

ISSUES IN THE ANTI-VACCINATION MOVEMENT IN ENGLAND

by

ANN BECK

ALTHOUGH criticism of the public vaccination movement in England had been common ever since it was introduced in 1840, an organized movement to repeal compulsory vaccination did not develop until after 1871. If one studies the history of the English public and compulsory vaccination, one is surprised to detect references to moral and political ideas as frequently as discussions of medical issues. Sometimes it seems as though the method used in the fight against vaccination would become more important than the abolition of small-pox itself.

An attempt is made in this paper to scrutinize the background of the movement for the repeal of compulsory vaccination and to examine the issues which influenced the leading supporters and opponents of vaccination. What makes this phase in the history of British vaccination so interesting is the fact that those who wrote about vaccination, the doctors who practised it, the officials who administered the laws, and the public that was subjected to it, were influenced in their attitudes by their political views, by religious convictions, by their own interpretations of medical theories, by dogmatic views on sanitation and by their acceptance or rejection of the new science of bacteriology. The most striking fact is that the anti-vaccination movement ran against the trends of the time which Goschen illustrated in 1885 by stating as self-evident that the old saying that a man could not be made sober by Act of Parliament sounded to contemporary ears like old-world nonsense.

A brief survey of vaccination legislation in the nineteenth century will help to comprehend the issues which are to be discussed. Between 1801 and 1825 Jenner's method of cowpox vaccination competed with inoculation as practised in the eighteenth century. Both methods had their defenders. The London Inoculation Hospital, however, abandoned inoculation after 1807 for its out-patients, and after 1821 for its in-patients.¹ During this time doctors, clergymen and laymen took sides in favour of one or the other method. Dr. Gregory, in a sober report presented to the semi-annual meeting of governors of the London Smallpox Hospital in 1824 spoke of the 'true value of the inestimable blessing which it was the glory of Jenner to have diffused' in spite of the often imperfect performance of vaccination.² A few years later Dr. Clutterbuck attributed the wonderful mitigation of smallpox to inoculation and regretted that the Vaccine Board under the guidance of the heads of the colleges lacked practical experience and did not use the £3,000 granted by Parliament in a more satisfactory way.³ Medical opinion continued to be divided and the many

complaints about poor vaccination procedure throughout this time led to the Vaccination Act of 1840 by which public vaccination for the poorer classes was performed at the ratepayers' expense. The Act also prohibited inoculation.

In 1853 vaccination became compulsory by law but heavy local opposition prevented the strict enforcement of the law. When John Simon testified before the Royal Commission in 1889, he described the period of 1853 to 1871 as unsatisfactory because vaccination was not universally enforced. Amendments to the Act of 1853, introduced in 1867, gave Boards of Guardians the power to appoint vaccination officers but they were not forced to do so. It also gave the Medical Department of the Privy Council the right to send inspectors on a circuit of vaccination establishments in order to improve the quality of vaccination. It had been thought that objection to, and evasion of vaccination, stemmed from the sometimes reprehensible performance at public vaccination stations. As a further incentive the Medical Department of the Privy Council authorized subsidies for those vaccinators who performed well.

Finally, when by 1870 many infants remained unvaccinated, new legislation in 1871 introduced the compulsory appointment of vaccination officers. These non-medical men, paid merely for policing duties, were entitled to impose fines of twenty-five shillings or to imprison parents who did not pay the fines.⁴

By 1871, it seemed the legislators were entitled to a good conscience. They had done all they could to protect the English people from smallpox. The reports of the medical officer of the Privy Council shared this view. But suddenly the anti-vaccination movement gained strength and began to exercise an influence on the public. Politicians were forced to yield and repeated inquiries in Parliament led to the formation of an investigating commission and ultimately to the repeal of the compulsory clauses in 1898.

