

the great imperfections of the drainage, and probable impurity of the water-supply, Mr. Taylor argued that these conditions exercised no appreciable influence upon the spread and localisation of the epidemic. The disease prevailed equally among the portion of the population which was in good sanitary circumstances and among the portion which was in bad. Overcrowding alone seemed, he stated, to exercise an influence upon the localisation of the malady. The general diffusion of the disease among the population, according to Mr. Taylor, cast a doubt upon our Commissioner's inference, that a sudden rise of temperature on the 7th of July, followed by sudden explosion of the fever in the third week, might be accounted for by the effect of the great heat in exaggerating the insanitary state of the town. Mr. Taylor maintained that the principal agent in the diffusion of the disease was the communication of the sick with the well directly or indirectly, and suggested that a high range of temperature might intensify the infectiousness of the malady, either by increasing the exhalations from the body of the sick, or by lowering the vital powers of persons exposed to those exhalations. We must, however, leave the question to the judgment of the profession. It is one of great importance, and deserves the closest investigation. Mr. Taylor has done good service in putting on record a history of the Guildford epidemic, and we should be glad to receive further information from other localities as to the origin and mode of propagation of this disease.

Correspondence.

"Audi alteram partem."

VACCINATION DIRECT FROM THE HEIFER.

To the Editor of THE LANCET.

SIR,—It is more than probable that the efforts of Dr. Blanc, coupled with the notice they have obtained through THE LANCET, will direct attention in this country to the greatly superior facilities for vaccination which are afforded by "animal vaccination."

For a period of three years I have used lymph procured direct from the animal; and I have made no particular selection of animal, but have procured it whenever I could, from both sexes, and at all ages. I am not a public vaccinator, so that my vaccination statistics in that period would not be very large; but I have only seen one instance of failure during that time from the use of animal lymph.

I commenced with human lymph transmitted through the cow (during the time of the rinderpest), and found it so certain in its action, and so constant in its supply, as to convince me of its unmistakable advantages over all other means. I also have had two somewhat unique and remarkable instances of its protecting power. Two of my patients (during an epidemic of small-pox), who resided some distance apart, became infected with the malady; and, while they were suffering from small-pox of the "distinct" form, but thoroughly well marked, I vaccinated three other persons residing in the same houses—two in one, and one in the other.

The two small-pox patients were unprotected by vaccination, and the disease was in their case tolerably well defined. I vaccinated these three persons with lymph taken from a calf seven months old a few days previous. On the fourth day after vaccination, two of the three vaccinated individuals exhibited symptoms of small-pox, being one in each house—muscular weariness, excitability, slight pyrexia, vomiting, and the diagnostic spine-ache. On the sixth day after vaccination the body was covered with small red maculæ, and on the seventh day they had got to the stage of "pimple," and were evident on palpation, feeling like minute eminences, distinct from each other, and accompanied with the redness of erythema. The temperature, taken by one of Negretti and Zambra's thermometers, was 102.4° Fahr. The cases were, of course, unmistakably small-pox, true and defined enough, but modified by vaccinia.

The development of variola in these cases did not seem to exert the slightest check upon the maturation of the vac-

cine vesicles, four of which were well defined, two on each arm, as large as a farthing, and with an increased superficies of areolæ. The small-pox never advanced beyond the stage of pimple, nor did the premonitory symptoms abate with the appearance of the eruption.

On the eighth day of vaccination, which was also the third day of the appearance of small-pox in the cuticle, the temperature was 102.1° Fahr., and on the tenth day after vaccination (fifth day after small-pox eruption), when the vesicles were in their most active stage, the temperature rose to 103.2° Fahr. Both cases were in every essential particular virtually the same, so I need not trouble your readers with fuller notes. I was pleased to witness the phenomena of two such specific diseases existing at one and the same time, and in the same individuals. There can be no doubt, I think, that the vaccinia materially modified the variola, and though each case presented varioloid constitutional symptoms, yet the effects upon the skin never reached beyond the stage of "pimple." The temperature was kept slightly below the ordinary range of small-pox, though it kept up till the vaccinia had acted with its fullest effect.

I conclude, rightly or wrongly, that these cases showed the great protecting power of vaccine lymph obtained direct from the animal; the attack of small-pox, which in these cases seemed to "succumb" to the power of "vaccinia" was of the ordinary "distinct" type, which in the two unvaccinated subjects proceeded through its ordinary courses to its termination, leaving behind it marks of its destructiveness. The other vaccinated person obtained complete protection, although he continued to reside, eat, drink, and sleep in the midst of small-pox, using of course such prophylactic measures as would naturally suggest themselves, but did not include change of residence, which was impracticable.

