forthcoming. On admission the temperature was 97°, and, curiously enough, remained subnormal throughout, possibly indicative of a severe haemia, and so of a bulbar toxæmia, with paralysis of the heat-regulating centres. The respirations were 42, the pulse 112.

Central Nervous System.—The meningeal signs and symptoms were as follows: There was head retraction to a marked degree, *tache cérébrale* and Kernig's sign, with rigidity of the legs, the right leg being flexed more than the left; he screamed intermittently but frequently in a typical manner. The knee jerks were increased, and the plantar response was (probably because he had not learnt to walk) doubly extensor, but notably brisk. He had a left internal strabismus. He appeared to be thin, and showed loss of flesh whilst under observation. He was extremely peevish and mentally irritable. The three highest mental faculties were all impaired—to wit, attention, judgement, and self-control. No convulsions occurred.

Respiratory System.—The child had pneumonic breathing, patchy dullness at the lower angles of the scapulae, below the left clavicle, and markedly at the bases, with fine crepitations.

Sputum.—Examination of the sputum showed a large number of pneumobacilli, strepto-diplococci (adherent pneumococci in chains in all stages of separation up to twenty pairs or more), and ordinary detached pneumococci.

Lumbar puncture yielded about 10 c.c.m. of turbid fluid, with a negative haemoglobin spectrum. This was centrifugalized, and also inoculated on blood-agar directly. Cultures of pneumobacilli and pneumococci were found alone. The former enormously predominated.

After-History.

On the seventh day of illness (January 3rd, 1915), that is, five days later, the condition of the child had markedly improved. He was much quieter, and screamed only occasionally during the day, but he was still restless at night, crying out often. The following mixture was found to be effectually sedative: Pot. brom. gr. iv, tr. bellad. m. iij, glycerine m. x, aquam ad 3j; sig. 3j nocte p.r.n. Head retraction and squint were still present, as also was Kernig's sign. The pneumonic condition was much the same as before, but pneumonic breathing, instead of being continuous, only occurred if the child were disturbed. The pulse was 85 and the respirations 30. Eight days later, on the thirteenth day of illness (January 11th, 1915), lumbar puncture was again performed and the fluid was thickly haemorrhagic, and cultures showed abundant colonies of Friedländer's bacillus and a few pneumococcal colonies also.

The condition of the child improved after this. Only a few rhonchi were noted in the chest, and pneumonic breathing had ceased. Cerebral scream had also vanished, but the child was irritable. Kernig's sign could not be obtained; there was no squint, and much less head retraction.

On January 15th, 1915—that is, the nineteenth day of illness (four days later)—the child was sitting up and taking an interest in his surroundings, to all intents and purposes quite well, although thin and wan to the eye. The lungs were now clear.

Lumbar puncture, cultivated on blood-agar, showed pure Friedländer's bacilli. The fluid thus obtained was still haemorrhagic.

On January 18th—that is, twenty-second day of illness—a final lumbar puncture was performed. The fluid was tinged with blood, but quite sterile on inoculation.

The child was normal in behaviour, slept and fed well, and was not in the least fretful. All nervous signs had disappeared, including squint. A second examination of the sputum showed staphylococci, pneumococci, also pneumo-streptococcal forms, and notably enormous numbers of pneumobacilli in smears.

The question arises whether what was taken for pneumobacilli were not in reality *B. enteritidis* of Gaertner, since this organism has been known to cause a meningitis characterized by haemorrhagic lesions likewise. Against this is the fact that this case showed no intestinal symptoms, and that 13 other cases of bronchopneumonia in the same ward showed no intestinal symptoms, and all showed in the sputum predominance of pneumobacilli, which were morphologically pneumobacilli and had the pathognomonic "nail-like" culture form. Unfortunately, lack of apparatus prevented me testing the indol and lactose reactions, but I can assert that the organism was non-motile. Moreover, I venture the opinion that clinical guidance was both confirmatory and reliable in this case. So far as I can ascertain, *B. enteritidis* has not been recorded in the etiology of bronchopneumonia. I therefore ruled out *B. enteritidis*.

Some writers identify the pneumobacillus with *B. lactis aerogenes*, which occurs most commonly in sour milk. That this may be true I do not dispute theoretically, but even so this is irrelevant to the essential substance of my thesis. Possibly it may be argued that this series of cases is in favour of this more improbable contention, since children in poor circumstances at such a tender age and with such careless mothers as some of them have, may well receive sour milk for food. But it seems strange that a normal inhabitant of the intestine should, for no

particular reason, suddenly migrate to the meninges to assume a pathogenic rôle, having previously attacked the bronchial mucous membrane. The total absence of intestinal disorder also contravenes this particular explanation. It is therefore not unnatural to conclude that one was dealing with a strain of true Friedländer bacillus as originally contended.

