

THE ARGUMENTS OF ANTIVACCINISTS AND THE MEASURE OF TRUTH AND ERROR CONTAINED THEREIN.*

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In 1798, Jenner announced to the world a means of staying the ravages of the dreaded disease, smallpox. In order to appreciate the importance of this discovery at that time, it is essential to know how extensive and fatal a disease smallpox was. We have accurate records of the number of smallpox deaths in the city of London from about the middle of the seventeenth century to the present time. The London Bills of Mortality show that in the eighteenth century, London, with a population varying between 500,000 and 750,000 had approximately 10,000 cases of smallpox a year. About one-fifth or one-sixth of the persons attacked succumbed to the disease. In 1721, the practice of inoculation of smallpox was introduced into England by Lady Wortley Montague.

The opponents of vaccination contend that the decline of smallpox mortality, which was noted in practically all countries about the beginning of the nineteenth century, was not due to the introduction of vaccination but to the discontinuance of inoculation. They claim that the smallpox death rate was increased throughout the eighteenth century by inoculation. Statistics show, however, that smallpox caused about one-twelfth of all deaths in the beginning of the eighteenth century before inoculation was introduced, and one-eleventh of all deaths toward the end of the century. So that the mortality from smallpox did not in any marked degree differ in the two periods. Smallpox was constantly increasing from the middle of the seventeenth century up to 1720, with no such factor as inoculation to account for it. It must be admitted that inoculation did tend to perpetuate smallpox, because inoculated smallpox, while saving the lives of thousands who were subjected to this procedure, could be readily caught in the ordinary way by those who were unprotected. Only one person in about a hundred would die of inoculated smallpox. As every one felt that he would have to suffer from smallpox at one or another period of his life, it was deemed desirable to take a small risk in order to be saved from a much greater peril.

Inoculated smallpox had two effects: It caused an enormous saving of life among those who were inoculated; it tended also to disseminate the disease. There were, therefore, two factors operative which practically neutralized each other as far as the influence of smallpox mortality was concerned. In every civilized country we note at the beginning of the eighteenth century a decline in smallpox mortality coincident with the introduction of vaccination.

I might remark, as indicating the prevalence of smallpox in the pre-vaccination era, that in certain cities and towns at various times, smallpox was so prevalent that 85 to 90 per cent of the people passed through the disease at some period of their lives.

It has been repeatedly urged by the antivaccinists that smallpox occurs among

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the vaccinated: no one claims at the present day that a single vaccination in infancy will in the majority of cases protect against smallpox for life; exceptionally, however, this does occur. On an average, vaccination will protect for a period of seven to ten years. A successful revaccination at the end of this time usually confers protection for life.

Shortly after Jenner announced the discovery of vaccination, the procedure was taken up, among others, by Dr. Woodville, the physician in charge of the London smallpox hospital. He employed it upon persons in the hospital, and it was subsequently found that some of those vaccinated at the same time contracted smallpox through the air. Much of this virus was sent out as vaccine virus and gave rise to inoculated smallpox. Dr. Crookshank, of England, the most scientific of the opponents of vaccination, has advanced the view that practically all of the virus sent broadcast by Jenner was in reality an attenuated smallpox virus, and that the "vaccinations" performed were in reality "variola-tions," although general eruptions were not produced by the virus. I may say that eleven of the thirteen surviving members of the British Royal Commission on Vaccination in their report published in 1896, were not of this opinion.

Crookshank endeavored, by his argument, to prove that the persons who were presumably inoculated with cowpox were protected against subsequent smallpox inoculation and purposeful exposure to the disease because they had been in reality "variolated."

It is claimed by some antivaccinists that our "vaccinations" at the present day are in the main "variola-tions." There is absolutely no proof of such a contention.

Vaccine virus may be made, and is indeed sometimes so generated, by inoculating calves with smallpox virus. After it has passed through three generations of the bovine species, it is completely and permanently transmuted into vaccine virus.