I believe both the subjects of the modified variola had, at the time of vaccination, small-pox in its state of incubation, as they had been living in its presence more than a week previously.

The above facts quite removed any misgivings I might have had relative to the proportionate value of the two modes of vaccination as a protecting power. I find persons offer no objections to the animal lymph, and it affords one a ready answer to their fears about "bad matter," scrofulous children, and the like.

I may add here, for what it may be worth, that I am not of those who fear any danger of transmitting other diseases by the use of human lymph,—though proper selection should be made, as an exercise of ordinary judgment, in the discharge of a public trust. Animal vaccination affords facilities for an abundant supply; and I can bear testimony to the greater certainty there is of producing good vesicles. I have found animal lymph produce very much more constitutional disturbance; the febrile symptoms are undoubtedly increased,—sometimes with simple vaccinia the temperature will be 101°, and I look upon a rise of temperature as a very essential pathological advent. The more active the febrile symptoms, *ceteris paribus*, the better the vesicle produced, which I look upon as the only protective indication. The localised erythema, the "coldness" of the vesicle, contiguous tumefaction, and the duration of the disease, are all increased with lymph procured from the animal. The virus seems to so disorganise the structure of the rete mucosum, that the cicatrices always present the distinctive features of successful vaccination—viz., distinct, foveated, indented cicatrices, with distinct radiation of its edges, the only indelible and living testimony of its power.

I believe, also, the present fashion of selecting what is called a good subject, and abstracting as much lymph as can possibly be secured, in order to keep up a supply, is radically and morally wrong, and defeats in that particular case its own object. It is a direct interference with the pathological conditions which have been imposed for a protective purpose, and can only seek its justification on the plea of circumstance.

I am, Sir, your obedient servant,
Belper, May 27th, 1869. E. GAYLOR, L.R.C.P. Edin., &c.

To the Editor of THE LANCET.

SIR,—Be so kind as to allow me some space in your valuable journal (the columns of which you have so liber-

ally opened for a discussion on animal vaccination) to answer Dr. Seaton's letter, inserted in a late number (May 29th).

Dr. Seaton acknowledges that he has no personal experience of this new mode of vaccination. His acquaintance with the subject is only by hearsay. He states that "some one told him that in Paris it did not answer the purpose," and that he would make inquiries into the matter.

I beg of Dr. Seaton the favour of not making any such inquiries. Let him rely on his own investigations, and only believe what he can himself verify. Dr. Blanc's establishment, recently founded in London, offers an excellent opportunity. Let Dr. Seaton there vaccinate some children with his own hand, from heifer to arm; and let him follow up the phases of the eruption which will occur. His standing in the profession, and his acknowledged merit, are to me a complete guarantee that he will do so with the greatest impartiality. I, for one, am certain that the operations will succeed; that Dr. Seaton will become quite partial to this novel practice; and that, in a few weeks, animal vaccination will have in him a staunch supporter.

Dr. Seaton says that, in England, vaccination is most satisfactorily organised; and that excellent vaccine matter is abundant. Well and good; but what becomes of the *renewal* of the matter, the necessity of which has been acknowledged for the last thirty years by the highest authorities, if we thus rest satisfied with the existing state of things? For seventy years vaccine matter has been travelling from one organism to another. Is it not high time to give it new life by obtaining it at its original source? This is the argument which animal vaccination fearlessly brings against its adversaries.

By this kind of vaccination the produce of such spontaneous cow-pox as may be discovered can be collected and propagated upon its own soil—viz., upon animals. From thence it can be conveyed to many human beings, without fear of losing the primary germ.

If you earnestly wish it, you can soon find a case of spontaneous cow-pox. Inoculate the produce to a single heifer; and with the vesicles of the latter, vaccinate the children of your national vaccine establishment. What will be the result? In less than a fortnight you will thus *renew* the vaccine matter of Great Britain and her colonies. This is one of the boons which animal vaccination offers to the population of a great country, which boon may be bestowed in a comparatively short time.

It might perhaps be objected that this matter is inferior to that obtained from arm to arm. But a moment's reflection will upset such a preposterous supposition; which is, in fact, quite disproved by daily practice.

