to share this opinion. I have myself seen doctors smile contemptuously when a death has been ascribed to vaccination; and another I have known declare that in the course of a long practice he had never observed a single case of serious injury. Such a remark reminds one of the saying of Rousseau, that "it requires much philosophy to observe once what can be seen every day"; for others have a very different story to tell. An able man, a believer in vaccination, for example, told me that he thought it would be better for the practice to be dropped, because his experience of its risks had made him regard it as "paying too high a premium for insurance"; and indeed the mass of medical evidence as to the existence of serious risks is simply overwhelming. Even the writer of the article in the *Edinburgh Review* for October, 1806, though a strong advocate of the new process, admitted that "violent cutaneous disorders" had sometimes followed, and that he knew of "one or two unfortunate cases in which the wound in the arm had degenerated into a dangerous ulcer."

Jenner himself, liable as he was to be blinded by his enthusiasm, admitted that he was alarmed at the severe effects produced by cow-pox in sundry cases that he had himself inoculated; indeed the whole history of vaccination, though much has been concealed, is strewn with disaster and death. Nor is it easy to see how it could have been otherwise, when one reflects on what vaccination really is. Why should cow-pox, alone among diseases, never do any harm? Other diseases of animals, such as glanders, or anthrax, or rabies, are known to be peculiarly

deadly when accidentally inoculated on to man. Cow-pox, no doubt, when affecting an animal otherwise healthy, is a comparatively mild ailment; and this, as has already been suggested, may be partly due to the fact that it is apparently a disease of human origin; but, whether we take Jenner's theory, that it is a form of small-pox, or Creighton and Crookshank's theory, that it is akin to syphilis, we still have to admit that it involves some risk. Dr Ballard, formerly Medical Officer to the Local Government Board, and a great believer in the value of vaccination, frankly admitted this:—

“Vaccination,” he says, “is not a thing to be trifled with or to be made light of; it is not to be undertaken thoughtlessly, or without due consideration of the condition of the patient, his mode of life, and the circumstances of season and of place. Surgeon and patient should both carry in their minds the regulating thought that the one is engaged in communicating, the other in receiving into his system, a *real* disease—as truly a disease as small-pox or measles; a disease, which, mild and gentle as its progress may usually be, yet nevertheless, now and then, like every other exanthematous malady, asserts its character by an unusual exhibition of virulence.”

He is speaking of vaccination simply as the inoculation of cow-pox, and he has not in view in this passage dangers which many dread far more, viz. : the possible invaccination of other diseases at the same time.

This last is a point on which there is much difference of opinion, and I have no desire to press it unduly. Nevertheless, it is impossible to ignore the fact that there exists a vast mass of medical evidence (or of medical opinion, it may be better to term it, since rigid proof is seldom to be had), that such diseases as syphilis, erysipelas, eczema, and scrofula can be communicated or stirred up by

vaccination; and the testimonies collected by Mr Tebb in various parts of the world amount to little short of a demonstration that the recrudescence of leprosy, which is causing so much alarm in tropical countries, is really due to this cause.* It has been suggested by some one, evidently not very familiar with the subject, that, where a disaster results from vaccination, the doctor who performed the operation should be prosecuted. But, this would be altogether unfair; for it appears to depend rather on the child's constitution than on the quality of the lymph used, whether the operation "takes" severely, or, as is more common, results only in a slight fever, and a sore that does not last many days; while, as to the simultaneous communication of other diseases along with the cow-pox, it has been admitted by more than one expert witness before the Royal Commission that no microscopical examination of the lymph used can guarantee that it is the vehicle of cow-pox only. There is, in fact, no bacterium specific to cow-pox lymph, though it is admitted to be an excellent medium for the cultivation of bacteria generally. And, while so few inoculable diseases can be identified by any special bacillus, recognised as forming their *contagium*, it is clear that bacteriology can throw little light on the subject, apart from purely negative conclusions, such as the absence of any relation between cow-pox and small-pox.† Of course,

* "The Recrudescence of Leprosy and its Causation," by William Tebb. London, 1893.

† While these sheets were passing through the press, there appeared (Aug. 29, 1894) in the Medical Officer's Supplement to the Twenty-Second Annual Report of the Local Government Board, a paper by Dr Klein, entitled, "On the Etiology of *Vaccinia* and *Variola*," in which he claims (p. 400 of the Supplement) to have discovered that "alike in variolous lymph and in vaccine lymph—and whether the latter be derived from the calf or from the human subject—one and the

even lymph that is by courtesy termed "pure" is full of microbes of one kind or another; but they are mostly quite harmless. The only really disquieting point in Professor Crookshank's evidence on the bacteriology of vaccine is that the lymph occasionally contains a bacterium characteristic of pus, thus indicating a risk of blood-poisoning.

It was the frequency with which syphilitic symptoms were alleged to follow vaccination that pointed Dr Creighton towards his conclusion as to the real character of cow-pox. For the medical details his book should be consulted;* it is enough to say here that ulcers of a cancerous nature, slow to heal, and ultimately leaving the characteristic "good mark" behind, are the most familiar symptom; while the persistency of the disease same definite bacillus is demonstrable, a bacillus, namely, which contains bodies comparable with spores, but which cannot at present be cultivated in artificial nutritive media." Of course the paper is intended as a reply to Crookshank, though his name is not mentioned. If this alleged discovery can be maintained, it may give, no doubt, a prolongation of life to the vaccination doctrine, by providing for it a specious if an insufficiently established scientific basis. But, to be frank, the discovery will need independent confirmation, if it is to be accepted. Dr Klein's researches have before now had somewhat ambiguous results, notably in the case of the "Greenwich epidemic" last year. It is difficult to believe that at the eleventh hour an accommodating bacillus, dwelling, apparently as a "specific," in the lymph of two diseases known by other tests to be pathologically distinct, should reveal itself to an official observer, evidently to save the scientific credit of vaccination, though it was invisible under Professor Crookshank's microscope; and, while Dr Klein's paper certainly deserves and will receive the careful study of competent men, at present the only conclusion one can draw from it is that the Medical Officers of the Local Government Board, meaning to fight for compulsory vaccination to the last, have realised that, unless they provide themselves with a scientific basis, they are bound to lose. See Postscript, p. 121.

* "The Natural History of Cow-pox and Vaccinal Syphilis," by Charles Creighton, M.D. London, 1887. The same theory is developed in his article "Vaccination" in the ninth edition of the *Encyclopædia Britannica* (1888).

in the system, long after the wounds have healed, a persistency which may manifest itself later in various disagreeable ways, is a further proof of its real character.

No doubt disasters consequent upon vaccination are but rarely observed, especially in the upper and middle classes. For one thing, observation depends on theory; and the old theory, which made cow-pox parallel with small-pox, naturally would not permit any such observations to be made after the period of a month or three weeks, had elapsed. For another thing, private vaccination is notoriously less severe—it is often enough not vaccination at all, in any real sense—than that performed at the public stations. It is mainly among those who have to go to these stations that disasters occur; and there are reasons for such a result apart from the vaccination itself. Poorly clad infants have to be taken to the place at the appointed time, whatever the season or weather may be; the mothers and their children, coming from a variety of unhealthy homes, have then to wait and associate; and this process has to be repeated eight days later, when the vaccinator has the right (penalty for refusing, twenty shillings) to open the vesicles so as to procure lymph for other cases; and in this second operation, followed by exposure to the cold, considerable risk must lie.

VACCINATION OCCASIONALLY A CAUSE OF DEATH.

Medical men, not public vaccinators, have frequently called attention to the hardships and dangers of this system; and the few cases of death registered as due to vaccination are probably all those of children operated on at the public stations, but subsequently attended by some other medical man; for at the eighth day the public vaccinator is not able to judge of the mis-

chief that has been done; and he does not see the child again after that date. It is hardly likely that any medical man would certify as due to vaccination the death of a child whom he had vaccinated himself. Indeed, regard for the parents' feelings as well as for his own reputation would suggest that he should conceal the true cause; and the laxity of our method of registration makes such concealment very easy. I have never been on the look-out for injuries consequent on vaccination; but two cases of death from that cause (undoubted and ultimately admitted) which came under my notice perforce, were registered, the one as due to "convulsions" and the other as due to "syncope." Under these categories (as also under "debility"), which really involve no definite statement as to the cause of death, medical men, whether from incompetence, or indolence, or because for some reason they are unwilling to name the true cause, have long been accustomed to enter wholesale the deaths of infants under one year.*

Yet "convulsions" are a symptom rather than a disease; and they correspond in the infant to delirium in the adult, indicating that some disease or derangement (and there are several that cause convulsions) has reached an acute stage. Cow-pox is such a disease; and when a child is suffering severely from vaccination, but there is no indication of the presence of any other disease or of physical derangement, if the issue be convulsions and death, it is surely clear that "cow-pox" should be registered as the cause, and not the mere symptom "convulsions." Much the same may be

* Upwards of 36,000 in England and Wales are thus registered annually at the present time. Other "Anomalies of Death Certification" are dealt with under that title by Dr Allan, Medical Officer of Health for the Strand district, in the "Medical Times and Hospital Gazette" for May 5, 1894.

said of the deaths of infants ascribed under similar circumstances to "syncope" or "debility," when such deaths occur during the crisis of the vaccination fever. Indeed, one may go much further and maintain that in every case in which an infant dies during the time of constitutional disturbance following vaccination, or before the healing of the vaccination wounds—a period often extending over six weeks or more—"vaccination" should certainly be entered on the certificate as a secondary or contributory cause of death, even though the fatal issue may have been mainly due to some other ailment; for the reason that the death was probably due to the complication caused by the cow-pox fever. And, if death would not have ensued but for that complication, vaccination is in such cases the real and efficient cause, as being the preventible one.

