Cholaemia is slightly, and cholesterinaemia is markedly, raised. This is the period at which chronic gall-bladder cases present local deposits of cholesterin. Chauffard has well shown that the system endeavours by all possible means to eliminate from the blood stream any excess of cholesterol.

Residual nitrogen and uric acid, less markedly increased than in the second group, are nevertheless above normal; the cells of the liver are less affected than in the latter group, but the deficiency of heart and kidney is more marked. It is the factor which will assume the supreme importance in the fourth group.

FOURTH GROUP. (See Table IV.)

In this group heart failure sets in and the blood gets more and more diluted. Albuminuria appears at the same time. The urea concentration of the urine falls coincidentally and Ambard's coefficient, by its increase of value, shows a progressive degeneration of the kidney. Hypercholesterinaemia remains very high, as also does the nitrogen and uric acid content of the blood. In brief, the cases in this group present the humoral characteristics of Bright's disease. As a matter of fact, these results enable us to trace the connexion between lithiasis and the condition underlying Bright's disease, and tend to verify the hypothesis of Chabanier that such a nephritis is the final development of a general condition.

CONCLUSIONS.

From the preceding facts we can draw the following therapeutical conclusions.

The gall-bladder localization must not be considered as the only guide to correct treatment. It can only be used to determine the need for surgical intervention. The essential treatment must be based on the conception of a general metabolic disorder, previous to calculus formation, in which the liver plays the predominant part. The safety-valve furnished by the biliary apparatus is of the utmost importance; it can act by preventing general and local complications.

Whilst therapeutic measures are practically ineffective once complications of the cardiac and renal systems are established (when symptomatic treatment is the best that is available), it is possible in the periods preceding painful or insidious lithiasis to amend and correct the function of the liver by more effective therapeutic measures than have previously been employed.

TREATMENT OF SLEEPING SICKNESS.

BY

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PREVIOUS to July, 1924, the routine treatment of sleeping sickness in the C.M.S. Hospital, Toro, had been by atoxyl injections, with varying success. In July 50 grams of "Bayer 205" were sent by the principal medical officer and six cases were selected for comparative observation. Two were of the severe cerebral type, showing the later stages of the disease; two were of early cerebral type, with considerable glandular involvement; two were fairly early cases, with slight involvement of glands, etc. All came from Katwe or the Semliki river area. In only one instance (severe cerebral type) had the patient received any previous treatment—namely, two injections of atoxyl three and four weeks before respectively, with only slight improvement. The blood contained trypanosomes in each patient except one early case, in whom the gland juices were positive.

One gram of "Bayer 205" was, as advised by Kleine, given to adults intravenously, in 10 c.cm. physiological saline, on the first, third, fifth, twelfth, and seventeenth days. Routine examinations of the urine were made, but no albuminuria or other toxic signs, found by others, were observed, and no ocular symptoms.

The blood examinations after the first injections were negative in every case. I fully appreciated the need of observation of the cerebro-spinal fluid, and only abandoned

the attempt after very careful inquiry and consideration. The compound is a voluntary one, attached to a missionary hospital, and it was thought that such a painful operation would be extremely likely to drive the patients away and keep others from coming, thus negating the work of years.

The treatment was given in July and August, 1924, and in October and November all but the two severest cases were discharged at their own urgent request. Blood and gland examination in every case were then negative, and the patients had been completely free from every sign or symptom of the disease for three months (the single possible exception is detailed below).

I persuaded the two "cerebral" cases to remain for longer observation, by promising gifts, etc. One had, in September, a slight return of drowsiness in the day time, but trypanosomes were not found (he refused spinal puncture); I accordingly gave them both three further doses at weekly intervals. The history of these two cases is worth recording.

CASE I.

Juma, a man aged 28, when admitted on June 16th, was sleeping nearly all day; he was emaciated (weight 5 st. 13 lb.), incontinent, and there was coarse tremor of the tongue, etc.; glands much enlarged. Examination of the urine was negative. Trypanosomes were present in the blood. Temperature 99.2°, pulse 120.

An intravenous injection of atoxyl was given on June 17th and repeated on June 24th. On June 30th his weight had increased to 6 st. 1 lb., and he was not sleeping so much. On July 15th he was given 1 gram of "Bayer 205" intravenously. The following day the temperature was 99.8°; no trypanosomes were found in the blood, and there was no albuminuria. He had not slept all day. The "Bayer 205" was repeated on July 17th, 19th, and 26th, and on August 12th. On August 11th his weight was 6 st. 11 lb., and he was not sleeping in the daytime; there was some tremor; he was able to answer questions. By September 4th the patient's weight had increased to 7 st. 4 lb.; he was reported to have been drowsy in the daytime during the last two days. He was given 1 gram of "205" on this day, and again on September 11th and 18th. On October 7th his weight was 7 st. 6 lb., and he was free from symptoms; there was, however, some tremor, and the glands were still much enlarged.

CASE II.