Why was the gradual though slow progress of vaccination between 1801 and 1871 threatened during the last three decades of the century? Did new political theories exercise an influence on public reaction to vaccination? Some of the statements made by political leaders seem to support such a view. In 1808 politicians as different as the reformer Cobbett and the conservative Canning protested against state control of vaccination in speeches in Parliament. They refused to grant the State rights over such personal affairs as a man's choice of his physician or the care of the health of his children.⁵ During the middle of the nineteenth century Sir Robert Peel said that compulsory vaccination was contrary to the mental habits of the British people.⁶ And in 1883, towards the end of the century, objection to compulsory vaccination was raised in Parliament because it was 'the most absolute invasion . . . of the right of individual liberty at the bidding of medical supervision'.⁷ That typical English right, freedom from State interference, is stressed throughout the nineteenth century in the debates on vaccination although political thought had undergone many changes during that period. It almost seems as though the argument of a person's right to exercise his idiosyncrasies in whatever way he wanted, was used as a cloak to hide the real reasons for objection to vaccination. But that was not so, since objection to vaccination on medical and scientific grounds was

stated frankly at the same time. Canning even said that he believed in the value of vaccination as a safe protection against smallpox but that he would oppose any measure of a compulsory nature.

Perhaps the climate of thought in Victorian England contributed to opposition to vaccination. Though fully aware of the danger of oversimplifying a complex development, a few factors of the currents of thought in England in the nineteenth century must be mentioned here.⁸ The cult of individualism and adherence to *laissez faire* in economics prevalent during the first decades of the century, gradually yielded to the acceptance of planning and reform. By the middle of the century more people were willing to sacrifice some of their traditional rights in the interest of public health and safety. Whether these developments were the result of industrialization or whether the ideological changes of the period led to the acceptance of the extension of government controls is not under discussion here. There is no doubt that people accepted sanitation and vaccination by the middle of the century because they realized that crowded living conditions and the abandonment of the 'state of nature' in urban centres made disease and epidemics more formidable. Doctors like Jenner thought 'the deviation of Man from the state in which he was originally placed by Nature (seemed) to have proved to him a prolific source of diseases'.⁹ Clergymen disapproved of slums although they emphasized the depravity of morals as an outward expression of inner pollution which, however, was caused by filth and dirt. As Lloyd Stevenson has shown in his article 'Science Down the Drain',¹⁰ holy and healthy became interchangeable words. No wonder then that vaccination was quietly practised and its practice more readily accepted by 1850. Sanitation caused more passionate discussion at that time. Adherence to its dogma became a matter of faith and conviction. And while the campaign for sanitation was waged, the concept of liberty was subjected to reinterpretations. It may strike us as strange but it was self-evident to the mid-Victorian participant in the movement for sanitation that he needed repeated reassurances that a man's dignity as a human being would not be violated by connivance with sanitary inspection, notification of communicable disease or inspection of his sewer system.

The relentlessness and the reforming zeal of men like Chadwick, Roebuck and the Grotes and the warm response they found in the humanitarianism of the Evangelicals towards the 1830s left their unmistakable mark on the period. The annual reports of the Registrar General begun in 1839 introduced statistics as a tool of social thought. Examination of the local inertia of boards of guardians led to a more effective system of central control over local administrators by 1848. What had seemed desirable to the reformers in the 1830s had been translated into action by the middle of the century.

While the Victorians were ready to legislate themselves into health and to change cherished institutions, the paradox of Victorian thinking is revealed. Young called it a strange confusion of the mind which was 'equally ready to denounce on the grounds of humanity all who left things alone, and on the ground of liberty all who tried to make them better'.¹¹ John Stuart Mill, for

instance, condemned the view that 'trampling, crushing, elbowing, and treading on each other's heels . . . were the most desirable lot of human kind' but, like Spencer, he insisted on a minimum of governmental interference. Legislation should be restricted to a minimum to protect the people from infringement of their rights by force and fraud.¹²

