If it be some intraperitoneal structure, such as a suppurating gall bladder, liver abscess, or suppurating pelvic cyst which has been opened and then stitched to the parietal peritoneum, some efficient method of drainage during the first few days becomes of even vital importance. The leakage of pus or other irritating fluid in the first few hours after the operation, before the cavity of the peritoneum has been shut off by plastic inflammation, has frequently been the cause of a spreading fatal peritonitis. But even when—as in the case of a suprapubic opening into the urinary bladder—a hollow organ has been opened without involving the peritoneum, if the discharge be at all profuse, there will be considerable difficulty in keeping the dressings dry. It is only by an almost constant changing of dressings and the use of large quantities of absorbent materials for collecting the escaping urine that the patient can be kept at all dry and clean; and, despite every care in nursing, the bed is apt to get wet and the patient chilled.

During the past twelve months I have tried several modes of drainage with a view of obviating this, and have at length found one which I believe to be both simple, efficient, and inexpensive. I lay no claim to originality in the principle of the apparatus. The idea, indeed, was suggested by seeing the siphon arrangement used by dentists for the mouth during their operations. Several such siphon drains have also been described by surgeons.

The principle of the apparatus is the keeping up of a continuous slight siphon action from the cavity to be drained by means of a modified Sprengel's pump. Only sufficient suction is required to keep up a siphon action; indeed, any powerful suction is apt to be injurious to the tissues of the patient.

The apparatus (Fig. I) consists of a reservoir (A) capable of holding about two gallons, which is connected by means of the tube (b) with the upper limb of a glass Sprengel pump (c), which is usually fixed to one of the legs of the patient's bedstead.

The side tube (d) of the pump is connected by means of a second piece of drainage tubing (d) with a perforated glass bulb (E) (Figs. I and II), which is placed in the cavity to be drained.

When water is allowed to trickle very slowly from the reservoir (A) through the pump (c) into a pan placed below to receive it, sufficient siphon action is maintained in the side tube (d) to remove even the smallest quantity of fluid as it collects in the cavity to be drained, and this passes down with the water from the reservoir into the vessel beneath the bedstead, leaving the patient and his bed quite dry.

The chief difficulty experienced was in securing a satisfactory glass ending to be placed in the cavity. When an ordinary piece of glass tubing was used, or one perforated at

the sides (like a Keith's drainage tube) the wall of the cavity to be drained was soon sucked into the open end and lateral openings, giving the patient pain and putting an end to all siphon action.

This difficulty is overcome by having two tubes, an outer one perforated at the sides, which encloses an inner one which is connected with the pump. Fluid as fast as it collects in the cavity trickles through the perforations of the outer tube, and is then sucked up by the open end of the inner tube. Several such glass endings have been tried, varying in size and shape with the wound and cavity to be dressed.

During the past six months I have used this apparatus on six patients after operation.

Two cases of suprapubic drainage of the bladder after removal of villous papillomata.

One case of cholecystotomy.

Two cases of suprapubic cystotomy for intractable cystitis.

One case of suprapubic lithotomy.

The apparatus has answered its purpose well in all. The only case which calls for any comment is one in which I am using it at present in the General Hospital, and which gives a good idea of its efficiency and usefulness.

It is the case of an old Crimean soldier, who was admitted into hospital in July last. He has a fracture of the dorsal spine high up, with typical symptoms of complete severance of the spinal cord at the seat of fracture.

Regular passage of a catheter for the relief of his retention of urine soon set up a cystitis, and at the same time acute bedsores made their appearance on the buttocks and sacrum. Unless a catheter was passed at almost hourly intervals urine dribbles away, wetting his bed and irritating his bedsores.

On July 26th, 1897, with the assistance of Mr. Chavasse, I performed a suprapubic cystotomy. No anæsthetic was needed, as the patient's tissues were completely insensitive. A glass tube was put in the suprapubic wound and connected with the apparatus, and he has worn it ever since—a period of 5 months. The apparatus has during all this time kept him and his bed dry and clean. The bedsores relieved of the irritating urine rapidly healed, and the patient's condition at the present time is almost as good as when he was admitted, though unfortunately a fresh bed sore has recently formed.

