was very marked, and in the remaining 7 no change was observed.

Of the females, in 1 case persistent epistaxis ceased; in 3 cases night sweats ceased and the temperature fell to normal; in 2 cases the night sweats ceased but the temperature did not fall; in 1 case night sweats ceased but the temperature rose slightly, but on continuing the treatment the temperature again became normal. In 2 cases the sweating was reduced but did not cease. In 2 the temperature was reduced to normal with improvement. In 1 the sputum was reduced to nothing with great improvement, and in 1 the sputum was reduced. In 1 breathlessness became much less. In 2 sputum containing tubercle bacilli appeared for the first time. In a spinal case irritability became less; 10 cases improved markedly in feeling of general well-being, and in 5 no change was observed.

The more immediate effects of treatment can be gathered from a perusal of the above, but I may say in passing that some of these cases have improved in a phenomenal manner, the majority being cases of long standing. The case having persistent epistaxis had suffered from it on and off since 1914, and just before the treatment was begun she was having attacks of epistaxis several times a day; after seven injections this completely stopped, and she had had none for six weeks; in addition she is not now short of breath, is feeling very fit and well, and is working hard as a ward maid. She was formerly an inmate of the Ayrshire Sanatorium. It seems difficult in this case to confuse cause and effect. One of the patients in which the haemoptysis ceased, had been having small haemorrhages for weeks; he has now been free for two months and tubercle bacilli have disappeared. One of those in whom the sputum dried up had had it for years; in addition her temperature has fallen to normal and she is able to do her work with comfort. One of those in whom the breathlessness was very much relieved has been under my care almost continuously for eight years; about four years ago I produced a partial pneumothorax in this case, without any improvement, and she then became quiescent under Spengler's I.K. therapy, but she was always troubled with shortness of breath when she gained weight. Since she has had the calcium she has gained over half a stone in weight and is less short of breath.

One of the cases in which the night sweats ceased and the temperature fell was very remarkable: she had been in bed in this sanatorium for seventeen weeks, with a continuous high remittent temperature; she had been ill for a long time, and was what is called a "third stager," with tubercle bacilli in the sputum; she had been treated by rest during all this time, and also with calcium lactate, but although an excellent patient she was no better. She was one of the first cases on which I tried this treatment: at the end of six weeks her temperature was normal, the night sweats ceased almost at once, and by the time she went out tubercle bacilli had disappeared, and she was very much improved.

In two cases something like a reaction occurred, as after the first injections sputum appeared for the first time containing tubercle bacilli. One was a patient who had been under my almost continuous care for six years; she had never had a normal temperature during that period, and was very breathless, largely owing to the extent of the disease reacting adversely on the heart. She has continued the treatment because she feels so much less tired after the injections, but is at present very ill. The other was a girl also with extensive disease, and I was much puzzled why she had no sputum; in this case the treatment was continued and the sputum is much diminished, and she is feeling very well. These two cases may serve as a warning that colloid calcium has in some cases a direct action on the lesion.

Colloid calcium would seem to be beneficial in surgical tuberculosis, for in one of the cases tuberculous glands rapidly diminished and sinuses dried up. In two cases of caries of the spine, in one of which paraplegia had been present for some months but had disappeared before I started the treatment, the remaining spinal irritability, as shown by increased knee-jerks and pronounced ankle clonus, became very much less, the latter being quite unobtainable on some days. In the other the knee-jerks became much less exaggerated and the temperature tended to fall.

The action of the calcium can, perhaps, to some extent be explained by a consideration of its effects. We believe that in a considerable number of cases it stops sweating; sweating lowers the temperature and therefore in those cases in which the sweats cease and the temperature falls there must be some other action at work, which, however, might be

explained similarly; the benefit may be due to the less permeability of the toxins shielding the remainder of the body tissues from poison derived from the lesion; the drug might by this action restore patients saturated with toxin to such a condition that they might ultimately be able to use toxin to form antibodies. I am inclined to think that a certain number of so-called chronic cases which exhibit a normal or subnormal temperature may really only have lost their sensitiveness and are being continuously poisoned by toxin, but are unable to react by a rise of temperature; many of these cases are doubtless thought to be doing well in sanatoriums, but their subsequent history differentiates them from cases in which a normal temperature indicates cure of the disease. Probably such cases will benefit by the administration of calcium. The two patients mentioned who lost their breathlessness may both come under this category, the breathlessness being due to toxæmia.

I think that colloid calcium may have a wider application in medicine than the treatment of tuberculosis; it may prove useful in rickets where there is a deficiency of calcium salts and where there is a great tendency to sweat. It is significant in this connexion that cod-liver oil is very useful in both these diseases. I would suggest that if colloid calcium be tried on quite young children a small dose of 0.1 c.cm. be first given, to be increased until the optimum dose is found. It is probable that adenoids would also be benefited, and the same caution would apply here.

In conclusion, I wish to express my thanks to Sir Malcolm Morris for the interest he has taken and the encouragement he has given me during this investigation, and to Mr. J. F. Ward, chief chemist to the Crookes Laboratories, for preparing the drug and for much valuable information concerning its properties.