It is difficult, I know, to bring people to take this view of the matter, though it is really the common-sense view, and will be recognised as such as soon as the quasi-religious belief in vaccination has waned. People feel that it is monstrous—as indeed it is—to recognise in a State-enforced operation a cause of disease and of death; and they are ready to accept any evasion rather than admit it. They are satisfied even with the stereotyped official denials made in Parliament, though such denials would count for nothing in the case of anything else. Occasionally a death alleged to be due to vaccination receives the attention of the authorities at the Local Government Board, and what is called an "enquiry" is ordered. An inspector is sent down, and, with a local medical man, he calls on the wretched mother. Of course they mean to act fairly, but they are convinced that vaccination could not possibly be the cause; and it is not difficult for them, after a little cross-examination, to make the mother bow to their authority,

though privately she may retain her own opinion. Parliament is then gravely assured that the death is not even supposed to have been due to vaccination; and John Bull is confirmed in his belief in his own wisdom in making so harmless and so valuable an operation compulsory; though, as I happen to know, a mouthpiece of the medical officials of the Local Government Board may ultimately feel ashamed of the lies which he has had to tell at their dictation.

Indeed, in spite of all the efforts that are made to conceal the truth, there exists now a considerable body even of official evidence to the risks of vaccination. The German regulations,* directing the vaccine lymph to be diluted before use with glycerine, and insisting on the most elaborate precautions, with the object of securing that only children in sound health shall be vaccinated, and that "humanised lymph" shall be taken only from the very healthiest cases, are a proof, not only of a paternal care for which everyone should feel grateful, but also of a recognition of the existence of serious dangers as possibly consequent on vaccination. These regulations, with various modifications, have been adopted by the Local Government Board; and are supposed to be followed at the public vaccination stations; but their great elaborateness makes them to a large extent impracticable, and it is certain that they are very imperfectly carried out.†

Then we have the Registrar General's returns, showing about fifty-two deaths annually due to "Cow-pox and other effects of vaccination," a number which Mr Alfred Milnes

* "Reichs-Impfgesetz," April 8, 1874. Among other precautions, vaccination during an epidemic of any infectious disease is forbidden. See Palmberg's "Public Health and its Appliances," translated by Newsholme. London, 1893. Pp. 365, 366.

† They are printed at length in the 17th Annual Report of the Local Government Board, and they came into force, March 17, 1887.

(who, as a Fellow of the Royal Statistical Society, may be trusted to be careful with his figures) estimates, after much enquiry, to represent about one in thirteen of the real number.* And, while the return moved for by Mr Hopwood in 1877 (Commons Paper, No 433) showed that the deaths of infants from certain specified causes had increased between 1847 and 1875—*i.e.*, coincidently with the enforcement of vaccination—at a rate considerably more rapid than the increase of the population would have warranted, in Leicester, on the other hand, the disuse of vaccination has been coincident with a reduction in the annual death-rate of young children from 107 per 1000 in 1868-72 to 63 per 1000 in 1888-9. I speak of coincidence and not of consequence, because the consequence is a mere inference, and the facts may be open to some other explanation. But the double coincidence is at any rate striking and worth recording.

On the whole it may be taken as adequately proved that vaccination, since its first introduction by Jenner, has brought about the deaths of some thousands of children; nor can we in regard to these have the consolation suggested by some who believe in vaccination but yet admit its risks,—that it is only the very weakest lives that have in this way been slightly abbreviated. Granting, for the sake of argument, that the State has the right to establish this form of infanticide, so as to rid itself of the burden of feeble and unpromising lives, the reply would be that it is not so much weakness, as constitutional susceptibility to

* Previously to 1881 it had only been officially admitted that “erysipelas following vaccination” might end fatally; and a coroner is reported to have refused to accept a verdict given in accordance with the medical evidence, on the ground that “vaccination is not a legal cause of death.” This anomaly was remedied by Dr Ogle in the year above mentioned; and immediately the returns showed about double the number of deaths resulting from vaccination.

the fever of cow-pox, that makes the risk ; and this susceptibility is certainly not peculiar to weakly children. Its existence can only be ascertained by experiment ; but when the experiment has proved fatal in the case of one child, it is natural to anticipate a similar susceptibility in the case of other children of the same parents, who, as having already paid tribute to the majesty of the law, might fairly claim subsequent exemption from the compulsory Acts.

COMPULSION IN THE FACE OF ACKNOWLEDGED RISK.

It is impossible to leave out of account this aspect of the vaccination question ; for, although vaccination is really discredited more by arguments which prove its uselessness than it would be (if its value were undoubted) by proofs that it occasionally does harm, it is the dread of vaccination, and not mere contempt for it, that makes compulsion so odious and ultimately so unworkable. And it is the existence of this dread which a statesman has mainly to take into account. Medical men may be able to prove to their own satisfaction in this or that particular case that the ascription of death to vaccination was a mistake ; but they cannot, on any theory of vaccination, prove that it is always and of necessity harmless. That being so, the dread in question remains a reasonable dread ; and a statesman, recognising its existence, need not trouble himself as to the exact measure of its reasonableness, when he contemplates a repeal of the compulsory law. That a number of persons are honestly persuaded of the seriousness of the risk is sufficient reason for not putting pressure on them. They may be mistaken ; but that does not alter the fact that their reasonable dread deserves consideration. For myself, I dislike in such cases the use of the phrase "conscientious objection" to vaccination. The word

"conscientious" has canting associations, and it is best not employed in this connection. It is rather a matter of common-sense than of conscience. A mother who loves her child will not allow it to pass the night in the open air without any covering, not because she has any "conscientious objection" to such a proceeding, but because she knows she would be a fool if she did. It is much the same with vaccination. To hold that it is useless and not free from risk may be an offence against medical orthodoxy, but you cannot prevent people from becoming persuaded that such is the case, unless you prohibit reading and thinking altogether. And, when parents are thus persuaded, it is merely in accordance with the dictates of common sense for them to refuse to have their children vaccinated. To discuss whether such persons should be prosecuted only once in the case of each child, or whether they should be prosecuted over and over again, until all their children are fourteen years of age, may be a useful way of employing the time of the House of Commons ; but, to anyone who takes a broad view of the situation, the idea of compulsion under such circumstances seems to be either immoral or grotesque.

OTHER OBJECTIONS TO COMPULSION.

Other points that a statesman has to take into account in regard to compulsory vaccination are, that it is at any rate unnecessary at the present time ; that experience has shown it to be impolitic ; and that the whole drift of public opinion all the world over is now steadily setting against it. A further point with which a Liberal statesman may be expected especially to concern himself is, that the compulsory law, while its existence is barely known to the well-to-do, presses with especial hardness on the poor. I will deal with this last point first, and very briefly, as I have already referred to it incidentally.

That the law, so lightly passed by the Legislature, was never intended to apply to persons whose station is above that of the lower middle class, is clear from the singular provision that the father of an unvaccinated child more than twelve months old is "summonsed" (if that is the word) to appear before the magistrate *bringing the child with him!* The father not unnaturally delegates this office to his wife; and, in a stuffy police-court, crowded with the riff-raff of the adjacent streets, I have seen half-a-dozen anxious mothers vainly attempting to keep their babies quiet while the criminal cases are first disposed of. If their efforts fail—as fail they must before two hours have elapsed—they have to wait outside in a draughty passage. What can be more ridiculous than such a provision, made too in the name of Public Health! The law permits the parent prosecuting to be represented in court by another person; but this hardly enables a working man to send anyone but his wife in his stead; whereas a gentleman with a banking account can send a cheque to the Clerk of the Court, appointing him his representative, and begging him to fill in the amount of the fine. And to do this—*experto crede*—is more economical than to pay a doctor a fee every two months to sign a certificate for postponement. Guineas and half-guineas soon mount up; whereas the fine cannot exceed twenty shillings; and the Guardians, after a time, see the folly of prosecuting when the object aimed at is obviously unattainable.*

* It is only when people realise that vaccination is of no service either to the child or to the community, while it may involve serious risk to the former, that they are in a position to recognise how cruelly the compulsory law weighs on parents among the working classes, who can ill afford to pay a fine, and who doubt and dread the operation. They are quite as sensible as are their superiors of the ignominy of being bullied by vaccination officers, or of having "summonses" served on them by policemen; and it is worth remembering that the fine

