Method of Administration.

The tartar emetic is made up with normal saline in the strength of $\frac{1}{2}$ grain in 2 c.cm., and is sterilized in an autoclave each time immediately before injection. A 10 c.cm. syringe is used, and as we sometimes had over twelve cases to inject at one time, and only one syringe was at that time available, we did not sterilize it afresh between each injection, but washed it out carefully by filling several times with sterile saline, and in that way removed all blood, so that any danger of haemolysis was removed. There was always a sufficient supply of needles kept freshly sterilized; if any of these needles became blunt we discarded them, as the danger of not getting properly into a vein only exists with such an unreliable needle. An injection was never commenced until the blood of the vein had been seen in the barrel of the syringe, and the plunger was always pulled back a little twice or thrice while the injection was being made to ensure that the needle had not shifted out of the vein. The skin over the vein was painted with tincture of iodine and one turn of bandage constricted the arm above the part. Working in this way in the last thirty-eight cases we did not have a septic arm nor anything more than a very slight and passing phlebitis; but in the first seven we had three rather severe infections; two had to be opened and dressed. The reason we found afterwards to be that one of our assistants had septic fingers, and though he never handled the needles or articles actually giving the injections, the infection must have passed from his fingers to the lips or edges of some of the dishes. Anyhow, when he was excluded from taking part in the procedure, all went well.

Injections were always given fairly slowly, especially in those cases where vertigo developed; by this means the number of such cases is diminished.

Complications.

Cough is extremely common, but is usually very slight. In two cases, however, we had seen it so bad as to lead to slight haemoptysis; even in these the symptoms disappeared in a quarter to half an hour. The cough is usually associated with a considerable amount of frothy expectoration which ceases when the coughing is over.

Vertigo is much less common but more troublesome; in three cases we first of all reduced the dose from two grains to one, and had finally to discontinue the treatment before the urine had been quite cleared, as the effect on the men was so great.

Vomiting was fairly common, but never severe. We have never seen any of the bowel complications—for example, diarrhoea—mentioned by Christopherson as seen in the treatment of bilharzia, and of which we have seen cases when treating kala-azar by this drug.

Of complications resulting from the injections themselves, the only one to be expected, if reasonable attention to asepsis is given, is a little phlebitis at the seat of puncture of the vein. This was not very common, and depends on the idiosyncrasy of the patient, for in a case where it had once occurred it tended to occur again. It was never severe, being little more than a tenderness with a rise of 1° or 1.5° F. in the worst cases; all symptoms disappeared on the exhibition of a hot fomentation to the painful spot. On the other hand, if any of the fluid were allowed to escape from the vein into the tissues, the resulting inflammation and necrosis was much greater than is seen with a similar accident from "606," although the ultimate result is always good once the necrotic tissue has been evacuated. In our second series we did not have one case where phlebitis or any similar conditions gave us the least trouble.

Results.

The results of the second series of thirty-eight cases were as follows: Twenty-eight were discharged cured, no ova being found on careful examination of the urine. In one or two very little blood still existed, but it was surprising how in the vast majority, from being almost pure blood, the urine became absolutely negative.

Two were invalided from the service after receiving only 4 grains each; the first of these was invalided because of his very poor state of health, and the second because of the multiplicity of the intestinal infestations (ankylostoma, taenia, oxyuris) and a continued low fever. One, after receiving 16 grains, was much affected with vertigo and treatment was stopped, although the urine contained more

blood and mucus than we liked. We might possibly claim this case as actually a cure, for no ova were found on the last examination. Four were discharged with ova still in the urine after doses of 15, 13, 11, and 10 grains respectively because of vomiting and vertigo. Our intention in such cases is to suspend treatment for a month or two and then resume it, but so far we have no data to give. We are firmly convinced that severe vertigo and vomiting are indications for the discontinuance temporarily of tartar emetic.

Of the twenty-eight cases discharged cured we had the good fortune to examine fifteen during the first to second month after they left the hospital, and in none were blood or ova found. The other thirteen were not in Khartoum, so that we have so far no details to give of them.

CONCLUSION.

We apologize for the recent character of the cases in this paper, for we know only too well the criticisms to which it is exposed. At the same time we feel that the faith that is in us relative to the value of tartar emetic in bilharzial infections is justified by the results we have given, for these results are not based on naked-eye observations or beliefs, but on the non-partisan findings of the microscope. Nor can it be said that we have done no more than has so often been done by rest in bed or low diet, for our most instructive results were on ambulant cases with full diet, and no case was treated on anything else than a generous diet.

