3. Both patients live at Nakibira, a village in the cleared part of the sleeping sickness infected area on the Mpologma River, from which place, however, a succession of fresh infections have been derived (Cases 36, 37, 66, 67, and 68).

4. Investigation showed that the people from this village were crossing to an uncleared and heavily fly-infested promontory, Budobo, for the purpose of devil worship.

5. Acting on the belief that they were not relapses but reinfections, and early cases at that, we treated them by a single intravenous injection of arsenic. Up to the present date they both remain quite well, and blood, glands, and cerebro-spinal fluid are completely negative. (Another case treated with plain serum, who also comes from Nakibira, showed trypanosomes in glands, and he also is possibly a reinfection.)

In view of a suggestion made to us by Dr. Shaw Mackenzie of King's College, that the results obtained from serum treatment might be due to the stimulation of fat splitting by the autogenous serum, we have treated a number of cases by injecting the serum intramuscularly instead of intrathecally. The number so treated, however, is too small for any conclusions to be drawn from them. Dr. Shaw Mackenzie also gave us two preparations to try—"A" and "B"—on which we are experimenting; further, he suggests that autogenous serum is one of the best stimulants of lipase.

In our endeavour to ascertain clinically the most satisfactory procedure we have used other methods; these are set out in Table VI, which is again self-explanatory.

TABLE VI.—Showing all Cases Treated, Method Employed, and Result to Date.

No.	Method.	Total Treated.	Alive and Well.	Dead or Relapsed.	Number Missing.
1	Intrathecally serum	41	31	8	2
2	Plain serum—that is, no preliminary drug injection	4	3	1*	0
3	Non-autogenous serum: injected intrathecally or intramuscularly	7	4	3	0
4	Intramuscular serum—as 1, but intramuscularly†	7	5	1	1
5	Drug only intravenously	5‡	2	3	0
6	Drug direct into spinal canal	2	0	2	0

* Possibly reinfection. See report.

† See Shaw Mackenzie's suggestions.

‡ See Table II.

Towards the end of 1920 Dr. Ashton Bond of the Church Missionary Society, Toro, at our request treated some cases by the salvarsanized serum method. He writes as follows (January 31st, 1922):

"About two months ago I was at Katwe and Kazinga, where the sleeping sickness cases mostly are. I saw a number of those whom we treated with intravenous neo-kharsivan and intrathecal injections of serum (about eighteen months ago) and in most cases there was general improvement of general health and also the glands had mostly become so small as to be hardly palpable, or else were not palpable at all."

Bond has, in addition, treated 12 other cases; after an average period of twelve to eighteen months these were re-examined, and the following report sent to us about them: "Dead, 2; 'alive and well,' 5; and migrated to Belgian Congo, 5." (The latter are therefore probably quite well.)

Apart from the appended figures we have, since the beginning of 1922, treated some 200 cases at the suggestion of the Uganda Government. These we have grouped under various treatments as follows:

1. Intrathecal salvarsanized serum.
2. Intramuscular salvarsanized serum.
3. Intramuscular plain serum.
4. Intrathecal plain serum.
5. Non-autogenous intrathecal serum.
6. "A" (Shaw Mackenzie) intravenously only.
7. "B" (Shaw Mackenzie) intravenously, followed by serum.
8. "B" (Shaw Mackenzie) intravenously only.
9. "B" (Shaw Mackenzie) intramuscularly only.

The study of these cases should provide an instructive commentary on the efficacy of the treatment we advocate.

We wish to express our deep obligation and thanks to Dr. C. A. Higgins, P.M.O. Uganda, for permission to publish this report, and also for his great assistance in enabling us to

carry out this method on a large scale; also in Uganda to Drs. Mary Martin, Griffin, Bond, and Rawson; and in England we are deeply indebted to Professors Simpson and Eyre and to Dr. Shaw Mackenzie for their very valued interest and assistance.

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HISTOLOGICAL CONDITIONS IN A CASE OF ADDISON'S DISEASE.