The reservoir requires filling twice in twenty-four hours, and once each day the glass ending is removed from the patient's bladder in order to cleanse it from the phosphatic deposit which collects in it. Beyond this his bladder requires no attention whatever.

The apparatus, which without the reservoir (for which an ordinary washhand-jug will suffice) costs some five or six shillings, has been made for me by Messrs. Philip Harris and Co., to whom my thanks are due for the care they have shown in carrying out my instructions.

A CASE OF ANTRO-TYMPANIC DISEASE AND BEZOLD'S MASTOID ABSCESS COMPLICATED WITH EXTRADURAL ABSCESS:

PARALYSES ON THE SAME SIDE AS THE LESION SUPERVENING AFTER OPERATION: RECOVERY.

By T. G. OUSTON, F.R.C.S. ENG.,

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THE patient, a largely-developed girl, aged 15 years, was first seen by me on October 22nd, 1895. Her mother gave the history of a discharge of "matter" from the left ear for twelve years, of pain in the head, intense at times, for six months, and of a gradually increasing swelling in the left upper part of the neck for two months. There was no history of vomiting, dizziness, or paralysis. The girl was acutely ill, and staggered a little in her walk. The temperature was 103° F., and the pulse 110. A fluctuating, and in places red and oedematous, swelling extended from the vertex in the parietal region, and occupied the anterior and posterior triangles of the left side of the neck to the level of the thyroid cartilages. The head was held stiffly inclined to the left shoulder.

OPERATION.

On October 23rd, 1895, under chloroform, a semilunar incision was made behind the attachments of the pinna, giving exit to fully 12 ounces of offensive pus mixed with dark blood-stained *débris*. The squamo-temporal and parietal bones were found denuded, the external surface of the mastoid process rough, and its tip carious and eroded. The abscess cavity extended deeply into the neck under the sterno-mastoid muscle. After removal of some superficial

mastoid necrosis the mastoid antrum was reached through fairly firm bone at a depth of $\frac{3}{4}$ of an inch, and a collection of creamy pus tapped. Several drachms of this pus issued, its white appearance and apparent freedom from odour contrasting strongly with the contents of the more superficial

The shading indicates the extent of the extracranial abscess cavity.

abscess. In enlarging the opening into the antrum downwards, the non-thrombosed lateral sinus was opened, blood welling up suddenly and flooding the wound; the hæmorrhage was very easily stopped by plugging with gauze.

A small loose sequestrum removed from a position above and behind the antral opening disclosed a larger opening, into which a probe passed by its own weight to a vertical depth of $1\frac{1}{4}$ inch. On bending the probe and sweeping it round in a posterior direction, a cavity could be made out between the dura mater and the bone. It was not thought advisable to proceed further by enlarging the opening into the cranial cavity owing to the very septic state of the parts generally, and the condition of the patient. A rubber drainage tube was inserted just within the opening into the cranium.

COURSE SUBSEQUENT TO OPERATION.

The temperature and pulse rapidly came down to and remained at normal, the wound remained sweet, and the condition of the patient appeared for a time satisfactory. The gauze packing was removed from the lateral sinus on the fourth day without hæmorrhage. Marked pulsation was observed in the blood clot occupying the opening into the cranial cavity on removal of the drainage tube.

On November 3rd, 1895, the patient complained that she "saw double." Examination showed complete paralysis of the left external rectus muscle, the pupils were semi-dilated, equal, and reacted sluggishly to light. Intense neuro-retinitis with the usual signs of choked disk were present in both eyes, but rather more intense in the left. Vision tested in a superficial manner appeared normal. Slight left facial paresis was present. The power of grip in the left hand was almost gone, that of the right hand being strong. No paresis of the left leg or *tache cérébrale* could be made out. The patellar reflexes were obtainable with difficulty.

