

*Cautions respecting the Inoculation of Cow-Pox, by*  
 Dr. STOKES.

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To Dr. BRADLEY.

DEAR SIR,

THE discovery of a disease in a quadruped of a genus so totally distinct from man, which, without exciting any considerable disturbance in the constitution, renders him insensible to the action of the most generally fatal malady to which he is subject, is a phænomenon which has arrested the attention of every enlightened physiologist; and the reception which this discovery has met with, deserves the attention of the metaphysician. The common people, as far as I have observed, receive it with gladness, as it comes to them free of expence, and some of them have been heard to speak of it as a blessing sent from God. They do not express any more repugnance to the insertion of pellucid lymph from the arm of a neighbour's child into that of their own offspring, because originally taken from a vesicle on the nipple of a cow, than they do to feed them with the milk or flesh of that animal. Their minds are no longer held in suspense, whether they shall consent to give their child a malady which may terminate in its death, with a view to preserve it from a disease which they sometimes observe to be a very slight one. The inoculator can now assure them, that their child *will not die of inoculation*, and every new inoculation confirms to them the truth of his assertion. The middling classes, who are in the habit of being guided by the practitioners they employ, take their opinion on the subject, and sometimes commission them to inoculate their children "with either kind of pock." The upper classes, who read and see a variety of practitioners, judge for themselves; and those among them who are philanthropists and converts to the new faith, inoculate their own children and those of the poor together. Mr. Fermor's pamphlet will, I doubt not, make many converts among this class, and I hope his example will have many followers. With regard to our medical brethren, the metaphysicians will tell us, that we are not in general to look up for support from the timidity of advancing years, and they will forbid us to be sanguine in promising ourselves the sanction of those who are past 70. I have, however, the pleasure to observe, that Dr. Hunter, of York, in a speech delivered before the Directors of the Dispensary in that city, recommends a general vaccine inoculation, with all the

ardor and enthusiasm of youth. Other veterans in medicine will, I doubt not, stand forward in the same cause; and should we live to so advanced a period of life, may we prove equally alive to the benefits likely to be derived from some other discovery equally beneficial to mankind! But the most formidable class of opponents which the new inoculation has to encounter, are those who calculate their future income by the quantum of expected disease; yet these we might soon make converts to the new doctrine, if we could convince them that the rapid increase of population would amply compensate for the apprehended defalcation of their accustomed profits. But the patrons of the new inoculation need to fear no opposition, if in steadily pursuing the practice they study Nature, and guarding themselves against the seduction of false theory, hold themselves ever ready publicly to acknowledge any errors into which they may have been led by inaccurate or limited observation. They ought to keep up a constant succession of inoculations, so that recent matter may be always in readiness; but if the Small-pox should break out in any family, all those who have not had the disease should be instantly inoculated with Cow-pox virus, even though labouring under other diseases; the parents being at the same time reminded, that the Cow-pox is no preservative against such diseases, nor even against Small-pox, provided the subject of inoculation has been exposed to its miasma. In such cases the inoculator should make several punctures, and the patient, if convenient, should be instantly removed to a situation where they may not be exposed to the contagion of Small-pox: Additional security may be obtained by making a fresh inoculation every day till marks of infection appear. Some of the best writers on the subject, speak of the difficulty of communicating the disease, and seem to think it a virus less active than that of Small-pox. My experience has led me to draw an opposite conclusion. My method is to introduce the lancet into the Cow-pox vesicle. In a few moments after withdrawing it, a small pellucid globule appears on the cuticle, which I scrape off by the edge of the lancet; I then turn the lancet, and scrape the cuticle still wet with the other edge; I then introduce the lancet between the cuticle and cutis of the left arm of the patient who is to be inoculated, holding the side of the lancet parallel to the arm, the arm hanging in its natural position, but the point of the lancet perpendicular to the horizon, that the virus may flow downwards into the minute wound, and its introduction I endeavour to facilitate by gently moving the lancet upwards and downwards. I sometimes turn the lancet and introduce it into the same punctures, which are generally visible, in children at least, whose cuticle is so thin, that