This leads me to another point, the impolicy of prosecutions. This is especially true, and its truth all but a few vaccination fanatics allow, as regards repeated prosecutions. I admit that the dread of the first prosecution does induce some parents to have their children vaccinated ; and it is just that fact which gives some reasonableness to the otherwise Dogberry-like policy of prosecuting those who are likely to submit, while leaving the intractable alone ; for no such result follows when the law has once been defied. And it is in this way intelligible that sincere believers in vaccination should desire the continuance of the compulsory law, in so far as it secures the vaccination of a number of children whose parents have no particular view on the subject, but are likely to neglect the operation from sheer indolence unless some pressure is put on them. But it is difficult to find any motive for the insistence on repeated penalties, unless it be found in the natural tendency of all dogmatists to persecute. For it is the obvious result of such a policy to defeat its own ends. This was pointed out by Mr Forster, in the House of Commons, as long ago as 1877. He urged that those who had what he called "conscientious objections" to vaccination should be left alone, and that only those should be proceeded against who were in default from mere laziness. They are, he said, by far the greater number, and it was against them that the Acts were directed. Had his advice been followed, it is very likely

commonly inflicted on them is equivalent to a fine of about £200 taken out of a Cabinet Minister's official income. The late Mr Peter Taylor used, I believe, to quote as a specimen case of the administration of the law—though happily not a fair specimen—a working-man being given by the magistrate the alternative of "twenty shillings or seven days," after he had protested that he had "sworn before God over the dead body of his first child that he would never let it be done to another." Such legislation and such administration are surely calculated to bring the law into contempt, and to breed a generation of Anarchists.

that the whole question would have stood in a very different position to-day.

In Scotland, for example, where the law is administered in a far gentler spirit, and where the poor are more credulous and submissive than they are in England, pretty nearly every child is vaccinated, with hardly any occasion to use the terrors of the law. Thus, in 1891 (I quote from the Annual Report of the Board of Supervision), 14,127 persons were reported as being temporarily in default; but out of this large number only 45 were prosecuted, and, of these 45, only 25 had any penalty inflicted on them. Whether the Scottish authorities are canny enough to perceive that compulsion provokes enquiry, and that enquiry is fatal to faith, I do not know; but it is certain that their milder administration of the law has been more successful in securing the vaccination of nearly every child in the country—and voluntary re-vaccination at a later time is also the rule in Scotland—than the brutal methods which our guardians and magistrates have often employed. But this side of the question is barely worth discussing now; for it is certain that no amount of sweet reasonableness on the part of the authorities in England can at this date avail to rehabilitate a creed so unmistakably outworn.

A WAY OUT OF THE DIFFICULTY.

The non-necessity for vaccination at the present time will provide, some think, the way by which the medical profession, without any humiliating confession of having been in the wrong, may escape from its present untenable position. Vaccination may be said to have "done its work," now that the country is ordinarily free from small-pox; and the provisions of the Infectious Diseases Notification Act and of the Isolation Hospitals Act may

be claimed as affording another line of defence, likely to prove sufficient under the altered circumstances. No one will grudge them this refuge, if they avail themselves of it in time; and, now that every Medical Officer of Health throughout the country prefers isolation to vaccination, or at any rate endeavours to supplement the defects of the latter by the proved advantages of the former, it is not easy to see on what ground (unless it be affection for the "principle of compulsion") medical men generally should be so unwilling to agree to a total repeal of the existing law; especially since their present uncompromising attitude (not indeed as individuals but when acting as Colleges, Associations, and the like) is doing so much to damage their reputation for scientific insight and common sense.*

Sir Benjamin Ward Richardson, in reviewing Crookshank's work in the "Asclepiad," † showed that he personally realised the situation, though he was careful not to commit himself on the main question. Speaking as a medical man to his brethren, he said:—"If it be true that we of physic have really, for well nigh a century past, been worshipping an idol of the market-place or even of the theatre, why, the sooner we cease our worship and take down our idol, the better for us altogether. We have set up the idol, and the world has lent itself to the idolatry, because we, whom the world trusted, have set the example. But the world now-a-days discovers idolatries on its own account; and, if we continue the idolatry, it will simply

* This new attitude of the Medical Officers of Health is the more remarkable, because they are to a man, at any rate at the date of their appointment, believers in vaccination. Only the orthodox on this subject have any chance of obtaining an official post, for they only can obtain the indispensable testimonials from the medical big-wigs.

† December, 1889.

take its own course, and, leaving us on our knees, will march on, whilst we petrify."

There can be no question as to the shrewdness of this forecast; the doubt is rather whether the medical profession have not already delayed too long to recognise the direction in which the tide is flowing. When, for example, we find the Council of the Royal College of Surgeons meeting the unanimous (interim) Report of the Royal Commission on Vaccination, which favoured an important relaxation in the compulsory law, by a resolution in which they declared that they "would regard as a national calamity *any* alteration in the law which now makes vaccination compulsory," and this, in spite of the fact that they were represented on the Commission directly by their own past President, Mr Savory, and other members of the College, we can hardly fail to realise the truth of the saying, that the two most odious elements in sacerdotalism, viz.: obscurantism and the spirit of domination, have in this nineteenth century passed over from the clerical to the medical profession. Men who could frame such a resolution certainly do not move with the times.

THE POPULAR PROTEST AGAINST VACCINATION.

A letter from Dr Yarrow to the *Lancet* (May 19, 1894) admitted that vaccination was becoming more unpopular. "Discredited" would perhaps be a more accurate expression than "unpopular"; but, however the fact may be stated, the witness of the vaccination returns quoted above (p. 55) is unmistakable. Nor do they stand alone; for the returns of prosecutions and convictions under the Vaccination Acts show that the persons imprisoned or fined are double as many during the later decade as they were during the previous one. The total number

of persons proceeded against under the Vaccination Acts in the years 1873-89 was 34,286. Of these 136 were committed to prison, 19,482 were fined, 14 were "bound over," and 7354 had "other punishments." The number proceeded against rose from 972 in 1873 to 2881 in 1888, when a decline began to set in, not because more children were vaccinated, but because more Boards of Guardians had become sick of the game.

Another important record, throwing light on the real state of public opinion, will be found in the details of the house-to-house census, taken in about a hundred towns and districts under the auspices of the London Society for the Abolition of Compulsory Vaccination. These records of opinion have been ignored by the press, and by the well-to-do public generally, because they have been collected by the despised and detested "anti-vaccinators." But there is no reason for supposing that they are in any sense unfair; and they show that, in a great variety of districts throughout England, as many as 87 per cent. of the people—mostly working men, no doubt—are opposed to vaccination being compulsory, while about 68 per cent. do not believe in it at all. It seems pretty certain that, if our Vaccination Laws were submitted to a popular vote, on the plan of the Swiss *referendum*, they would at once be swept away.*

Another testimony to the drift of public opinion on this subject is to be found in the British colonies. In some of these, viz: in Canada, Queensland, and New South Wales, there has never been any compulsory law; in New Zealand there is such a law, but it is not enforced; and in Tasmania

* The fact that very few petitions to Parliament against the compulsory law are presented is no criterion of popular feeling. Petitions are the luxury of well-organised movements that have plenty of money behind them; and of new movements especially; for a little experience proves their utter futility.

the law has been repealed.* Similar progress can be reported from some parts of the Continent, at any rate from countries in which liberty is still of some account. In Switzerland not only was the Federal Law of Vaccination rejected in 1882, at the *referendum*, by the largest majority that had been known, but the Cantonal laws are also, I am told, not enforced, and re-vaccination on admission to the army has been dropped, as it has been also in Holland. Even in State-ridden Germany, where it is little short of blasphemy to suggest that any legislation is wrong and should be repealed, there is a growing movement in favour of liberty; and it is a significant fact that the Emperor does not permit his own children to be vaccinated.† France indeed, where there had been no compulsory law at all at the time when the famous statue of Jenner was erected at Boulogne, and where there is still no law enforcing the vaccination of infants, is somewhat retrogressive on this question, new regulations coming into force from time to time, which make vaccination a necessary preliminary to admission to the public schools or the public service; and in Italy a most stringent law, enforcing vaccination in infancy, and re-vaccination between the ages of eight and eleven, came into force as recently as January 1, 1892; the authorities having decided to attribute to the non-universality of vaccination a persistency of small-

* In the United States of America the vaccination of infants has never been compulsory; and a decision of the Supreme Court of the State of New York, in June, 1894, practically deprived the Health Commissioners of the powers which they had previously claimed to enforce the vaccination or re-vaccination of adults.

† See *Vaccination Inquirer*, Vol. xiv., p. 71. (July, 1892). A similar inconsistency, interesting as showing how little real belief in the official doctrine prevails even in official circles, is to be found in the fact that Professor Crookshank, whose work on vaccination is practically an incitement to a breach of the law, has quite recently been made a J.P. for the county of Kent.

pox in certain localities, which would more obviously be explained as due to the notoriously insanitary conditions under which the poorer Italians live. France and Italy are thus disappointing from the point of view from which I approach this subject; but in both countries there are medical men of repute who disbelieve in vaccination altogether; and, as science becomes more and more international, the civilised world must ultimately come to the same conclusion on all questions such as this.

THE ATTITUDE OF THE PRESS.

