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 excentric 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,

the pelvis looking forwards and slightly inwards. This position explained why no calyces other than those of the uniting portion of the renal tissue could be seen in the pyelogram, the shadow due to the dilated pelvis lying immediately in front of the kidney. All attempts at delivery of the kidney on to the surface of the loin failed, owing to the lower pole being attached to the opposite kidney. The bond of union could be felt as a thick mass extending across the middle line immediately in front of the aorta and inferior vena cava. The successful removal of the calculus, which was embedded in the lower pole, presented difficulties on account of the lack of mobility of the kidney, and an incision had to be made through the capsule and cortex before the stone, the size of a marble, could be extracted. The patient's convalescence was slow, but no complications occurred until six weeks later, when an outbreak of influenza in the ward caused pneumonia to set in, from which the patient died.

The *post-mortem* examination revealed a very fine example of a horseshoe kidney. (See Fig. 1.) The left half of the transverse portion was anatomically perfect—that is, it consisted of calyx and cortex, the latter seen with the microscope to be made up of glomeruli and tubules. The right half had no calyx, but normal glomeruli and tubules were present. Each half of the uniting band of renal tissue had its own blood supply, which was distinct from that of the kidneys proper. The ureters, as is usual in these cases, passed down in front of the kidneys. Both pelves were dilated, the left more than the right.

In order to confirm the presence of an accessory calyx, as seen during life in the pyelogram, and before a portion of the uniting band had been removed for microscopical examination, a *post-mortem* pyelography was performed. The accompanying illustration (Fig. 2) shows the result of this procedure. The accessory calyx and the dilatation of the renal pelvis are again well demonstrated, but branching shadows can also be seen in the cortex of the left kidney. These shadows are caused by the pyelogram fluid having been injected under pressure, and forced into that part of the cortex where incision was made for removal of the calculus.

Since this specimen was shown at a meeting of the Section of Urology of the Royal Society of Medicine, I have had to operate on a somewhat similar case at the Whipps Cross Hospital. The notes of the case are as follows:

CASE II.

The patient, a man aged 33, had had intermittent attacks of pain in the left loin from childhood. No investigation of the urinary tract had been undertaken until recently, when cystoscopy was performed at one of the London hospitals. The patient, having refused any further examination, was discharged, but later was admitted to the Whipps Cross Hospital. Again he refused any examination, but was willing to undergo an operation if promised that he would be relieved of his pain. As a fluctuating swelling could be felt in the left loin extending down to the left iliac fossa, I felt confident of the diagnosis of hydronephrosis without the necessity of confirmation by pyelography. As indicating pressure on the inferior vena cava the superficial veins of the lower limbs and lower abdomen were noted to be dilated. Previous to the commencement of the operation, when fully anaesthetized, the patient was cystoscoped. The bladder and ureteric orifices were normal. A catheter passed up each ureter without difficulty, but the quantity of urine which escaped from the left side was greater than that from the right. The urine analysis prior to operation

showed a urea excretion of 2 per cent. and the absence of abnormal constituents.

On exposure of the left kidney through an incision in the anterior abdominal wall the diagnosis of hydronephrosis was verified. Its

removal was not possible until some of the fluid contents had been evacuated, this being accomplished by means of trocar and cannula. Two and a half pints of straw-coloured fluid were thus drawn off. From this bag of urine two small stones were also removed. Separation of the surrounding tissues from the kidney then revealed a band of renal tissue 1½ inches broad, extending from its lower pole across the aorta and inferior vena cava and continuous with the lower pole of the opposite kidney. The latter in size and consistency felt normal. The left ureter and left spermatic vein, which were anterior to the uniting band, were ligatured and divided. With great care this transverse band was next dissected off the aorta and divided between two ligatures of Japanese gut. No accessory calyx was observed. The ligature of the vessels of the renal pedicle was attended with some difficulty owing to their unusual arrangement. In fact, no pedicle as such existed, both arteries and veins having entry and exit along the entire

length of the inner border of the kidney.

The operation was followed by profound shock and paralytic distension of the small and large bowel, but these disquieting phenomena disappeared under appropriate treatment carried out by the resident medical staff of Whipps Cross Hospital. The

dilated veins of the lower abdomen and limbs subsided within a week of the nephrectomy. From the first the function of the remaining kidney was satisfactory.

It has been stated that in cases of horseshoe kidney an occasional symptom is epigastric pain due to pressure of the transverse band on the aorta. It was absent in both of my cases. Moreover, I am sceptical of such an explanation should there be complaint of pain in this region. The first structure to show signs of pressure must be the thinner walled inferior vena cava, and then the sympathetic nerve trunks in its vicinity.

A careful search of the literature on the subject of horseshoe kidney has not elicited any reference to the presence of accessory calyces in the uniting band, as dia-

gnosed by means of pyelography. I have reason to believe, therefore, that the pyelogram of the first case is unique.

THE United States Census Bureau states that in 1921 the death rates of mothers from childbirth and puerperal causes were lower in 1921 than in any year since 1917. In the area for which figures are available the death rate in 1921 from puerperal causes was 6.5 to 1,000 live births, and the ratio of deaths from childbirth to the number of women bearing children in the year was about one to 150.

THE *Nederlandsch Tijdschrift voor Geneeskunde* states that the sixth All-Russian Congress of Internal Medicine was held in Petrograd last September under the presidency of Professor Kotschalowsky of Moscow; 500 members were present, and 104 communications were made. Moscow has been chosen for the next meeting in 1927. The fifteenth All-Russian Surgical Congress was held the same week in Petrograd, and was attended by 685 members. There were 158 communications.

FIG. 1.—Drawing of horseshoe kidney, showing the position of the bloodvessels which supply the uniting band of renal tissue, also the ureters passing down in front of it, and the dilatation of both pelves.

FIG. 2.—Post-mortem pyelogram. Note the shadows of the accessory calyx and those in the cortex. The pelves of both kidneys are dilated.