that it is difficult to introduce the lancet without some slight effusion of blood. These precautions are peculiarly necessary where the Small-pox has already made its appearance in the family. In two instances where the patients were inoculated with recent virus in the afternoon of the day on which the Small-pox broke out in another child in the family, no pustules appeared excepting those on the arm; but in Job Webster, two months old, inoculated in both arms with virus taken on a lancet and carried a quarter of a mile, pustules appeared on the 4th day on the lower limbs, at the same time that one of the punctures became elevated into a red pimple, which I saw on the 4th, but it was not till the 6th that I saw the pustules: the inoculated pustule was now become orbicular, with a slight depression in the middle. On the lower limbs and the lower part of the trunk we counted sixteen pustules. The largest, which was on the right knee, was orbicular, and depressed, exactly as that on the arm, but rather larger, and surrounded by an efflorescence of very minute papillæ, similar to what I have sometimes observed round pustules on the arms of Cow-pox patients. The child's mother, one of my female pupils, and Mr. Walker, surgeon, who is in the habit of inoculating with both Small-pox and Cow-pox, were of opinion with me, that it was a Cow-pox pustule, and I became for a time a convert to the opinion of Dr. Woodville, that these pustules were the consequence of the action of a variolated atmosphere. On the 7th, the pustule on the arm measured in diameter  $1\frac{1}{2}$  tenth of an inch, and was surrounded by a very slight redness; that on the knee was  $2\frac{1}{4}$  tenth of an inch, and was of a dirty brownish hue in the middle. There was a lenticular pustule on the left temple,  $1\frac{1}{4}$  tenth of an inch in diameter, and two or three on the lower part of the abdomen, which were of a whitish hue in the middle. The rest on the body resembled that on the knee, excepting two on the middle of the abdomen, which appeared like variolous pustules. The lower limbs and the inferior part of the trunk were of a redder hue than the rest of the body, similar to the appearance of the skin in scarlatina. On the eighth day, the pustule on the arm was increased to two-tenths of an inch, and the surrounding skin was more inflamed. The pustule on the knee was browner in the middle, and the surrounding minute pustules larger; and more pustules made their appearance on the upper part of the body. The point of a lancet was passed into the margin of the pustule on the knee, and into some of the surrounding pustules; but neither lymph nor pus exuded. The lancet was barely moistened, and being carried to the distance of about a hundred yards, was inserted into the arm of a child four years old. Another lancet was introduced

duced into the pustule on the arm, but neither lymph nor pus exuded. The moistened lancet was carried to the same distance, and inserted into the arm of another child,  $1\frac{1}{2}$  year old. On the ninth, the pustule on the arm was surrounded by an inflamed areola of about an inch in diameter; that on the knee was larger, as also its surrounding minute pustules, and more pustules had appeared on the upper part of the body, and one or two on the face. On the tenth, the pustule on the arm was larger, but the inflammation round it as the day before; those on the limbs were rather larger, and more had appeared on the face. On the eleventh, the pustule on the arm measured  $3\frac{1}{2}$  tenths of an inch, and was of a whitish ash colour, and the areola was become rather paler; those on the knee were covered with a yellow crust.

Elizabeth Titley, the child *inoculated from the pustule on the arm* of Job Webster, went through the Cow-pox in the usual way. I was informed that on the seventh day the punctures inflamed, and I examined the arm on the eleventh; the pustule measured  $3\frac{1}{2}$  tenths of an inch, and the areola 1 inch eight-tenths in diameter. On the twelfth, the greater part of the areola had nearly disappeared, but it had extended with an irregular outline towards the axilla. The pustule afforded pellucid lymph.

In Hannah Titley, the child *inoculated from the pustules on the knee* of Job Webster, I was informed the punctures became inflamed on the ninth, two days after her sister's. On the eleventh, when I first saw the child, the pustule on the arm measured  $2\frac{1}{4}$  tenths of an inch, was depressed in the middle, and was surrounded by an inflamed space half an inch diameter, of a deep red. Her mother observed, that she had been hot and not well for two or three days, and that she had eaten very little. In the evening a pustule appeared on her right arm. On the twelfth, the pustule on her right arm appeared elevated, with a slight depression at the top, and others had appeared on all parts of her body. She took little or no food, and her pulse was 120. On the thirteenth, the pustule from inoculation appeared irregular, with an angular margin, with several small ones round it, and more pustules had come out. On the sixteenth, the pustule being opened by a needle, a pellucid lymph exuded. The pustule and inflammation round it measured 1 inch 1-tenth in length. On the seventeenth, the pustule was spread wider and longer, with an irregular margin, exactly like that of inoculated Small-pox; and on opening it with a needle, the contents were a straw-coloured opaque fluid. The inflamed space surrounding it was very narrow in proportion. The pustules on the body were conical, rather obtuse at the end; some contained pus at the extremity, and others

others were covered with a yellowish-brown scab. On the eighteenth, the child was playing out of doors.

Hence it is evident, that the pustules on the body of Job W. were variolous, probably derived from the same source as those of the patient in whom the disease broke out four days before him, and that the pustules on his arm were pure Cow-pox, both diseases going on at the same time; the lancet inserted into the pustule on the arm producing genuine Cow-pox in Elizabeth Titley, and that infected by the pustules on the knee, Small-pox in Hannah Titley. But I am inclined to believe, that the Cow-pox inoculation modified the progress of the Small-pox, which instead of appearing on the face and bosom, broke out on the lower extremities, proceeding very gradually upwards.

