and putting on a lint and ointment face-mask. This was done, and as her mother refused to take her home through the streets like that we had to admit her. On that Wednesday no rash appeared, and she went home next day. On the following Wednesday the rash reappeared, but obviously we could not find a bed for her every week. Why she did it I do not know.

II.—MR. CYRIL WALKER.

It is not easy to understand the motive which induced the girl whose case is to be related to inflict so much pain upon herself, but I have very little doubt that she was in some way tampering with her eyes long before the pieces of cotton-wool and thread were discovered.

L. G. came to me at the Bristol General Hospital as an out-patient in 1892 when she was 6 years old. She was then suffering from phlyctenular conjunctivitis and keratitis. She soon recovered under the usual treatment, but had very frequent recurrences, so that for some eight or ten years she was almost constantly under treatment. When she was 8 years old she had typical molluscum contagiosum of the eyelids—a disease, by the way, which is seldom seen amongst ophthalmic out-patients now. When she was 12 she developed tuberculous glands in the neck, and in consequence underwent three extensive operations between the ages of 15 and 17. The corneae were at that time so much damaged by recurrent strumous keratitis that she could only read big print, and no examination of the fundi was possible. When she was 18 she had an extremely severe and intractable attack of keratitis affecting both eyes, and accompanied by great photophobia and intense spasm of the orbicularis. She was an in-patient for some months, and towards the end of her stay in hospital it was noticed that on two or three occasions a tiny piece of cotton-wool or of thread from a bandage was found in the conjunctival sac. She was not definitely accused of having introduced these foreign bodies, but she was questioned about it and told to be very careful not to touch her eyes herself. Her general condition slowly improved, and her eyes gradually quieted down. The corneae had been rendered very opaque all over by the interstitial keratitis. No fundus reflex could be obtained, and her vision was reduced to bare perception of light. The corneal condition was not enough to account for such great loss of sight, and it must be assumed that she had choroiditis at the same time as the keratitis.

Soon after this, as her health was fairly good and there seemed to be no further prospect of recovery of sight, she was admitted to the Blind Asylum as a resident pupil. Attacks of conjunctivitis with keratitis soon came on, and after several attacks Dr. Flemming found that she deliberately introduced pieces of the thick paper used for Braille writing under her lids. On three occasions a piece as large as the finger-nail was found in her right eye. She was very sternly spoken to by Mr. Cross, and an exaggerated account of the risk she ran of setting up dangerous, perhaps fatal, inflammation induced her to desist from any such pranks again. Since then she has had no similar attacks.

Such practices amongst ophthalmic patients have often been recorded, but usually the immediate object is obvious—to excite sympathy, to prevent returning to work, or to gain admission to hospital. I recall the case of a young woman who was much crippled with arthritis, and who, besides attending at the electrical department, repeatedly for some years came to my ophthalmic out-patients with "conjunctivitis" which was never at all severe and left no trace. It always got well quickly with boric lotion and mild astringents. On one occasion, as she was leaving the consulting-room, she dropped a small piece of hard dry white soap. She picked it up hastily, but not before I had seen it. On being asked what it was for she made no reply, but turned very red. She had no more conjunctivitis after that day, though I often passed her on her way to and from the electrical department. The inference is almost irresistible that the conjunctivitis was self-inflicted, and that the soap was the agent used.

NOTES ON ONE THOUSAND CASES OF BILHARZIASIS TREATED BY ANTIMONY TARTRATE.

BY

F. O. LASBREY, M.B., AND R. B. COLEMAN, M.B.,
CH.B., CH.B.,

PRINCIPAL AND ASSISTANT MEDICAL OFFICERS, CHURCH MISSIONARY
SOCIETY'S HOSPITAL, OLD CAIRO, EGYPT.

OUR reason for adding still another chapter to the rather numerous articles written on the subject of the treatment of bilharziasis by intravenous injections of antimony tartrate is the fact that up to the present time the con-

clusions arrived at have been based on the investigation of a comparatively small amount of clinical material, whereas we have been able to avail ourselves of the exceptional opportunities which Egypt affords for making observations on very large numbers of patients.