But the unresolved conflicts in the minds of many Victorians did not prevent the transformation of Victorian institutions. The noisy reformer passed from the scene and the efficient government expert assumed responsibility for the health and happiness of the masses. John Simon and Southwood Smith in public health, Lyon Playfair as fighter in Parliament and Dr. Ballard as medical inspector worked hard against the odds of suspicion, mental inertia, general opposition to increased taxation and innate conservatism. Their work helped to bring the entire range of ordinary life, from before birth to burial within the ambit of public interest and observation.¹³ The anti-vaccination movement developed towards the end of the century seems to reflect a growing scepticism.¹⁴ Did the intellectuals lose faith in the advance of science and the practices of government? Did medical science not produce the theories for further scientific advances?¹⁵

We noticed previously the Victorian paradox in the realm of intellectual developments. Perhaps one can also speak of a Victorian paradox in the realm of medical theory and practice. When cholera, smallpox and other infectious diseases ravaged the city slums at the beginning of the century, bacteriology had not yet developed sufficiently to give a satisfactory explanation of epidemic diseases. Instead, filth and putrefaction were denounced as the major causes of epidemics. The subsequent success of the sanitarians in preventive medicine convinced many people that foul air and dirt caused infection. The germ theory of infection when first presented found lukewarm reception.

Jenner experimented with cowpox to fight smallpox. But he was not so much interested in an analysis of the origin of infection. Vaccination was accepted by the Royal Society as a means of immunization as early as 1802 but the theory of infection had not been altered. New theories of contagion did not develop between the Middle Ages and the middle of the nineteenth century as Owsei Temkin has shown.¹⁶ Infection was explained as the staining of the blood with an evil substance. How this poison reached the blood was uncertain as Stille's writings indicate as late as 1848.¹⁷ A further confusion was added to this by the traditional explanation of disease as a manifestation of the will of God. And, as Stevenson has shown, a number of educated men rejected the germ theory for religious reasons.¹⁸ They preferred sanitary science to bacteriology because sanitary measures could at least eradicate inner and outer pollution whereas immunization put an evil into the blood and thereby committed pollution.¹⁹

Benjamin Ward Richardson, for instance, physician, health administrator, reformer, lecturer on public health and founder of several journals in the field, remained a strong opponent of the germ theory throughout his life. His writings fall into the period of the anti-vaccination movement and although his errors in judgment have been fully described by several writers, he is mentioned here

nevertheless.²⁰ Richardson's belief in cleanliness as a remedy, especially when supported by sanitation, made him an inflexible opponent to the germ theory. Simon rose above Richardson and Chadwick and acknowledged the importance of morbid contagia.²¹ But for Richardson the soil, rather than the seed, was pathogenic. He denied the necessity of antiseptic agents. He thought that fevers were caused by vitiated glandular functions. He resisted experimentation with live matter because evil methods of research which shocked the conscience must lead to faulty results.²² How could he explain why immunization was effective and why, therefore, vaccination could prevent smallpox?

Others reacted equally negatively to the germ theory. Hirst, the author of a book on the *Conquest of Plague* mentioned among British scientists who ignored Koch's bacteriological findings, men like Payne who interpreted infection as caused by chemical poison and Creighton who explained it as poison emanating from putrescent corpses.²³ Even Simon wrote in his medical report to the Privy Council as late as 1863 that contagion was caused by transference of a zyme or contagion which caused disease by chemical processes. Not until 1869 and thereafter did he acknowledge self-multiplying organic forms.²⁴

Under these circumstances it is not surprising to find doctors and non-professional men of lesser learning and experience present theories in the seventies and eighties designed to discredit vaccination on scientific grounds. Back in 1825, a doctor, lecturing on smallpox, stated bluntly that one did not know anything definite about contagion. Much uncertainty about the spread of epidemics was still voiced in 1868 when Dr. Ransome said at the annual meeting of the British Medical Association at Oxford that neither unsanitary conditions nor simple contagion accounted for the spread of epidemic diseases.²⁵ Although he was sceptical about spontaneous generation, he had to admit that no proof existed that the poison transmitted was not living matter. He did not go beyond the recognition that there were two opposing theories, the pythogenic and the contagionist. And in 1899 a writer in the *Edinburgh Review* summarized a number of vaccination theories and concluded that it was not known with precision how immunity was gained. The writer explained that the new theory of antidotes had disproved the previous assumption that during an infectious disease 'something' was removed from the body which prevented the development of new germs.