"But the blood and ova will recur," says the persistent sceptic. Perhaps he is correct; if so, we will repeat the treatment, and so kill the few remaining schistosomes that escaped our last injections.

Let any one try the effect of even four initial injections—that is, 5 grains—and watch the effect on the hatching period of the ova when water is added to the freshly voided urine, and we are sure he will feel justified in going on to the 15 grains, which we feel is a sufficient and perfectly safe dose to kill the bilharzia without affecting the patient, although in saying this we see no danger in going on to the 25 grains which Christopherson now considers the optimum.

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A CASE OF HYDROCEPHALUS.

BY

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ON February 14th, 1916, Dr. Squire of Pudsey asked me to see with him an ex-soldier invalided owing to suspected cerebral tumour. For the previous eighteen months headaches and diplopia had been the principal symptoms. Latterly his sight had deteriorated, and during the last few days he had suffered from intense left-sided supra-orbital neuralgia.

He was found to have right homonymous hemianopsia; papillitis on both sides; on the right with swelling of 1 D., and on the left of 4 D. The pupillary reflexes were present and the hemianopic pupillary reflex absent. Irritation of the recurrent meningeal branch was considered to be the explanation of the intense neuralgia. He had diplopia from paresis of left external rectus.

There was ataxy of the arms, more pronounced on the right side. The plantar reflex was extensor on the right side. Eleven days afterwards the pulse rate was 48, and the respirations 12; slow cerebration and cerebral vomiting were very pronounced.

First Operation.

The same day the left subtemporal area was decompressed. On reflexion of the dural flap the pent-up cerebrospinal fluid burst through the wall of the lateral ventricle. The dural flap was turned down and invaginated between

the bone and the temporal muscle, and the wound closed in the usual manner.

The next day the pulse was 86, the respirations 22, and previously subnormal temperature had risen to 99.2°. By the second day the plantar reflex had become flexor in type.

On the third day he said that "there was a little man kept running along the bed-rail"; "everything has a red appearance"; "the room is queer-shaped—there are so many corners in it." The auditory cortical centres were also disturbed, as he heard "some one talking to him behind the bed-head." The hallucinations ceased in a few days, and might have been prevented by operating on the right side, had this been feasible. In the case of another right-handed patient, published in 1912,¹ the wall of the posterior horn of the right lateral ventricle ruptured spontaneously during the operation, but no such symptoms occurred during convalescence.

Three months later vision was as follows:

R. $\frac{3}{6}$; 1 Jaeger at 13 in. L. $\frac{3}{6}$; 10 Jaeger at 13 in. No signs of papillitis. Right homonymous hemianopsia still present.

The patient sought relief from the disfigurement of a large hernia over the temporal area which displaced the upper part of the pinna downwards and outwards; he was quite prepared to undergo any operation which would open up fresh channels of escape for the cerebro-spinal fluid. Cushing's operation of retroperitoneal drainage through the lumbar theca was contraindicated, since lumbar puncture had demonstrated that the foramen of Majendie was blocked. We decided to explore the right cerebellum for tumour, and, if no tumour were found, to open up the posterior subarachnoid reservoir (Parkin's operation), and to utilize the deep tissues of the neck as a drainage area, if needful.

Second Operation.

The right lobe of the cerebellum was explored with a negative result. There was a gush of fluid on opening up the posterior extremity of the cisterna magna.

Recovery was uneventful, and, when re-examined two years later, the hernia had disappeared. The stretched skin over the left temporal area could be rolled between the fingers and thumb. The right suboccipital area was not prominent. The sight of both eyes had improved but the hemianopsia persisted. He has resumed his pre-war duties, the chief of which is that of driving a motor car.

The etiology, as is not unusual in these cases, remains unknown.

My thanks are due to Dr. Squire for much assistance in the conduct of the case, and to Mr. Haigh, of the Royal Infirmary, Halifax, for taking post-operative skiagrams of the decompressed area of the skull.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, March 16th, 1912.

FLAT-FOOT.

BY

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AMRITSUR.