We can add little fresh information to what has been noted in previous articles on the subject, but with the records before us of 1,000 individuals who have undergone treatment at our hands, we are able to verify what has already been written on the subject, and venture to think that our testimony to the efficacy of the antimony tartrate treatment may be of some value, and a report of the results of the treatment of our first thousand cases of general interest.

Since June, 1919, injections of antimony tartrate in accordance with Dr. Christopherson's observations have been the routine treatment for bilharziasis at the Church Missionary Society's Hospital, Old Cairo, and we are now injecting from fifty to seventy cases a day; both urinary and rectal bilharziasis are being treated, but the former in a much larger proportion.

Dose.

In cases without contraindication the usual method has been to start with 1 grain as the initial dose, increasing by $\frac{1}{2}$ grain at each injection, so that the maximum of 2.5 grains is reached at the fourth injection; this dose is then repeated at all subsequent injections. Injections are given on consecutive days for the first six days, and then on alternate days. The dose is altered in the following cases: Weak men and most women take slightly smaller doses. Children take much smaller doses in proportion to their size and condition. All cases showing much reaction—for example, fever, loss of appetite, etc.—are given smaller doses, and some are given longer periods between injections. It is worth while mentioning that the liberal dosage mentioned above is found necessary in order to cure the disease within a limited period. Our patients, most of them farm labourers, are unwilling to prolong their stay in hospital unduly. On the other hand, it appears that a much smaller and more gradual administration of antimony is equally effective. Quite small doses spread over a considerably longer period appear to cure the disease, the main point being the cumulative effect of about 20 grains of the drug.

Examination.

All cases are submitted to microscopical examination before beginning the course. A re-examination is made after the sixth dose, and subsequently after every dose, and a daily report made with regard to the presence of bilharzia eggs, their condition, and the relative proportion between dead and living eggs in each specimen. When all eggs are found "dead" injections are stopped. The urine is examined again on the two following days, and on three consecutive reports of all eggs being dead the patient is considered free from bilharzial infection. Unfortunately some patients after one report of "all dead" will not stay for further examination. Examinations are made as follows: The urine is allowed to stand for a quarter of an hour, and the deposit pipetted off for examination. If the result is negative the lower layer of the urine in the specimen glass is centrifuged and the deposit examined. Dead eggs are shrivelled and black. No organism is visible in the eggs, and they fail to hatch out on the addition of water.

Rectal cases are more difficult to pronounce free from bilharzial infection, for sometimes eggs do not show for days together. Consequently in these cases we do not usually depend on microscopical examination, but give the full course of twelve doses, amounting to 27 grains of antimony tartrate.

Statistics.

In 1919 (June to December) 370 cases of bilharzial disease were treated, while in 1920 (January to August) our books record 630 cases. Proper records of the first 150 cases in 1919 were not kept, and of the remaining 220 we find that 44, or 20 per cent. of the total number, received less than six injections each. This is not surprising considering that the antimony method of treatment is by no means free from discomfort. Moreover, treatment was abandoned in the case of a few where adverse symptoms, such as marked debility, anorexia, etc., supervened after a

few injections. It may be remarked, however, that many of those who took only a few injections experienced remarkable alleviation of symptoms. Of the remaining 176 cases:

24 had 7 to 9 doses, totalling an average amount of 18 grains.
92 had 10 to 12 doses, totalling an average amount of 25 grains.

Of these, 81 were pronounced cured by the above tests, the majority of them having taken the larger number of doses, that is, an average amount of 25 grains. This means that 81 individuals, or 42 per cent., were proved cured out of 176 who more or less completed the course of treatment. Almost without exception those not pronounced cured were benefited to a very large extent, and the examinations showed a large proportion of dead eggs, but it is not our method to call them "cured" so long as any living eggs appear, or even in the event of no eggs at all being seen. Dr. Christopherson emphasizes this latter point, and we agree strongly as to its importance. Again, the very marked relief of symptoms which many experience is in itself a cause of a certain percentage of patients not persevering in the treatment after the haematuria and general distress have disappeared; thinking themselves cured, they choose to leave hospital without waiting for an examination, or in spite of the fact that living eggs are still demonstrable in the urine.

By 1920 the antimony method had passed the tentative stage, and patients were beginning to seek treatment with greater confidence; consequently the 1920 records show an increasing number of cases and a higher percentage of cures.