With so much uncertainty still officially admitted by 1870, could statistics be of value to prove that vaccination prevented smallpox? Their incompleteness and their limitation to certain localities prior to 1839 did not permit general conclusions for the entire period of vaccination. In fact, the use of statistics led to more confusion. In 1825, John Cribb tried to prove with the aid of statistics that vaccination lowered the mortality rate more than inoculation. His method of gathering his statistics, as reported in the *Lancet*, leaves much to be desired.²⁶ He merely went from house to house together with an overseer of parishes and relied on the parents' truthfulness when they said that a child died in spite of vaccination or vice versa. Statistics were used by others to prove the opposite point of view.²⁷ Even after 1839 the irresponsible use of statistics did not cease.

A writer in the *Westminster Review*, for instance, would use the same statistics as the medical officer of the Local Government Board. The former would state in 1889 on the basis of these statistics that the death roll from smallpox rose through vaccination²⁸ while Dr. Seaton's figures in 1875 revealed a maximum death-rate of unvaccinated persons up to that year and a decline thereafter until the epidemic of 1902–3.²⁹ Creighton used statistics for his *Encyclopaedia Britannica* article in 1888 to show that there was a marked decline of infant deaths from smallpox after 1877 which he attributed to sanitation and not to vaccination although the medical officer's report had shown that in 1873, for instance, all but five per cent of the infants had been accounted for as vaccinated.

And, finally, we find a complete disregard of statistics in theories such as that presented to the investigating Royal Commission by Mr. Wheeler in 1891. He denied the preventive character of vaccination. To him it merely disturbed the balance of mortality proper to each year. The diminished rate of smallpox deaths must lead to an increased rate of deaths from measles, scarlatina, enteric fever to make up for the loss of smallpox deaths. The editor of *The Lancet* gave the right answer to this pessimistic determinist, saying that apparently vaccination was acceptable as a means of prevention on only one condition, namely that it conferred immortality.³⁰

By 1870, sanitation, bacteriology, public health regulations and the procedures of the modern welfare state did not seem to thrive smoothly side by side. The anti-vaccination movement then growing in dimensions cannot be attributed to queer people alone. On closer examination, however, one notices that it was as paradoxical and heterogeneous in character as the intellectual climate of Victorian England discussed above. There were cranks among them whose contentions need not attract the attention of historians although some of their remarks have been given unnecessary attention when they were incorporated in official records of evidence given before Royal Commissions. Some clergymen preached against vaccination in their sermons and forecast that mothers would see their children's faces turning to cows' faces and horns growing from their heads. But that was shortly after Jenner's report on vaccination had been published.³¹ Others opposed vaccination because it was not 'natural'.³² This type of objection could not have produced a movement.

The campaign against vaccination after the compulsory clauses of 1871 were enacted gathered momentum soon thereafter when an inquiry in Parliament was made. While these inquiries were repeated until a commission of inquiry was set up, a thorough campaign for public 'enlightenment' was carried on, and meetings as well as publications kept the desirability of the repeal of the compulsory vaccination laws before the public eye. The movement can be classified under three headings, namely opposition on constitutional grounds, opposition on medical grounds, and opposition on religious grounds.

