CASE 93.—Female, 38; vaginal discharge for five years, occasionally offensive, and latterly slightly blood-stained. Uterus freely movable; no friable tissue in the cervix, and no bleeding on examination. Cardiac dullness 3 in. across. Four months later the patient was much better.

CASE 97.—Female, about 70; a typical case of pernicious anaemia, with usual blood changes, gastro-intestinal disturbances, and ataxia of legs and hands; no loss of flesh. Death from cardiac asthenia. Cardiac dullness normal.

REFERENCES.

¹ Roy. Med. and Chir. Trans., lxxxvii, p. 327. ² The lungs were examined in one case by Dr. R. V. Solly of Exeter, in the other by Dr. J. Miller of Exeter.

A CASE OF STREPTOCOCCIC PUERPERAL INFECTION TREATED WITH A VACCINE.

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The following case seems to us worthy of record, as it illustrates the successful application of vaccine-therapy to a condition which causes considerable anxiety in practice.

Mrs. X., aged about 35, a primipara, under the care of one of us (G. W. C.), was delivered of a child at full term on January 25th, 1908. Labour was perfectly normal, and its duration was about twelve hours. No instruments were used, and there was no rupture of the perineum. The placenta came away entire in twenty minutes, and there was no retention of membrane. The uterus was rather flabby, and there was a little free haemorrhage, but this soon ceased with kneading. For eight days the temperature remained normal, but on the evening of February 2nd it rose to 98.8°, and the following day to 99.6°. A clot with an offensive odour was passed, and the uterus was washed out with 1 in 1,000 biniodide solution. This brought away a quantity of slimy blood-stained material. More clots were passed on February 4th, and the lochia continued to be offensive. The uterus was washed out with biniodide solution each day until February 11th. This treatment seemed to have a good effect for a time, as the temperature came down to 99° on February 6th and 7th, but on the three following days it rose again to 100.4°, and on the 11th to 101°. On February 10th a specimen of the uterine discharge was examined by Mr. Duncan at the Shire Hall, Worcester, and was found to contain streptococci and *B. coli*. The patient's symptoms became more marked, and she suffered from headache, some thirst, and loss of appetite with furred tongue. There was no marked prostration, delirium, vomiting, or diarrhoea. The lochia and flow of milk ceased after February 11th. Her condition was at no time alarming, but the presence of a rising temperature uncontrolled by antiseptic douches, and the knowledge that the infection was of streptococcal nature made the prognosis a grave one. It was therefore decided to use antistreptococcal serum, and 10 c.cm. of a reliable brand were injected on February 11th, 13th, 14th, 15th, and 17th. A serum rash was produced, but soon yielded to a few 10-grain doses of calcium lactate. As the serum did not appear to control the infection, resort was made to vaccine treatment. This was carried out by one of us (W. H. W.). On February 14th the opsonic index to *Streptococcus pyogenes* was found to be 0.65. On February 16th the uterus was washed out with sterile normal salt solution. A small clot was brought away, and from this an abundant growth of streptococci and *B. coli* was obtained on agar plates. Subcultures on agar of each organism were made, and from these a combined vaccine was prepared. On February 19th the patient was inoculated with 70 million colon bacilli and 10 million streptococci. As was expected, the temperature rose the same evening, reaching 102°, but on the third morning after the inoculation it fell to normal. The opsonic index to streptococci twenty-four hours after the inoculation was 0.90, and to *B. coli* 1.05. On February 22nd the index to streptococci was 1.72 and to *B. coli* 1.58. The temperature remained normal for four days, but on February 26th there was a rise to 100°. This was obviously associated with toothache, and as the opsonic indices to both organisms remained high it was not thought necessary to give another inoculation of the vaccine. Two carious teeth with abscesses at their roots were removed on March 1st, and the temperature promptly became normal and remained so, the patient thereafter making an uninterrupted recovery.

REMARKS BY DR. WYNN.

Streptococci are the most frequent organisms found in cases of puerperal fever. Thus, Foulerton found streptococci in the uterus in 46.2 per cent. of a series of 54 cases of puerperal infection, while, excluding the cases in which the uterus was sterile, the percentage would be 64.1. Czerniewski found streptococci in 53.8 per cent. of 91 cases, and Krönig in 41.9 per cent. of 179 cases. *B. coli communis* rarely causes a primary infection of the uterus, but is the most frequent of all the secondarily infecting bacteria. It is doubtful whether the presence of *B. coli* materially aggravates an infection primarily due to streptococci, or whether it should be regarded as an indication of the effects of an existing streptococcal infection of high virulence—that is, the more virulent the primary infection the more likely that a secondary infection would occur. At all events authorities are agreed that a combined infection with streptococci and *B. coli* is more dangerous than one with streptococci alone or combined with staphylococci. It is usually assumed that the streptococcus present in these cases is the *Streptococcus pyogenes*, and the brands of antistreptococcal serums on the market are made by the use of various strains of *S. pyogenes*, but since attempts have been made to differentiate the streptococci into several types, it has been found that the types *S. salivarius*, *S. anginosus*, and *S. faecalis* are frequently found in such conditions as ulcerative endocarditis, cystitis, etc., formerly thought to be caused by *Streptococcus pyogenes*. The only attempt at exact study of the streptococci infecting the puerperal uterus with which we are acquainted is that by Andrewes and Horder.

In each of 6 such cases the organism conformed to the type *S. pyogenes*. As in our case symptoms of the infection occurred only after eight days from delivery, the infection was not of an acute fulminating type, and the organism was associated with *B. coli*, it seemed possible that the streptococcus might be of the type *S.*

faecalis rather than *S. pyogenes*. To determine this point the organism was tested by the reactions suggested by Gordon. Of Gordon's nine tests, a positive reaction was given only with saccharose, lactose, and salicin. Long chains were formed in broth, and there was a good growth on gelatin at 20° C. The organism therefore conformed to the type *Streptococcus pyogenes*.

We do not intend to make any comparison between the use of antistreptococcal serum and streptococcal vaccine. It is possible that if the serum had been given in much larger doses its action might have been successful, and it is obvious that in a case of great urgency time would not allow for the preparation of a vaccine. But there are various theoretical reasons which lead one to prefer a vaccine to an antibacterial serum, and if it can be shown that the streptococcus occurring in puerperal fever in the great majority of cases conforms to the type *Streptococcus pyogenes* a stock vaccine of this organism could be used with no more loss of time than is involved in the case of a serum. There is, therefore, great need of more precision in our knowledge of the organisms producing puerperal and other acute septic infections, so that a truly specific remedy can be quickly employed, and we may avoid a specious reliance upon a serum or vaccine which, however successful in other cases, is not appropriate for the particular case in question.

REGULATIONS for admission to Queen Alexandra's Imperial Military Nursing Service Reserve have been issued with the Army Orders for August. The reserve is formed for the purpose of maintaining a reserve of nurses to supplement Queen Alexandra's Military Nursing Service in the event of war.

Temperature Chart.—s, Injection of antistreptococcal serum. i, Injection of vaccine. T, Toothache. E, Teeth extracted.