I must acknowledge the valuable assistance given me at the operation by Dr. Hewer and by Dr. Box, who administered the anaesthetic, which, from the regurgitation of faecal matter, was a very risky and unpleasant task.

EMPHYEMATA ASSOCIATED WITH THE BACILLUS COLI: TREATMENT BY ANTITOXIN.

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As antidiphtherial serum is now being frequently administered by the mouth, the following cases may prove of interest, not only because of their unusual character, but because it was possible to demonstrate from day to day the direct effect of the antitoxin treatment.

F. C., a boy aged 7, was admitted on October 15th, 1908, under Dr. Coutts, with dyspnoea, cough, and very fetid breath. He had been attending hospital on and off for six years, beginning with an attack of pleurisy. When in the hospital five months previously he had shown signs of bronchiectasis involving the left base. Dr. Coutts still inclined to this diagnosis, for although on examination impaired resonance and diminished breath sounds were found all over the left side of the chest, yet from time to time the boy expectorated copious, very foul sputum. He had night sweats, and was losing weight, yet there was no history of phthisis. The heart's apex was felt to be in the fifth intercostal space, about $\frac{1}{2}$ in. internal to the nipple.

On November 19th a red, tender, fluctuating swelling appeared immediately below and to the left of the nipple. Under chloroform I made an incision over this and found the sixth rib necrosed. The diseased portion was cut away, when immediately there was an escape of foul smelling gas, followed by about 4 oz. of pus, resembling pale anchovy sauce—obviously pus that had intimately mixed with blood. I felt the lung to be much shrunken and fibrosed, but could detect no rent in its substance. Streptococci and *Bacillus coli* were found in the pus. On November 19th and on each of the two following days 10 c.cm. of polyvalent antistreptococcal serum were given by the mouth. The discharge from the wound, however, still continuing very foul and profuse, a week later I ordered 25 c.cm. of anticoli serum to be administered by the mouth. Two days later the discharge was less profuse and not nearly so offensive, and ten days later had quite stopped.

On December 20th the wound opened and again discharged offensive pus swarming with the *Bacillus coli*, so that I repeated the dose of 25 c.cm. anticoli serum, and the discharge quickly became less in amount and lost its fetid odour. I examined the discharge daily, and whereas before the serum had been given the bacilli were very active, yet twenty-four hours after its administration they were seen to be very sluggish, of large size, and in greatly reduced numbers. Two days later I could find no *Bacillus coli* in the discharge. The boy's general condition had correspondingly improved, and the wound closed.

On January 10th, 1909, it again broke open and discharged pus as before, this time containing both streptococci and *Bacillus coli*. Both antitoxins were administered simultaneously by the mouth, and two days later Dr. Saunders reported that he could find no bacilli and only a few short chained streptococci. The antitoxins were given again, and henceforward the wound healed and the boy made a rapid recovery. I saw him on May 24th—six weeks after his return from our convalescent home—still looking the picture of health, having put on several pounds in weight.

Empyemata associated with the *Bacillus coli* and without any abdominal mischief are very rare. This case gave no signs of any extra-thoracic trouble. Moreover, whilst he was in the hospital, another boy—C. F., aged 5—was admitted in extreme dyspnoea, and died on the same evening, a few hours after a large empyema had been opened. The pus from this case was very foul and contained the colon bacillus. At the *post-mortem* examination the pericardium also was found full of pus, but no abdominal lesion of any kind was discernible.

G. S., a boy aged 10, was admitted with a subdiaphragmatic abscess that had extended into the right pleura and lung. The stench from his breath was unbearable, but twenty-four hours after the oral administration of 25 c.cm. anticoli serum it was quite sweet. The boy was in the hospital for three months, and made a very slow recovery. His full history is out of place here, but after his abscess had been opened I had two occasions to watch the effect of the anticoli serum upon the bacilli. Within twenty-four to thirty-six hours the bacilli become very sluggish, and the greatly reduced numbers pass into the large involution stage.

I have tried the anticoli serum on one case of acute gangrenous appendicitis, but without obvious result either before or after operation; yet I think investigation in this direction is desirable.

In no case was the antitoxin given hypodermically, and at the present time all serums are given by the mouth at the East London Hospital for Children, except to cases of very urgent laryngeal diphtheria, when it is given subcutaneously; even in these cases I doubt whether it acts more quickly or directly.

Children take antitoxin very well when administered with about double the quantity of warm milk. I have never known the dose vomited.

Since writing the above I notice, in *Lancet*, June 5th, 1909, p. 1580, Drs. Hale White and Eyre report two cases of empyema associated with the *B. coli* treated by vaccines. They state that the improvement after administration of the vaccine was immediate and remarkable. In the cases recorded it was equally so. Both the first and third cases were given up as hopeless, and they appeared to be dying, yet after the antitoxin they both took a new lease of life. Certainly antitoxin is more readily obtained than vaccine, and when the former acts so efficiently I see no reason to delay while a vaccine is being prepared.

For permission to publish these cases I am much indebted to Dr. J. A. Coutts and Mr. Warren.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

QUININE IN SYPHILIS.

IN 1905 the subject for the triennial Alexandra Memorial Prize, open to army and navy surgeons, was "Syphilis in the army and its influence on military service: its causes, treatment, and the means which it is advisable to adopt for its prevention." The essay submitted by me was later published in book form in 1907, under the title: *Syphilis in the Army*.¹ On page 52 it is stated that: "Quinine in dilute acid solution is often most valuable—precedent to, or immediately after, the first mercurial course, and in cachectic cases. Whether it exerts a specific action on the spirochaete of syphilis, as on the malarial parasite, is uncertain, but I think it should be invariably given if there is an associated malarial history or syphilitic fever. Such fever is common with the onset of rash, and in the later stages with the septicaemia due to necrosing bone or tissues. As early syphilis is associated with a loss in numbers of the red blood corpuscles and in the amount of the haemoglobin in those cells, quite possibly its chief action may be in overcoming this degenerative action, and thus assisting the blood to better deal with the inroads of the virus in the early and more remediable phases of the disease, by increasing its phagocytic power, or by the formation of antibodies. Further, any drug which tends to reduce the number of spirochaetes in the blood in the early stages, will consequently lessen the amount of toxin which can later injure the central nervous system and cord."

In an article written at the request of the editor on the treatment of syphilis, in the November and December 1908 numbers of the *British Journal of Dermatology*, it is further stated: "Whether quinine exerts a specific action on the *Treponema pallidum* as on the malarial parasite is uncertain, but I always temporarily 'substitute' it for mercury if there is an associated malarial history, or if syphilitic fever is present."

During sixteen years' specialized work on venereal diseases in the army I have extensively used quinine, and before the days of the demonstration of the protozoan of malaria by Ross, and prior to Schaudinn's valuable discovery of another protozoan, the *Treponema pallidum* of syphilis. The use of quinine, however, is now placed on a more "scientific" basis. My attention was chiefly directed to this drug in India, where cases of syphilitic fever were not infrequently sent into hospital as ague, or vice versa, or the two diseases co-existed. The drug acts most beneficially in any "septicaemic" state with fever, whether such be due to gonorrhoea, syphilis, or enteric fever. Quinine, mercury, and opium judiciously used are veritable sheet anchors in treating early syphilis. Santogen and arsenic are most useful adjuncts. The whole category of

¹ *Syphilis in the Army*. 1907. London: John Bale, Sons and Danielsson.