Everina, a girl aged 16, when admitted to hospital on July 2nd was sleeping nearly all day; she had been incontinent, and answered questions only after repeating three or four times. There was coarse tremor, and glands were very much enlarged; no ocular symptoms were present. Weight 4 st. 9 lb.; temperature 99.4°, pulse 116. Trypanosomes were found in the blood.

On July 15th 0.7 gram of "Bayer 205" was given intravenously; there was no reaction; no albuminuria, etc. Temperature 99.6°. The following day there was no reaction; the patient did not sleep during the day; no trypanosomes in the blood. On July 25th her weight was 4 st. 12 lb.; she was smiling and answered questions; tremor less; no trypanosomes. On August 11th she was quite bright; weight 5 st. 4 lb. On September 4th she was given 0.7 gram of "Bayer 205," and again on September 11th and 18th. By October 7th her weight had increased to 5 st. 6 lb.; there were no symptoms, though there was still some tremor.

The later history of these two cases is very unfortunate, but interesting. It points to the necessity for prolonged observation and, if possible, examination of the cerebro-spinal fluid.

On October 16th I went on Safari. Both patients were then apparently quite well and still gaining in weight. No symptoms had been observed. They had both wanted to return to their homes and it had taken considerable persuasion to induce them to remain. While I was away on Safari, on October 19th, both patients, apparently without any premonitory symptoms, went into the comatose final stage of the disease. They became incontinent and died within twenty-four hours. Such a rapid course is unusual in my own experience, and I think might be considered by a biologist for his explanation. The native attendants are quite emphatic in saying that there was no return of symptoms up to within a few hours of the comatose stage, while I myself saw them four days before. It was unfortunate that I was away when this occurred. The blood had not been examined for two months.

The other four cases are reported to be still well after eight months (March, 1925).

Summary.

1. "Bayer 205" is immensely superior to any drug previously tried.
2. It caused trypanosomes to disappear from the blood in twenty-four hours in the severest cases.

3. It cannot yet be considered to be a cure for *late* cases, though definitely ameliorating the patient's condition and restoring normal life for some months.

4. Late cases should be kept under compulsory control—for example, in some prison lines—with examination of the cerebro-spinal fluid.

In conclusion, I must add that I have also made a trial of tryparsamide, a supply of which drug was furnished in October, through the principal medical officer, by the Rockefeller Foundation. A similar series of six cases was selected, but was unfortunately broken up, after three injections, by five of the cases running away after a spinal puncture for cerebro-spinal fluid examination of one case. This misfortune points to the need of careful, plodding preparation before making any further attempt at spinal puncture, or else putting some cases aside for the purpose, but not in the same area. Each case, however, had improved remarkably and seemed completely free from the disease.

Three cases have now been under observation for over three months, apparently completely cured. No reaction or toxic effects were noticed after the tryparsamide injections.

The results are difficult to compare with the "205" results. However, the clinical impression left on my mind is that tryparsamide is equal, if not superior, to "Bayer 205" in the treatment of sleeping sickness, and is easier to work. I intend to use the tryparsamide as a routine, as long as the supply lasts.

I am indebted to the Principal Medical Officer, Uganda, for permission to publish these notes.

TEN CASES OF ACUTE RETROBULBAR NEURITIS.

BY

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DURING the last six months an unusually large number of cases of acute retrobulbar neuritis were admitted to the ophthalmic ward of St. Bartholomew's Hospital. These cases are of interest inasmuch as in no one of them was any satisfactory cause of the condition found, and in all but two there was rapid recovery of vision.

There are a certain number of cases in which the cause is clear, such as disseminated sclerosis, diabetes, and various toxic conditions; but reference to writers on the subject shows the frequent occurrence of cases in which the cause is unknown. A very large list of diseases held responsible has been compiled; this includes rheumatism, gout, dysentery, intestinal stasis, tubercle, syphilis, sinusitis, septic tonsils, typhoid, and many others. Sphenoidal sinusitis has been blamed for a great many cases, and the sinus drained, with subsequent rapid improvement of vision. This, however, is the normal course of events in a majority of cases, and therefore not necessarily a result of the operation. Mr. Foster Moore states that he has never seen a case of retrobulbar neuritis that he was satisfied was due to paranasal sinusitis.¹ All these cases, accompanied by skiagrams and x-ray reports, were examined, with negative results, by Mr. Rose in the throat and nose department of the hospital.

The outstanding features of the condition are rapid loss of central vision with neuralgic pain in the eyeball, made worse by movement of the globe or pressure of it back into the orbit; impairment of the activity of the pupil to light; absence of gross disc changes; and a tendency to rapid recovery. The following is a short summary of each case.

Case 1.—A woman, aged 27. Noticed pain in the right eye, followed a week later by defective vision in the same eye. Vision: right, 6/60; left, 6/9. The right pupil reaction was sluggish. The peripheral fields were complete, but there was a small central scotoma in the right field. The edges of the right optic disc were not well defined, but the fundi were otherwise normal in appearance. The Wassermann reaction was negative. There was no evidence of any sinusitis. Dr. Hinds Howell reported the absence of signs of organic disease of the nervous system apart from the optic nerve. After eight weeks the vision was 6/9.