On November 4th, 1895, Professor Oliver kindly discussed with me the advisability of exploring the cerebellum and temporo-sphenoidal lobe. It was decided to wait, as a basal inflammation might account for all the symptoms. The general health of the patient continued to improve, and during the following six weeks the paralyses and neuro-retinitis

gradually became less marked. At this time the vision in the right eye was normal, with the left eye $\frac{1}{2}$ distant vision and Jaeger 4 near type were read. On March 25th, 1896, the wounds were entirely healed and the paralyses gone.

On November 3rd, 1897, the patient presented herself in robust health. The left eye showed deterioration of distant vision to $\frac{1}{2}$, the fundus oculi showing partial atrophy of the nerve with a few white patches in the neighbourhood of the papilla. These with a slight otorrhœa being the only adverse signs to be detected.

REMARKS.

The difference in character and complete separation of the two collections of pus is worthy of notice. The extradural abscess in all probability was continuous with one in the cerebellum, with which it communicated through an erosion in the dura mater. The abscess burrowing down in the sheath of the sterno-mastoid followed the course sometimes taken in disease of the tip and inner surface of the mastoid process as described by Bezold. Erosion into the mastoid vein would afford an explanation of the presence of the altered blood clot found in this abscess. The explanation of the paralyses on the same side of the body as the lesion is explained as an involvement of the motor fibres in the inflammatory process after their decussation. The possibility of this is a fact worth remembering in cases presenting one-sided symptoms in which cerebral abscess of the opposite side is suspected, especially should middle-ear mischief be present on both sides. The absence of diminution of vision during severe neuro-retinitis in this class of case, with greater intensity on the same side as the lesion, is in accordance with the signs noticed by other observers.

A CASE OF CHRONIC SUPPURATIVE MIDDLE EAR DISEASE WITH INTRACRANIAL COMPLICATIONS.

By ROBERT H. WOODS, M.B., F.R.C.S.I.,
Throat and Ear Surgeon to the Richmond Hospital, Dublin.

THE time is within the recollection of the youngest of us when intracranial abscess meant certain death. To-day it is not too much to say that with proper treatment the chances of recovery are distinctly in the patient's favour. This change is partly the result of the spirit of investigation which in the recent past has dominated the work of our profession and partly to the genius of one man whose achievements have been something for the rest of us to wonder at.

Professor Macewen was the first to co-ordinate and elevate the treatment of brain abscess, and to him must be ascribed the credit of having shown the laws to which the condition is subject and the evidences by which its presence, from being a matter of conjecture, becomes one of high probability. For my own part I must express my indebtedness to him for any knowledge I may possess on the subject or any success that may have attended my efforts in this direction.

I hope the following case will have sufficient interest to warrant my bringing it under notice:—

M. C., aged 28, railway guard, was admitted to the Hardwicke Hospital under the care of Dr. O'Carroll on September 21st, 1895, having been sent in by Dr. O'Connell Redmond, who suspected intracranial mischief as the cause of his malady.

Previous History.—Fifteen years previously he had scarlatina. For the past seven years his left ear has been intermittently discharging fetid pus. He suffered from chronic constipation.

History of the Attack.—The discharge from the ear stopped on September 15th (that is, seven days before admission) and he was attacked by violent throbbing headache, principally affecting the left side and occipital region. He lost appetite, became thirsty, shivered repeatedly, and was inclined to be sick but did not actually vomit.

Condition on Admission.—The patient looked dazed. His pupils, especially the right, were dilated, but reacted slowly to accommodation and to light. The eyes were prominent, the lids not touching the corneæ. The tongue was covered with fur, brown in the middle and white towards the tip and edges. He was perspiring freely and the body was covered with a sudaminous rash. He complained of great pain in the abdomen, especially in the right iliac region. A loud systolic murmur was to be heard in the mitral area and could be followed into the axilla. The upper angle of the left posterior triangle of the neck just at the base of the skull was very tender, especially on firm pressure. His stools were yellowish and fluid. He had no paralysis motor or sensory.

The case was one of some obscurity, and although the likelihood of the brain being affected was not lost sight of, the first idea was that it was a case of severe typhoid fever;