retards healing by preventing its contact with the visceral layer.

When we come to rigid cavities, such as the antrum of Highmore, where the mucous membrane is degenerated, the utility of expecting drainage to effect a cure will, from previous considerations, be apparent. It may be admitted that in the history of a case of empyema of the antrum from simple infection—that is, where there is no tooth or bone disease, there is a point up to which simple drainage might allow the lining membrane to recover, though I am not at all aware that this has ever been tried. But when once the purulent stage is established it is hard to see how this can ever occur. The truth is that mere drainage, if not actually pernicious in such cases, can be entirely dispensed with. At best it can only get rid of excess of pus; it can never leave the cavity pus-free.

Further, in cases where the membrane at the hiatus semilunaris is degenerated or swollen, no ordinary-sized hole would have the effect of emptying the antrum, for no air could come in from above to take the place of the pus. The rule that lays down that the antra should be tapped at the most dependent point is only an unreasoning extension of what in other circumstances is a highly important practice. The real reason why opening the antrum from below sometimes cures empyema is that it allows thorough flushing and cleansing of the cavity, and by removing the infected matter permits the lining membrane to recover. This end is just as well attained with a solid plug in the opening as with a drainage tube, while the plug has the additional advantage that the pus does not trickle into the mouth and get swallowed by the patient. In cases where degeneration is so well established that regular and frequent flushing does not effect a cure within a reasonable time, continuing the treatment will not bring it about.

Granulation tissue would be no bar to healing if the walls could but collapse and the granulations fuse, but the rigidity of the walls prevents anything of the kind from happening, for after the first few layers granulations grow so slowly that it would take an enormous time for obliteration to be effected in such a way.

An effort must then be made to curette the diseased tissue and allow the raw surfaces to epithelialize. This can be effected by cutting away the inner wall of the antrum to such an extent as to permit the mucous membrane of the nose to creep in and cover the raw surfaces with a healthy coat. I have lately in three cases supplemented this method by applying large grafts to the inside of the antrum through the opening in the canine fossa a week after the primary operation, and in each case with an excellent result.

Again, let us take the case of the frontal sinus. Here we have the best possible example of the insufficiency of drainage to cure an infected bone cavity. The sinus is provided with an exit at its most dependent point, and if drainage were of any service whatever, one can hardly see how such a cavity could ever become chronically affected. The explanation given by those who attribute its disease to want of proper drainage is that the concomitant swelling of the mucous membrane of the infundibulum blocks the exit, and so impedes the gravitation of the discharge. So in many cases it undoubtedly does, and in these we have brow ache from pus pressure as a constant symptom; but in many others the infundibulum is large enough to allow perfect drainage, in spite of swelling, and this is borne out by the ease with which large instruments can be introduced into the cavity from the nose, and also by the complete absence of frontal ache, a symptom which could not fail to be present were the outflow in any way obstructed.

That such cases do not tend to spontaneous cure shows that mere drainage is not enough, unless the other necessary condition is present—namely, that one wall of the cavity must be collapsible.

Here, then, we have the key to the correct treatment of such cases. There is no use in trephining the anterior wall and scraping and disinfecting the cavity. The mucous membrane has been destroyed, and when the bone granulates the old condition is re-established as badly as ever. In the same way a diseased mastoid process will never heal from simply letting the pus out by chiselling if its interior is degenerated. Such treatment should be reserved for acute cases, where, on the subsidence of the inflammation, the membrane reverts to its normal condition.

Operations on the mastoid in old-standing cases were heart-breaking to the surgeons until the modern radical procedure was developed. The essence of this beautiful operation consists in throwing the tympanum, external meatus, mastoid

cells and attic, all into one large accessible cavity over the surface of which epidermis is encouraged to grow by utilizing the skin of the external meatus and by transplantation by Thiersch's method from other parts of the body.

So, also, when abscess occurs in bone, the head of the tibia for example, opening and scraping and drainage are of no use, the granulations cannot fuse, for they cannot meet if the cavity is of any but the smallest size. The efforts of the surgeon should be directed towards laying the cavity freely open and planting the raw surface with large grafts.

In the majority of surgical cases pain is a function of tension. Now, tension in cases of infection is determined by two things: the rigidity of the surrounding tissues and the time they get to adapt themselves to their new conditions. There are certain parts of the body noted for their painfulness when inflamed. These are not necessarily places richly supplied with sensory nerves, but rather parts whose structure is such that it does not readily allow of distortion.

A gouty or rheumatic inflammation of fibrous tissue is always severe, and a patient may suffer a degree of torture from a small furuncle on the fibro-cartilaginous parts of the nose or ear out of all proportion to the size of the affected area. If the affection is virulent the inflammatory products accumulate rapidly, the mechanical disturbance of the tissues is violent, the tension is high, and the pain great. If, on the other hand, the infection is mild the products accumulate slowly, the tissues get time to adapt themselves, the tension is low, and there is but little pain, and if the malady only progresses with sufficient slowness there is no reason why pain should not be entirely absent.