Critics may rightly ask why splenic and blood cultures were not made. The answer is that the particular case occurred in an investigation undertaken for a totally different purpose, and that it was not until I came across the notes of the case in revising the others that it occurred to me to record it; then the opportunity for making such cultures had gone, the child having disappeared.

I have noted the case for a dual purpose. Firstly, to demonstrate the prognostic value and manner of sputum examination in children with bronchopneumonia, and secondly, in the hope that a clinical variety of meningitis, with a favourable prognosis, may be established—and this is submitted as a desirable objective from the medical, from the maternal, and especially from the national point of view, in face of the heavy toll of childhood which meningitis in all its forms exacts to-day, when more than ever do we require to conserve a healthy childhood.

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TRAUMATIC RUPTURE OF THE SPLEEN: SPLENECTOMY: RECOVERY.

BY

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A HEALTHY married woman aged 31, the mother of four healthy children, spent the first twenty-one years of her life in South Africa and never had a day's illness. Since living in this country she has from time to time suffered from a fairly severe degree of anaemia, but has never needed a doctor except for her confinements.

On August 6th, at 3 p.m., she found a nail projecting through the sole of her boot. She stood up on a kitchen chair to reach a set of boot lasts and a hammer from a shelf (Fig. 1). The chair tilted forwards, the hind legs

FIG. 1.

FIG. 2.

FIG. 3.

leaving the ground, her feet slipped. She fell forwards, striking her epigastrium on the edge of the chair-back (Fig. 2). Her weight then carried the hind legs of the chair to the ground, and she received a second and more severe blow as the hind legs regained the ground (Fig. 3). She continued with the job in hand, picked up the boot lasts and hammer which had slipped from her grasp, and having satisfactorily knocked down the nail in her boot, again stood on the chair, and replaced the boot lasts on the shelf. This accomplished she felt faint and sick, walked upstairs to her bedroom, and lay down.

One of her children was then dispatched to me. Unfortunately I was out, but on my return at 6 p.m. I went to her house and found a colleague had in the meantime been sent for and had, about twenty minutes previous to my arrival, given morphine gr. $\frac{1}{4}$ hypodermically. The patient was lying in bed blanched and nearly pulseless, with the

knees slightly flexed and her hands under the back of her head, resting on the pillow. The pulse was 130, the temperature 98° F., and the respirations 32. The pain, which had been very severe, was easier; she had not vomited, but felt sick, and complained of a desire to micturate, which she had been unable to satisfy.

There was no visible sign of injury, such as a graze or bruise, but the whole abdomen was rigid to palpation. The point of maximum tenderness appeared to be to the left of the mid-line and in the left iliac fossa, but her condition was too grave to justify questioning. To percussion the whole of the left flank seemed duller than the right, but no definite shifting dullness could be found. The liver dullness was normal. The catamenia were regular and no period had been missed. I ordered her immediate removal to hospital.

At 7 p.m. she was anaesthetized with open ether. Examination then revealed definite dullness in the left side of the abdomen, which did not shift. A catheter was passed and about 8 oz. of pale and normal-looking urine withdrawn. The only possible diagnosis was severe internal haemorrhage, and the spleen appeared the most probable source in view of the fact that the urine was normal. It was impossible to exclude injury to the gastro-intestinal tract in addition.

Operation.

A median incision was made below the umbilicus and free blood could be seen through the peritoneum before this membrane had been incised. The incision was then extended upwards. The peritoneal cavity was full of blood and blood clot. On commencing to remove the latter, bright fresh blood welled up extremely profusely. Examination revealed to the touch a tear in the visceral surface of the spleen. The bleeding appeared to be controlled when the splenic artery and vein were compressed. This was effected with the left hand whilst the spleen was brought into view with the right. The tear was then seen to extend through the hilum involving the point of entry of the vessels.

As time was of the utmost importance, no effort was made to isolate the individual vessels. A pedicle needle was passed through the extreme tail of the pancreas and one ligature made to include the whole vascular pedicle of the spleen, which was then removed. The peritoneal cavity was cleared of blood and clots and then flushed with normal saline at a temperature of 112° F. The incision was closed in layers, and as much saline left in the cavity as could be retained. At the conclusion of the operation the colour was better, the pulse 120 but much fuller, and the respirations 36.

After-Treatment.

