THE WORKS OF EDWARD JENNER AND THEIR VALUE IN THE MODERN STUDY OF SMALLPOX

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THE WORKS OF EDWARD JENNER AND THEIR VALUE IN THE MODERN STUDY OF SMALLPOX.*

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Jenner's *Inquiry*: "No book so small has been talked of so much; no book has been read from the original so little; no book of such dimensions has made the name of any author so famous."—Sir Benjamin Ward Richardson.

Few topics in medicine are more interesting than the history of vaccination, and the extract I have taken as a text may serve to show the particular aspect of the subject I wish to discuss. Through the kindness of Dr. William Osler—one of many examples of a generosity for which I can not adequately express my gratitude,—I was able recently to examine a full collection of first editions of Jenner's works on vaccination. The collection itself is particularly interesting in having been given by Jenner to his friends, W. F. Shrapnell and Henry J. Shrapnell, who will be remembered by readers of Baron's *Life of Jenner*. The volumes, bound together, were

* Read before the Buffalo Academy of Medicine, October 14, 1902.

ultimately presented by the family of Dr. Hunter McGuire to Dr. Osler, and it is hardly necessary to add that a more appreciative owner could not be found. Jenner's first three works on vaccination had long been familiar to me through a copy of the second edition, but in the McGuire-Osler collection I read for the first time the brief pamphlet on the *Origin of the Vaccine Inoculation* and the *Instructions for Vaccine Inoculation.* These emphasized certain of Jenner's characteristics, viz., his practical sagacity, coming as it does so near to inspiration, and his lack of method. The study of the later pamphlets led me to investigate Jenner's life and work after the announcement of vaccination. My examination included a large proportion of the books and pamphlets concerning vaccination published during Jenner's life, and a great deal of periodic literature of the same era, including several non-medical journals. For the opportunity of seeing most of this great and, I may add, rare material, I am particularly indebted to the officers of the Boston Medical Library. The Boston Public Library and the Boston Athenæum also gave me opportunities for research that could not easily be found elsewhere. Thanks are further due to Dr. J. H. McCollom and Dr. Samuel W. Abbott for valuable assistance.

I do not intend to go into the details of Jenner's life, interesting as that would be. At the time of his first publication on vaccine inoculation he was in his fiftieth year. Though fond of natural history all of his life, pupil and friend of John Hunter, he yet preferred the career of a country practitioner to that of a naturalist or medical teacher. An active, popular

and successful physician, he had shown more than ordinary ardor in the observation of disease and its treatment. A facile maker of verses, he shows a tendency to poetic expressions in his articles on cow-pox, as he did in his conversation and letters. As examples may be cited the answer to the question of Charles James Fox,—vaccination is "like a section of pearl on a rose-leaf,"—or when, after speaking of the effect of vaccination in healing chronic eruptions he said, "it is not one gift only that the fair and bountiful hand of Vaccina has bestowed upon us." Yet Jenner's writing is always simple and attractive. Such expressions as I have quoted seem to come rather from the exuberance of a mind naturally imaginative and poetic than from any attempt at decoration. His chief fault is in the poor arrangement and diffuseness of his material.

In his mental qualities Jenner has been compared with Franklin, and there is a resemblance in the simplicity of his observations and methods, as when he settled the question as to the hottest part of a flame by putting his finger into it. Two other facts should be mentioned before we leave the man for his work. He suffered much from illness, his wife and one son were invalids and the latter required constant care. Besides, he had a tendency to indolence, "of all the ill habits a man may fall into, the most difficult to get rid of," he said, adding: "I for one am a sad example of the truth of this position, and this very sin has got me into more scrapes than all the rest put together."

Jenner has suffered much, as his discovery has suffered, from indiscriminate praise. It is often said that he devoted his time for years,—thirty is the

period most frequently given,—to the investigation of cowpox, before he published his results. This is by no means the real basis of Jenner's claim to renown. The results are important without reference to the time spent in achieving them. Jenner himself gave twenty-two years as the period of investigation. In the parliamentary hearing which resulted in the first grant of money, ten thousand pounds, one of the witnesses stated that Jenner had spent six thousand pounds in prosecuting his inquiry, but Jenner himself never made such a claim.

The first publication, *An Inquiry into the Causes and Effects of the Variolæ Vaccinæ*, appeared in 1798, as a quarto of seventy-five pages, with four colored engravings.