A GOOD deal written on the subject of flat-foot has been far too much to show that the leg muscles attached to the tarsus were intended by Nature to support and maintain the arch of the foot. It seems to me that Nature no more intended the leg muscles attached to the tarsus to maintain its form than that the corresponding muscles attached to the carpus were intended to maintain its form. The corresponding muscles attached to the carpus are plainly intended to move the joint and nothing else, and in my opinion the same holds as regards the leg muscles attached to the tarsus. They are merely intended by Nature to move the ankle-joint and the joints of the tarsus. If these muscles had to support the weight of the body or a portion of that weight they would very quickly lengthen and be useless for that purpose. The strong ligaments of the sole have something to do with the maintenance of the arch, though if the weight of the body is excessively thrown on them, as in the development of flat-foot, they too give way and lengthen. The cause of the evil in flat-foot and in over-high instep is to be found in the skeleton formation. Normally the heel, the outer side of the tarsus, and the metatarsals carry the weight at rest and in motion. If

the formation is such that the weight of the body is thrown too much on the inner side of the foot we have flat-foot; if too much on the outer side of the foot we have over-high instep, which cripples a soldier in marching as much as a flat-foot. When for knock-knees we cut the thigh bones in a child of, say, 10 or 12 years of age and set the legs straight, we would have reason to be anxious about the loose ankle-joints, due to the undue looseness of the external ligaments. When we see the patient five or six years later we find that Nature has "taken up the slack" and that the ankle-joints are perfect, as well as the general symmetry of the limbs. Here we have merely dealt with the skeleton. We have adjusted it so that the weight is conducted as in a normal case, and Nature takes care of the rest.

I know a farmer in Ulster whose amusement from boyhood was to shoe a crooked-footed horse. He had no teacher in the art, studied the issues himself, and never read books on the subject. He had experimented to such a degree that I doubt if there is a professional or other horse-shoer in the empire—including veterinary surgeons—who could shoe a crooked-footed horse better than he, and exceedingly few who could do it as well. He was a born mechanical genius. I often talked the matter over with him, and though he had never heard of the centre of gravity or of muscle attachments, he had got to the bottom of the subject, and was scientific to the last degree. A few years ago I was spending an evening with him, and a flat-footed workman came up to us. I requested him to strip the feet, and asked the farmer how he would "shoe" him. He had not previously devoted any attention to orthopaedics—a term he had never heard of. He asked the man to stand in an attitude which a soldier calls "attention," and walked round him, looking at the legs and feet. He drew my attention to the fact that the inner side of his feet was not straight, but bulged inwards at and below the ankle. He then said the cause was plain; that flat-foot was due to the formation of the skeleton, which threw the weight of the body too much on the inner side of the foot, and that the remedy was plain. I then asked him about an over-high instep. He replied that it was the opposite of an over-low instep, and the cause must be the reverse, and the remedy the reverse. He said he would get the bootmaker to make the insole (which is usually made of thin leather all the same thickness) of the heaviest sole leather for the flat-foot, full thickness from heel to toe on the inner side and pared away like a wedge to the outer side, and the reverse for an over-high instep. By this means he said he would throw the weight further out on the foot in the case of a flat-foot and further in in the case of an over-high instep. In the case of the over-high instep he said the instep would sink under this treatment. He also said it would require some experimentation to find the most suitable thickness of the thick side of the insole to suit the individual case. I then explained to him the steel plates which orthopaedists use for flat-foot, and that they claimed that they supported the arch. He laughed at the idea, and said that if the plate supported the arch, it would press on it and would certainly lame the man, and that any benefit it might have was due to raising the whole inner side of the foot, and thus throwing the weight of the body further out.

I am personally convinced that the farmer was right both as regards the causation of these two conditions and as to the method of treating them, and I would respectfully invite the attention of those who have to deal with these conditions to this aspect of the question.

KEIFFER has published in *Le Scalpel* the results of a study of the physical and mental state of Belgian women during the war. The effects of privation began to show themselves in 1915 in disturbances of nutrition, wasting, enlargement of the glands of the neck, and rickety lesions. Tuberculosis caused great ravages, especially in young girls. In married women, long before the menopause, amenorrhoea was very common; with the signature of the armistice it diminished. Keiffer attributes it to the insufficiency and bad quality of the food, as well as to the mental suffering caused by the German occupation.

THE Massachusetts Commission of Mental Diseases states that 200,000 persons in the United States suffer from epilepsy, and that only 3.5 per cent. of these are cared for in institutions. Thirteen States in the Union have colonies providing for the care of 7,000 epileptics.