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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

which in this animal closely resemble those observed in man. The experiments were commenced in the spring of 1898, and the small-pox material has been obtained from cases coming under observation during outbreaks of this disease at Middlesbrough, London, and Glasgow. In each of the three separate series of experiments the human small-pox lymph or pulp was first inoculated directly on calves, and in every instance, so far as could be observed, with altogether negative results. But with monkeys success was as invariably obtained, and when, after one or more passages through this animal, the contents of the local inoculation vesicles were employed for insertion on the calf, an effect was now produced which, after one or more removes in that animal, was indistinguishable from typical vaccinia. Moreover, from the contents of vesicles raised in this manner on the calf, a considerable number of children have, in turn, been vaccinated, and afterwards kept under observation for about a couple of months. Every such vaccination "took" normally, and in no case was any bad result subsequently observed by myself or the parents of the children, no "generalisation" of the eruption occurring in any instance. I obtained a series of photographs of monkeys, calves, and children, which I hope, together with full details of the experiments, to have the opportunity of publishing shortly.

The point of interest in these experiments is found in the fact that whereas the human small-pox material employed could not be got to "take" directly on the calf, nevertheless results typical of ordinary vaccinia were obtained when the strain of lymph, after inoculation with it of a series of monkeys, was again transferred from the inoculation vesicles on this animal to the epidermis of the calf.

NOTE ON A CASE OF ENORMOUS DILATATION OF THE FIRST PART OF THE DUODENUM,

CAUSING GREAT DILATATION AND PROPTOSIS OF THE STOMACH:
GASTRO-JEJUNOSTOMY: NECROPSY.

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P. W., male, aged 31, was admitted to the General Hospital, March 15th, 1900, complaining of pain and sickness after taking food of about four years' duration, though he had suffered from indigestion since boyhood.

I first saw the patient in consultation with his medical adviser about three and a-half years before his admission to hospital, when his symptoms were the same as those mentioned above, and looking to the dilatation of the stomach with much loss of weight, I then advised an exploratory operation with gastro-jejunostomy if it seemed advisable. The patient was admitted to a hospital soon after this, and the abdomen was opened through the right rectus near the semilunar line, but the operation was merely exploratory, and nothing further was done, and I am unable to obtain any report of the condition found at that time. No benefit followed exploration—indeed, the patient thought he was distinctly worse, and took morphine to relieve his pain, subsequently developing the morphine habit badly.

During the time intervening between this operation and his admission to hospital the patient was extremely careful in his diet, but with all his care he suffered much pain with frequent vomiting, and often brought back food he had taken twenty-four or thirty-six hours previously, whilst eructations of offensive gases caused the patient a good deal of annoyance, and on two occasions these eructations ignited when he was lighting a cigarette. The bowels during this time were very constipated.

Condition on Admission.—The patient was painfully thin; he suffered from epigastric pain every few hours, followed by vomiting, which relieved him, and he was constantly craving for morphine; there was a scar near the right semilunar line, the result of the previous operation, and tenderness existed in this region. It appeared as though an ill-defined thickening could be palpated here, marked by the shading in the diagram, but the muscular rigidity was too great to allow of any positive expression of opinion on this point. When the stomach was distended by an effervescent powder it appeared to be dilated and displaced downwards, its lower margin being nearer the pubes than the umbilicus, as shown in the diagram. The dilatation and displacement of the stomach, and the vomiting of large quantities of material retained in the stomach for twenty-four hours or more pointed to a mechanical obstacle to the

emptying of the stomach; the long history pointed decidedly to this obstacle being of an innocent nature, and the starved condition of the patient clearly showed that if operation were to be attempted it must be without delay.

Operation.—On March 19th the abdomen was opened in the middle line above the umbilicus, and the stomach examined. Marked dilatation was verified, but there was no definite obstacle such as growth or cicatrix at the pylorus to explain the dilatation, nor was there any hour-glass constriction of the body of the organ. Dense adhesions were found, however, uniting the pylorus and the parts beyond to the anterior parietal peritoneum to the liver, etc., and the patient's feeble condition forbade any attempt at unravelling these because of the time it would have occupied. Gastro-jejunostomy was then performed, the jejunum, about 14 inches from its commencement, being united to the anterior wall of the stomach in front of the colon by Halsted's method, reinforced by a continuous suture through all the coats at the edge of the anastomotic opening, partly to stop bleeding, partly for extra security.

Diagram outline of stomach when artificially distended. The shading marks thickening felt on palpation and lay over dense adhesions.

After-History.—The operation was fairly well borne, and progress for the first four days was satisfactory, though vomiting occurred from time to time. On the fifth day the patient became suddenly worse, with diffuse pain in the abdomen, which became generally tender, whilst vomiting was persistent, and it was evident that widespread peritonitis existed. Death occurred on the evening of the fifth day.

Necropsy.

There was early suppurative peritonitis, with a thin, brown, slightly bile-stained fluid in the belly, which was escaping from a tear in the extremely dilated duodenum, the walls of which were in places as thin as tissue paper. The anastomosis was firmly united, and without any suspicion of leaking, and on opening the stomach two fingers could be introduced through the new orifice into the jejunum.

The parts concerned skin, liver, spleen, stomach, etc., were removed *en masse*, and showed the following conditions: Somewhat to the right of the present incision was a linear cicatrix in the skin several inches in length, beneath which were dense adhesions, uniting the anterior aspect of the pylorus to the under surface of the liver and the anterior abdominal walls, whilst other adhesions tied the anterior surface of the liver to the abdominal wall.

The walls of the stomach were thin, the muscles considerably atrophied with a certain amount of fibrous degeneration, whilst the mucous membrane was smooth and its rugæ well marked and apparently healthy. On pushing the finger through the pylorus it presented itself into the base of a large cavity which represented the hugely dilated first part of the duodenum, in size equal to about half-a-pint cavity. This was bounded above by the under surface of the liver, below by the hepatic flexure of the colon, in front by the anterior abdominal wall; it was limited to the left by the dense adhesions beneath the linear scar already alluded to, and to the right by the adhesions between the hepatic flexure and the anterior abdominal wall. In the posterior wall of this cavity remains of a first part of the duodenum could be traced, and this cavity communicated with the stomach on the one hand by the pyloric opening, and with the second part of the duodenum on the other by a second opening, the two orifices being distant from each other only by $\frac{1}{2}$ inch.

The lining membrane of this cavity in the neighbourhood of the pylorus was smooth, and consisted of mucous membrane, and muscular tissue could also be distinguished here. The anterior, inferior and right lateral aspects of the sac were rough and ragged, the mucous and muscular coats