One difficulty that still to a great extent stands in the way of those who desire a repeal of the compulsory Vaccination Law has been and is the persistent hostility of the Press. There is no evidence to show that this hostility is based on any special knowledge of the subject possessed by journalists and editors; on the contrary, ignorance, arrogance, and flippancy chiefly characterise the paragraphs that from time to time treat of the follies and iniquities of "anti-vaccinators" in the columns of newspapers otherwise so highly respectable as the *City Press* or the *St James's Gazette*. A writer who can describe a disbeliever in vaccination as "an advocate of free-trade in small-pox" has yet to learn the very elements of this controversy; and another paragraph writer, who speaks of the delight it would give him if he could inflict physical torture on parents who prefer to go to prison rather than subject their infant children to the admitted risks of the operation, has evidently been born some centuries too late. But it is as much by persistent silence as by silly misrepresentation or envenomed criticism that the Press has retarded the due recognition of the essential justice and the scientific soundness of this cause. The *Daily News*, for example, that has been in

other respects for the last quarter of a century the most ably conducted organ of Liberalism in the world, has uniformly excluded, at any rate until quite recently, all letters or communications that contained statements to the discredit of vaccination. Doubtless this has been done with the best intentions, so as not to encourage what from the official point of view is a dangerous heresy; but such a policy of suppression looks a little foolish when, after years of waiting, the heresy in question is on the point of being acknowledged as the true account of the matter. The *Times* has similarly used its tremendous influence, though perhaps less persistently. Letters from representative men on the anti-vaccinist side it has occasionally admitted during the holiday season; but the grossest unfairness was exhibited in its extended notice of the (so called) Fourth Report of the Royal Commission, containing the evidence given between July 1890 and July 1891, and at last published in February this year. The article was evidently the work of a medical member of the Commission, for it was printed a fortnight before the Report was issued to the public; and it consisted exclusively of professional criticisms on the non-professional evidence of opponents of vaccination in Leicester,—an easy task, and one satisfactory probably to the writer, but unsatisfactory to readers who recognise that knowledge may be accurate, though not expressed in technical language, and that working men and their wives, who live habitually with their children, may be better able to appreciate what has caused a death in the family than a medical man who looks in when all is over, and is prohibited by professional prepossession from admitting that the cause was vaccination. Leaving that on one side, however, the worst feature of the article in question was its passing over in absolute silence, as if unworthy of even being mentioned, the elaborate and

important evidence of Professor Crookshank, which occupied the Commission for nine days (July 9, 16, 23, 30, August 6, November 12, 19, 26, and December 3, 1890), and extends over some 110 pages, closely printed in double columns. This evidence is probably the fullest indictment of vaccination on scientific grounds that has ever been made; and, taken in conjunction with the same writer's two volumes already referred to, and Dr Creighton's evidence before the Royal Commission (December 4 and 11, 1889, and January 22 and 29, 1890), and his four publications on the same subject, it constitutes that case which elicits no reply from the other side, beyond an appeal to statistics which I am surely justified in describing as questionable. The motive for this silence is obvious. The average well-to-do Englishman reads his *Times*, either at home, or in his office, or at his club. It is his ordinary source of knowledge, so far as current events are concerned. What the *Times* does not notice, he does not notice. For a thousand men (including legislators and justices of the peace, who are under a kind of obligation to inform themselves on this vaccination question) taking this newspaper article as giving them all that is worth knowing about the Fourth Report of the Vaccination Commission; there will be barely one who will turn to the actual Blue Book, and will see for himself what it really does contain, and will endeavour to form a fair judgment on it. The obscurantism of the Press is thus effectual, at any rate temporarily; but, though ignored in this country, as far as is possible, Professor Crookshank's evidence and Dr Creighton's evidence will be attentively studied by medical scientists on the Continent, and it will not ultimately be without effect. For the time, however, as indeed for a long time past, the hostile attitude of the Press (in which I include the unwillingness of magazine editors to admit an article that

might offend medical orthodoxy in regard to this vexed question) must be accounted one of the chief difficulties in the way of those who have lost faith in vaccination and desire that it should no longer be enforced by law. *

ANTI-VACCINATION LITERATURE.

The works of the two writers just named have finally removed the reproach that used to be levelled against anti-vaccination literature as being intrinsically poor stuff. But it is by no means clear that those who used to affect such contempt had really read what they thus condemned off-hand. A cause which is a popular one, in the sense that the majority of those keenly interested in it, for reasons mentioned above, will be found among the poorer classes, is sure to be supported to some extent by literature of a popular kind and of inferior value.† We do not look for carefully balanced arguments or for literary style in

* At a meeting of the British Economic Association on June 27, 1894, Mr Balfour, as reported in the daily papers, referred to the vaccination question as one in which he took "a remote interest," it being "a quarrel between the doctors on the one hand, who think they have settled the matter in a scientific spirit, and a section of the people on the other hand, who have not studied it in a scientific spirit at all, but are determined that their feelings shall override science." This deplorable misunderstanding of the present position of the controversy is presumably a result of that conspiracy of silence on the part of the Press above referred to.

† The number of writers and of publications against vaccination is at any rate evidence of a wide-spread feeling, even though they may not always display scientific or literary power. "A Catalogue of Anti-Vaccination Literature," printed in 1882, showed:—

	Writers.	Publications.
British . . .	100	205
American . . .	17	36
German . . .	39	104
French and Belgian .	8	29
Dutch . . .	2	4
Swedish . . .	3	7

hand-bills and posters hastily drawn up and circulated wholesale when parents are being sent to prison, or are having their furniture sold under distraint, for the sole crime of loving their children and of believing that they know best how to take care of them. Publications of this kind apart, there existed already, before Dr Creighton first appeared on the field in 1887, certain books and pamphlets that deserved far more attention than they obtained. Omitting all publications dated 1882 or earlier, there was Dr W. J. Collins' pamphlet, entitled "Sir Lyon Playfair's Logic" (1883), which is a most temperate and judicial criticism of the speech referred to above (p. 53); and there were the two works of the late Mr William White, unfortunately entitled, I admit, but forming in all respects (apart from the identification of cow-pox with syphilis, the key-stone of the arch, necessary for the confirmation and explanation of those observations which indicated the uselessness of vaccination and of those which indicated its dangers, which it was left to Dr Creighton and Professor Crookshank to supply in 1887 and 1889), a careful and complete answer to the arguments used by the advocates of vaccination.* Other publications, well deserving notice, might be mentioned; but I must content myself with naming an able and convincing criticism of the statistical arguments, written by the eminent naturalist, Dr Alfred Russel Wallace,† and a monthly periodical, (indispensable to those who want to know the progress of the anti-vaccination movement, but read, I am disposed to

* "Sir Lyon Playfair taken to Pieces and Disposed of; likewise Sir Charles Dilke." Presented to the Third International Anti-Vaccination Congress, held at Berne, September 27th to 30th, 1883. "The Story of a Great Delusion." 1884.

† "Vaccination proved Useless and Dangerous from Twenty-Five Years of Registration Statistics." 2nd Ed., 1889.

fear, exclusively by those who are already supporters of that movement), ably edited by Mr Alfred Milnes, F.S.S.*

It is not in fact any lack of earnest and well-informed writers, but of unprejudiced readers, that hampers this movement. So much contumely has been poured on anti-vaccinists as "faddists," "fanatics," and what not, that very many people would be ashamed to be seen reading a publication put forth by an adherent of that cause. Things are not indeed so bad with us as they were some years ago in Germany, when the writings against vaccination of the late Dr Nittinger, of Stuttgart, were treated as seditious, and were confiscated by the police; but much of the old bitterness, as between orthodoxy and heresy, still remains; and men will not sit down to read works which advocate a cause they have long been accustomed to despise. And, if this is true of laymen, it must be truer still of professional men, whose orthodoxy is so chaste that they will not, for example, even allow a homœopathic periodical to lie on the table in their public library. It is really only the prejudice and timidity of readers that anti-vaccination literature has to fear.

THE ROYAL COMMISSION.