Now we come to an argument which is advanced by some of the most radical of the opponents of vaccination, namely, that vaccination actually spreads smallpox; this is based upon the assumption that vaccine virus which may originally have been derived from smallpox, may through some particular susceptibility of the subject vaccinated, revert back to its original nature and produce smallpox. This is an entirely gratuitous assumption which is made without any basis in fact. I need only mention the fact that variola-vaccine (i. e., lymph of smallpox ancestry) has been used more extensively in Germany than in any other country. Of all the great countries of the world, Germany is the one which has had the least smallpox during the past twenty-one years.

The two main arguments of the opponents of vaccination are that vaccination does not protect against smallpox, and that it is injurious. A study of the statistics of the protective influence of vaccination against smallpox during the past century leads convincingly to the conclusion that vaccination does protect against smallpox. Time will not permit me to discuss this subject at length, but I can not refrain from mentioning the case with regard to Germany. Since 1875, Germany has had compulsory vaccination in infancy and compulsory revaccination at the age of twelve, with a third vaccination among the men who enter the army. There is no country in the world at the present time where

vaccination is so thoroughly carried out. Not only has Germany a vaccination law as ideal as can be framed, but there is, moreover, a most thorough administration of the law. This does not mean that there are not thousands of unvaccinated people in Germany; there are always some thousands of children who are below the age of vaccination. There are those postponements of vaccination due to physical disability. Nevertheless, if we consult official publications, we find that in the twenty years between 1889 and 1908, England and Wales have had about eight times as great a smallpox mortality as Germany.

In proportion to the population of the two countries, we find that England and Wales have had $13\frac{1}{2}$ times as many smallpox deaths as Germany. England has a vaccination law requiring only vaccination in infancy, and this law has been greatly weakened in its effect by exemptions under the "conscience clause." The discrepancy is still all the more remarkable considering the wonderful natural isolation of England and the exposed position of Germany, surrounded, as she is, by countries in which smallpox is very prevalent. Russia, for instance, in 60 to 70 millions of her population has 39,000 deaths annually from smallpox. Germany has a population today of over sixty-four millions and averages about 53 smallpox deaths a year. It is asserted by the opponents of vaccination that the hygienic and sanitary conditions in Germany are better than those in England. The proof that this statement is false is evident from the comparative general death rates of the two countries. England has and has always had a considerably lower general death rate than Germany, so that whereas the general death rate from all diseases is higher in Germany than it is in England and Wales, the smallpox death rate is infinitely lower.

It is asserted by the opponents of vaccination that sanitation is responsible for the general decrease in smallpox. No one here would attempt to deny that sanitation plays a part in the decrease of all infectious diseases. But we insist that such sanitary reforms as improvement in water supply, in drainage, in ventilation, etc., have little or nothing to do with the prevalence of smallpox.

Personal susceptibility is the dominant factor. Such sanitary measures as the prompt isolation of the patient, expeditious quarantine of those who have been in contact, and subsequent disinfection of premises must exert an important influence upon the limitation of the spread of smallpox, and is, of course, practiced by all vigilant health services.

The other main argument against vaccination is that it is injurious. It is held that the best protection against disease is health and that to inoculate any disease into the system is a blunder. As a pure academic proposition, this hypothesis seems reasonable, but when we find as an actual matter of experience that the inoculation of the system with a mild disease which produces an absolutely insignificant mortality confers protection against a loathsome disease which kills, disfigures and causes blindness, we would exhibit but little intelligence if we did not accept the benefits of such a procedure. When smallpox prevails, people become panic stricken and rush to be vaccinated.

It has been urged that vaccination has caused syphilis. It is admitted that arm-to-arm vaccination with humanized virus has, in extremely rare instances, transmitted syphilis from one child to another. With the employment of bovine

lymph, such as is universally employed in this country today, such an argument loses all force, inasmuch as the bovine is not susceptible to syphilis. It has been urged that tuberculosis may be disseminated by the use of bovine lymph. This is another of the gratuitous assumptions of the opponents of vaccination. Not only is tuberculosis of the greatest rarity in young calves, but they are thoroughly tested with tuberculin before being used. Furthermore, the calf is autopsied before the lymph is placed upon the market. Even if tubercle bacilli were intentionally placed in the lymph, they would be destroyed by the glycerin, as has been proven by S. Monckton Copeman, of England. Finally, if tubercle bacilli were actually inoculated on the skin of a person, nothing more would result in the vast majority of cases, than a local skin affection.

