Protein Shock Therapy.—I have been much impressed with the possibilities of this new line of treatment, as applied to the more chronic forms of tropical disease. The most effective method of producing "protein shock," of which I have had experience, is the intravenous injection of a dilute solution of the ordinary typhoid-paratyphoid vaccine, which is supplied to the Army. In order to get a sufficient reaction, that is a high temperature of 103° or 104° F., associated with profound sweating, it is necessary to give a dose of at least 100,000,000 organisms; this can be done by diluting down the vaccine twenty-five times. The second or third dose, sufficient to produce a reaction, has to be two or three times this strength. I find this much more reliable than the various milk and peptone solutions which have been put on the market. I think, too, that it is most necessary to inject the solution intravenously and not intramuscularly, as is sometimes advised. The indications, to my mind, for protein shock therapy are many. There are, for instance, certain obscure and fugitive forms of arthritis, of which I have seen two examples, one a member of our own profession, a specialist in surgery who was afflicted at periodic intervals with a fugitive and very painful swelling of his interphalangeal joints, which entirely incapacitated him from following his profession. The source of infection had, in his case, been attributed, as is usual, to some obscure and hidden septic focus concealed somewhere in his body. The bacteriologist, as so often happens, found an excess of streptococci in the faeces. Prolonged vaccine therapy had failed to afford any relief, but after two injections of protein shock therapy, I hear he has now entirely recovered and is able to operate once more. There is a similar case of a lady, in which the arthritis was accompanied by a profuse urticaria, the treatment of which has also been followed by a similar remarkable result. The illness of this lady, which entirely incapacitated her, had also been attributed to some streptococcus infection. Protein shock in her case cut short the arthritis, the affected joints once more became mobile, and for the last two years there has been no recurrence. I have come to regard association of arthritis and urticaria in this obscure condition as a kind of anaphylactic phenomenon, or a super-sensitization of the body to small doses of some specific toxin.

There is one condition in tropical disease in which, possibly, the protein shock acts in the same way; at any rate, it is specific. This is climatic
bubo, which is a form of adenitis, not uncommon in tropical climates and which may be prevalent among troops in India, China and the West Coast of Africa. I think there is little doubt from the observations made in recent years that the infection is venereal in origin. At any rate, it is a most obscure and incapacitating disease which, no doubt, classified under various headings, may be responsible for a great deal of invalidism in the Army. The disease generally commences with a prolonged fever of a remittent type, accompanied with painful inflammatory swelling of the groin glands. The affected glands may enlarge to the size of a hen's egg and then break down with a discharge of a thin, purulent matter through various fistulae. Unfortunately, surgical interference very often only tends to spread the mischief; the pus from the bubos is sterile on culture and the undoubted bacterial origin of the disease is unknown. I would suggest that this subject presents a fine field for research. Of the various forms of treatment devised for this condition, there is no doubt that the protein shock therapy is specific. It cuts short the process of suppuration and subsidence of the glands takes place almost instantaneously and, in short, the treatment of climatic bubo is terminated within a week, whereas formerly the case lingered on for six weeks, two months, or more. During the last two years, I have had striking instances of the efficacy of this form of treatment, one patient had been diagnosed as suffering from some obscure fever for four weeks before the true condition had been realized. There are other conditions in which, I think, protein shock therapy may be used as adjuvant to other forms of treatment. I have seen cases of obstinate tertiary syphilitic lesions, such as ulceration of the leg, or stricture of the bowel, in which the administration of salvarsan and potassium iodide became effective only when combined with protein shock. I certainly think this is a line worth further trial. The actual shock itself lasts usually from twenty-four to forty-eight hours. During this time the patient feels ill, very much as he would in a sharp attack of malaria; he has a furred tongue; loses his appetite; feels generally depressed, but rapidly recovers. Apparently the shock produces a large amount of leucocytes in the blood. The recent work of Row and others in leprosy, using various kinds of bacilli for intravenous injection in this disease, is probably based also on the same principle, that is, one which produces a series of high temperatures, associated with a leucocytosis in patients who suffer from hypothermia and general asthenia. It is very obvious that further research in this method of treatment is necessary in many obscure and chronic infections.

The Treatment of Colitis.—In my last communication I mentioned a new treatment called yatren which, when injected into the bowel, has been found to be remarkably specific for amoebic dysentery. Further work on this subject has confirmed my earlier experiences. It is certainly a very rapid and pleasant method of curing an infection of the bowel, but there is great discrepancy in the opinions of various workers on this subject.
Apparently, as far as I can see, it is more efficacious in eradicating an early than a long-standing infection, but I have had such a long series of consecutive successes that I feel it is worth giving a trial in every case. In long-standing and chronic conditions, with a passage of cysts, I am now combining the intrarectal injections of yatren with the administration of E.B.I. in three-grain doses by the mouth. In order to produce the maximum effect the injection of yatren should be preceded by a thorough bowel lavage with two per cent sodium bicarbonate which clears the mucus and debris out of the bowel. The comparatively small quantity of yatren, 200 cubic centimetres, is then injected slowly into the rectum and allowed to remain there as long as the patient can retain it. If he is kept in bed he will probably do so for eight to ten hours. Naturally, the lower down in the rectum the amoebic lesions are situated the more rapid will be the action of the drug. A ten days' course is usually sufficient; but some patients are unable to tolerate this intensive treatment, so that in this case the injections must be made on alternate days. When given by the mouth, yatren, apparently, is not nearly so effective and is apt to produce an acute diarrhoea. Since yatren has been applied to amoebic dysentery, it has been found to have a distinct therapeutic action in other conditions. During the past six months I have had three cases of acute bacillary dysentery (all Shiga infections), in which an almost instantaneous improvement took place after the injection of yatren. There is every indication that it will prove to be a useful and easily tolerated method of treatment in this serious disease. There are other and more intractable forms of colitis with which we have to deal from time to time and which are often confused with the better-known forms of dysentery. These are mucous and ulcerative colitis. I do not think I am going too far in saying that yatren is the only drug, so far, which I have found to be of any use in that distressing condition known as mucous colitis. The injection of the drug causes a great discharge of the peculiar, stringy mucus, with consequent relief to the patient upon whom it has a marked stimulative action. After a course of treatment, as already described, I find that the best method is to continue with the yatren by mouth in small doses, in pill form, of which one may be taken three times a day, after meals. This ensures in some manner the continuous excretion of the mucus, so that it no longer becomes clogged in the patient's intestines.

Ulcerative Colitis.—This is a most terrible and distressing condition, for which there is no known specific treatment at the present moment. It is too early to say much yet, but I have had recently an experience of an early form of the disease, in which yatren caused a healing of the ulcers and a great physical improvement in the patient resulted. He has now been free of the symptoms for over nine months. It certainly would seem advisable that a further trial of this method of treatment should be given in this intractable disease.