Many people anticipate that this vexed question will be settled by the final Report of the Royal Commission, which is expected to be published this year. That the Report will contribute towards a settlement is certain; but it is hardly possible that it can do more. If so comparatively small a detail as the repeated prosecution of defaulters could not be settled by the unanimous decision of a Select Committee in 1871, followed up by the

* "The Vaccination Inquirer and Health Review." London, E. W. Allen. The sixteenth annual volume is now in progress.

unanimous decision of a Royal Commission in 1892, it is not to be expected that the larger question will be settled by a Report which is certain not to be unanimous. Other circumstances, connected with the appointment and the procedure of the Commission, suggest that, although its work in collecting evidence is of permanent value, and its preliminary so-called Reports, containing this evidence, will be a quarry for anti-vaccinists so long as the controversy continues, the actual conclusions and recommendations of the majority of its members are not likely to be in accordance with what I claim to call the progressive view of the subject. In the first place, there was no thought, when the Commission was appointed, that it might possibly result in an exposure of the futility of vaccination. It was appointed in order to shelve a troublesome subject, and to provide a loop-hole for escape from the interminable series of questions asked in Parliament as to the administration of the Vaccination Laws. Its appointment was wholly in the hands of believers in vaccination; its enquiry, it was thought, would be brief, and would quickly result in the "pricking of a bubble," *i.e.*, in the discomfiture of the anti-vaccinists; and there was barely any pretence of treating the question as one in which either side had a right to equal representation. The proportion seems to have been suggested rather by the number of medical men understood to be on either side in the country at large. A similar rule was observed in the appointment of the German Commission in 1874. It consisted of eighteen members, of whom three were opposed to vaccination. But such a rule had not been adhered to in other enquiries. When the Gold and Silver Commission was appointed, the advocates of bi-metallism in this country were fewer than they are now, and were probably numerically not one tenth of their opponents. Yet an equal number (four on each side) represented the

contending parties on the Commission ; and, as had been anticipated, the parties were still equally represented when the Commission issued its final Report. On the Vaccination Commission it is true that a certain number of laymen (eight) were placed, who might be expected to form their opinion solely on the evidence brought before them. None of them, I believe, had already expressed any definite opinion on the subject, but some of them had confessed to doubts, and they were therefore likely to prove impartial judges. But the medical profession was represented on the Commission by six to one in favour of vaccination. Of the ability and high character of each of the six there could be no reason to doubt ; but how could it be expected of professional men, men moreover past the age when the judgments and opinions of earlier years can readily be reconsidered and revised, that they would find themselves free to take a wholly unprejudiced view of a question on which their definite opinions had long been before the public in print ? A study of the evidence already published discloses the fact that they habitually treated witnesses opposed to vaccination as hostile witnesses ; and their policy, as advocates of the practice which they had been commissioned to weigh in the balance, is in other respects unmistakable. If ever there was an enquiry which it was desirable for the public to follow day by day, it was surely this one. Yet the majority decided that it should be conducted with closed doors ; with the result that when, at long intervals, hundreds of columns of closely printed evidence were published as Parliamentary Blue Books, the vast mass of material was at once buried under its own weight, and the enquiry was thus rendered to a large extent nugatory.*

* Only once during the enquiry was there any publication of evidence while it was thus still in the confidential stage ; and that was in May

Further, the strength of the existing case against vaccination depends, first on the pathological argument, which proves the absence of relation between cow-pox and small-pox, and then, as a subsidiary argument, on criticisms of the current statistics, which, collected under the influence of an erroneous theory, are used to prove that vaccination, whatever it may be, is at any rate efficacious. The incidental risks of vaccination—*i.e.*, risks which may exist apart from the essential nature of the disease inoculated—and the anomalies of the compulsory law, are not the arguments which constitute the strength of our case, though in themselves they have considerable importance. Yet, incredible as it may seem, it was only these minor points that the majority of the Commissioners were at first willing to take into consideration at all. To them apparently the vaccination question was merely a question of policy. That there existed a clearly defined scientific case against vaccination itself seems only to have dawned on them after the enquiry had already lasted some time. Certainly, before Dr Creighton had given his evidence they regarded such an idea—I judge

1890, when a paragraph went round the papers to the effect that the evidence of Surgeon Parke, who accompanied Stanley across Africa, had profoundly impressed the Commission with the value of vaccination. Some time afterwards (Christmas, 1890) when the second Report was published, it proved to be merely hearsay evidence (for he had been 500 miles away from the place where the events occurred), and therefore such as would have been ruled inadmissible had it been on the other side ; and in substance all it amounted to was that the vaccinated companions of the travellers, *i.e.*, men seasoned by climate and a variety of other circumstances, were mostly found to be insusceptible to an epidemic of small-pox which carried off a number of natives to whom the disease had before been a stranger. There is no necessity to refer to the condition of being vaccinated or not, susceptibility or insusceptibility under such different circumstances. The evidence is criticised at length in the "Vaccination Inquirer" for January 1891.

from the proceedings contained in the First Report—as too extravagant to deserve consideration; and we know that it was only after a sharp struggle that Professor Crookshank was permitted to give evidence at all. Indeed, every effort is still made to ignore his evidence; while by a majority the Commissioners have recently decided not to hear Major-General Phelps as a witness, though his testimony would have been of the utmost importance, as showing how statistics, which make the unvaccinated almost invariably die, and the vaccinated almost invariably recover, are utterly untrustworthy, being falsified at their very source. The Commissioners excused themselves from hearing him, on the ground that they had not proposed to themselves to base any conclusions on those particular statistics which he had examined with such damaging effect. But this was hardly a sufficient reason for excluding his evidence. No one suggested that the Birmingham and King's Norton Small-pox Hospital returns were less trustworthy than those prepared elsewhere; the point was that General Phelps, as a Guardian in the locality, had enjoyed facilities for investigation which are unfortunately very rare; and his evidence, if received, would not only have shown that in such and such particular cases an incorrect and misleading entry had been made, but would also have indicated a line of enquiry worth following out at much greater length, if the conclusions of the Commissioners were ultimately to rest on a sure basis.

One other instance of unfair dealing must not pass unmentioned. The evidence of witnesses opposed to vaccination had throughout the enquiry been submitted, while still in the proof or confidential stage, to witnesses—chiefly to one witness—taking the other side, with a view to its being criticised and rebutted. There would have been no objection to this, were the same favour shown to either side

impartially. But the evidence given in favour of vaccination between July 1890 and the autumn of 1893, was all withheld from the opposite side until November 1893, when an enormous amount of printed matter was submitted, all at one time, and at a date when the hearing of witnesses was understood to be nearly over ; while the evidence thus tardily divulged needed weeks for careful examination and for the preparation of counter-evidence, where necessary, that should disclose its weak points.

There are thus, it would appear, serious grounds for maintaining that a permanent solution of this vexed vaccination controversy cannot be looked for from a Commission constituted such as this was, especially when sundry features in its procedure are taken into consideration. It is no settlement of the real question at issue, if, after hearing the evidence of a number of poor and respectable parents, who have been shamefully treated under the provisions of the compulsory Acts, the Commissioners, in a fit of condescending generosity, unanimously report that such persons ought not to be punished more than once. That is a very small matter in comparison with the question whether a scientifically discredited operation, dangerous as well as useless, should be in any degree enforced by law, or even be encouraged by an elaborate system of State endowment. Another enquiry, with fair play for both sides, will be needed before that question will be satisfactorily answered.*

* In a letter to "Vanity Fair," dated November 5th, 1892, Mr Tebb called attention to one very remarkable testimony to the changed position of the vaccination question which the Royal Commission had incidentally brought to light, viz. : the retreat of former advocates, Lord Playfair, Mr Ernest Hart, and Sir George Buchanan, who have all declined to face the risk of cross-examination.

THE PREPOSSESSIONS OF MEDICAL MEN.

A consideration of the action on the Royal Commission of the strong majority of medical men introduces the question sometimes raised as to whether medical men are really prejudiced in approaching this subject; and, if so, on what grounds. There are vaccination enthusiasts who maintain that it is in the most heroic spirit of self-sacrifice that the profession encourages vaccination; for without it the disease which they thus so easily repress would bring much grist to their mill. This, however, is a begging of the whole question. From my point of view the doctors have had, since vaccination was invented, every shilling's worth of small-pox that they would have had without it; and they have had in addition an easy and not unpleasant operation to perform, which, it is the simple truth to say, has brought in hundreds and thousands of pounds to the medical exchequer. I do not impute a directly sordid motive as at the bottom of the professional interest in vaccination. I have known and know a number of medical men, and I am sure there is not one among them who would advocate vaccination, not believing in it himself, merely because he thereby increased his income. But doctors, perhaps more than any other professional men, act as a corporation and not as individuals; and it would be affectation to assert that they, as a body, have no pecuniary interest in the matter at all. Here is a popular belief, which has to the profession a capital value that may be estimated at some millions sterling;* and what corporation would be so unselfish as to discredit such a belief, until the time came when it could be maintained

* This capital value will, of course, be more than doubled if a belief in the universal necessity of "recent vaccination" can be established in the public mind.

no longer? * And so much evidence in favour of vaccination is forthcoming, and will be forthcoming so long as the belief in it remains, that a medical man, even if he privately entertain some doubt, is almost justified in silencing such a doubt; or at least he is not bound to disclose his doubt by refusing to perform the operation. It is the laity and not the medical profession that will first abandon vaccination. For the profession has an interest in the matter more deserving of respect than a merely pecuniary one. So committed has it been for nearly a century past to the value of this operation, that its prestige must suffer severely when the confession of a mistake has to be made; and that confession will be postponed as long as possible. Vaccination is indeed a *damnosa hæreditas* from credulous and unscientific predecessors; but, so long as the medical profession, as a whole, is satisfied that its interests are best served by maintaining the value of the operation, we cannot look to that quarter for aid in the work of emancipation. As Burns puts it:—

“When self the wavering balance shakes,
It's rarely richt adjusted.”