It is urged by the opponents of vaccination that tetanus is commonly introduced with vaccine lymph. I can not go into a detailed discussion of this allegation. I merely wish to call attention to the statement made by Dr. Elgin that some 5,800 tests have been made without any tetanus organisms having been found. I believe very strongly that nearly all, if not all cases of tetanus occurring after vaccination, have been due to accidental inoculation of the site of vaccination as a result of uncleanness and maltreatment of the wound. These accidents will doubtless be prevented as improved technic is brought about,

The statistics of the Philippines within recent years with relation to vaccination and smallpox are most enlightening. Millions of vaccinations have been performed in the Philippine Islands by the United States authorities, with the result that smallpox mortality has been enormously reduced and the disease in many localities completely stamped out.

In conclusion, permit me to quote from a letter sent to Jenner in 1806 by Thomas Jefferson, then President of the United States: "You have erased from the calendar of human afflictions one of its greatest. Yours is the comfortable reflection that mankind can never forget that you lived. Future nations will know by history only that the dreaded smallpox has existed and by you has been extirpated." I may say that this prediction only fails of being a prophecy because vaccination and revaccination are not universally employed throughout the land.

DISCUSSION.

PROFESSOR MACFARLAND: "I have just one single thought which bears somewhat indirectly on the whole subject and yet calls to mind certain facts that many people seem to forget in this matter of explanation of the contamination of smallpox depending upon sanitary conditions.

"I wonder how many people are perfectly acquainted with the housing conditions of Philadelphia. I was very much surprised myself, although I knew they were not what they should be, after a talk with Dr. Abbott of the University of Pennsylvania upon this subject some time ago. I knew that many houses in Philadelphia were old, I knew in my own family there were houses that had been built by my great grandfather, and that these houses at the present time are in about the same conditions they were then, but it did not occur to me until I talked with Dr. Abbott that what was true of these old houses in Philadelphia is true of more than forty thousand other houses which at the present time are in precisely the same conditions they were from 75 to 125 years ago. There are 40,000 (?) houses in Philadelphia that have no sewer connections, that have cesspools in the back yards.

"My grandfather was born in 1819, and he told me that when he was a child he was vacci-

nated, but some of his brothers who were not had smallpox. He said that in his day nobody paid very much attention to smallpox. Those people lived in the same houses and in very much the same way in which people live today, so that if there were better hygiene, it cannot be the method of living; if it were better drainage, it cannot apply. If it referred to the number of people in the houses it would not apply, because the number of people in these old houses is in excess of what it was."

DR. WADSWORTH: "The pharmacist comes in contact with the people in a very peculiar way. The pharmacist should understand this is a very serious matter. Is it the duty of a sane man, and I am not talking to any others, to sit down and deny such facts? It is our business as sane, intelligent members of this community to say, if there is a mistake here or a mistake there which brings a danger to a good thing, let us go after that danger, but don't let us block the wheels of progress.

"You asked me about my experience. I do everything I can to investigate matters, and if I can find any mistake, I am going to find it. I have been sent out on a number of these cases of tetanus. I don't think I have been unfair, but when I find a child vaccinated on a certain day, gets along nicely, and the child not being particularly healthy is sent to the country, goes up on the hills, plays out in the yard, gets dirt on the vaccination scab, and two days after that develops a pus infection of the arm, then ten days after that develops tetanus.

"It takes me two weeks of hard digging to find out the facts, but when I find them, I am rather inclined to believe that this is a dirt infection.

"Whenever I have a chance, I stand up and say keep dirt out of vaccination wounds. Don't get hysterical when you are doing the work of the community or when you are thinking for yourself, but use your common sound sense and say, keep dirt out of vaccination wounds. If that one had been protected as an open wound as it should have been, the chances are that the child would not have got tetanus.

"There is another argument which has been brought up in regard to vaccination, that you should not use animals for experimentation. But when a race that has been supposed to be Christian and follows the lead of the Master who said that not one sparrow falls to the ground that your Heavenly Father does not know it, ye are of more value than many sparrows—you have your religious doctrine for it and it is the finest expression for vivisection that has ever been put in any platform anywhere.

