CASE II.

On June 9th, 1924, I was called in consultation by Dr. E. R. Weir of Dunoon to see an unmarried woman, aged 68, who had been suffering from abdominal pain and vomiting for forty-eight hours. The signs of acute intestinal obstruction were complete, but the vomit was not faecal.

Operation was immediately undertaken. On inserting a hand into the abdomen I came at once upon a mass in the ileum four or five inches proximal to the ileo-caecal valve. Through a small incision in the bowel I removed a gall stone. Recovery was uneventful.

This calculus was roughly a truncated cone. The greatest length equalled the greatest breadth—namely, one and one-fifth inches. The dry weight was 180 grains.

CASE III.

A detailed account of this case has already been published in another connexion.² The operation took place on January 10th, 1917. A married woman, aged 52, had had a long experience of so-called gastric disease before intestinal obstruction manifested itself. The stone which I removed from the ileum was ovoid in shape, the greatest circumference being 5½ inches, and the weight was 636 grains. Recovery was uninterrupted.

I saw this patient recently, more than eight years after operation, when she reported well, and stated that she had had no recurrence of discomfort.

It is noteworthy how seldom these patients have earlier symptoms pointing directly to the gall bladder; that there should sometimes be complete absence of any morbid signs before the onset of obstruction is equally striking.

It is scarcely ever possible to diagnose the cause of the obstruction before operation, but during the operation the mass in the intestine is easily discovered by the exploring hand. The bowel, tightly gripping the impacted stone, shows signs of bruising by the irregular surface of the calculus, and the direction of the incision into the intestine must be determined by the injury already sustained by the intestinal coats.

On no occasion have I attempted, as advised by several authorities, to move the stone along the interior of the bowel before cutting down upon it, as I am of opinion that the less the damaged intestine is handled the better.

It is now generally believed that gall bladder and small intestine adhere together on account of an inflammatory process, and that the large calculi pass directly into the intestine through a stoma set up by a process of ulceration.

There can be little doubt that these patients, when they have recovered from the operation for intestinal obstruction, derive considerable benefit from the cholecyst-enterostomy established by this curious happening. By this means they become possessed of two outlets from the gall bladder, and a period is thereby put to this organ acting as a factory of gall stones.

REFERENCES.

¹ BRITISH MEDICAL JOURNAL, November 28th, 1925, p. 993. ² *Practitioner*, August, 1917.

TUBERCULOSIS IMMUNIZATION.

BY

NATHAN RAW, C.M.G., M.D., M.R.C.P.LOND.,

LORD CHANCELLOR'S VISITOR IN LUNACY.

IN the BRITISH MEDICAL JOURNAL of July 19th, 1924 (p. 102), I described a series of animal experiments in which it was conclusively shown that it is possible to give active immunization to animals against a virulent dose of tubercle bacilli.

A further series of experiments has just been concluded at the Lister Institute with the same encouraging results, and I am hopeful that in the near future the work will be extended to young children, with a view to protecting those who are in daily contact with cases of open tuberculosis.

Animal Experiments.

A large series of rabbits and guinea-pigs were used. Half of the animals were given protective doses of vaccine prepared from attenuated killed human bacilli, which had been continuously subcultured by me for sixteen years, and were quite non-pathogenic and non-tuberculo-genic. Two protective doses were given—one on July 25th, 1925, and

the other on August 1st. The whole series of animals, including the controls, were then given 0.1 mg. of virulent bovine bacilli by Dr. Schutze.

One of the rabbits and two guinea-pigs died in three weeks from septicaemia, and the whole of the controls died within three months of acute and generalized tuberculosis. The protected animals gained weight and appeared quite healthy when they were killed on February 24th, 1926. A very careful *post-mortem* examination of the rabbits was made by Dr. Schutze and myself. The animals were fat and in excellent condition. At the site of inoculation (in each case in the thigh) was an enlarged gland or glands, but not extending into the inguinal glands. There was no trace of tubercle in any of the organs. Smears from the glands showed tubercle bacilli in large numbers, and these will be injected into guinea-pigs with a view to testing their virulence. It is evident that a local infection was produced at the site of inoculation, but the animals were protected against a progressive tuberculosis.

As my previous experiments have also shown, it is only possible to protect animals by using bacilli of human origin, against an infecting dose of bovine origin, and vice versa.

Conclusions.

The problem of tuberculosis resolves itself into the question of immunity. Contrary to what is observed in other infectious diseases, no immunity is conferred on the human by a previous attack of tuberculosis, caused by the same type of bacilli. Pulmonary tuberculosis, which is nearly always caused by bacilli of the human type, does not appear to give immunity in after-life, and patients whose disease has been arrested are liable after many years to another acute attack of active tuberculosis. Clinical experience, however, goes to show that children and young adults who have received a mild infection of bovine bacilli in milk, causing enlarged glands in the neck, bone and joint lesions, and other forms of localized tuberculosis, are practically immune to pulmonary tuberculosis, and it was this observation that led me to use bovine bacilli to immunize animals and man against the more serious disease of the lungs.

