REFERENCES.

¹ BRITISH MEDICAL JOURNAL, November 14th, 1896. ² *Deut. Chir.* Stuttgart, 1898. ³ *Traité des Maladies du Foie et du Pancréas*, 1898. ⁴ *American Journal of the Medical Sciences*, January, 1901, p. 27. ⁵ BRITISH MEDICAL JOURNAL, December 22nd, 1900. ⁶ *Contributions to the Science of Medicine*, Johns Hopkins Press, Baltimore, 1900. ⁷ *Boston City Hospital Report* for December, 1900. ⁸ *Loc. cit.*, p. 743. ⁹ *Centraibl. f. Chir.*, 1894, Bd. xxii, p. 297. ¹⁰ *Loc. cit.*

NOTES ON A MILD TYPE OF SMALL-POX (VARIOLA AMBULANS?)

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THE Dominion of Canada is now being threatened with, and in some places invaded by, small-pox from her neighbour, the United States. This in itself would hardly call for remark. Communication of infectious disease from one country to another is a very ordinary form of international courtesy. In the present instance, however, the outbreak of small-pox presents some unusual features. It began on this Continent several years ago in the United States, the Southern States especially. It has gradually spread northwards. Its origin is difficult to establish, either as to time or place, with any historical accuracy. It has been attributed by many to returning soldiers from Cuba or from the Philippines. But it is certain that it was prevalent in the United States before the beginning of the war between that country and Spain. The difficulty in tracing back its history is due in great part to the unusual mildness of the type. Many cases of it were diagnosed as chicken-pox, many as German measles. Many more were not reported to, or seen by, any medical man at all.

How extensive is the spread of the disease in the United States may be judged by the fact that the Public Health Reports published officially by the Government at Washington give a total of 11,964 cases as reported present in that country during the period of three months between December 28th, 1900, and March 29th, 1901.

How mild the type is may be judged by the fact that in these 11,964 cases, only 157 fatal cases are reported to have occurred. This would only be 1.31 per cent. Further, the number 11,964 may, for reasons given above, be taken as very much under the actual number of cases that have occurred, whilst the fatal cases were doubtless all reported. The proportion of deaths to cases was, therefore, in all probability considerably less than this 1.31 per cent.

It has been suggested that the mildness of the type is due to some meteorological condition. Against this theory is the fact that, during the period since its commencement, we have had at least one intercurrent outbreak of a very virulent form of the disease introduced from the Orient. It was quickly limited and stamped out. But in the score or so of cases that occurred, the mortality ran up to over 50 per cent.

The extreme mildness of the present disease has defied from time to time our efforts to prevent its entrance, and has rendered it unusually difficult to handle, control, and stamp out.

Severe cases of small-pox are, as a rule, too ill to leave their bed, and are eager to obtain medical attendance. This leads to notification, isolation, disinfection, and the vaccination of those who have been exposed to the infection. And so we have a reasonable expectation of limiting the outbreak.

But this type offers more difficulty to the Public Health authorities. There is as a rule but little initial fever, a very sparse discrete eruption, and no secondary fever. The patient is not usually confined to bed, or even to the house, and no medical man is called in. In the country parts it is very generally regarded and spoken of as a chicken-pox or German measles. In many of the lumber camps it goes by the name "cedar itch." Those affected by it go to their work or their business, travel in public conveyances, go from one part of the country to another, not only in the period of incubation, but often also in the early period of the eruption, and thus spread the disease generously and widely. We have had outbreaks of it in several of our provinces and territories from the Yukon to Nova Scotia. It is present in eleven out of the fourteen States of the United States which, from Alaska to Maine inclusive, border on Canada, with an aggre-

gation in them alone of 4,433 reported existed cases. It is present amongst us in several localities at this time.

There is therefore grave reason to fear its continuance and spread. Vaccination is not compulsory in Canada as a legislative enactment, although the municipalities have power to enforce it under certain conditions.

That this disease is small-pox is questioned by many. The following facts, however, in connection with it give a reasonable assurance that it is small-pox and not chicken-pox. It attacks adults quite as often as, or indeed more often than, children. It attacks the unvaccinated or those who have not been vaccinated for some time. It does not attack those who have been recently successfully vaccinated. Every here and there a susceptible person develops a severe confluent or even fatal case.

The threatening and even the presence of this mild form of small-pox interrupts and interferes more or less with trade and commerce, travel and traffic. It is not, however, an un-mixed evil. Many may pass through its lenient hands without much illness, pitting, or mortality. Many, very many more will be vaccinated for fear of it.

Between the two classes a large proportion of the people of Canada should be rendered immune to small-pox. And so for some years the Dominion may be safe from any severe epidemic of this disease.

NOTE ON THE PROBABLE RELATIONSHIP OF VACCINIA TO THE INOCULATED FORM OF SMALL-POX IN MAN.

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THE difficulty experienced by myself and numerous other investigators in attempts to transmit human small-pox to bovines, whether cows or calves, has not infrequently been cited as a reason for regarding with distrust the theory first expounded by Jenner, that cow-pox, whether carried through the horse as intermediary host or not, was originally derived from small-pox in the human being.

But a great deal, at any rate, of the small-pox which was prevalent during the time that Jenner lived and wrote was of that comparatively mild variety which, under the name of inoculated small-pox, was intentionally produced in healthy subjects, with the object of thereby conferring protection against subsequent attack by the disease in virulent form. So mild, indeed, at times were the results of inoculations in the hands of such operators as Adams and the brothers Sutton, that no obvious effect was observed, with the exception of the local vesicle arising at the site of insertion of the small-pox virus, and the patients suffered but little inconvenience. Many of them doubtless therefore would be capable of following their ordinary avocations, which would hardly be possible in the case of persons contracting small-pox in the ordinary way, among whom the disease was apt to exhibit such virulence as to account for the death of perhaps 50 per cent. of those attacked.

Not only were the effects following on inoculation comparatively mild, but the disease in this form was intentionally brought into many country districts which otherwise might not have become invaded. In the light of these facts, it has for some time past been borne in upon my mind more and more convincingly that it was not improbably from the inoculated form of small-pox rather than the ordinary variety that much of the cow-pox, in the prevaccination era, was derived. It is not difficult to understand how that the cracks so often found on the udders of a cow might become infected by a milker with fingers contaminated by contact with the inoculation sore upon his arm.

I determined, therefore, if possible to put the matter to the test, and learning that in Nubia and in certain parts of India the inoculation of small-pox is still carried out, I made numerous endeavours to obtain the necessary material, but unfortunately without success.

In default of inoculated small-pox in the human subject, I made trial of the monkey, which my previous work had shown to be readily susceptible to the disease, the various phases of