Only individuals here and there, men to whom medicine is really a science, and who do not dread, or perhaps can afford to despise, the evils threatened by the trade-

* The annual payments out of public funds on account of vaccination amount to more than £110,000; but the aggregate receipts of private practitioners must be largely in excess of this, though it is impossible to form even a rough estimate; and the amount, especially on account of re-vaccination, varies largely from year to year. When there is, as there has been recently, a slight epidemic of small-pox in the country, and the *Lancet* calls our attention to it, assuring us meanwhile that it is “a disease which no one need have unless he pleases,” the harvest reaped in Harley Street and thereabouts is, I have been assured, something prodigious.

unionism which has enmeshed their profession,—only these few can be looked to for a plain and straightforward account of this strange delusion. For the great majority, the fact that a practice is in possession is sufficient justification for maintaining it.

I should be sorry if these remarks were interpreted as a generally hostile criticism on medical men and their profession. The medico-politician I do indeed distrust, as a serious foe to liberty; for members of Parliament are so much in the habit of bowing to “doctor’s orders” when he recommends them a month at Monte Carlo in the season, or, should that be beyond their means, an extra glass of whisky in the evening, that they are predisposed similarly to give their vote for coercive measures, asserted to be necessary in the sacred cause of Public Health, on the word of a medical man, who may be taking only a very narrow view of the subject, and may indeed be incapable of a statesmanlike consideration of what the proposals involve. And, what is true of the medico-politician as an individual, is truer still of the action of the Medical Associations, Colleges, and the like. Corporate action deadens the sense of personal responsibility; and it is certain that, in this vaccination business especially, much that is simply tyrannical has been done at the dictation of these bodies, or by direction of medical men holding official positions—that is to say, by professional men who cannot be called to account by those over whom they rule.

But there is another side to all this. The “beloved physician” belongs to no one place or time. The skilful, experienced, sympathetic, and judicious medical man must always be a welcome visitor where accident or disease has brought anxiety and alarm; and the triumphs of modern surgery, no less than the heroism necessary and forth-

coming when a dangerous epidemic is abroad, must ever command sincere admiration. Much self-denial goes to the making of a good doctor ; and it would be ungenerous not to recognise frankly and fully the services that are daily rendered by men of education and refinement, of whom the most hard-worked are often the least fairly paid.

THE DIFFICULTY OF AROUSING INTEREST IN THE SUBJECT.

One difficulty in the way of securing a revision of judgment on this vaccination question is the unwillingness of people to think about it at all. The question is said to be settled ; the matter is declared to be of no importance ; the subject is voted a bore. Others will even go further, and recoil from an enquiry, as if it were almost profane. In truth, the little girl who replied to her Sunday-School teacher that "circumcision under the Law of Moses was a type of vaccination under the Gospel" really showed a true appreciation of the quasi-religious position which vaccination holds in the public mind. The belief has at any rate this in common with a theological belief, that, to those who hold it, it is more certain than the premises on which it is grounded ; and it is difficult to shake a prepossession, however unreasonable, that occupies a position such as this.

A first step towards a due understanding of the subject is made when people come to realise that, though medicine is or ought to be a scientific art, it is really full of uncertainties throughout. "Dr Chassaigne" has recently been insisting on its limitations ; * and, if what he says is true—

* "Vous demandez des certitudes, ce n'est sûrement pas la médecine qui vous les donnera. . . . Certes, il est des maladies que l'on connaît admirablement, jusque dans les plus petites phases de leur évolution ; il est des remèdes dont on a étudié les effets avec le soin le plus

as it undoubtedly is—of curative medicine, of “treatment” generally, which has the whole past experience of the human race to inform and guide it, how far more true must it be of preventive medicine, which is but a thing of yesterday, and, having little or nothing else to boast of, is obliged to stake its reputation on the alleged success of vaccination.

Possibly fiction, which M. Renan told us was to be in the future the means of conveying all knowledge, might penetrate the hedge of prejudice and secure a hearing that would result in a revision of judgment. There would be no lack of realistic material ; for Mr Tebb, who years ago was active in the cause of the slaves in North America, declared before the Royal Commission that their sufferings were in his judgment less than those of poor parents in England struggling against the tyranny of the vaccination law.

The object that might be attained by such a treatment of the subject would be the awakening of sympathy for those mothers, and especially for those among the poor, who, reluctantly submitting to this cruel and useless law, are condemned, if not to witness a loved child’s legally-inflicted death—and it must be remembered that even the official returns admit that since 1881 one death per week on the average has been due to this cause—at any rate to days and nights of anxious watching, if the course that the disease takes is severe. Such sympathy would not be of

scrupuleux ; mais ce qu’on ne sait pas, ce qu’on ne peut savoir, c’est la relation du remède au malade, car autant de malades, autant de cas, et chaque fois l’expérience recommence. Voilà pourquoi la médecine reste un art, parcequ’elle ne saurait avoir une rigueur expérimentale : toujours la guérison dépend d’une circonstance heureuse, de la trouvaille de génie du médecin. Et, alors, comprenez donc que les gens qui viennent discuter ici me font rire, quand ils parlent au nom des lois absolues de la science. Où sont-elles ces lois, en médecine ? Qu’on me les montre !” *Lourdes*, p. 198.

the conventional, counterfeit, loquacious kind, with which we are but too familiar, but such that stimulates and enables the sympathiser to understand—*durch Mitleid wissend*—what causes have led to the trouble, and to work quietly but determinedly for their removal.

Or, if literature should fail, painting might succeed, and a realistic presentation at the Royal Academy of one of the wretched calves at the Vaccine Institute, with its stomach shaved clean of hair and punctured in some sixty places for the production of cow-pox lymph, might shock the British public into a sense of the disgusting folly of the situation. Or, better still, an imaginative artist, following out the idea of Van Eyck's "Adoration of the Lamb," might produce a most telling picture of our nineteenth century calf-worship. Angels should be represented as catching in goblets the "life-giving fluid" as it issues from the poor beast's festering sores, and groups of Medical Men (the Council of the Royal College of Surgeons having a prominent place in the foreground) of Poor Law Guardians, of Justices of the Peace, of Vaccination Officers, of Jailors and Policemen, all duly supported by Members of both Houses of Parliament, should be picturesquely grouped around, singing the praises of the Great Preservative. There has, in truth, been no such calf-worship since the days when the children of Israel encamped beneath Mount Sinai; though on that occasion, if the records are to be trusted, the representative of the Law was not on the side of the superstition.

CONCLUSION.

It has been my aim in writing this letter, while pointing to larger works in which the history and pathology of

vaccination have been adequately handled by specially qualified men, to show, not only that vaccination is and from the first has been a mistake, but how it was possible, and even natural under the circumstances, that such a mistake should have been made. That the history of vaccination might form an additional chapter in Sir Thomas Browne's *Pseudodoxia Epidemica*, or an extended section in Mr Caxton's "History of Human Error" is to many persons an altogether incredible idea. They forget how much that is false, and for how long a time, mankind has in all ages believed.* They do not test Jenner's advocacy of vaccination by the application of Aristotle's doctrine as to the sources of persuasion, which shows, correctly enough, that it is not the cogency of the arguments used, but the acceptableness of the man, and the acceptableness of his message, that really command assent. They forget how Fashion, Authority, and Interest are more potent guides of conduct than science or common sense. They leave out of account the influence of Enthusiasm and of Custom, and they ignore the passion for coercing all to march in line, which so often possesses those who have their fingers on the springs of legislation.

I do not anticipate that my arguments will suffice to change the opinion on this subject of men who have long been accustomed to regard the belief in vaccination as worthy of all acceptance; but I do think the considerations I have urged should suffice to show that disbelief in vaccination cannot fairly be described in a disparaging

* An interesting illustration of the persistency of an error, which has a pseudo-scientific basis, is to be found in the popular belief in the influence over the weather possessed by the "changes" of the moon. It is easy to demonstrate the scientific baselessness of the belief, and three or four times a month it can be tested and shown to be a mistake. But the belief prevails and will prevail. Fortunately it is harmless and not compulsory.

sense as "a fad," and to prove further that the doubts concerning it are so reasonable and well-grounded that it is not a fit subject for compulsory legislation. The term "faddist" is indeed a relative one, and the faddists of one generation may prove in the next to have been pioneers. The Lollards, for example, were the faddists of the fifteenth century, but they were the heralds of the Reformation. And so, when anti-vaccinists are contemptuously classed by their opponents with anti-vivisectionists, anti-opiumists, vegetarians, teetotallers, spiritists, phonetic spellers, Anglo-Israelites, and what not, it is well to insist on a distinction, and to claim that only such opinions as are ill-supported by argument, and are obviously of a fantastic and trivial kind, shall be stigmatised as "fads."