It seems to be probable that children may be protected against infection in the household, but some years must elapse before this can be finally established. All children over the age of 1 year who are living in the same house with a tuberculous member of the family ought to be protected if possible against infection, and it is in the early years of life that such infection usually occurs.

From a long observation of tuberculosis I am convinced that if some active immunity can with complete safety be given to those children who are directly exposed to infection at home, a long step will have been taken in the direction of prevention, which, after all, is the key to the problem.

The protection of the community by some safe scientific method of active immunization is the only effective way by which this preventable scourge can be eradicated.

FRACTURE OF THE SKULL AND EXTRADURAL
HAEMORRHAGE WITH SYMPTOMS
OF HYPOTENSION.

BY

SYDNEY SMITH, M.D., D.P.H.,

PRINCIPAL MEDICO-LEGAL EXPERT, EGYPTIAN GOVERNMENT SERVICE.

THE case recorded below is of much interest, since, although there was considerable extradural haemorrhage, there was a complete absence of pressure signs. The case suggests that a haemorrhage within the skull may act not only by its own local pressure but also by its general effect on the pressure of the cerebro-spinal fluid of the brain.

A man, aged 26, was knocked down by a tram on November 27th and was taken to hospital in a comatose condition.

On admission the pulse was 100 and irregular, the temperature 38° C., and the respirations shallow. There was escape of blood from the nose and the right ear. The pupils were unequal and

fixed. The conjunctival reflexes were present, but all the deep reflexes were absent.

A lumbar puncture showed the cerebro-spinal fluid to be blood-stained and under tension. Subsequent lumbar punctures on November 28th, 29th, and 30th showed progressive diminution in pressure, and on the 30th the pressure was much below normal.

The general condition of the patient did not materially alter for a few days, but on December 5th (nine days after the injury) he spoke, and was able to brush the flies away from his face. On December 6th and 7th he appeared to improve steadily as regards consciousness and muscular power, but the pulse continued rather feeble and rapid (110-112). On December 8th the pulse was 116 a minute and very feeble, and the respirations 40. At this time the blood pressure was 110 mm. and the pupils equal and reactive.

After recovery from the initial shock the patient showed general signs of cerebral irritation but none of pressure. From December 8th to 11th he remained in the same condition of partial consciousness; there was no sign of paralysis, but the pulse became progressively weaker and more rapid, and he died on December 11th—fourteen days after the injury.

At the post-mortem examination the following conditions were observed:

There was a lacerated injury about the size of a florin on the right parietal eminence of the skull which reached the bone and around which there was considerable infiltration of the tissues with blood. There was a fissured fracture of the skull under this injury which ran from the vault in two portions—one along the right petrous temporal through the sella turcica into the left middle fossa, the other forwards to the posterior wall of the right orbit. The fractures crossed both anterior and posterior branches of the right middle meningeal artery, and an extradural haemorrhage was caused by rupture of the posterior branch. This haemorrhage formed a clot, 7 cm. in diameter, beneath the above-mentioned injury, and the clotted blood, though not extensive, was sufficient to cause flattening of the convolutions of the brain beneath it.

On the base of the skull there was a quantity of clotted blood along the line of the fractures, and a certain amount of pressure must have been caused on the emerging nerves and on the pituitary body.

There was no injury to the brain substance of the right hemisphere except a small bruise over the right middle temporal gyrus.

On the left side of the brain the pia arachnoid showed a generalized diffuse blood staining, but no definite extravasated blood could be made out. There were, however, several lacerations of the left cerebral cortex—one over the inferior frontal gyrus near the frontal pole, a second on the middle frontal 5 cm. from the pole, and a third more extensive bruised area above and parallel with the posterior ramus of the Sylvian fissure affecting also the superior temporal gyrus in its anterior part and the orbital surface of the inferior frontal gyrus near the temporal pole. This bruise covered an area 4.5 by 3 cm., and passed through the grey matter into the white substance. There was also a bruise of the middle and inferior temporal gyri, extending from the temporal pole for a distance of 3.5 cm. On replacing the brain inside the skull cap the lacerations were observed to be roughly opposite the site of the injury if a line were drawn from this site through the central point of the skull. They were, however, dispersed over a considerable area, and in the writer's experience these contre-coup lesions are usually found over the poles of the brain whatever be the site of the violence.