POST-OPERATIVE HAEMORRHAGE.

BY

FREELAND FERGUS, M.D., LL.D.,

CONSULTING SURGEON, GLASGOW EYE INFIRMARY.

In connexion with an extremely interesting communication made by Messrs. Pringle and Stewart and Professor Teacher in a recent number of the *Journal of Pathology and Bacteriology*,* the case hereafter recorded may be of some importance, for it seems to be analogous to the cases of post-operative haematemesis which they have described. I have now had a large experience of ophthalmic operations, but as far as I recollect I have never had a similar incident. Fortunately the patient concerned did not succumb to the condition. He made an excellent recovery, and therefore an accurate diagnosis of the source of the haemorrhage is impossible; only inferences can be made.

I performed the operation of cataract extraction one afternoon about 2 o'clock on a gentleman well over 70 years of age, being assisted thereat by my friend Dr. McMillan. The patient had been in a nursing home for a considerable time before the operation, for, at his first admission, inoculation of serum agar tubes with the conjunctival fluid gave a fairly active growth of *Staphylococcus albus*. I therefore had resort to the saline douche, which was applied every few hours for some days till the culture gave only two small colonies. When this condition of comparative sterility had been obtained I determined to operate. There was thus ample opportunity of observing his general condition prior to the operation. To all appearances he enjoyed excellent health; he took a full but plain diet, and in every way had a relish for food and never complained of the slightest pain. For years he had been in the habit of taking a mild aperient as occasion required, and this he continued to do while in the nursing home. The urine was found to be free from albumin and sugar. He was for his years possessed of a most unusual degree of vigour, both mental and physical. The only incident in his previous medical history which seems worthy of record is the fact that when a young man he was considerably troubled with epistaxis.

The operation of extraction gave no trouble; the lens came out quite easily, and an iridectomy was made; although the eye was highly myopic there was no escape of vitreous whatsoever. Altogether the conditions seemed very favourable. I visited the patient the same night about 10 o'clock, and found him as comfortable as could be expected. Following

* An account of this paper was given in the *BRITISH MEDICAL JOURNAL*, December 24th, 1921, p. 1038.

my invariable custom, I gave him liberty to lie in whatever position he found to be most comfortable. He made no complaint, and seemed to be doing quite well. The following morning I was summoned urgently to see him. On my arrival in his room I ascertained that about two in the morning he had suddenly been seized with very acute pain in the neighbourhood of the stomach; this had lasted for some considerable time, and had been followed by severe vomiting. The matters vomited had been retained, and I found on inspection both of the contents of the vessel and of the bed-clothes, which had been stained by some of the vomited matter, that there had been severe haematemesis. The coloration of the vomited matter was dark brown, but in the vessel I found also some fresh blood. I immediately availed myself of the services of a physician, who gave him a prescription, chiefly consisting of bismuth, and gave directions as to the feeding. When I saw him in the morning after the vomiting I found him considerably collapsed, and complaining of great weakness. Evidently he had suffered very severely from pain. Fortunately there was no recurrence of the haemorrhage, and ultimately, as already intimated, he made an excellent recovery. In view of the communication already referred to, the possibility of the case having been one of oesophageal post-operative digestion cannot be overlooked. Such severe symptoms after cataract extraction was an entirely new occurrence in my experience.

ANTIMONY IN LEPROSY.

BY

G. H. WILDISH, M.B.,

V.M.O. AMATIKULU LEPER INSTITUTION, ZULULAND.

In view of the reported benefit derived from the antimony treatment of some Indian lepers at Durban in 1920,¹ Dr. F. G. Cawston asked me to give antimony a trial on a more extensive scale amongst natives at the Amatikulu Leper Institution in Zululand. No special treatment for the disease had been used there, reliance being placed on fresh air, good food, careful dressing of ulcers, cod-liver oil, and to a lesser extent chaulmoogra oil by the mouth.

I decided to test oscol stibium in the treatment of twenty of the worst cases, mostly cripples who were being housed in the central hospital while awaiting death. The majority of these cases received doses of the drug intramuscularly, 2.5 c.cm., 3 c.cm. and 6 c.cm. on consecutive days. Three weeks later 4.5 c.cm. and 6 c.cm. were given on consecutive days. This series of two doses was repeated during the next two months, making a total of about 40 c.cm. injected.

Beneficial effects were seen in the relief of paralysis, drying of the ulcers, and in the general condition of all the patients treated except one, who has shown no change at all so far. Similar successful results were obtained from the use of Crookes's colloidal antimony, which proved more toxic and more effective; equally good results were obtained in a few cases treated with tartar emetic intravenously.

Over 1,000 injections have been given at the Amatikulu Institution during the last six months; there has been no serious local inflammation and no abscess. In each case the needles and syringes were sterilized before use by means of mercury biniodide in methylated spirit followed by pure methylated spirit, and the site of the injection was sterilized by mercury biniodide solution.