How weak is the faith in vaccination, even of those who profess such belief in it that they insist on enforcing the practice by law, is evidenced by the very fact that they do thus insist on the vaccination of others. If the protection is absolute, why worry about other people? if it is not absolute, whence comes your right to enforce it? Faith indeed has grown cold among medical men as well as among the laity. Could any doctor now be found, who, in spite of his brave confession of belief, would be willing to imitate Jenner's foolhardy experiment in permitting his own vaccinated child to sleep in the same bed with a small-pox patient? We are now within a very short time of the centenary of Jenner's great "discovery." How will it be celebrated? Will his statue in Kensington Gardens be decorated, after the manner of "Primrose Day," with wreaths and flowers? or is it not more likely that, if vaccination is still compulsory at that date, an indignant Hyde Park "demonstration" will chuck it into the Round Pond? Such a demonstration—apart from any lawless incident—

might very well be arranged for now, and is perhaps the only thing calculated to persuade our easy-going legislators that the question is an important one, and that many people are in earnest about it. But funds and organisation are needed to carry out such a scheme; while anti-vaccinists are for the most part poor and isolated. Speakers could easily be found, for all the Labour members of the House of Commons (and many others) are opposed to compulsory vaccination; the difficulty would be to get the bunting, the breaks, and the brass-bands; for these things cost money. It was done, however, at Leicester in 1885, when the Mayor, amidst the wildest enthusiasm, burnt the Vaccination Acts in the market-place; and a similar demonstration in London in 1895 might set the whole country free.

But to conclude, Sir, my letter, which has run to much greater length than I had thought of when I began, may I make one or two suggestions as to the way in which the Legislature might deal with the Vaccination question without delay. If the case against vaccination is accepted as adequately proved, many will urge that an immediate repeal of the compulsory law is hardly enough. The whole of the State establishment of vaccination should at the same time be abolished, so that no further official sanction or encouragement to the practice should be given. Some would even go further, and demand that an operation condemned as futile and perhaps dangerous should be made illegal, as the old system of inoculation was made in 1840. I would not ask for so much; rather I would urge that the prohibition of inoculation should be withdrawn, save in so far that persons inoculated should be prevented from involving other persons in the risk of infection. For freedom is surely the best atmosphere for the progress of science, medical or otherwise; and, though it might be right to prohibit the vaccination of children,

or of young persons unable to give a rational consent to its being done, it would be absurd to prevent intelligent people from using an alleged prophylactic which has been so long and so firmly believed in. Freedom for both sides is really all that need be asked for. If, after compulsion has been withdrawn, the practice slowly dies out, it will be time enough then to put an end to the National Vaccine Institute.

Meanwhile, it is much to be hoped that there may be nothing like a serious epidemic of small-pox during the time that the question of compulsory vaccination is being considered by Parliament: for experience has shown that, oddly enough, it is not the apparent success of vaccination but its obvious failure in the face of epidemics that stirs up the official world to make the burden of compulsion heavier. The dates of the various Vaccination Acts are sufficient illustration of this.*

What I hope is this, that the Government, in view, not only of the final Report of the Royal Commission, but also of the facts I have noted above as to its constitution and procedure, will feel satisfied that compulsion ought forthwith to cease, and will resolve to carry this through. I do not wish to suggest ignoble motives for undertaking what ought to be done on account of its own inherent justice; but it is more than probable that some hundreds

* Activity in the administration of the law is stimulated by the same cause. A somewhat grotesque instance may be quoted. At Ashford, in Kent, in the autumn of 1891, there was a slight epidemic of small-pox, traced to the importation of foreign rags. As there had been considerable resistance to the compulsory law in the district, the authorities at once began proceedings against the detested "anti-vaccinators." But on enquiry it was ascertained that the disease had only attacked vaccinated persons. An attempt was made to obtain publicity for these facts; but it was of no use. See the "Vaccination Inquirer," Vol. XIII., pp. 109 and 122.

or thousands of votes at the next General Election will be determined by the attitude taken by the Government on this question; for it is widely felt that this is a matter which has been neglected too long. Not much time need be spent upon it, if the Government would first proceed by resolution in the House of Commons, and would then introduce a measure of repeal in the House of Lords. A bare resolution passed in the Lower House would suffice to render the Acts inoperative throughout the country, as they are already in very considerable districts; for indeed the authorities, by their own confession, are becoming sick and ashamed of administering a law for which they are careful to disclaim responsibility. A resolution, "That in the opinion of this House the time has arrived when the practice of vaccination should cease to be enforced under penalties," would, if proposed by the Government, easily command a majority; for many sincere believers in vaccination hold that it has now "done its work," and that it is better to rely on sanitary measures, or the compulsory notification of infectious diseases, and on the isolation, so far as practicable, of cases. No doubt the motion would be opposed; but it could not fail to pass, if the case were clearly and firmly stated. That then being carried, the Lord Chancellor could introduce in the Upper House, a measure embodying the resolution; and, as having been for three years the presiding Chairman of the Royal Commission, he would be listened to and would command assent as an expert on the subject; and it is quite possible that the Bill might get through. Further action would then in one sense be unnecessary, as the law would be practically repealed; and in another sense it would be imperative, so as to secure the executive from the ignominious position of being unable to carry

out a law which still remained on the Statute Book. Under such circumstances even the most resolute obstructives in the House of Commons might relent, and allow the repealing Bill to pass as an uncontentious measure. A widespread feeling of relief would accompany the final stages of the Bill; for compulsory vaccination has been for years a vexed Parliamentary question; while the bitterness it has stirred up throughout the country at large need not be further referred to. That you, Sir, may put your hand to this work of justice, and may secure the emancipation of your countrymen from a law so foolish and odious that it can hardly fail to be regarded a century hence with a mixture of amusement and amazement, is the sincere wish of,—Yours, &c.,

ARTHUR W. HUTTON.

September 16, 1894.

POSTSCRIPT.

DR KLEIN'S ALLEGED DISCOVERY.

I HAVE made above (p. 83) a note on Dr Klein's paper *On the Etiology of Vaccinia and Variola*, which was issued with the Local Government Board's Medical Officer's *Supplementary Report* just as these pages were passing through the press (August 29). I anticipated that the advocates of vaccination would hail its appearance with delight, as rescuing them officially from the ignominious position of having no scientific theory of vaccination to adduce; and so it has proved. In a leading article on September 7th, the *Times* called attention to this "highly important paper," and asserted that "the experiments of Dr Klein . . . appear to place the identity of the two forms

of disease [cow-pox and small-pox] beyond a doubt." The article in question was probably the work of a medical member of the Royal Commission; for it referred to evidence as yet unpublished.

As I have made a special point of the dissimilarity between cox-pox and small-pox, there is some likelihood that inattentive readers will conclude that Dr Klein's paper has knocked the bottom out of my argument. I therefore append some criticisms on its conclusiveness:—

1. It is a small matter, but one worth noting, that Dr Klein, as an apt disciple of Jenner, assumes in the title of his paper the conclusion which he has to prove. Such at least is the inference one would draw from the single use of "etiology" with the two diseases. They have one and the same cause—viz., the bacillus that I have discovered.

2. Another small matter, but one deserving attention, is the silence, both of Dr Klein and of the writer in the *Times*, concerning Professor Crookshank's elaborate and prolonged researches in the same field. He must, if possible, be forgotten.

3. Independent observation by other skilled and un-biassed bacteriologists is necessary to confirm the existence of this new bacillus alleged to be common and specific to the two diseases. It must be remembered that scores of microscopes, on the Continent and in America no less than at home, have been for years searching for this much-desired microbe, but (Dr Klein apart) in vain.

4. Assuming, however, that the discovery is a genuine one, to what does it amount? Does it mean that vaccination, discovered by Jesty in 1774, or, if you so prefer it, by Jenner in 1796, approved by the profession since 1800, and enforced in England since 1853, has

had all this time only an empirical basis, but is now at last, in 1894, proved to be a genuinely scientific operation? They who eagerly welcome Dr Klein's paper should not forget what a confession it involves.

5. But the discovery (granted, for the sake of argument) is quite inadequate by itself to transform vaccination into a scientific operation. Bacteriology is still in its infancy, and it has doubtless something to unlearn as well as much to learn. Every Medical Congress introduces to us with much enthusiasm a new bacillus, specific to this or that disease; and wondrous results are promised, or are even alleged as already realised. But how very, very little does it all come to after a few months or years! Even those bacteria which have been longest and most closely studied are of dubious service in diagnosis, as they who watched Dr Klein's reports on the cholera last year must have noticed. The distinction between *cholera nostras* and the Asiatic variety is better drawn by the old-fashioned method of clinical observation than by bacteriology.

6. And, while bacteriology is thus, so far as I can judge, of second or even of third-rate importance in the diagnosis of disease, the distinction between cow-pox and small-pox has been firmly established on pathological grounds which cannot easily be gainsaid. No mere bacillus will avail to set aside the observations of Auzias-Turenne, Boens-Boissau, Creighton, and Crookshank; and, while it is best for a layman to leave to professional men the technical details which indicate the difference between the two diseases, it may be pointed out that the vaccine vesicle, though it has, no doubt, some superficial resemblance to the variolous pock, is really unlike it, in being of an ulcerous rather than of the true exanthematous character; while the "marks" that the two diseases

leave behind—the foveated scar of the one and the indentated “pit” of the other—can readily be distinguished even by a non-professional eye; though the fact that “marks” are commonly left in both cases is enough to satisfy those who wish to believe in the identity of the two diseases. And, finally, the non-infectiousness—in the ordinary sense—of cow-pox is a very notable distinction. The mildest case of small-pox may, by aerial infection, convey the disease to others, even in its severest form; while the most severe case of cow-pox can only be transmitted to another when the lymph actually touches the person where the skin has been abraded. This is really a decisive differentiating test.

