

ALFRED RUSSEL WALLACE, LL.D., D.C.L., F.R.S.,
AND THE ROYAL COMMISSION ON VACCINA-
TION.

THE third report of the Royal Commission on Vaccination is in the main taken up with the evidence of witnesses who are opposed to the practice of vaccination. The witnesses in question are, as a body, not men who can be regarded as generally possessing scientific knowledge on the subjects with which they deal, but there is one notable exception to this rule in the person of Dr. Alfred Russel Wallace, whose conversion to the principles of anti-vaccinators was hailed as a great triumph by the party he joined, and whose scientific antecedents make it especially interesting to take note of the grounds on which he has, late in his public career, adopted the attitude in question. His works are numerous and well known, they embrace a number of scientific subjects, and they have won for him a reputation throughout the civilized world. The absence of a scientific basis for opposition to vaccination has hitherto been very marked, and if the hiatus could be filled, Dr. Alfred Russel Wallace might have been expected to have supplied the need. It is from this special point of view that we propose to examine his evidence, which very largely deals with the question from the statistical point of view.

And we take this course the more readily because Dr. Wallace himself, on his first appearance before the Commission, distinctly set it out that it was as a scientific expert, as one capable of handling and accustomed to deal with scientific evidence that he came forward. "I hope we are all scientific inquirers," urged the witness; and in bringing before the Commission that piece of his evidence which he deemed "the most important," he availed himself of a privilege which, at the time, he seemed entitled to claim, namely that of addressing an exhortation to the Commission in the following terms:

"Nothing is a matter of more common knowledge in science than that when you are seeking after causes, you must have

experiments which shall be strictly comparative—that is to say, one shall only differ from the other in regard to that special cause being present or absent. As an illustration I would just mention Dr. Tyndall's celebrated experiments on organic infusions and the production of life. The essential point of all his experiments was that each set should be exactly alike except in the condition that to the one of them air should have access, and that from the other air should be excluded. In the same manner Mr. Darwin, in making his experiments upon the fertility of seeds from self-fertilized and cross-fertilized plants, took care to grow his plants in the two halves of the same flower-pot, so that both experiments should be exposed to exactly the same conditions, and that when they arrived at maturity and produced seeds it could not be said that there was any difference in the conditions of the plants, except in the condition of the one being from seed of self-fertilized and the other from seed of cross-fertilized plants. Now, if we had a really good case of that kind—that is to say, a tolerably homogeneous population, of which one half was not vaccinated at all, and the other half had been vaccinated for a series of years, we should have an absolute test and demonstration. Fortunately for the purpose of arriving at the truth, we have an approximation to that condition of things in France."

Following on this proem Dr. Wallace submitted a vast mass of French statistics as to small-pox and vaccination; they cover no less than fifteen closely printed sides of foolscap; and they are also embodied in the form of a diagram, so that the lesson they affected to teach might be apprehended by the unlearned as well as by the scientist. And what is alleged to be that lesson? On this point Dr. Wallace says:

"Altogether the general effect is to show that the amount of small-pox mortality increases as the amount of vaccination increases. In order to determine whether that was a real fact, or only a deception of the eye, I have taken them out upon another plan. I have extracted the ten departments in which there was least vaccination, and the ten departments in which there was most vaccination, and have got out the averages by adding together the vaccinations and births for those departments. Then I have taken, in another set, the twenty

which are the least vaccinated departments, and the twenty which are the most vaccinated departments. In order that it might not be objected that these were selected groups, I have taken, also, the half which are least vaccinated and the half which are the most vaccinated, and the result is that taking them in tens the least vaccinated departments have least deaths from small-pox, and the most vaccinated departments have most deaths from small-pox; and when you take the twenties you find that the least vaccinated have the least deaths from small-pox, and the most vaccinated have the most deaths from small-pox; and when you divide them into halves you find again that the half which is the least vaccinated has the least deaths, and the half which is the most vaccinated has the most deaths. That really supports the view I have submitted to you from my previous diagrams, that so far from vaccination producing any visible diminution of small-pox mortality it goes rather the other way."

In short, the more you vaccinate the more small-pox you will have. "France," says Dr. Wallace, "is the only country in Europe in which there is no compulsory vaccination." And yet, oddly enough, in order to prove this "most important" point, Dr. Wallace actually passes over countries such as England, Germany, and others, where accurate statistics, as to vaccination, are available, and in which the death-rate from small-pox is equally well known, and he chooses France, where no similarly trustworthy records are kept, and selects among the years for his purpose those in which the Franco-German War put an end for a time to all pretence at accuracy as to the special vital statistics concerned. Surely Dr. Wallace, in so acting and in formulating the conclusions which he advanced, was abandoning his scientific principles, and was allowing himself to be used by obscurer men. He admits, indeed, that his friends, Messrs. Wheeler and Gibbs, had come to his assistance; but, though, in answer to a question from Lord Herschell as to whether one of these gentlemen might not have started with a bias, he was obliged to answer, "No doubt;" yet he confidently added, "but unless one falsifies his figures the figures remain." And he went on to claim the statistics as his own, stating definitely that in his preparation of them he "went over all of them twice."