BY

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It is not easy to find any detailed description of the microscopical appearance of the organs in Addison's disease; the following details may therefore be of interest, more especially in view of the prominent part that is being assigned to the endocrine organs at the present time.

History.—The patient was a storeman, aged 42. In September, 1921, he began to suffer from indigestion accompanied by vomiting, and about the same time his wife noticed that his skin began to darken; she stated that the deep bronze colour noted on his admission to hospital was reached within a few weeks. In January, 1922, the patient gave up work, and took to his bed on account of progressive weakness; at this time he also complained of pains in his limbs and chest, and was treated for "influenza." On February 14th, 1922, he was admitted to hospital suffering from extreme weakness. He had had no previous illness except severe influenza thirty years ago. The family history is good and he has five healthy children.

Condition on Admission.—The patient was emaciated, although well built and muscular. He was extremely weak, and sweated freely on the slightest movement. Temperature 94° F., but no shivering. The skin was brown all over, the pigment being most marked over the hands, face, penis, scrotum, nipples, and anterior folds of the axilla; there were also brown spots within the cheeks. There was some deep tenderness over the liver; no superficial abdominal hyperaesthesia. There was slight dullness over the apex of the right lung. Knee and ankle jerks absent; flexor plantar reflex. The urine was alkaline, sp. gr. 1026; otherwise nothing abnormal detected. Respirations 20, shallow. Circulation: Radial pulse not felt; blood pressure (by auscultatory method) 55 mm. Hg; blood film normal. A blood count showed red blood corpuscles 4,800,000; haemoglobin 65 per cent.

The temperature rose to 98° F. on February 15th. On the morning of the 18th, the fourth day after admission, he suddenly became weaker and died.

Post-mortem Report.

Lungs: Old pleural adhesions present over the whole of the right lung; a few scars of old healed tubercle at right apex. Bronchial glands show no evidence of tubercle. Heart: 230 grams, normal. Liver: 1,450 grams, slightly nutmeg. Gall bladder: Distended; contains a single small black stone; no evidence of inflammation. Spleen: 200 grams, moderate perisplenitis. Kidneys: 330 grams, normal.

Suprarenals.—Right, 16 grams; left, 22 grams. The right is small and fibrous, the left shows much fibrosis and some areas of caseating material. No evidence of accessory suprarenal tissue.

Microscopical Appearance of Organs.

The material obtained at autopsy was fixed immediately in formol-acetic-Müller, and embedded in paraffin; the sections were stained with Scott's haematoxylin and Biebrich scarlet, with Mallory's connective tissue stain, with Weigert's resorcin-fuchsin stain, and by the Ziehl-Neelsen method for the tubercle bacillus.

Suprarenal.—Only one small area of cortical tissue found involved in a chronic tuberculous process with round-cell infiltration showing an unusually high percentage of plasma cells. There was much fibrosis, some calcification, and formation of many giant cell systems. The cells of the cortical tissue were of the type belonging to the zona fasciculata, many of them spherical with strongly eosinophil cytoplasm and excentric nuclei; other cells were very irregular, with poorly staining nuclei. The unusual appearance of these cells might have been due to post-mortem changes, but more probably indicates the breakdown of the last remnants of true cortical tissue. No medullary tissue was found. The surrounding fat was unusually rich in small round cells. A small ganglion just outside the organ showed some cellular degeneration and pigment deposition.

Pancreas.—No gross lesion was detected. The islets of Langerhans appeared normal, and contained some lymphocytes. The organ was extremely vascular, and there was some fibrous increase in the blood vessel walls.

Thyroid.—The organ was not so vascular as usual. There was very little intervascular parenchyma, but frequent aggregations

of lymphocytes between the vesicles. Most of the latter were distended with colloid, and showed a very flattened epithelium; in these vesicles the colloid stained very deeply with Biërich scarlet, and was probably old. A very few vesicles showed the typical cubical epithelium, lightly staining colloid, and slight vacuolation round the edge of the colloid, that indicate active secretion; these vesicles, mostly towards the outer edge of the gland, seemed the only really active ones. A few vesicles showed migration of cells into the colloid, and the appearance of giant cells; both epithelium and colloid were disappearing from these vesicles.