The patient was put in the low Trendelenburg position, and rectal saline injections were immediately started. To the first saline injection of 2 pints, brandy 1 oz. and aspirin gr. xv were added. The instructions were to repeat the saline injections every two hours as long as the patient could retain them, and that the bed was to be put flat at the expiration of four hours. The following morning the head of the bed was raised on high blocks.

The patient made an uneventful recovery. The temperature rose to 100° in the first twenty-four hours, but thenceforward remained normal or subnormal. No external bruising ever developed, nor was there any injury to ribs.

REMARKS.

The main interest in the case appears to lie in the fact that it is possible to sustain such a severe injury from a comparatively trivial accident. The patient is an averagely covered woman, weighing 8 st. 7 lb., and stands 5 ft. 2½ in. Macroscopically the spleen appeared healthy.

I am indebted to Dr. Penny for giving the anaesthetic and to Dr. W. B. Maurice for assisting me at the operation.

The accompanying sketches are intended to illustrate precisely how the injury occurred; and Dr. H. M. Turnbull, Director of the Pathological Institute, London Hospital, who kindly examined the spleen for me, reports that with the exception that it was very anaemic, it was otherwise normal in every way.

TRAUMATIC RUPTURE OF SPLEEN.

WITH A FEW NOTES ON THE BLOOD.

BY

CAPTAIN E. H. JONES, M.B., B.S., R.A.M.C.

The patient whose case is here related was admitted to the Preston Royal Infirmary, October 31st, 1912, under the late Dr. Garner.

T. W., a boy aged 10, had fallen a distance of 20 ft., coming in contact with a tree stump. He walked 100 yards and then fainted. He was admitted to hospital the same evening, with signs of intra-abdominal injury.

Operation.

On opening the abdomen by the high rectus incision I found that the peritoneal cavity contained much free blood, the source of which was found to be the spleen, which was almost completely severed. The organ was removed through a transverse incision, commencing at the apex of the exploratory opening, and the abdomen closed hurriedly.

After-History.

For seven days progress was uneventful. On November 7th, 1912, the temperature shot up to 104° and reached 105° on the next four days. The patient had definite bronchopneumonia, the temperature returning to normal by lysis by November 19th, 1912.

He was discharged on December 18th, 1912.

I saw the boy on November 14th, 1915 (three years after the operation), and he was quite healthy, doing half-time at the mill.

Blood Counts.

On November 3rd, 1912 (three days after the operation), the blood count was—

Red cells	...	...	...	3,500,000
White cells	...	...	...	15,600
Polymorphonuclears	...	...	...	36 per cent.
Mononuclears	...	...	...	64 per cent.

Following the bronchopneumonia the blood count was—

Red cells	...	...	...	3,500,000
White cells	...	...	...	21,200
Polymorphonuclears	...	...	...	58 per cent.
Mononuclears	...	...	...	42 per cent.

On December 4th, 1912, the blood count was—

Red cells	...	...	...	3,000,000
White cells	...	...	...	11,000
Polymorphonuclears	...	...	...	68 per cent.
Mononuclears	...	...	...	28 per cent.
Eosinophiles	...	...	...	4 per cent.

A year later Dr. Leigh kindly examined his blood for me, and found mononuclears rising in percentage and eosinophiles up to 6 per cent.

On December 14th, 1915, Dr. Tindall, the honorary pathologist to the Preston Royal Infirmary, made a final count, which was as follows:

Red cells	...	...	...	3,200,000
White cells	...	...	...	6,900
Polymorphonuclears	...	...	...	55 per cent.
Mononuclears	...	...	...	44 per cent.

A case Dr. Collinson operated on during the same period, a lad of 19, showed lymphocytosis, which persisted for at least a year, without the return of a higher polymorphonuclear count such as accompanied the bronchopneumonia in my case. Dr. Collinson's case showed an eosinophilia of 12 per cent. twelve months after the operation. This patient is now serving with the colours.

The cases are interesting as showing (1) the original leucocytosis, (2) a relative lymphocytosis of some duration, (3) the transient eosinophilia twelve months after removal of the organ, (4) the absence of any adverse effect following removal of the spleen.

A CASE OF PROBABLE SPONTANEOUS RUPTURE OF THE SPLEEN.

By W. B. OGILVIE, LIEUTENANT-COLONEL I.M.S.,
SUPERINTENDENT, DELHI GAOL.

It is recognized that this case is not a well proved one, but such cases are of so much deep interest to those working in tropical countries that it is thought worth while to record it, incomplete though it is.

Prisoner, male, aged 28, had been in gaol for three months, during which time he had never been in hospital, and his weight had remained steady. On a Sunday he did none of his ordinary work—paper making—but washed his clothes and