

formula recommended by me.* In the spring Taylor and McKinstry published their second paper on the condition as a clinical entity, reporting 70 cases, and again overlooking the earliest work, as also does Captain McKinstry [20] in his article, with extensive bibliography, in the *Practitioner* of December, 1917. Marsh [14], in Australia, reported a severe case in a sailor with lips, gums and tonsils affected, and complete cure brought about rapidly by the use of the Fowler's solution and vinum ipecac. prescription. In June, 1917, in the *Journal of the American Medical Association* appeared a paper by Captains J. D. Campbell and A. R. Dyas of the Canadian Medical Service [15] on "Epidemic Ulcero-membranous Stomatitis (Vincent's angina) among Troops," based upon the study and treatment of 129 cases. They note seven cases of bronchial infection in which the sputum was loaded with Vincent's organism, and found these organisms in small numbers in 50 per cent. of the swabs from the throats of soldiers examined overseas. They also employed the arsenic and ipecacuanha treatment for the gingivitis. In France Ramond [16] has recommended treatment by silver nitrate.

The disease has become commonly known as "trench mouth" among the troops, and at first was not distinguished from pyorrhœa, and among both medical and dental officers for many months was commonly called pyorrhœa alveolaris, and treated as such. My report in 1915 was based on an examination of 100 cases, and since then more than 1,000 have been seen, and the seriousness of the disease as a devitalizing agent among troops cannot be emphasized too strongly.

The disease may be located not only in the mouth and throat, but also occasionally in the conjunctiva and glans penis.† It has also been reported in the lungs, and deaths have occurred from a severe infection of the bronchi and lungs. For convenience, the disease may be divided into three stages:—

(1) The patient complains of a "soreness and bleeding of the gums with tenderness of the teeth," and a general feeling of lassitude, indigestion and depression. Examination shows the margin of the gums œdematous and red or "spongy-looking," with a grey line of pus extending along the edge. On even slight pressure pus exudes in small droplets, and there is more or less profuse bleeding on even the slightest touch. The teeth may be tender when tapped and loose, having lost the gum attachment. The breath is foul and has a foetid odour, characteristic of the disease.

(2) The patient has the above conditions, with added ulceration of the mucous membrane of the mouth. The ulceration almost invariably appears first opposite the last molar teeth, and may extend forward and merge with the gingivitic condition described before. The ulcer is usually shallow and covered with greyish fragile membrane of necrotic tissue. It may, however, have a ragged, punched-out appearance and be quite deep. When the membrane is wiped away a bleeding red surface remains.

There may be associated tonsillar ulcers much the same in appearance. The patient may not complain of sore throat even when the ulceration is quite extensive. The sublingual glands are more or less enlarged and tender.

(3) The ulceration may advance to such a degree as to involve a large surface of the mucous membrane of the mouth. The teeth become very loose and may come out. On the other hand, a single ulcer may advance and burrow

until the stage of noma is reached. The infection may be spread to the bronchi and lungs and cause death.

Fresh smears made from the gums or ulcers show practically pure cultures of Vincent's organisms (spirochaetes and fusiform bacilli). Carbol-gentian violet stains them a deep purple, and they are easily recognized. For a description of the morphology and cultural characteristics reference may be made to the *Proceedings* of the Royal Society of Medicine, 1916, vol. ix (Medical section), pp. 51-60.

DIAGNOSIS.

The disease when seen first may be called pyorrhœa alveolaris, and the two conditions may be associated, and undoubtedly pyorrhœa is a predisposing cause. However, when carefully examined clinically, the two conditions can be distinguished. The redness, œdema and profuse bleeding of the gums, with the pus present, and the peculiar foetid odour should be noted. Pyorrhœa alveolaris is not usually such an acute condition, and when it is acute careful bacteriological examination will usually reveal the cause to be, not the amœba usually described as the cause, but Vincent's organisms, although the amœba gingivalis may also be found.

Where ulceration appears, the question occurs of syphilis being the underlying factor. Many cases have been seen here in which a diagnosis of syphilis has been made, but the Wassermann reaction has been negative. Ulcers, due to syphilis, are not usually so acute as those due to Vincent's organisms, but in the tonsil they may be indistinguishable. A fresh smear may show large numbers of Vincent's organisms, but this condition is very frequently superimposed upon a syphilitic ulcer.

Vincent's organisms seem to select undermined tissues for growth. This is well illustrated in cases of mercurial stomatitis where Vincent's organisms are usually found in large numbers, and treatment for this condition causes great relief.

In all cases of ulceration of the throat, if possible, a Wassermann reaction should be done. In several hundred uncomplicated cases of Vincent's disease I have never found a Wassermann positive.

The membrane covering a diphtheric ulcer is quite tough and does not come away easily, and when it does is usually intact. The characteristic odour is not present.

ON THE FREQUENCY OF VINCENT'S ORGANISMS IN THE MOUTHS OF SOLDIERS.

It was decided during last December to examine 1,000 men in camp, both clinically and bacteriologically, to learn, if possible, the number of men who cleaned their teeth carefully and the number of men who did not, and the number of men in each of these groups showing Vincent's organisms present in numbers sufficient to be diagnostic; also the numbers of cases of clinically infectious gingivitis in each of these groups.

The men examined may be divided for convenience into two classes: those with clean and those with unclean teeth.

In the first group there were 816 men, and 314, or 38.4 per cent., of these showed Vincent's organisms present, but very few in number; 20 or 6.4 per cent., showed large numbers of spirochaetes and fusiform bacilli, and were, clinically, positive cases.

In the second group there were 184 men, and 139, or 75.6 per cent., of these showed a few Vincent's organisms present; while in 59, or 32 per cent., the organisms were present in preponderating numbers, and these cases were all clinically positive.

CHART I.

Condition of teeth	Number examined	A few Vincent's organisms present	Large number of Vincent's organisms present	Clinically positive. Infectious gingivitis
		Per cent.	Per cent.	Per cent.
Clean	816	314 or 38.4	20 or 6.4	20 or 6.4
Unclean	184	139, 75.6	59, 32	59, 32

Thus it is shown that not only are Vincent's organisms much more prevalent in mouths where the teeth are not cared for, but clinically infectious gingivitis is also much more prevalent, and corresponds practically with the bacteriological findings.

Undoubtedly these ordinarily commensal organisms may become highly virulent where tissue is prepared for their

* Captain Johnson writes: "I should like to thank Dr. Taylor and Captain W. H. McKinstry, M.D., D.P.H., R.A.M.C., for the trouble they have taken in making bacteriological examinations, and for their suggestions as to treatment. Since writing these notes my attention has been drawn to the fact that a formula identical with the one quoted above has appeared in the *Dental Record*. I wish to state that neither of the bacteriologists nor myself saw this copy, so the fact that the formulæ are the same is a coincidence."

† Last October I published a note [17] on a case of the coincident infection of mouth, conjunctiva, and glans penis with Vincent's organisms. According to Vincent, the first to call attention to this form of spirochaetal balanitis was Queyrat, who induced the condition by inoculating the organisms into the mucosa of the balano-preputial groove. It deserves suggestion that if Vincent's organism can thrive in the mouth without setting up serious disturbance, it may under like conditions thrive in the smegma, and so be responsible for some of the reports of spirochaetes found in the urine of cases of trench fever.