On the whole, I am disposed to conclude that Dr Klein’s paper, so far from rehabilitating vaccination, will rather tend to discredit bacteriology as a method of diagnosis.

A. W. H.

PROFESSOR CROOKSHANK ON DR KLEIN’S PAPER.

AN earlier portion of Dr Klein’s paper (pp. 391-5) gives details of experiments made by him, and by Dr Simpson, of Calcutta, chiefly with the view of raising a fresh stock of vaccine lymph from genuine small-pox virus. On June 23rd, 1892, Dr Klein inoculated a calf at the Brown Institution with “lymph of variolous pedigree,” making “forty-seven cutaneous insertions in the usual manner.” On June 28th, this animal “had splendid vesicles typical of *vaccinia*.” Other experiments were less “successful”; but “scrapings” from the calf aforesaid were used by Dr Cory to vaccinate three children, with “characteristic *vaccinia*” as the result. An effort to test the effect of the vaccination by subjecting the children to re-vaccination at a little later date was thwarted by “our failure to induce the mothers

in question to bring back their children, after the first vaccination had to their satisfaction been happily got over." This is intelligible.

It is mainly with reference to this portion of Dr Klein's paper that Professor Crookshank writes as follows :—

"In answer to your letter, I must state most emphatically, that we do not know the nature of the *contagium* of cow-pox, or of human small-pox, or of any of the diseases from which so-called "vaccine lymph" has been cultivated for the purpose of obtaining protection from small-pox.

"With regard to Dr Klein's experiments on behalf of the Local Government Board, which have been recently noticed in the *Times*, I am bound to say that they have not added in the least to the information we previously possessed. Lymph for vaccination has been over and over again obtained by inoculating calves with human small-pox; but this does not prove the identity of two such totally different diseases as natural cow-pox and human small-pox. If Dr Klein, or anyone else, had ever succeeded in converting cow-pox into human small-pox, that would be evidence of a different kind; but it never has been done. On the other hand, lymph producing the familiar appearances of vaccination has been obtained by attenuation of small-pox, without resorting to the calf as a medium of cultivation; and similarly, lymph for the purposes of vaccination has been raised from horse-pox, sheep-pox, and cattle-plague. To argue on this ground that all these diseases are identical is therefore absurd."

"EDGAR M. CROOKSHANK,

"*Author of 'The History and Pathology of Vaccination'*
(2 vols., 1889), and *Director of the Bacteriological Laboratory, King's College, London.*"

"SAINT HILL, NEAR EAST GRINSTEAD, SUSSEX,

"Sept. 20, 1894."

Attention may also be called to a letter in the *British Medical Journal*, September 15, 1894, in which Professor Crookshank defines and defends his position. The letter was written on August 1; but was kept back by the editor for six weeks, apparently with the aim of printing simultaneously some kind of rejoinder (*q.v.*).

I subjoin the professional records of the three medical men on whose criticisms of the current belief in vaccination my own disbelief is mainly based (see above, p. 4). They are taken from the "Medical Directory" for 1894:—

COLLINS, WM. JOB, 1 Albert Ter., Regent's Park, N.W.—
M.S. Lond. 1885, B.S. (Honours) 1881, Certif. Pub. Health (Gold Medallist) 1887, B.Sc. (2nd in Honours in Physiol.) 1880, M.D. 1883, M.B. (Univ. Schol. and Gold Medallist in Obst. Med., 1st Class Honours in For. Med.) 1881; F.R.C.S. Eng. (exam.) 1884, M. 1880; (*St Bart.*); Senator of Lond. Univ.; Mem. Lond. Co. Council; Jeaffreson Exhib. St Bart. Hosp. 1876; Fell. Sanit. Inst.; Mem. Ophth., Anat. and Path. Socs.; Mem. Middle Temple Inn; Vis. Surg. Lond. Temp. Hosp.; Roy. Commissioner on Vacc.; late Asst. Demonstr. of Anat. St Bart. Hosp. Med. Sch., Ophth. House Surg. and Res. Midw. Asst. St Bart. Hosp., and Surg. Western Ophth. Hosp. Author of "Specificity and Evolution in Disease," 1884 and 1890; "Spinoza," 1889; "Rationalism in Medicine," 1890. Contrib. "Cases of Ocular Motor-Paralysis," *St Bart. Hosp. Reps.*, 1883; "The Capsulo-pupillary Membrane, with some Varieties of its Persistence," *Ophth. Hosp. Reps.*, 1888; "Action of Various Aromatic Compounds upon Bile-Secretion," *Rep. Brit. Assoc.*, 1888; "Associated and Related Ocular and Dental Diseases," *Trans. Odont. Soc.*, 1891; "Surgical Treatment of Empyema," *Lancet*, 1889; "Traumatic Hydronephrosis," *Brit. Med. Journ.*, 1892; Evidence before University for London Commissioners, *Blue Books*, 1887 and 1893.

[Dr Collins' tract, "Sir Lyon Playfair's Logic," 1883, referred to above (p. 103), is not included in this list, being

now out of print. Dr Collins' father, who bore the same name, was induced, by his experience as a public vaccinator, to abandon his belief in vaccination. He refused to have his own children vaccinated, and he published two tracts (*Twenty Years' Experience as a Public Vaccinator*, 1866, and *Have you been Vaccinated?* 1867), showing how he had come to recognise the futility and the risks of the operation.]

CREIGHTON, CHARLES, 32 Gt. Ormond St., W.C.—M.A. Aberd. 1867, M.B. and C.M. 1871, M.D. 1878; M.A. Camb. (*propter merita*); (*Aberd., Edin., Vienna, and Berlin*); formerly Demonst. of Anat. Univ. Camb. Author of "Contributions to the Physiology and Pathology of the Breast and its Lymphatic Glands," 1878; "Bovine Tuberculosis in Man," 1881; "On the Autonomous Life of the Specific Infections" (address in Path. Brit. Med. Assoc., 1883); Art. "Pathology," *Encyc. Britan.*, 1884; and other works. Contrib. "On Infection of Connective Tissue in Scirrhus Cancers of Breast," *Journ. Anat. and Physiol.*; "Physiol. Type of Giant Cells of Tubercle, &c.," *ibid.*; "Illustrations of the Pathology of Sarcoma," *ibid.*; "A Pathol. Function of the Periosteum," *ibid.*; "Homology of the Suprarenals," *ibid.*; "Formation of Placenta in Guinea Pig," *ibid.*; &c.

[The above list of Dr Creighton's publications is very incomplete, all his writings on vaccination, for example, being omitted. The following additions may be made:—"Handbook of Geographical and Historical Pathology" (translated from the German of A. Hirsch), 3 vols. 1883-6; "Illustrations of Unconscious Memory in Disease, including a Theory of Alteratives," 1886; "The Natural History of Cow-pox and Vaccinal Syphilis," 1887; Article on "Vaccination" in the *Encyclop. Britan.*, 1888; "Jenner and Vaccination," 1889; "Vaccination: a Scientific Enquiry," *Arena*, Sept. 1890; also sundry articles in the earlier volumes of the "Dictionary of National Biography," ed. Leslie Stephen; the sections on "Public Health," in the

work entitled "Social England," now in course of publication; and "The History of Epidemics in Britain" (Cambridge University Press), the second and concluding volume of which is expected to be published this autumn.]

CROOKSHANK, EDGAR MARCH, Saint Hill, East Grinstead, Sussex—M.B. Lond. (Honours in Obst.) 1884, M.R.C.S. Eng. 1881 (*King's Coll.*); Exhib. and Gold Medallist in Anat. 1st M.B. Lond. 1879; Fell. King's Coll.; Mem. Roy. Micros. Soc. and Path. Soc.; Prof. of Comp. Path. and Bacteriol. King's Coll.; late House Surg. King's Coll. Hosp., and Civil Surg. Med. Staff Egyptian Campaign (Medal and Clasp, Tel-el-Kebir, and Khedive's Star). Author of "Manual of Bacteriology," 3rd edit. (transl. into French); "Photography of Bacteria"; "History and Pathology of Vaccination." Contrib. "Evidence on Medical Service in Egypt," *Blue Book*, 1883; "Report on the Antiseptic Methods Employed at the Field and Base Hospitals of the Egyptian Expedition," *Lancet*, 1883; "Remarks on the Cholera Bacillus of Koch," *ibid.*, 1885; "Report on the Typhoid Fever Epidemic at Worthing," *ibid.*, 1893; "On Flagellated Protozoa in the Blood of Diseased and Apparently Healthy Animals," *Journ. Roy. Micros. Soc.*, 1887; "On the So-called Hendon Cow Disease in its relation to Scarlet Fever," *Path. Trans. and Rep. Agric. Departm. Privy Counc.*, 1887; "Anthrax in Swine," "Tubercular Mammitis," "History and Pathology of Actinomycosis," *Rep. Agric. Departm. Privy Counc.*, 1888; "Evidence before Royal Vaccination Commissioners, 1891"; several Papers in *Trans. Internat. Med. Cong.*, 1892, &c.



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