In the first category it attracted serious followers who could refer to such famous personalities of the past as Canning, Cobbett, Peel, and Gladstone. The English concept of liberty, it was said, required a man's right to manage his

household according to his liking, and not the command of Parliament.³³ A majority in Parliament, said Dr. Nichols in 1883 at a meeting of protest against compulsory vaccination, had no right to decree any kind of surgical operation, like cutting off a man's nose or ear, and this included vaccination.³⁴ In 1876 Gladstone spoke of vaccination as an attack upon 'private liberty'.³⁵

But even the *Lancet*, dedicated to the cause of universal vaccination, was very sensitive to the explosive nature of individual liberty whenever it found it necessary to mention it in editorials or articles. To cite just one of many examples, compulsory vaccination, said an editorial in the *Lancet*, could be set up without 'trenching unduly upon the liberties and prejudices of a people jealous above all things of domestic and personal interference'.³⁶ In all these criticisms the assumption was that in England laws could not be devised to help people against their will. P. A. Taylor who had sponsored the compulsory clauses of the Vaccination Act of 1871 said in 1883 in Parliament that compulsion represented 'the most absolute invasion of the sacred right of the parent, of the right of individual liberty, at the bidding of medical supervision'.³⁷ This in spite of the fact that, as Playfair had pointed out, many laws had been accepted although they interfered with personal liberty, whenever the public needed protection in areas in which it could not help itself.³⁸

The greatest emotional weight and the most absurd obstinacy in opposing the vaccination laws, however, were exercised in the name of conscientious objection which had both a religious and a political tinge. One year after the compulsory Act of 1871 had become law inquiries began to be made in Parliament. Violations of the Act were justified on the ground that conscientious and deeply rooted objections to vaccination should not be punished if parents did not 'believe' in the theory of vaccination.³⁹ Such arguments were not heard when in the preceding decades public health legislation was debated. When parishioners did not want to be taxed for new sewer systems, they did not refer to their 'disbelief' in sewers. But apart from the fact that sewers brought an immediate and recognizable measure of relief from filth and stench, they did not require direct interference with a person's body. Again we must cite the common-sense answer of Lyon Playfair that 'individual disbelief in a remedy which science and experience had confirmed as effective beyond all reasonable doubt, was no justification for relieving the conscience of that individual at the expense of society'. And with this statement we have come to the often quoted statement of 'honest disbelief' in the theory of vaccination. Acceptance of scientific statements and public reliance on the expert knowledge of professionals were suddenly threatened by a rabid group of men who claimed the right to pass judgment on medical theories and practices because they had the sole responsibility for their children.

Playfair called this attitude criminal, and death of an unvaccinated child 'omissional infanticide' and recommended that the state intervene to prevent mutilative disease.⁴⁰ A leading anti-vaccinationist quoted a Viennese statesman approvingly. The latter had said that in each individual case the usefulness of vaccination could only be determined by the convictions of the individual

which should be as inviolable in the domain of medicine as in that of religion and politics.⁴¹ And, added the British author, 'the history of medicine, rife in delusions, which compress each other in grotesque succession from the earliest ages to the present time [supplied] no instance comparable to the absurdity of vaccination'.⁴² Why, asked the editor of the *Lancet* in 1894, did well-intentioned, but obviously misguided people, not devote one-tenth of the effort to publicize the risks of smallpox instead of trying to prejudice and poison public opinion?⁴³

The answer has in part been given by Stevenson in his previously cited article. The introduction into the body or the blood of a fluid of mystic significance was contrary to the sanitarians' postulate of a clean life.⁴⁴ If this view is added to the religious interpretation of disease as willed by God, just as early nineteenth-century writers interpreted poverty in the same way,⁴⁵ then we have a perfect combination of reasons chosen by religious fanatics and ignorant superstitious people to join forces in the fight for the repeal of the vaccination laws.

The sad fact is that this group was joined and supported by medical men who, though they did not share the opinions of the former, yet supplied them with arguments for reasons of their own. Here are some of the statements made by opponents of vaccination in the two decades before the repeal. First, said one British writer, in the *Vaccination Tracts*, the child is poisoned by the lancet; secondly, the glands are affected, thirdly, phthisis, cancer, madness are likely to have been the tertiary products of vaccination since they increased in frequency after vaccination was introduced.⁴⁶ He thought that the medical profession was blind to these facts because vaccination was practised for political reasons. Cobbett called vaccination beastly and more hideous than death and was approvingly quoted in the 1870s.⁴⁷ Another statement of an anti-vaccinationist was intended to show the decay of political and medical conscience. Families, it said, are kept separate in a healthy state of a nation. Vaccination, however, mingled the taints of the community in a communism of blood. The modern penal state by saying 'suffer little children to come unto me' had become the antichrist. To point out to people of such a frame of mind that the death-rate from vaccination had declined periodically between 1817 and 1880 was of no avail.⁴⁸