I have seen the two diseases existing together in three other instances. Mary Wasse, of Astwith, 5 years old, after having just gone through the chicken-pox, was inoculated by her mother, a very intelligent woman, in both arms, with Cow-pox virus, taken by her husband on a lancet, two or three days before, from a patient inoculated by a cabinet-maker about three miles distant, on the 24th of July. On the 6th day, one of the punctures appeared inflamed, and still more so on the 7th, in the evening of which day she complained of not being well. On the 8th she had no appetite, could not walk, and was feverish in the afternoon; and on the 9th the Small-pox broke out in the face. During all this time the inoculated pustule proceeded regularly, and on the 11th appeared to be at the height. The mother, from whom I received the above account, which I wrote down on the spot, and who had inoculated one of her children some years before with Small-pox, described the inoculated pustules as being circular, lower in the middle than at the edge, and as appearing to contain a fluid of a bluish white. On the 14th day, the 6th day of the eruption of Small-pox, I first saw the patient. There was a degree of redness in the skin round the inoculated pustule, such as remains after Cow-pox, and the pustule now secreted some yellow pus at the margin, as Cow-pox pustules sometimes do. There were no Small-pox pustules within the limits of the faded areola. The Small-pox I was informed went through its usual course, and some weeks after I saw the child perfectly recovered. The Small-pox had prevailed in the village some time, and I doubt not, this child had received the infection previous to the insertion of the Cow-pox virus.

W. Drabbles of Inmansthorpe, a year and a half old, was inoculated by Mr. Walker, surgeon, of this town, with Cow-pox virus, on the 6th day preceding that on which the Small-pox broke out. On the 3d day of the Cow-pox inoculation,  
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the punctures appeared inflamed. I saw the child on the 8th day. They were true Cow-pox pustules, but several Small-pox pustules had made their appearance within the limits of the areola; and on the 12th day, the 8th of the Small-pox fever, the child died.

Another child of the same family was inoculated with Cow-pox virus, on the 4th day preceding that on which the Small-pox broke out, and the day before the commencement of the variolous fever. On the 3d day the punctures appeared inflamed, and on the 8th there were two Cow-pox pustules, with one of Small-pox, at the distance of half an inch from them. Mr. Walker informed me, that on the 12th day, the 11th of the Small-pox fever, the pustules looked all alike, the Cow-pox pustules not being surrounded by an areola. This patient recovered.

Hannah Drabbles, 6 years old, was inoculated with Cow-pox, on the 7th day preceding that on which the Small-pox broke out. On the 8th day, one of the punctures for the first time appeared slightly inflamed, and Mr. Walker informed me, that on the 12th, the 8th of the Small-pox fever, they all appeared exactly similar to the Small-pox pustules. This child also recovered.

The next caution I have to mention is, that all inoculators should strenuously inculcate the necessity of every patient being inspected at such periods of the disease, as may enable them to pronounce whether the patient is rendered secure from the action of Small-pox. At Ilkeston near Nottingham, two children were inoculated with Cow-pox virus. Eight weeks after they caught the Small-pox, and one of them died. Being in the neighbourhood, I extended my ride to inquire into the circumstances. Mr. Williams, the surgeon who inoculated them, carried me to the parents, from whom I learnt that the pustules rose in the course of a few days into elevated pustules, like those of distinct Small-pox, were never flat, were soon changed into a scab, and that the surrounding skin was not inflamed to more than half an inch from the base. I drew representations of convex and depressed pustules, as viewed in profile. The mother said they were like the convex, but never like the depressed. Hence it was evident, that the disease which the Cow-pox virus excited, was the crustaceous pustule described by Dr. Jenner,\* and which Dr. Woodville, in his excellent Observations on the Cow-pox, has proved to afford

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\* Continuation of Facts and Observations relating to the Variolæ Vaccinæ, 1800, p. 35.

afford no security against the Small-pox. The gratification I felt at having discovered the cause of the failure could only be equalled by the surprise I experienced, at finding the new inoculation in high reputation in the village. They were all inoculated with Cow-pox. I earnestly recommended a re-inoculation of all the cases which had not been regularly inspected, and whose appearances had not been distinctly recollected, lest the popular enthusiasm in favour of the new inoculation should be damped by future failures.

The discovery of the crustaceous Cow-pox, (or *vacciola leprosa*, as I propose to our Nosologists to have it styled, distinguishing the preservative against Small-pox by the appellation of *vacciola scatellata*;) will enable us to reconcile the contradictory accounts of the effects of the casual Cow-pox in securing the constitution against Small-pox, as related by Drs. Jenner and Pearson, and the cases published in opposition by Drs. Ingenhoufz and Beddoes. It is natural to suppose that, in some instances, the ulcers on the hands and arms assumed the crustaceous form; and the contradictory evidence afforded by tradition, probably prevented the earlier introduction of the practice of Cow-pox inoculation.

Whenever any patient is reported to have the Small-pox after inoculation with Cow-pox virus, the inoculator should take the earliest opportunity of inspecting the case. J. Burton, who had the Cow-pox in July, had the chicken-pox about a month ago. I am,

DEAR SIR,  
Your's, &c.

Chesterfield, Nov. 17, 1800.

JONATHAN STOKES.

*To the Editors of the Medical and Physical Journal.*

GENTLEMEN,

FROM the communications upon the Cow-pock, a subject intimately connected with the interests of humanity, and deservedly exciting the attention of the medical world, I think the Medical Journal has been of the greatest utility; and it was with the greatest pleasure that, in the last number of your Journal, I read the remarks of Sir Christopher Pegge of Oxford, and of Dr. Barry of Cork, upon the same subject. It appears from Sir C. Pegge's observations, that horses are liable, in their heels, to the same disease as affects the teats of  
cows,