been transferred or returned to Canada, and thus many interesting features were not available regarding the ultimate diagnosis, or the results of treatment following positive complement fixation tests.

A short résumé of cases tested, and a few short histories of typical cases will be cited. Only those in our series were called positive where they were distinctly so, and our reports were not sent in as x, xx, xxx, and xxxx, but only as *positive, strongly positive,* or *negative.*

Three hundred and eighty-three tests have been done. Of these 177 were positive. 77 cases gave a definite history of having had gonorrhœa, and 60 of these were strongly positive and 17 negative.

Of thirty-six cases diagnosed epididymitis, nineteen were positive, seventeen were negative; of twenty cases diagnosed prostatitis, fourteen were positive, six were negative; of twenty-one cases of orchitis, fifteen were positive, six were negative; of four cases of chronic gleet, three were positive and one negative; three cases diagnosed rheumatic fever were positive; of twenty-six cases with a clinical diagnosis of myalgia and no clinical evidence of gonorrhœa, eight were positive and eighteen negative. It might be stated that a Wassermann test was made on each of these specimens; twenty-five were positive, and all of these had had syphilis, or clinical evidence of this disease was actually present. We have found no evidence of cross-fixation in this series of tests.

The following short histories are illustrative of the cases tested by us. They are from notes made by Captain G. S. Gordon, C.A.M.C., No. 11 Canadian General Hospital, officer in charge of the genito-urinary clinic.

Case 1.—Cysts are present in both right and left globi majores. The bladder is infected and trabeculated. The urine is ammoniacal. Condition apparently long standing, although there has been an exacerbation of symptoms for past five months. Venereal disease denied. Complement fixation test, positive.

Case 2.—Age, 45 years. Chronic prostatitis. Severe myalgia. Gonorrhœa admitted twenty years ago. No evidence of reinfection since. Complement fixation test, positive.

Case 3.—Sexual neurasthenia. Pain in left groin at orgasm. Hyperæsthesia of seminal vesicles. Palpation shows left epididymitis. No pus in semen or urine. Complement fixation test, positive.

Case 4.—Incontinence. Prostatitis. Enlarged epididymis both sides. Tuberculin test, negative. Venereal disease denied. Probably gonorrhœal in origin. Complement fixation test, positive.

Case 5.—Incontinence. Prostatitis. Terminal hæmaturia. Pyuria. No pus from kidneys. Mononuclear cells in ureteral specimens from right kidney. Tuberculin test positive, focally. Complement fixation test, positive.

Case 6.—Prostatic abscess. Complement fixation test, positive.

Case 7.—Orchitis. Double epididymitis, vesiculitis. Prostatitis. Local and temperature reaction to tuberculin. Probably infection is both tuberculous and gonorrhœal.

In this case the complement fixation test for tuberculosis was positive. Complement fixation test, positive.

Case 8.—Double epididymitis and recto-urethral fistula following perineal section ten years ago. Passed urine per rectum and fæces per urethra comfortably until recently, when irritability of bladder began, which condition may be attributed to gonorrhœa. Venereal disease denied. Complement fixation test, positive.

Case 9.—Epididymitis. Gonorrhœa six years ago. Complement fixation test, positive.

Case 10.—Myalgia. Tenderness over prostate and vesicles, and pus in semen. Probably gonorrhœal rheumatism. Complement fixation test, positive.

Case 11.—Myalgia. Severe pains in lumbar region. Gonorrhœa fifteen years ago. Prostatitis, vesiculitis, and double epididymitis. Complement fixation test, positive.

Case 12.—A newspaper reporter. Denies any chance of ever having contracted gonorrhœa. Associates symptoms with appendectomy in June, 1917—five months ago. Epididymitis and prostatitis, pus and blood in urine. Complement fixation test, strongly positive.

Case 13.—Neurotic man. Admits gonorrhœa in 1916. Has posterior urethritis, and pus can be massaged from the prostate. Left epididymitis. Smear negative. Probably not due to the gonococcus. Complement fixation test, negative.

The above cases are cited simply as representative examples, from whom sera were submitted to us for examination, and not as being of any special interest. In all of these, however, from stained smears it was impossible to diagnose the condition. Many of them denied ever having had gonorrhœa, and thus, for many reasons, as they were soldiers, it was important to have further evidence as to the possibility of a focal infection with the gonococcus being the seat of the trouble.

SUMMARY.

From our work and from the work of serologists during the past decade, it can be definitely stated that the complement fixation test for gonorrhœa is specific. If a positive reaction is given, we must conclude that there is an active focus of the gonococcus present.

Where a large amount of pus is present and intracellular Gram-negative cocci numerous, a diagnosis of gonorrhœa can be accepted. But, in cases such as those quoted in this paper, where there may be no discharge, or very little, with very few bacteria present, a positive diagnosis of gonorrhœa *cannot* be given. In many large genito-urinary clinics, particularly in America, it is well recognized that seldom can positive cultures be obtained from material expressed from the genito-urinary tract, and the complement fixation test must be relied on to confirm the diagnosis.

The importance of the reaction in the Army should not be underestimated, because of the value of a definite diagnosis being given where clinical symptoms are obscure, in order that the proper treatment can be instituted. It is of great value where pension claims, &c., are being considered to know whether a man is suffering from the results of venereal disease or a condition due to the hardships of active service. Nearly all soldiers deny the possibility of venereal disease where the acute condition has been "cured."

It is important in cases of prostatitis to massage the prostate a day or two before taking a specimen of blood for examination.

In this series the number of cases diagnosed "myalgia" giving a positive test is remarkable. These cases of obscure muscle pains have always been a source of trouble to the diagnostician, and the question of the possibility of the gonococcus in certain instances being the cause of the trouble should be considered. It is true that our series of cases is small; so far as it goes, it indicates that close upon one-third of all the cases of myalgia among soldiers coming under examination in a General Hospital were of gonorrhœal origin. Remembering how frequent and how difficult to deal with are these cases of myalgia our results deserve notice, and, we urge, demand that a special inquiry be instituted on a larger scale.

Although we have had few opportunities of studying cases of chronic gonorrhœa in women, from a review of the literature it would seem that positive reactions are seldom given unless the cervix at least is involved.

From our work the following conclusions may be cited:—

(1) Chronic gonorrhœa can seldom be diagnosed by stained smears alone.

(2) Cultural methods are too difficult to be of practical use.

(3) The complement fixation test in gonorrhœa is definitely specific.

(4) Where the test is positive an active focus of infection is present.

(5) The test is never positive in localized anterior urethritis.

(6) The test is not usually positive before the sixth week of the disease if no complications are present.

(7) A case should not be considered cured if the test is still positive, even two months after the disappearance of all symptoms.

(8) No cross fixation takes place with either syphilitic or tuberculous sera.

(9) Because of the difficulty in cultivating strains of gonococci, antigens should be prepared, if possible, at central laboratories, and thoroughly tested and standardized before issue.

THE CHARTS.

From the test here shown the antigen should be used in a dose of 0·5 or 0·1.

In the chart the serum shows anti-complementary properties only in 0·5 c.c., therefore the final result in this amount cannot be taken. Using 0·025 there is no inhibition without antigen, and complete inhibition with antigen, showing that the serum is definitely positive.