Cadman³ in Winnipeg used a vaccine of 300 million streptococci, 200 million influenza bacilli, and 150 million pneumococci. Out of 7,600 soldiers, 4,842 were inoculated, but only about half received two doses. Of cases admitted to hospital, 6.05 per cent. of those previously inoculated developed pneumonia, against 17.1 in the uninoculated. The deaths in the uninoculated were 7.1 per cent., in the inoculated 1.7 per cent., but all these had only received one dose of vaccine; there were no deaths among those who had two injections. In the civil population 24,184 received two injections; the incidence of influenza was 9.8 per cent., pneumonia 0.57 per cent., and deaths 0.16 per cent., as compared with 21,285 uninoculated, among whom the incidence of influenza was 24.8 per cent., pneumonia 2.2 per cent., and deaths 0.66 per cent.

In England there has been an unnecessary timidity in the use of large doses for prophylaxis, and the original formula recommended by the War Office Conference—namely, 60 million *B. influenzae*, 80 million streptococci, and 200 million pneumococci in 1 c.cm.—of which it was recommended that 0.5 c.cm. should be given as a first dose and 1 c.cm. after ten days, met with considerable criticism. Nevertheless the results, just published by Sir William Leishman,⁴ obtained in the Home Commands showed that this vaccine gave some measure of protection. Of 15,624 inoculated the incidence of influenza was 14.1 per 1,000, of pulmonary complications 1.6 per 1,000, and deaths 0.12 per 1,000, as compared with 43,520 uninoculated giving an incidence of 47.3, 13.3, and 2.25 respectively. About half the inoculated received only one dose of the vaccine.

The vaccine now recommended and adopted by the Ministry of Health contains 400 million *B. influenzae*, 80 million streptococci, and 200 million pneumococci. Thus, whilst the dose of pneumococci and streptococci remains the same, the dose of influenza bacilli has been increased from 60 to 400 million. It would be interesting to have the reasons why this formula was adopted. The streptococcus is probably the most dangerous of the three organisms, and in view of Rosenow's experience with doses of 1,000 million of haemolytic streptococci, it seems advisable that as large a dose of this organism should be given as of the others. The experience of Lister, Cole, and others with pneumococcal vaccine shows that large doses can be given without undue reactions. With the increase of the dose of influenza bacilli to 400 million the point is made "that the strains employed should not have been so cultivated or so recently derived from cases as to be unduly toxic in their action." Some of the advantage of the larger dose is therefore lost by using less active cultures. The dose contrasts with that used in San Francisco, namely, 5,000 million influenza bacilli, with such excellent results.

The St. Mary's Hospital formula—*B. influenzae* 500 million, pneumococcus (mixed types) 1,000 million, and streptococcus 100 million, $\frac{1}{2}$ c.cm. to be followed by 1 c.cm. in a week—gives a larger dose and has been used on a large scale, but no results of its use have been published.

Of other vaccines that have been advocated Rosenow's vaccine suspended in oil instead of normal saline may, in the light of Fennel and Cecil and Vaughan's studies of the pneumococcal lipo-vaccine, give a greater degree of protection. Detoxicated vaccines are being strongly advertised. The evidence in their favour is not convincing. My own experience of them leads me to regard them as comparatively inert, and I doubt if any reliance should be placed upon them for purposes of prophylaxis.

There is evidence of a considerable degree of cross-protection from vaccines. In connexion with the severe outbreaks of camp septicaemia and bronchopneumonia in America,⁵ it was found that inoculation with a pneumococcal vaccine gave some protection against the streptococci responsible for the outbreaks, the incidence of streptococcus pneumonia being nearly ten times as great among the unvaccinated as in those injected with the pneumococcal vaccine. It must also be within the experience of many that during the epidemics of last winter, patients who were undergoing vaccine treatment for other complaints were comparatively immune to influenza. Also injection of the triple influenza vaccine often has a beneficial effect in patients suffering from chronic infections.

In the circular accompanying the vaccine issued by the Ministry of Health the inoculation of children under

3 years of age is not advised. It is difficult to understand the reason of this. Young children show no special resistance to influenza, and their chance of recovery is less than in older patients. Children respond to vaccines very well, and I have had no hesitation in giving suitably reduced prophylactic doses to children under 3 years of age.

The records here given show that no medical man need hesitate to advise prophylactic injections to his patients. In most instances the vaccine of the Ministry of Health will doubtless be used, but there is evidence that much larger doses can be safely used. Indeed, it seems advisable that persons particularly exposed to infection should reach larger doses, and 0.75 c.cm. and 1.5 c.cm. of the Ministry's vaccine or a vaccine of a stronger formula could be chosen. It is to be hoped that in every case careful statistics will be kept, and that where the dose varies from that of the standard vaccine a note of this will be made.