Of the 630 cases treated between January and August, 1920, 20.6 per cent. did not take as many as six doses, the continuance of the treatment being contraindicated in a few, while the rest did not persevere. Of the remaining 500:

13 had 6 doses, amounting to ...	12 grains
57 had 7 " " " " " "	14.5 "
56 had 8 " " " " " "	17 "
138 had 9 " " " " " "	19.5 "
107 had 10 " " " " " "	22 "
70 had 11 " " " " " "	24.5 "
59 had 12 or more doses, amounting to ...	27 "

Of these 500 we find 348 were pronounced "cured" according to the above definition—that is, nearly 70 per cent. The increase in the proportion cured over the first series is not due to any difference in the treatment or its results, but mainly to the course becoming more popular, and the consequent willingness of a greater number of patients to wait for its conclusion. As far as our experience goes, we find that all cases strong enough to take the treatment become cured if they continue with it; this year's series produced more "cured" with a slightly smaller dose, the desired result being most frequently obtained after nine, ten, or eleven doses, as follows:

After 9 doses 97 were "cured."
After 10 doses 79 were "cured."
After 11 doses 64 were "cured."

These amount to just 70 per cent. of the total number of cured, and this means that the usually effective dose is from 19.5 to 24 grains, and exactly bears out Christopherson's opinion that the dose of antimony tartrate required for an adult is between 20 and 30 grains, and that it is generally nearer 20 than 30 grains.

Mortality.

In the total series of 1,000 cases we had 10 deaths which could in any way be attributed to the treatment or to the disease itself, a proportion of 1 per cent. Six deaths occurred in the first series of 370 patients, and only 4 in the second series of 630 cases. Thus the percentage during 1920 has been considerably reduced. We regard this as very satisfactory when the poor condition of so many of the patients is considered. Not a few of those who apply for treatment are in a very miserable state. In some the kidneys are affected, and the urine shows a very low specific gravity. Eager to grasp at any possibility of cure, it is only fair to give these physical wrecks the chance of recovery. If they stand the injections well these are continued; if they develop bad symptoms the course is abandoned. We attribute the lessened mortality in 1920 to a greater watchfulness and caution in weeding out patients exhibiting marked intolerance for the drug, to more gradual administration, and to a great moderation of dosage in very feeble subjects.

The usual symptoms preceding death are total loss of appetite, extreme debility, and complete apathy. The patient curls up in bed and lives perhaps for some days before the fatal issue. Then a sudden effort, such as rising from bed, is followed by fatal syncope. No death took place immediately after an injection, and usually some days supervened between the last injection administered and the fatal issue. The total amount of antimony administered in several of these cases was very small.

Technique.

As we have to deal with a very large number of cases, it is important that the routine should be as simple as possible and the work reduced to a minimum; this department has been added to the already heavy daily round of a large hospital with all its varied medical and surgical work, without any addition to the staff. An Egyptian orderly has been trained to do all the microscopic work, and all cases are examined by him before beginning the course and again after the sixth and every subsequent injection. He sends in his reports daily to the sister in charge of the section. The latter supplies every patient with a card on which is marked his name, number, and the date and amount of each dose; all this is also noted in her book of records together with notes concerning the presence in the urine of bilharzia eggs, blood, pus, the urinary specific gravity, etc. Each morning, before the arrival of the doctor, she marks all the cards for that day and the patients are lined up. Any doubtful cases are reserved for further inspection. The antimony tartrate is supplied in tablets for solution, especially made by Messrs. Parke, Davis and Co., containing 10 grains each. From these a sterile solution is made containing 1 grain in 20 minims. This is dropped from a drop bottle into a sterile cup and further diluted to make up about 10 c.cm., which is then ready to be drawn up into the syringe. A 10 c.cm. glass syringe is used, with two or three needles. All the apparatus is boiled before commencing work. After each injection sterile water is drawn up into the syringe, which is then rinsed out and the needle is removed and immersed in a glass of rectified spirit.