While the fight against compulsory vaccination was continued inside and outside of parliament between 1872 and 1889, the opposing forces were unable to reach a compromise. Playfair defended the absolute right of the state to prevent the spread of communicable diseases while 'Education Act' Forster defended the right of absolute freedom of conscience, in the tradition of Thomas More. He may have been unaware of the quality of his fighting colleagues. In 1889 Allanson Picton, of long anti-vaccination fame, introduced a motion in Parliament for a Royal Commission of Inquiry and his motion was accepted.⁴⁹ Richie and Stansfield, president and past president of the Local Government Board respectively, agreed that the principle of compulsion and enforcement of compulsion required justification beyond a doubt. Had past experience and

the present findings of science proved the necessity of universal and compulsory vaccination? If even men like Creighton changed their minds (in 1886) and came to the conclusion that sanitation and the less virulent character of smallpox had been responsible for the lowering of the death-rate, then a re-examination of the principle was needed although the Royal Society, the College of Physicians and the Royal College of Surgeons endorsed public and compulsory vaccination.

In its final report in 1893 the majority of the Royal Commission reached the conclusion that vaccination diminished susceptibility to infection and that, if an attack occurred nevertheless, it rendered it milder and less fateful. It admitted the need for re-vaccination. Injuries, except through very poor performance, did not result from vaccination. Isolation could not replace vaccination. It was recommended not to abandon vaccination.

The dissentient members of the Commission, Dr. W. J. Collins and Mr. J. A. Picton,⁵⁰ maintained that the decline of the death-rate from smallpox must be attributed to sanitation and to naturally acquired immunity. Though not convinced that the increase in syphilis could be attributed to vaccination, Collins and Picton believed that many cases of syphilis might have been caused by it. They also quoted Chadwick's view that complete sanitation would eliminate all epidemic diseases. They advocated observation, isolation, and cleanliness to combat smallpox which prompted McVail to ponder how compulsory isolation could be carried out without violating the parents' right to decide on the medical treatment of their children.

Although the dissentients considered vaccination as dangerous, they did not endorse the pragmatic quacks of the anti-vaccination league. McVail concluded his critical review of the dissentients' report by saying that if the dissentients would have their way,

the liberty of the subject would mean the liberty of impudent neglect and delay; the liberty to despise a danger none the less real that for the time is hidden; the liberty of a father to refrain from protecting his children against disease and disfigurement and death.⁵¹

In 1898 the Vaccination Act of 1871 was amended. Public vaccination was performed in homes with glycerinated calf lymph except when the Local Government Board recommended vaccination stations. The infants must be vaccinated within six months after birth, instead of three as before. Penalties were abolished and vaccination could be remitted if within four months of birth a magistrate or two justices in petty sessions were given proof that the parent 'believed' conscientiously that vaccination would be prejudicial to the child's health.

Did common sense prevail? Was science swept 'down the drains'? The medical officer of the Local Government Board reported that three months after the Act of 1898 the number of vaccinated children was in excess of the number vaccinated in preceding years under the old Act. And, added the *Edinburgh Review*, no committee could pay the fines which an unvaccinated person would have to pay if later on in life he would be unable to secure

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employment, get life insurance or look for a residence in a desirable place. Fawcett, however, concluded in the *Contemporary Review* in 1899 that the time would never come in England 'when medical police [could] seize a child and vaccinate it by main force against the consent of its parent'.⁵²

Much ado about nothing? McVail who ardently attacked Collins and Picton in 1893 wrote in 1919⁵³ that since 1892-5 and still more since 1904 smallpox had become less fatal, less infectious and less prevalent in England owing to vaccination and re-vaccination. In addition the compulsory notification of infectious diseases contributed to the control of epidemics if one broke out. And, finally, the improvement of the training of public health officers was a third important factor in controlling smallpox. The summary conclusions drawn by McVail in 1919 represent an anti-climax to the virulent struggle carried out during the second half of the nineteenth century.