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SOME UNUSUAL FORMS OF DYSENTERY.

BY

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THE term dysentery is more or less indiscriminately applied to any condition producing blood and mucus in the stools, or even to diarrhoea alone.

For a proper classification the cause of the condition must be determined, and at the present day we talk of protozoal dysenteries, helminthic dysenteries, bacterial dysenteries, pseudo-dysenteries, and so on. As a general rule, when the term dysentery is used, unless some qualifying adjective is attached to it, either a case of amoebic or bacillary dysentery is indicated—namely, dysentery due to the *Entamoeba histolytica* or to the bacillus of Shiga or Flexner. We are apt to rest at this and consider the matter settled, but so many other conditions, many of them very common, may produce an almost similar clinical picture to these real dysenteries that a careful examination must always be made to exclude them before definitely settling our diagnosis.

A few specific instances culled from a large experience of the treatment of dysentery in London during the war will explain what I mean.

1. SYPHILIS RESEMBLING DYSENTERY (SYPHILITIC DYSENTERY).

Syphilitic ulceration of the rectum is not uncommon; ultimately it leads to stricture of the bowel and other troubles. The patient passes bloody stools with mucus, and is at once branded as "dysentery" and probably dosed with emetine or given antidyenteric serum. I have the records of such a case by me now:

The patient started his trouble in France, in 1916, with diarrhoea. Though the result of the examination of the stools was negative as to protozoa, the diagnosis of dysentery was made and he was given emetine. He was no better, but returned to his work. He soon broke down again and spent the next years going in and out of various hospitals and having more emetine, though again no protozoa were found in his stools. At one of these hospitals a shadow was seen in the rectum on x-ray examination. Finally he came under my care in 1919. A sigmoidoscopic examination made by Sir James Cantlie then revealed ulceration with a stricture just below the sigmoid flexure; the opinion was that this was not malignant but syphilitic. There was an old history of syphilis. The Wassermann reaction was negative. A course of novarsenobillon injections was then given and everything cleared up satisfactorily, the blood and mucus disappearing and the stools becoming normal in consistence and appearance. After some time he relapsed and a second series of injections was given. The condition again improved, but not so much as the first time. He is now on mercury and iodide. During his stay in hospital no protozoa were ever found in his stools.

2. MALIGNANT DISEASE.

Mr. Dobell has told me of a case, very similar to the one described above, in which the patient was treated for dysentery and dosed heavily with emetine for quite a long

time. Finally it was discovered that he had a large fungating malignant growth in the rectum. The moral of such a case is that the rectum should always be examined in cases of dysentery and also if the patient has piles, a source of mistake with the uninitiated. Three times recently cases have been sent to me as dysentery because they had blood in the stools; in each instance I found that they had not got dysentery, the blood being derived from obvious piles.

3. TUBERCLE.

An Indian patient was sent into hospital with the diagnosis of dysentery. He was extremely emaciated and was passing diarrhoeic stools with sloughs, blood, and mucus. No protozoa were found nor dysentery bacilli isolated. An examination of the lungs revealed evidence of consolidation at the right apex and below. A specimen of the stool was then examined for tubercle bacilli and a positive result was at once obtained. The patient died and the autopsy revealed advanced tuberculosis of the lungs, with extensive tuberculous ulceration in the small and large bowel. The value of proper stool examinations is well seen in this case.

4. SCHISTOSOMIASIS DYSENTERY.

This common helminthic dysentery should be easily diagnosed by the finding of the characteristic ova during the routine examination of the stools. Nevertheless cases have been sent to me which had been diagnosed as dysentery and treated by emetine injections, but after all turned out to be schistosomiasis infection only. This is a bad mistake, because emetine can do such cases no good, whereas intravenous injections of tartar emetic will cure them.

5. PARAGONIMUS DYSENTERY.

The *Paragonimus westermani*, as regards its habitat in man, is not necessarily limited to the lungs. It has been recorded also in the abdomen and the brain. When found in the walls of the intestine the mucosa may become ulcerated, and then there will be diarrhoea with blood and mucus in the stools. I recently had a case of this nature. The man—a Japanese—had some obscure abdominal trouble with a tendency to looseness of the bowels, but no blood and mucus. Nothing could be found to account for this with the exception of scanty numbers of paragonimus ova in the faeces. Thymol was tried, but no adult worms appeared and the eggs persisted.