The patient holds up his record card, the sister measures out the doses indicated thereon, and the doctor draws up the solution into the cleansed syringe and adjusts a needle. The patient sits on a chair with his arm extended on a table and his fist clenched. An Egyptian orderly firmly compresses the upper arm with one hand and strokes up the forearm with the other; he paints iodine on the bend of the elbow, and the doctor injects into a prominent vein, the orderly releasing his pressure, and the patient opening his hand. After injection no bandage or dressing is used, but the patient holds his arm up for about five minutes. In this way we inject patients daily at the rate of more than sixty an hour. Occasionally some patients, more especially women and children, have very indistinct veins, and in such cases some trouble is experienced now and again in finding the lumen of the vessel, but fortunately these are few in number. Great care is taken not to let any fluid escape into the tissues. Should this accident occur, the patient feels it at once and says so. If only a drop or two escapes a painful arm results, necessitating the application of fomentations, etc. In the early months we had several such mishaps, one or two causing local abscesses, but now with increased practice we very rarely get any trouble at all.

It has been questioned whether our sterilization is sufficient, especially in that we do not boil the syringe after each injection; but taking into consideration the nature of the fluid injected and the immersion of the needles in spirit before each operation, the method is regarded as adequate. Moreover, in the whole series no case has exhibited the slightest sign of sepsis from faulty sterilization.

Accommodation for Patients.

The majority of those taking the antimony course are in-patients, some of them occupying beds, but the larger number lying on mats in our large open-air "anaemia pavilions." The reason for this is that most of them also suffer from ankylostomiasis, and are being treated for that ailment at the same time. The injections are not begun until two days have elapsed after the patient's first dose of chenopodium oil or thymol with the accompanying fasting, etc., and likewise they have a few days' rest before the

subsequent doses of these parasitocides. A considerable number, however, take the antimony course as out-patients, attending hospital regularly for their injections.

Complications.

Many patients have complications due to the disease, which are appropriately dealt with. Vesical calculus is treated by lithotripsy or suprapubic cystotomy, the injections being continued. Bilharzial growths of the perineum, often resulting in urinary fistulae, are treated by operation in addition to injections. It is remarkable to notice the influence of the injections on the healing of these fistulae; down to a year ago they used to be our most chronic cases, often taking months to heal up after operation. Now the average case heals in about twenty days. Rectal cases showing friable, cauliflower tumours of the mucous membrane, many of considerable size, are treated by ligature, and in the case of small growths by removing as much as possible by scraping with the finger-nail and swabbing with zinc chloride solution. Again, the influence of the injections on these growths is very marked, as many of them quite disappear in a comparatively short time after scraping. Previously two or three operations were necessary. As regards other complicating conditions a very large proportion of the cases, as mentioned above, also suffer from ankylostomiasis, and a considerable number have pellagra. Nephritis is observed occasionally, and in several weak patients with this complication the treatment had to be abandoned.

Late Results.

In a country like Egypt it is always very difficult to follow up cases and to get satisfactory statistics, but we have inspected several patients some months after treatment who testify to the complete relief of all symptoms. Microscopical examination, moreover, still shows only "dead" eggs. The same result is found in several of our own workers who took the course a year ago. In no case have we seen living eggs reappear after completing a successful course, though obviously this might be possible owing to reinfection.

CONCLUSIONS.

1. The results of the antimony treatment on a large scale bear out in a remarkable way the findings of those who have recently written on the subject, and especially of Christopherson, to whose original research is due the fact that bilharziasis need no longer be regarded as an incurable ailment.

2. As most ordinary patients are unwilling or unable to make a protracted stay in hospital, it is necessary to hasten the antimony course and thus give liberal doses; yet in cases where it is possible we urge a more gradual administration of the drug, and in this way we believe risk will be reduced to a minimum, while the eventual cure will be as surely effected; 20 to 25 grains of antimony tartrate is, in our experience, the average amount required to effect a cure. While a less toxic substance than antimony tartrate would be welcomed, we are persuaded that its toxic effects can be largely eliminated by cautious administration.

3. To reduce the mortality a very careful investigation of cases is necessary. "Rests" should be given on the occurrence of any untoward symptoms, the dose lessened at the least indication, and the course immediately abandoned in cases showing marked intolerance.

4. The above technique is recommended as being simple and rapid where large numbers of patients are to be dealt with, as, for instance, when any attempt is made to eradicate the disease in infected districts.

5. It is noteworthy that the successful surgical treatment of complications dependent on bilharziasis, such as urinary fistulae and rectal papillomata, is enormously facilitated by the elimination of the causative factor.