The absence of any sign of pressure in this case is of considerable interest, for the extradural haemorrhage was sufficient to cause flattening of the brain convolutions, and, therefore, should have produced definite pressure effects. The diminished cerebro-spinal pressure is a feature which possibly explains the absence of pressure signs. Leriche has described a definite syndrome caused by diminished tension in the cerebro-spinal system with symptoms of torpor, mental stupor, or sometimes coma. There is no paralysis or contraction, the pupils are normal, and the reflexes positive. Stultz and Stricker¹ have caused an increase in the cerebro-spinal tension in these cases by the injection of 40 c.cm. of distilled water into a vein, which resulted in an almost immediate increase in tension and remission of symptoms.

In the case under review it is possible that the lesion of the pituitary may have caused hypotension of the cerebro-spinal fluid, which entirely obscured all focal symptoms of the extradural haemorrhage, and gave rise to the symptoms described by Leriche as those caused by diminution of the tension of the cerebro-spinal fluid.

In such cases—and they are probably not uncommon—it is possible that intravenous injection of 30 to 40 c.cm. of distilled water might not only cause a remission of the symptoms due to hypotension, but the increased cerebro-spinal tension would then allow the haematoma to produce symptoms which would lead to its localization and treatment.

REFERENCE.

¹ *Annals of Surgery*, November, 1925, p. 678.

Memoranda : MEDICAL, SURGICAL, OBSTETRICAL.

INJECTIONS OF ACRIFLAVINE FOR TUBERCULOSIS.

SINCE its introduction I have used acriflavine in every kind of case in which an antiseptic is indicated, because of its bactericidal properties and its non-toxic effect on the tissues. For the latter reason I was tempted to try, somewhat empirically, the effect of hypodermic administration of the drug in cases of advanced pulmonary tuberculosis. The results obtained exceeded my expectations, and I feel that a trial by others is warranted. Three cases only have been treated in this way.

CASE I.

A young woman, aged 24, with advanced phthisis of three years' duration, had on two occasions received sanatorium treatment, and was discharged the second time with the report that further sanatorium treatment was useless. After two or three injections of acriflavine the patient felt much better. Within a month the physical signs markedly improved—the fever was reduced, night sweats ceased, sputum decreased and became less purulent, and the moist sounds in the lungs cleared up. For nine months before the first injection she was confined to bed, and now, after five months' treatment, she is able to walk two miles daily without fatigue. The report on the last examination of sputum states that "the tubercle bacilli are not very numerous, about one per two fields." The first dose given was 5 minims of 1 in 1,000 solution of acriflavine in normal saline, and three doses were given at intervals of forty-eight hours. There being no local or general reaction, the amount was doubled and given at the same intervals. As still no contraindications were observed, the dose was rapidly increased to 40 minims twice a week.

CASE II.

A youth, aged 21, with Pott's disease of long duration, was treated in exactly the same way. Here again the improvement is definite, though of not so dramatic a nature.

CASE III.

This is an instance of advanced tuberculosis of the pleurae and lungs in a man aged 32, who (except during two short periods of sanatorium treatment) has been under the constant observation of my partner for four years. For the last year he has been a complete invalid, and for several weeks immediately preceding the treatment he had been confined to his bed by pronounced hectic fever with a daily rise of temperature to 102° or 103°. An application for further sanatorium treatment had recently been refused (after examination of the patient) on the ground of the hopelessness of the case.

After initial smaller doses beginning on December 9th, 1925, this patient has, from December 22nd, been given 25 minims of the solution of acriflavine every fourth day. From the commencement of these injections, except during an attack of coryza lasting four days, the daily maximum temperature has been 99.2° or less; night sweats have ceased, coughing is much less, and the quantity of sputum has diminished to one-tenth of its former amount. Tubercle bacilli are still present, but the sputum is now mucoid rather than purulent in character. The patient has left his bed during the last six weeks and is now able to walk a mile or so daily.

My colleague, while reserving judgement as to the value of acriflavine treatment, states that in a long experience he has never seen so manifest an improvement in an advanced case of phthisis.

How the drug works can only be a matter of conjecture, and I would welcome the opportunity of trying it in a larger number of cases, but I have not felt it justifiable to retain patients in the early stages of tuberculosis when sanatorium treatment is available.

I hope these notes will arouse sufficient interest in others who have the opportunity of treating the disease in its early stages.

Romsey, Hants.

G. H. JOHNSON, M.R.C.S.

PARATYPHOID A FEVER IN SCOTLAND.

THE following two coincident cases of paratyphoid A fever are of interest owing to the infrequency of this type of the enteric group in Scotland.

According to Goodall, paratyphoid A fever was not found in Europe before the great war, but was known to occur in Asia, especially in India. Paratyphoid B, on the other hand, was occasionally found in Europe but not in Asia.

The patients were two brothers, one of whom, aged 9, became ill on January 20th, 1926, with general malaise. His temperature was 102°, rising to 104° in the evening. There followed an afternoon rise of temperature for some days, fluctuating between 100° and 102°, on one day 104°. Constipation was marked throughout, with abdominal uneasiness and slight epigastric tenderness.