Case 2.—A woman, aged 20. Pain in the right eye, followed a week later by defective vision. For one year she has had a twitching of the left side of the face and neck. Vision: right, 6/12; left, 6/9. She complained of tenderness of the right eye. The reaction of the right pupil was sluggish. The peripheral fields were complete, but there was a relative scotoma in the lower temporal region of the right field. The fundi were of natural appearance. It was reported that there was no manifest sinusitis. Dr. Hinds Howell found no evidence of insular sclerosis. Eight weeks later the vision was 6/6.

Case 3.—A woman, aged 26. Left eye became misty two weeks before admission. Three weeks previously she had had pleurisy. Vision: right, 6/6; left, counts fingers at one metre. The left pupil was inactive to light. The visual fields were complete. The edges of the left disc were blurred, but the fundi were otherwise of natural appearance. No evidence of manifest sinusitis was found. There was no organic disease of the nervous system. Six days after admission the vision was 6/6.

Case 4.—A woman, aged 32. Frontal headache and pain in the right eye, followed nine days later by failure of vision of the same eye. Vision: right, 6/12; left, 6/6. Both pupils were active to light. There was a general contraction of the peripheral field, and a small central scotoma. There was optic neuritis, but no haemorrhages and no exudates. The left fundus was of natural appearance. Mr. Rose reported that clinical examination did not arouse suspicion of sinusitis. There was no evidence of organic disease of the nervous system. Seven weeks later the vision was 6/9.

Case 5.—A woman, aged 20. Sudden fogging of vision and pain on touching the eyes. Vision: right, 6/24; left, 6/36. The right pupil was active, but the action of the left pupil was sluggish. The visual fields were complete. Both optic discs were swollen, the left more than the right. The Wassermann reaction was negative. Nothing abnormal was discovered in the central nervous system, and there was no sinusitis. Eighteen days later the vision was much improved: right, 6/12; left, 6/6.

Case 6.—A woman, aged 40. Right eye became misty three weeks before admission to hospital. No pain was noticed at any time. Vision: right, large moving objects; left, 6/6. The right pupil did not react directly to light, but reacted consensually. There was loss of the nasal half of the right field and of the inferior temporal segment of the left field. The fundi were of natural appearance. The Wassermann reaction was described as border-line. Mr. Rose reported that there was a small polyp in the left nostril, and he believed there was ethmoiditis on the left side, but he could find no evidence of it on the right side. There was no evidence of organic nervous disease. The vision was not improved one month later.

Case 7.—A woman, aged 22. Impaired vision of the right eye, and pain in the same eye on looking to the left. Vision: right, less than 6/60; left, 6/12. Both pupils were active. The peripheral fields were full, but there was a central scotoma in the right field. In the right fundus great tortuosity of the vessels and distension of the veins was to be seen. The disc was surrounded by small haemorrhages. The left fundus showed the same condition of the arteries and the veins, but no haemorrhages were to be seen. No sinusitis or organic nervous disease was to be seen. Three weeks later the vision was 6/24.

Case 8.—A woman, aged 24. Pain in the right eye, which became worse on looking to the left. Vision: right, less than 6/60; left, 6/6. Both pupils were active. There was a central scotoma in the right field, but no contraction of the peripheral fields. The right optic disc was swollen, and there were haemorrhages in the fundus. The left fundus was of natural appearance. The Wassermann reaction was negative. Mr. Rose reported that there was no sinusitis. Dr. Hinds Howell found no evidence of insular sclerosis, nor of any lesion in the nervous system beyond the papilloedema. Four weeks later there was no swelling of the disc and no haemorrhages, but the vision was not improved.

Case 9.—A man, aged 39. Pain on looking to the left, followed two weeks later by failure of vision, especially of the left eye. Vision: right, 6/36; left, perception of light. Both pupils were active. There was some contraction of the nasal part of the right visual field. The right fundus was of natural appearance. There was some swelling of the left optic disc, but no haemorrhages. The Wassermann reaction was negative. There were two septic teeth in the lower jaw. Mr. Rose reported no manifest sinusitis. There was no disease of the nervous system. Three weeks later the vision was: right, 6/9; left, 6/24.

Case 10.—A man, aged 43. Pain on movement and failure of vision in the left eye. Vision: right, 6/6; left, less than 6/60. Both pupils were active. There was a general contraction of the left visual field. The left disc was slightly swollen, and one haemorrhage was to be seen. The Wassermann reaction was negative. There was no sinusitis and no evidence of organic disease of the nervous system. Four weeks later the vision was 6/36.

Diagnosis.

Although in one or two of the cases the diagnosis was reached by a process of exclusion, it may in general be accepted as correct. In all but two of the cases there was pain as well as defective vision. In four this pain was made worse on movement of or pressure on the globe. A scotoma was found in five of the cases, and in four there was some peripheral contraction of the field of vision. In five cases there were marked pathological changes in the disc. In five of the cases the activity of the pupil was