"There is only one thought I want to add further and that is that as far as possible you keep a record of the packages of vaccine lymph sold; and to whom delivered, so that we may eliminate the undesirable features. Then if there has been a mistake, we can go through it and have it corrected. There is nobody more anxious than the straightforward manufacturer to have every error corrected, and he will meet you more than half way and lay his books before you, if you will help in this way by registering every bit of lymph you have come in. It is not much work for you and it helps materially in the investigation."

DR. ROYER: "I am specially glad to hear the splendid lecture by Dr. Elgin and to hear Dr. Hitchens on the preparation of vaccines, but I was more impressed by the importance attached to the proper storage of vaccine virus by Dr. Cliffe, than by the earlier papers in the evening, because I think that is a point where pharmacists very often fail, and we can't impress upon them too strongly that vaccine virus must be stored in a cool place. In fact, I think the producers are a little at fault in this way. They should stamp on every package they ship to pharmacists that this product is perishable unless stored in a refrigerator, because I am sure many pharmacists have not grasped fully the importance of storing vaccine virus in a proper place.

"The first thing I do in going into a pharmacy for vaccine is to find where that virus was stored. It is absolutely essential because you may get virus that has not been properly stored and is no longer active. You give that poor unfortunate individual a false sense of security. Many of the failures, most of them I think, are due just to that sort of thing—bad storage of virus—and it is especially important in the two seasons of the year,—in the winter season when your drug store is superheated and during the hot season.

"I have had an opportunity of testing out the virus of nearly all the large manufacturers of the country. I perhaps have vaccinated under my personal supervision between six and

seven thousand people, most of them children, and I have yet to see the bad results that are reported by those who oppose vaccination.

"Anyone who has seen the effect of vaccination, as a worker in a smallpox hospital, cannot but be convinced that vaccination ought to be practiced everywhere."

DR. ROUSSELL: "The preparation of the arm for vaccination is an important point. The use of antiseptic solutions on the arm improperly cleansed with water will prevent the action of the vaccine. I find out, after considerable experience, and also teach my class, no matter what antiseptic they use, be careful to see that you have afterwards washed off any remains of it.

"I would like to call attention to the advantage of the European method of vaccinating at two or three or more points. I am quite satisfied that the use of a single vaccination may be effective in most cases, occasionally it would seem that a successful vaccination has been followed, within a comparatively short time, by smallpox. That is possibly in two or three cases.

"More often very sore arms are simply proof of infection and not of successful vaccination. The vaccination has to go through a regular course, in order to insure a perfectly successful vaccination, and physicians may be misled by accepting large inflammation as proof of a successful vaccination."

DR. WELCH: "Referring to the statement I made in reference to vaccination in the Philippines, I would say that while we did clean up these towns in addition to the vaccination, when I returned to the town after a few years the sanitary conditions were the same as they had been before, but there was no smallpox.

"In reference to smallpox in the army in the Philippines, there were several reasons; in the first place, smallpox follows an army. In the United States army in the Philippines, there were a great many men who had not been vaccinated. These men were volunteers. We also discovered, as I told this gentleman a short time ago, that the vaccine virus was found inert on account of climatic conditions. It had been used for quite a while before they discovered that fact.

"I would also say in reference to Japan, that the laws were not enforced for a long time."

PARCELS POST AND A MAIL-ORDER TRUST.

Advocates of Parcels Post have been calling wholesale and retail merchants parasites upon our economic system. Edward B. Moon, Secretary of the American League of Associations, demonstrated that the wholesaler enabled the manufacturer to use capital in production which otherwise he must employ in marketing his products that the wholesaler by taking a consignment of manufactured goods frequently finances a meritorious struggling industry; and that his extension of credits to the retailer enables the retailer to credit his patrons. To bring the country suddenly to a cash basis, necessary if concentrated in great retail mail-order centers, would work hardship. He showed that the profits of these retail mail-order houses were usually greater than those of wholesaler and retailer combined and that, if present methods of trade distribution were destroyed through Parcels Post, the country might look for a trust of great retail mail-order houses.

Congressman Hill of Connecticut says: "If Parcels Post be established, the yearly deficit on that would be one hundred and fifty million dollars. Yet the advocates of parcels post will not compromise. They don't want to experiment; they want to go the limit."—*Rocky Mountain Druggist*.