Though antagonistic to the treatment when first adopted, these leper patients have developed a great belief in its efficacy, and in most instances have themselves requested that it should be continued. In the case of Zulul this request is very significant—they do not like medicine injected.

At the present time (July) 98 female natives and 131 males are being treated with various preparations of antimony; 4 of these have recently been treated with ethyl esters after two series of injections with antimony, and their progress points to the efficiency of the combination.

Although still in its early stages, the results at the end of six months have been very encouraging, and suggest antimony in considerable doses for short periods, with intervals of three weeks between each series, as a great help in treating leprosy and possibly as a cure in some cases. It is also useful in combination with ethyl esters and sodium hydnocarpate.

The following cases illustrate the use of the drug, especially in very severe untreated cases.

CASE I.

Native male; on January 20th, 1920, he was not expected to live much longer. He was partially paralysed in both legs and had lost all the toes on one foot. There was marked paralysis of the face and eyelids, so that he could close his mouth only by means of his hand. Dry keratitis had supervened as a result of the facial paralysis, but was not advanced. He received 2.5 c.cm., 3 c.cm., and 6 c.cm. oscol stibium on three consecutive days. Three weeks later the paralysis of the legs had much improved, he had taken food better, put on weight, and felt more comfortable in every way. Since then he has received four more series of injections, 3.5 c.cm. and 6 c.cm. being given intramuscularly on consecutive days. To-day (July 20th) he can walk regularly to the dispensary, a distance of 200 yards or more, and is to be seen walking about the place continually. He can close his mouth without help and chew his food. His eye condition is much improved, but he cannot yet quite close the lids. The treatment is being continued.

CASE II.

This is also a case of maculo-anaesthetic leprosy, showing partial paralysis of the legs and face with conjunctivitis. He received the same treatment and no other during the last six months. The eye condition has entirely cleared up and the lids have returned to normal. Although there is still some weakness of the legs, he is now able to walk without difficulty and has considerably improved in general health. Both these cases showed lepra bacilli in scrapings taken from the nasal septum and were passed as lepers by several boards. Without treatment both would certainly have died before now.

CASE III.

This native female was very emaciated and feeble. She had also been placed in the hospital to die. There was no paralysis. The macular areas were raised over nearly the whole of the back about one-eighth inch above the normal skin; they were rough and one of them covered a square foot of the surface of the back. She received the treatment outlined above. After the first series of injections the most remarkable results became evident, the whole area desquamating and leaving patches of healthy skin with small ulcerated areas. A somewhat similar result was obtained by Dr. Cawston in the treatment of Naukaklia, as reported in the *BRITISH MEDICAL JOURNAL* on December 4th, 1920, pp. 855 and 856. The skin of this Amatikulu patient was anaesthetic throughout, but after the injections the affected areas began to itch and caused her to scratch herself. On July 19th the skin was almost normal, a trifle lined, with a slight mottling of colour only. She is now walking about easily, is eating well, and feels well.

CASE IV.

This native woman was also in a dying condition; she was a case of maculo-anaesthetic leprosy with enormous discharging ulcers extending from the knees to the feet. She was very thin and weak. She received the same doses. The ulcers cleared up very rapidly at first, and, although there are still a few small sores, the extensive ulceration has healed up much more rapidly than a burn over such a large area would have been expected to do. To-day (July 19th) she feels well and walks about easily all over the place. Throughout the injections the ulcers have been treated locally, as they were treated before the commencement of the antimony course.

CASE V.

On January 20th this native boy of 11 years was considered to be dying. He had enormous tubercles all over the face which might be described as confluent. On one of the feet there was a perforating ulcer 2 inches in diameter. He was given 2.5 c.cm. of colloidal antimony intramuscularly. This dose gave rise to a very severe reaction and for a week his condition was very grave. At the end of the week, however, he felt so much better that he requested me to continue the injections and 3.5 c.cm. were injected without ill effect; 6 c.cm. were given on the following day. All the tubercles shrunk immediately so that their summits looked feathery as a result of acute desquamation. This desquamation has occurred after the other series of injections. On July 19th the tubercles, though present, were much smaller and retracted. The boy is taking his food well and feels well. The ulcer on the foot healed rapidly and has not caused any further trouble.

CASE VI.

This native man showed macular areas all over his face and body, these leprosy areas were depigmented and anaesthetic. He improved very rapidly after the first series of injections in February. The spots began to regain their pigment and the sensation of pain returned. The sweat glands returned to normal in the leprosy areas, so that the skin regained its normal appearance and became shiny. To-day there is only a slight mottling of the skin to indicate previous disease.

At a later date it is hoped to give a more extensive report of the effect of antimony on a large series of cases, but at the end of six months' treatment one can say without fear of contradiction that antimony has a very decided value in the treatment of leper patients, more particularly those who are exhibiting severe manifestations of the disease. Dr. Andrew Balfour of the Wellcome Bureau saw these cases when visiting Natal, and they have been inspected by a considerable number of medical men from various parts of South Africa who are interested in the progress of the treatment.

¹ See *BRITISH MEDICAL JOURNAL*, July 17th, 1920; December 4th, 1920; March 19th, 1921.