The work begins, after some general observations on the variations of animals, with an explanation of the origin of cowpox in "grease," a disease of the heels of horses. Jenner thought that milkers, having previously dressed the sores of such horses, carried the disease to cows. He cited seven cases showing the relationship, as well as the immunity furnished against smallpox after accidental inoculation of grease-cowpox in man. He admitted that he had not been able to show the relations of grease and cowpox by actual experiment, but was not very critical in the matter, for he had held the belief in the grease origin of cowpox and smallpox for more than ten years. Further on in the same work he cited a case in which cowpox originated, not in matter from the heels of a horse, but in an "erysipelatous" inflammation on the upper part of the thigh of a colt. After several weeks the process terminated in the formation of

small abscesses. The same men who dressed these abscesses milked cows, and in a short time the whole dairy, twenty-four cows, had cowpox. The milkers in turn got vaccinia in varying degrees of severity according to their previous histories, one, who had never had either cowpox or smallpox, being severely affected. Circumstances prevented a test of the cowpox by variolous inoculation, yet Jenner thought there could be scarcely any room for suspicion that the disease was not true cowpox. He supposed, also, that the specific virus became more "certain and determined in the cow," because it was easier for milkers to become infected than for the dressers of sore heels, but, aside from the experiments he thought of but did not make, he seems not to have considered the greater exposure in milking as compared with the dressing of horse's heels. A great deal of work was done on grease in the early years of vaccination. Many investigators agreed with Jenner; certain strains of "vaccine" virus originated in the sore heels of horses, but the final conclusion was that grease was not a specific disease, or at least not related at all to vaccinia, and if, in some cases, cowpox seemed to have originated in horses, the latter animals must have had variola. Jenner never seems to have publicly abandoned his theory, but the course of events relegated it to obscurity. While still working on his early grease observations, Jenner inoculated his son with swine pox, but he did not follow up this line of investigation.

No one seems to have tried to deprive Jenner of credit for the grease theory, but the case is very different in the next step of his work, regarding cowpox

more particularly. Just what Jenner claimed, and what he deserved in this connection, are often not remembered. As he often pointed out, the protective action of cowpox against smallpox was widely known among dairy farmers, but perhaps became recognized only after the general use of variolous inoculations, which called attention to cases refractory to the latter. Investigations aroused by Jenner's *Inquiry* fully confirmed the extent of the belief among farmers, and before that, as early as 1795, Adams, in his *Observations on Morbid Poisons* spoke of it as a well-known fact. The question whether the accidental infection might not be used with a distinct purpose must also have been raised by many. Ring, one of Jenner's most ardent supporters, says he was often asked by patients whether cowpox or chickenpox would not protect against smallpox. Nor was the knowledge of cowpox confined to England. Heim tells us that his father, a preacher in Saxe Meiningen, told him as early as 1763, when one of his cows had cowpox, that the dairymaids who milked such cows became infected, and added it was believed those who once had the vaccine disease never took smallpox. But whenever such facts were mentioned contradictory experiences were not wanting. So Jenner was often reminded by his friends, and the feeling of the latter shows why the observation of immunity was not earlier acted upon. After Jenner's claims were published, and especially at the time of the parliamentary action on Jenner's petition for a grant in 1802, other cases of planned inoculation came to light. Among these were some ascribed to Nash, a surgeon in Devonshire, and a Mrs. Rendall, but the most important

were those of the now well-known Jesty. It is interesting to observe that in this case the champions of Jesty did not even know either his name or his habitation. Pearson called him Justin. His visit to London and the painting of his portrait were both done to discredit Jenner, but the outcome did the latter no harm. Many years later Husson asserted that Rabaut, a protestant minister of Montpellier, had vaccinated in 1781, having derived the idea from a farmer, and that the operation was suggested to Jenner by a Frenchman. Husson should have put the date earlier. There is no doubt that Jenner had talked of vaccination before 1781. None of these earlier observations, interesting as some of them are, weaken Jenner's claim in the slightest degree. He not only inoculated cowpox virus with the purpose of protecting against smallpox, but also with the aim of making the operation known, and he not only did make it known, but he put it beyond question that, but for him, Jesty and all the other claimants might have remained long in the obscurity in which his discovery found them. He also carried the inoculation through several generations in the human body, proving the possibility of becoming independent of primary cowpox, and in marked contrast to Jesty, he overcame the fear of the disease. Thus he caused vaccination to be practised by others, so that from a casual and formidable operation it became used all over the world on an enormous scale, and always in association with his own name. How he did this is an interesting part of the subject.

Jenner gave brief notes showing the protective action of casual cowpox against variola, acquired either