Mr. Picton had, at a previous sitting of the Commission, announced the same belief that vaccination produced small-pox, but he had based this view on the fact that stational attendances for vaccination were greatest in years when small-pox mortality was greatest; forgetting, apparently, the essential point that when small-pox prevails people, even including the nominal anti-vaccinationists, rush in unwonted numbers for vaccination. But the same view, emanating from a leading scientific authority, merited some attention, and it is evident that Dr. Wallace's statistics underwent careful examination at the hands of the Commission before the witness next appeared before them on March 5th, 1890.

At that meeting Dr. Wallace was, in the first place, asked why his tables included two departments of the same name, and why, while the figures relating to both were practically the same, the addition of the results, in one important particular, differed by some 13,000. The answer was, "It is a great puzzle to me;" this being followed by an admission that the figures on which the argument was based had "got mixed up and confused." But Dr. Wallace appears to have thought lightly of mere statistical inaccuracy at this stage, for Lord Herschell soon found it necessary to tell him that "one does not accept statistics blindfold." The next point related to the department of Sarthe, as to which he was questioned by Sir William Savory, as follows:

"(*Sir William Savory.*) One more point with regard to the accuracy of these tables. Upon the first page, under the head of High Alpes, you reckon up the total and get 711 under the heading of 'small-pox deaths;' it is a simple question of addition; do you know that that really adds up to 1011, that it is 300 out by simple addition, and that instead of giving a percentage of 35.55 it gives a percentage of 50.55?"—"Yes, apparently it does; that is a mistake evidently, but I do not think that there are many mistakes of addition of that kind, for I went over all of them twice."

"You would hardly like this table to go forth in this form as worthy of your scientific reputation, would you?"—"I have not had the opportunity of comparing it with my manuscript yet."

"But so much is at stake. Are these returns compulsory

in the several departments?"—"That I do not know, except that they are official records; that is all we know of them; they are presented in the regular official form."

"Vaccination is not compulsory?"—"No, vaccination is not compulsory."

"So that young persons may be vaccinated at any age?"—"I presume they can; I do not know."

"Are not those very important facts? Have we not the important fact in our own country that between 1840 and 1853, before vaccination was made compulsory, when small-pox increased there was increased vaccination; and was it not in consequence of the discontent with that state of things, was not that one of the arguments used, that vaccination was made compulsory; is it not a very fair inference that there is a relation between the fear of small-pox and vaccination?"—"It may be explained in that way."

"At all events, is not that inference more scientific than the one that you draw from it?"—"I do not see that that could make any difference when you have the same law for the whole country. In France you have no compulsion for one department more than the other."

"But is it not likely that the law would be obeyed with more strictness in one department than another?"—"That is shown by the diagram."

"Would not that invalidate the inference you draw from it?"—"My inference is drawn from the diagram."

"But you have not, as I submit, data sufficient to draw an inference."—"That is a question."

"After what has occurred with regard to these tables do you still put forward this diagram as showing that vaccination instead of diminishing small-pox has rather an influence in increasing it?"—"I do not wish to put that forward as proved by this diagram, certainly."

At this stage the witness was apparently offered a chance of recanting, and he was asked what conclusion he still wished the Commission to draw. The answer is characteristic; it was to the effect that the conclusion remained "what I stated first;" but in the same breath, the original contention that "small-pox mortality increases as the amount of vaccination increases" was in reality superseded by the much milder

contention, "that there is no apparent connection in a beneficial sense between vaccination and small-pox." But even this modified form of unbelief naturally led to a further criticism of the statistics on which this new assertion was professedly based; and the result was a confession on Dr. Wallace's part that his tables were "not perfect," that "the imperfection is very great and irregular;" and an admission that if his entry of "no deaths" often meant nothing more than that there had been "no returns" (which was actually the case) "then, of course, the whole thing is imperfect," and that in view of such a defect, which was "vitally important, . . . the whole thing is valueless."

But criticism followed on criticism, and at last Dr. Wallace asked that he might make a few personal concluding remarks, the pith of which had to do with suggestions from the Commission that he must have "taken up this subject and written on it without full and accurate information befitting a man of science." And in making the personal explanation, the previous declarations as to the absolute need for a scientific accuracy such as had controlled the labors of Darwin seems to have been forgotten, and in their place came the frank admission: "My answer is that I did not take it up as a question of pure science."

Thus ended the "absolute test and demonstration" held out at the first sitting; and the result is that the party opposed to vaccination still lack a scientific statistician as an exponent of their views. Some of that party who claim that status seem studiously to avoid coming forward as witnesses, but it is sincerely to be hoped that the Commission will, before it rises, have the advantage of hearing an acknowledged expert in statistics on the side of the opposition, and not have to close their proceedings without having some better statistical data against vaccination than those which, as one of the Commissioners himself put it, relate "to foreign countries, which we have no means of verifying or the reverse." English experience over a sufficiently long period is ample to decide the question whether vaccination as practised in England is or is not a preventive of small-pox; and this is, after all, the one point at issue.—*The Practitioner*, June, 1891.