Thymus.—Some true thymus tissue was persistent, lying as nodules in fat and fibrous tissue. There was slight increase of the connective tissue elements, and large cells of endothelial type were entering the gland in parts by way of the trabeculae. A few large, clear, strongly eosinophil cells were present, and an occasional giant cell. The Hassall's corpuscles were unusually large and well formed, and a few chromophobe complexes were also present.

Spleen.—The capsule contained hardly any muscle, being almost completely fibrous. The pulp showed intense congestion, with hyperplasia of the endothelial cells at the expense of the lymphoid tissue. The Malpighian bodies were small, otherwise normal. A very few giant cells were present, and many eosinophil myelocytes, which usually showed bilobed nuclei. The walls of the small arteries were thickened.

Testis.—The condition of the seminiferous tubules resembled somewhat that obtained by the action of x rays in small doses. (This patient had never received any x-ray treatment.) There was marked degeneration of the tubules; no spermatozoa were present, but a few spermatids. In the tubules, cells of all stages of development were being set free into the lumen; some of these cells showed a large nucleus with diffuse, poorly staining chromatin; others showed a very small pycnotic nucleus. There was no mitosis. A few tubules showed giant-cell formation. Very little interstitial tissue was present; there were very few (if any) real interstitial cells, but an increase of fibrous tissue and a few large strongly eosinophil granular cells. The vascularity was not increased.

Semilunar Ganglion.—There was definite, patchy, cellular degeneration, but no evidence of local tuberculous or other inflammation. Very few of the cells were healthy, and various stages of degeneration could be distinguished. There were cells staining poorly, showing an indistinct outline, swollen eccentric nucleus, and pycnotic nucleolus; in a later stage the nucleolus was lost and yellow pigment granules appeared in the cytoplasm; then the nucleus became vacuolated and disappeared, the cytoplasm became very granular, and much pigment was deposited; this pigment did not contain iron. The nuclei of the cell capsules were also degenerated, and some of the nerve fibres. Nissl staining showed that the basophil substance was diffused throughout the cytoplasm, even when the cells appeared healthy.

Lymphatic Glands.—Lymph glands from the neighbourhood of the suprarenal, pancreas, semilunar ganglion, and portal fissure were examined. They all showed subacute inflammation, but no tubercle bacilli were found. A fibrinous exudation was always present just within the capsule, and filling the periglandular lymphatic sinus. The cellular content was high, and many large endothelial cells were present, entering the glands along the connective tissue strands; there were also many eosinophil cells of various sizes, some clear, others granular. Most of the glands showed some fibrosis. No pigment was present.

Pituitary.—The pars posterior was more vascular than is usual and showed several small haemorrhages; there was no evidence of pigment, nor of "colloid," but small granular masses with faintly eosinophil reaction were present. The pars intermedia showed a small amount of eosinophil colloid, and a large proportion of the small strongly eosinophil cells of the pars anterior. The pars anterior had a general appearance of being normal; the small chromophobe cells were fairly numerous, but there were very few of the large basophil cells; on the other hand, the vast majority of cells were strongly eosinophil, and these were of all sizes. Some colloid was present, similar to that of the pars intermedia; and between the groups of cells, but apparently not in the blood vessels, there was much granular chromophobe (?) secretion. In parts some cells were greatly enlarged and swollen, with eccentric nuclei, looking as if being changed into this chromophobe granular material. There was some increase of fibrous connective tissue in the pars anterior.

The presence of the tubercle bacillus was not demonstrated in any of these organs.

Considering the extent of the suprarenal lesion, serious symptoms were of comparatively short duration. At the time of death there was probably no functioning suprarenal tissue, and yet the patient had been at work until three weeks before this.