NOTES AND REFERENCES

1. CREIGHTON, CHARLES. *A History of Epidemics*. Cambridge, 1894, II, 587.
2. *The Lancet*. London, 1824, III, 350.
3. *Ibid.*, 1826-7, XI, 830.
4. *Sessional Papers*. First Report of the Royal Commission appointed to inquire into the subject of Vaccination. 1889, p. 5.
5. *The Westminster Review*. 'Vaccination by Act of Parliament', 1889, CXXXI, 99.
6. *Vaccination Tracts*. London, 1879, p. 10.
7. *Hansard*. 1883, CCMXXX, p. 290.
8. See George M. Young, Michael St. John Packe, Crane Brinton and others who tried to trace the history of ideas in Victorian England and came to the conclusion that a coherent trend did not exist.
9. SIGERIST, HENRY E. *The Great Doctors*. New York, 1958, p. 247.
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14. THORNTON, WILLIAM THOMAS. *On Labour*. London, 1870, pp. 10-12.
15. SIGERIST, HENRY E. *op. cit.*, p. 247.
16. TEMKIN, OWSEI. 'An Historical Analysis of the Concept of Infection', *Studies in Intellectual History*. Baltimore, Md., 1953, p. 131.
17. Quoted by Temkin, *op. cit.*, p. 136.
18. STEVENSON, LLOYD G. *op. cit.*, and MACNALTY, SIR ARTHUR SALUSBURY. *A Biography of Sir Benjamin Ward Richardson*. London, 1950, pp. 52-3.
19. STEVENSON, *op. cit.*, p. 2.
20. *Ibid.*, p. 14.
21. MACNALTY, *op. cit.*, p. 53.
22. RICHARDSON, BENJAMIN WARD. *Biological Experimentation and its Limits*. 1896, p. 131.
23. HIRST, FABIAN. *Conquest of the Plague*. London, 1953, pp. 86-7.
24. *Ibid.*, p. 89.
25. RANSOME, ARTHUR. *On Epidemics*. Manchester, 1869. Read before the public section at the annual meeting of the British Medical Association. 1868. Oxford.
26. *The Lancet*. X, 1826, 123.
27. *Ibid.*, p. 123.