THE third annual meeting of the Board of Governors of the League of Red Cross Societies will be held in Geneva on March 28th. The Board contains representatives of the Red Cross of the United States, Great Britain, Australia, France, Italy, Japan, Spain, Sweden, Brazil, Switzerland, Argentina, Belgium, Denmark, and Serbia. The chairman is Mr. Henry P. Davison, of the American Red Cross, and the vice-chairman the Director of the League, Sir David Henderson.

STENOSIS AT THE INTERNAL MEATUS AFTER SUPRAPUBIC PROSTATECTOMY.

BY

ANDREW FULLERTON, C.B., C.M.G., M.CH.,
F.R.C.S.I.,

SURGEON, ROYAL VICTORIA HOSPITAL, BELFAST.

ALTHOUGH Freyer's operation of suprapubic prostatectomy, correctly performed, is rarely followed by serious after-effects, a recent article by Thomson Walker¹ shows that stenosis at the vesico-prostatic orifice is not a very uncommon occurrence. In a certain proportion of cases after prostatectomy it is difficult or impossible to pass a catheter

into the cavity of the bladder, even when the patient does not complain of any difficulty in micturition. The instrument hitches against a diaphragm roofing the remains of the cavity once occupied by the prostate. The point of the instrument can be moved more or less freely in a space in front of the rectum and behind the bladder, and the injection of fluid, unless very slowly performed, is apt to give rise to pain. The fluid, however, if slowly injected, may find its way into the bladder. The difficulty in introducing the catheter is due, first, to the absence of the guidance of the prostatic urethra, and, second, to the fact that the vesical orifice of the prostatic cavity is not in alignment with the direction of the urethra. It is, in fact, difficult to hit off with the point of the catheter the vesico-prostatic opening. If, in addition, this opening has contracted, the difficulties are much increased. (See B, in diagram).

A. Vesico-prostatic septum.
B. Stenosis of vesical orifice.
C. Prostatic cavity.

The following are illustrative cases:

CASE I.

In July, 1914, I removed an enlarged prostate and a villous growth in a patient aged 70 years. In November of the same year he returned, as directed, for cystoscopic examination to ascertain if any recurrence of the villous growth had taken place. I found it impossible to introduce the cystoscope, though the patient denied any difficulty in micturition. After trying several catheters and dilators I was able to pass a small instrument and to dilate gradually the internal opening sufficiently to admit the cystoscope and destroy with the high frequency current a commencing papilloma. In December of the same year I again had difficulty in dilating him sufficiently to pass the cystoscope. In September, 1915, I passed the cystoscope once more, and again destroyed a small papillomatous bud. Immediately after this I went abroad and did not see the patient again, but I ascertained that he remained well until his death from apoplexy in September, 1919, at the age of 75.

CASE II.

In April, 1919, I removed an enlarged prostate in a patient aged 61 years. Fourteen days after his operation he could hold his water for six hours and pass it in a vigorous stream. In May the suprapubic wound began to leak, and I attempted to pass an instrument into the bladder, but only succeeded in getting in a fine catheter. The wound healed in a few days and remained firm until June, when it again leaked for a few days. I saw him subsequently for cystitis, and tried to pass a catheter to wash out his bladder, but failed absolutely. As his symptoms were slight he refused to have anything further done. I have seen him several times since, and he informs me that he is passing water freely and without pain.

CASE III.

A third case gave me a good deal of trouble. The patient was aged 64 years. I removed his prostate in May, 1919. He passed urine on the twenty-sixth day, but leaked a little from the suprapubic wound on micturition for a fortnight after. From this on his wound was dry, and he left the nursing home apparently well on the road to recovery. It was evident, however, as time went on that he had not obtained the usual relief from prostatectomy. He complained of frequency and pain, passing small quantities of water at a time with much difficulty and straining. The urine contained a good deal of pus. In March, 1920, an attempt was made to pass an instrument to wash out his bladder. All kinds and shapes of catheters and dilators were used, but none of them could be got to enter the bladder. Fluid injected at the meatus was tolerated, and disappeared, presumably into the bladder. On March 19th, 1920, cystotomy was performed through the suprapubic scar. The bladder was empty. The prostatic cavity was roofed over by a