I must be allowed to state that the authority of the most eminent vaccinators of the old school is not of much weight, when the relative advantages of human and animal vaccination are carefully considered. Though the latter is of very recent date, it has already acquired considerable influence. Animal vaccination is becoming more and more popular, and it has the singular privilege of gaining to its ranks, in a very short time, such of its adversaries as recognise the strength of actual facts.

Dr. Seaton is too sincere to shut his eyes to the light, and I fully rely on his speedy conversion.

I will not trespass on your space by examining all the questions connected with vaccination, though they are just now being so warmly discussed by men of great eminence; I will confine myself to quoting the deductions concluding my first paper on animal vaccination, which I presented to the Academy of Medicine of Belgium as far back as 1865. Four years' persevering practice of this vaccination has not altered my opinions.

These deductions are as follow:—

1st. The vaccine matter obtained by successive transmissions of the cow-pox from heifer to heifer, can be propagated to human beings, and protects them from small-pox.

2nd. Animal vaccination possesses the exclusive privilege of dispelling the fears of those who, rightly or wrongly, believe that vaccine matter can transmit to the vaccinated individual the constitutional diseases with which the vacciner may be affected.

3rd. The inoculation from heifer to heifer yields an inexhaustible supply of vaccine matter, which may, almost instantly, satisfy the most extensive demands.

4th. A central vaccine establishment, founded by the State, would allow of the regeneration of human vaccine matter by making animal vaccine fluid penetrate into the smallest hamlet of the kingdom. Such an establishment would, besides, be able to supply any infant with a produce the acknowledged innocuity of which would strengthen the hands of the authorities, when they lay a penalty upon the non-vaccination of children.

The wish expressed in the fourth deduction has been complied with. The Belgian Government has founded a National Vaccine Institute, the object of which is to furnish all the medical men of the kingdom with vaccine matter taken from heifers, or from children recently vaccinated from heifer to arm. This establishment is in a very prosperous condition; the profession and families are highly pleased with it, and no one now thinks of questioning its usefulness.

I am, Sir, your obedient servant,

— WARLOMONT, M.D.,

May 30th, 1869.

Director of the National Vaccination Institute of Brussels.

THE CARBOLISED CATGUT LIGATURE.

To the Editor of THE LANCET.

SIR,—The failure of the catgut ligature in Professor Spence's case of ligature of the common carotid artery may have given rise to doubt in the minds of some members of the profession as to the expediency of using the antiseptic catgut ligature in the manner recommended by Professor Lister for the deligation of large arterial trunks. As I am specially concerned in Mr. Spence's case, from his having used a ligature prepared by me, I hope you will allow me space for a few remarks, which may throw some light on so important a subject.

I wish, in the first place, to make some remarks with regard to the ligature itself; and, secondly, to notice the means used to prevent putrefactive suppuration in the wound afterwards.

Since Mr. Lister discovered the antiseptic catgut ligature, it has been constantly used in Mr. Syme's wards in amputations, &c., though, as yet, there has been no opportunity of using it for vessels in their continuity. On the 12th of May, the day of Mr. Spence's operation, one of his dressers came to me in a great hurry a few minutes before the operation was to be performed, to ask if we had any "carbolic ligatures," either silk or catgut. I gave him some of both kinds, that had been prepared for our own use three days previously, but which had by that time got perfectly dry, and had probably parted with most of the carbolic acid they had imbibed. I was not aware, I confess, at that time, of the importance of the directions which Professor Lister has given, that the gut should be kept steeping for a protracted period in the antiseptic solution. Though Mr. Spence describes very carefully the way in which he made the knots in tying the vessel, it is quite possible, considering the state of the catgut at the time of the operation, that the first knot yielded while the second was being tied; and the unusual precautions which he adopted to guard against this occurrence imply that he felt apprehensive of it. This view is borne out by what was seen by myself and others in the dissected preparation, where, after the knots had been unfortunately completely cut away, more catgut was visible on the vessel than could possibly have formed the constricting ring if the first knot had retained its hold.

As to the precautions taken to prevent subsequent putrefaction in the wound, I can only say that, whatever the sponges were washed with before the operation, they were frequently wrung out of water without carbolic acid during its performance; that no means were taken to render the instruments, or the fingers of the operator or his assistants, innocuous; and that the dressing of the wound consisted of a single strip of lint moistened in a solution of oil and carbolic acid (one part in twenty), not large enough to overlap the wound half an inch in any direction. These are the precautions which Professor Spence took "to give the method a fair trial;" and they have only to be compared with the directions of Professor Lister, or the way in which