6. HETEROPHYES DYSENTERY.

The presence of large numbers of the *Heterophyes heterophyes*, a minute fluke, in the small intestine may give rise to signs and symptoms of enteritis. The following are the notes of such a case:

A Japanese was admitted into the Albert Dock Hospital under my care supposed to be suffering from dysentery. The stools resembled the pea-soup evacuations of typhoid, but the patient looked quite well and the temperature was not raised. There was mucus in the stools, and on one occasion some traces of blood. On examination of the faeces no amoebae or cysts were found, but quite a large number of ova of *Heterophyes heterophyes*. The question whether the flukes were causing the symptoms then arose. To settle this I administered an anthelmintic (eucalyptus, castor oil, and chloroform mixture), after the usual starvation. The result was excellent, over 500 adult flukes coming away. The symptoms after this all subsided and the stools became quite normal. In a week the patient left hospital cured.

7. ANKYLOSTOMIASIS.

Occasionally diarrhoea with blood is seen in ankylostomiasis. Last year a patient was admitted with the diagnosis of dysentery, because there was blood in the stools. He passed a liquid stool with blood in it; microscopic examination gave the diagnosis, many ankylostoma ova being present. Under suitable treatment, leading to expulsion of the worms, all the symptoms disappeared. In this case there was also considerable epigastric pain, which had puzzled several people, before the true nature of the disease was discovered.

8. BALANTIDIAL DYSENTERY.

Balantidium coli is also a cause of dysentery; the symptoms, indeed, resemble very closely those seen in amoebic dysentery. The diagnosis is made by finding the characteristic ciliates in the faeces. No instance of this

disease was seen in my series of cases, but I have heard of it from other observers. It is not uncommon in the Philippine Islands.

9. PSEUDO-DYSENTERIES.

This name has been applied to cases which do not fall under any of the headings described above. Foreign bodies impacted in the rectum above the anus may cause ulceration and discharge and be diagnosed as dysentery, especially if the patient has been abroad.

I once saw a patient with a rectal discharge of a purulent nature, and on making a digital examination found what appeared to be a growth just inside the sphincter. Next day he passed the tumour, a large piece of bone, and all symptoms and discharge disappeared. He did not remember swallowing it.

Such examples show that it is most necessary to exercise care in diagnosing cases presenting symptoms of dysentery. Careful and accurate examination of the stools comes first, of course, and after that local rectal examination, either with the finger or the sigmoidoscope.

ANKYLOSIS OF THE MANDIBLE AND ITS OPERATIVE TREATMENT.*

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THE operations hitherto described for this condition fall broadly into two groups, according as the bone resected is from the region of the condyle or from the horizontal ramus. Operations in the first group fail to give relief when the cause of fixation is wholly or in part anterior to the condyle. Those in the second group, in bilateral cases, leave the jaw so weak as to be practically useless for mastication. In the recent third edition of Brown's *Surgery of Oral Diseases and Malformations* it is recommended that, save in rare cases of urgent necessity, such cases should be left undisturbed, rather than that a bilateral Esmarch operation should be performed.

The present paper deals with the operative treatment of five consecutive cases of ankylosed mandible. In each case, irrespective of the original cause, it was found that a factor in the fixation was the formation of fibrous or bony adhesions between the anterior border of the coronoid and the pterygoid aspect of the maxilla. The operation described permits of the complete resection of the whole of the coronoid. In one case this structure was removed on both sides, together with the condylar neck region of either side also. In no case was there any involvement of the facial nerve, and in each case the patient was left with a gape of at least 2½ cm. and a very satisfactory power of mastication.

Four of the cases were traumatic, all in the malar region and accompanied by fracture of the zygoma. One was infective in origin, and followed a bilateral suppurative arthritis of the temporo-mandibular joints in infancy.

In each case the whole of the coronoid was removed, so that the anterior aspect of the condyle passed in a clean sweep down to the commencement of the alveolar border of the horizontal ramus.

The incision for this operation starts in the pre-auricular fold at the lower level of the external auditory meatus, and passing vertically upwards to the level of the tip of the pinna, curves forwards below the superior temporal crest to terminate anteriorly within the hair area of the temporal region. The incision is carried down to the bone, and the skin, temporal fascia and muscle are separately defined and turned forwards. The deeper of the two layers into which the temporal fascia splits as it approaches the zygoma is divided, and the latter bone, still working from the deep aspect of the temporal fascia, is removed piecemeal with gouge forceps. The tip of the coronoid is defined, and both its surfaces cleared of muscular attachments with the raspator. By means of suitably shaped gouge forceps the whole of the coronoid process can now be removed. During this process the surgeon is working

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