It has been stated that in Addison's disease there is a general increase of lymphocytes; in this case no such increase was apparent. The blood picture was normal; in the spleen the lymphoid tissue was even decreased owing to the increase of the endothelial cells. In such lymph glands as were examined the cellular content was certainly high, but in addition to the increase of lymphocytes there were also many endothelial cells. But a general lymphoid increase was not apparent; this is contrary to the distinct increase that the author obtained in rats whose suprarenals had been almost destroyed by inoculation with certain suprarenal constituents.

It is to be regretted that no haemolymph glands were obtained for examination, because in the experiments just referred to melanoblast cells—carrying pigment presumably produced consequent on the deficient elaboration of adrenin—had been found in these glands. In the case under discussion such cells were not found in the organs examined; no doubt melanin-bearing cells were present in the Malpighian layer of the skin, as is usual in this disease.

The thymus evidently reacted to the condition in the same way as the other lymph glands, as shown by the appearance of endothelial cells. The large Hassall's corpuscles and chromophobe complexes are usually interpreted as signifying involution of the gland; this is what would be expected in a man aged 42. The condition of the thyroid is interesting in connexion with the view that this gland and the suprarenal mutually excite each other's activity. In this case the suprarenal was probably functionally inactive, and the thyroid presented an appearance similar to that seen in colloid goitre, with very few indications of any activity. The degeneration of cells in the sympathetic ganglia in this disease has been emphasized by others; it may perhaps be due in part to the lack of adrenin, which is necessary for the optimum functioning of the sympathetic nerve endings.

The atrophy of the seminiferous tissue in the testis is of interest in view of the debated relationship existing between the suprarenal cortex and the gonads. In this case both seminiferous and interstitial tissue were degenerating. Here again the breakdown of the tubule cells was precisely similar to the degeneration experimentally brought about in rats by suprarenal inoculations (where again the suprarenal was more or less destroyed), and is probably due to perverted or deficient action of suprarenal autocoids.

It is often stated that there is a close functional relationship between the suprarenals and pituitary. In this case the suprarenals were probably functionless, and the pituitary had the appearance of great secretory activity. It is somewhat difficult to interpret the appearance of a "fixed" human pituitary; the *post-mortem* changes are rapid, and various fixatives have very different effects on the cells. The extension of colloid material into the pars anterior, and the presence of masses of granular chromophobe material, probably signify great activity; it is, however, unusual to find the colloid strongly eosinophil, and the relative number of basophil cells was below the normal.

I am greatly indebted to Dr. A. P. Beddard, under whose care the case was, for permission to make use of the hospital reports from which the above details of the history of the case and the gross *post-mortem* findings have been taken, and also for permission to publish this case. I would like also to thank Dr. Laidlaw for procuring the material for me, and Professor Herring for examining the sections of the pituitary.

TWO CASES OF HORSESHOE KIDNEY.

BY

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The union of both kidneys by means of fibrous tissue is a well known abnormality, generally recognized in the *post-mortem* and dissecting rooms, Sir Henry Morris claiming that it occurs in one out of every thousand bodies. But when the uniting band is composed of renal tissue the condition is believed to be of unusual interest and undoubted rarity. The cases which I record come in the latter category, and the interest of one is enhanced by an accurate diagnosis having been made during life with the assistance of pyelography.

CASE I.

The patient, a man aged 45, had suffered from a stricture of the urethra for many years, which from time to time had been dilated with instruments. When this man came under my care, apart from difficulty in micturition, he complained of pain in the left loin. A skiagram revealed the presence of a shadow in this region, but as I was not convinced that it was in the left renal area I decided to perform pyelography. The pyelogram clearly showed the presence of an accessory calyx directed inwards from the lower pole of the left kidney towards the vertebral column. It also demonstrated a shadow immediately above that of the accessory calyx and distinct from it. The renal pelvis was shown to be dilated, but no calyces other than the one mentioned could be seen, the explanation of which was not cleared up until after the operation.

Under general anaesthesia an incision was made in the left lumbar region and the kidney exposed. It was found that the convex border of the kidney was resting on the quadratus lumborum,