28. *Westminster Review*. 'What is the Truth about Vaccination?', сxxxI, 1889, 187.
29. McVAIL, JOHN C. *Half a Century of Smallpox and Vaccination*. Edinburgh, 1919, pp. 16–17.
30. *The Lancet*. 1891, p. 204. Compare also the interpretation of statistics on smallpox given in 1887 by Thorne, president of the Epidemiological Society for 1887–8. After citing the decline of deaths from smallpox between 1838 and 1869 from 57.2 per 100,000 to 14.4 per 100,000, he said that intermittent periods of rising smallpox deaths must be attributed to the imperfect performance of vaccination and to the lack of re-vaccination. His authority for this statement was Dr. Buchanan, the medical officer whose excellent reports made him an authority in the field. (*Transactions of the Epidemiological Society of London*, VII, 1887–8, Inaugural Address entitled 'On the Progress of Preventive Medicine during the Victorian Era', pp. 4–10.)
31. *The Edinburgh Review*. CCCLXXXVIII, 1899, 346.
32. *The Lancet*. I, 1881, 28. The editor remarked that riding on a train or wearing clothes were not 'natural' either. The back-to-nature slogan was not convincing at that time.
33. 'Vaccination by Act of Parliament', *Westminster Review*. XXXI, 1889, 99.
34. *The London Times*, 29 November, 1883, p. 7.
35. *The Lancet*. II, 1876, 693. It seems that Gladstone withdrew his statement for political reasons when he was attacked by the press.
36. *The Lancet*. 1820 to 1890. This quote from *The Lancet*, I, 1856, 293.
37. *Hansard*. CCCXXX, 1883, 90.
38. *Ibid.*
39. *Ibid.*
40. *Ibid.*
41. *Vaccination Tracts*. London, 1879, p. 12.
42. *Ibid.*, p. 14.
43. *The Lancet*. II, 1892, 554.
44. STEVENSON, LLOYD G. *op. cit.*, p. 14.
45. For an eighteenth-century account of a Quaker interpretation of smallpox I am referring to Masback, Frederic J., *The Economics of Evil, A Study of John Woolman's Thought*, Philadelphia, 1958. Woolman called smallpox 'a messenger from the Almighty, to be an assistant in the cause of virtue, to incite us to consider whether we employ our time only in such things as are consistent with perfect wisdom and goodness', p. 13. But he would probably not have rejected vaccination since he believed that God had endowed man with an understanding to hinder the force of the disease by innocent means, p. 14.
46. *Vaccination Tracts*, p. 25.
47. *Ibid.*, 4.
48. First Vaccination Report, *Sessional Papers*, XXXIX, 1889, 4.
49. The Royal Commission submitted three reports on 12 August 1889, 29 May 1890 and 7 August 1890.
50. The dissentient members were Dr. W. J. Collins and Mr. J. A. Picton. In their statement of dissent Picton and Collins do not indicate for what sections of the minority report they were individually responsible. But there was a great difference between the two men.

Picton was a political radical, a liberal in religion and had to leave the Ministry because of his unorthodox methods of preaching, such as, for instance, lectures to the working men. In Parliament between 1884 and 1892 he represented the more extreme view of individual rights versus the state, and opposed the invasion by the state of inalienable personal responsibilities.

The position taken by Collins deserves more attention here. His criticism of the majority report was probably not merely based on opposition to compulsion. Collins did not deny the role played by micro-organisms in infectious diseases under certain conditions. He was sceptical with regard to the continued and unchanged character of microbes. He believed that 'the chief, if not the only, element in determining

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specificity [was] the *nature of the soil* in which the poison (whatever be its nature) grows, that is to say, the predisposition of the individual' (Quoted by Lloyd Stevenson, 'Science Down the Drain', p. 21). Collins denied the effectiveness of vaccination as the exclusive remedy against smallpox since evolution might develop innocuous types from noxious microbes and vice versa. Therefore, as late as 1922, he warned against the overestimation of microbes as *vera causa* of infectious diseases and epidemics (Cf. Sir William Job Collins, *The Man versus the Microbe*, 'Presidential Address to the Conference of the Sanitary Inspectors' Association at Buxton, 1922'. Surrey Fine Arts Press, 1929). He pleaded for greater emphasis on consideration of environmental factors and considered himself as the proponent of the 'new' sanitarians who were 'in harmony alike with the teaching of Chadwick and his school as to the nature and origin of zymotic diseases, as well as with the modern conception of the evolution of specific infections'. He also paid tribute to Pasteur and conceded that his life's work exerted a potent influence on medicinal theory (*ibid.*, p. 35, address delivered in 1923). But, as Stevenson has pointed out, in spite of such assertions, he remained a foe of bacteriology. In this respect it is interesting to compare Rudolf Virchow's stand toward bacteriology which has been fully described by Erwin Ackerknecht in *Rudolf Virchow, Doctor, Statesman, Anthropologist* (chapter on Parasites and Bacteria, University of Wisconsin Press, 1953).

51. McVAIL, JOHN C. 'The Report of the Royal Commission of Vaccination: A Review of the Dissenters' Statement', *Transactions of the Epidemiological Society of London*. London, 1897.
52. FAWCETT, MILLIGENT G. 'The Vaccination Act of 1898', *Contemporary Review*, LXXV, 1899, 334.
53. McVAIL, JOHN C. *Half a Century of Smallpox and Vaccination*. Edinburgh, 1919, p. 53.