This gives a more reasonable explanation of the fact that tuberculous otitis usually progresses painlessly, than the assumption, obviously made to fit the fact, that the tubercle bacillus produces a special anaesthetic toxin which deadens the nerves of the affected area.

FRONTAL SINUS EMPYEMA FOLLOWED BY SUBDURAL ABSCESS.*

By A. J. MARTINEAU, F.R.C.S. EDIN.,

Assistant Surgeon to the Throat and Ear Hospital, Brighton.

J. M., aged 31, was first seen in January, 1904, when he complained of pain in the right cheek, upper molar teeth, and over the right eye, and of a nasal discharge. Symptoms had been present five or six months. He had been to a dentist and had a sound tooth drawn.

On examination there was found a marked deviation of the nasal septum to the left side and a corresponding enlargement of the turbinal bones on the right. There was pus about the middle turbinal region and the cheek was dark on transillumination.

On January 29th, 1904, the right antrum was perforated through the tooth socket under gas and foul pus washed out. The patient was taught to wash the cavity out himself, and this antrum gave no more trouble. In the following August the left antrum began to trouble him. Symptoms were the same as he had had on the right side, and I saw him on August 23rd. He had had a molar tooth extracted before I saw him on this occasion also, and there was said to have been an abscess at its root. (I may mention that all his teeth are unusually good.) I perforated this antrum also through the tooth socket, and daily syringing was instituted.

I was called to see him one week later for acute pain on the left side of the forehead and round the orbit, especially at the inner angle of the lids. His temperature was 101° F. The antrum when examined washed out clear. The day before he had been for a long motor-car ride, which, owing to a mishap, had been prolonged until 2 a.m. on the day when I saw him. Pain commenced at 6 a.m.

I tried to pass a frontal sinus cannula under cocaine and failed. I put him on inhalations of mentholized steam, and tried again, but without success.

On September 1st, under chloroform, I raised an angular flap over the sinus, and removed a circle of bone with a $\frac{1}{2}$ -inch trephine. The mucous membrane lining the anterior wall was deeply congested, and gas bubbled through a puncture made in it by the pin of the trephine. The sinus was full of offensive yellow pus, and there was a small area of bare bone on the inner wall. It was ascertained that a probe could be passed into the nose, and the inferior turbinal was removed

* Case shown to the Brighton Division of the British Medical Association.

to facilitate drainage. Temperature fell after this operation and remained down for two days, when he had a rigor, and it ran up to 104.2°. There seemed to be very little pus from the frontal sinus, but there was a good deal of offensive discharge about the ethmoidal region.

On September 4th, under chloroform, I completed the radical operation on the frontal sinus, removing the whole of the middle turbinal bone, scraping out the ethmoidal cells, and making a large opening into the antrum from the inferior meatus of the nose. This operation gave no relief. Rigors were of daily occurrence; the pulse was somewhat slow, headache was severe, and the patient complained of numbness and tingling at the extremities of the little and ring fingers of the right hand; there was no vomiting, no optic neuritis, and the mental condition was brisk.

On September 9th I explored again under chloroform, and found a bead of pus issuing from a pinhole opening in the posterior bony wall of the sinus in the middle of the bare area above noted. I removed this bare bone and evacuated a considerable amount of creamy-white offensive pus.

The subsequent history was uneventful. For some time there was offensive discharge about the ethmoidal region. This eventually diminished in amount and became sweet. I found the administration of nuclein solution by the mouth useful in drying up the discharge. Complaint was made of some discomfort owing to division of the supraorbital nerve in performing the radical operation. This is now passing off, and there is practically no nasal discharge.

REMARKS ON COMPLETE PROSTATECTOMY FOUNDED ON FIFTEEN CASES.*

By J. LYNN THOMAS, C.B., F.R.C.S.ENG.,

Surgeon to the Cardiff Infirmary; Consulting Surgeon to the Hamadryad Hospital, Porth Hospital, Bridgend Cottage Hospital, Cardiff Provident Dispensary, and Barry Accident Hospital.

I HAD the privilege of being present at the Manchester meeting of the British Medical Association, 1902, when the two alternative routes for the removal of enlarged prostates in the aged were recommended by men of specialized experience with zeal worthy of forensic advocates, and it is no exaggeration to state that the practical result of that discussion has been a great boon to many sufferers, and has borne fruit to a degree which is almost revolutionary.

Mr. Freyer, in enthusiastically advocating the suprapubic route for complete removal of the prostate, trod upon the corns of admirers of McGill's operation, who thought that they recognized an old dish under a new name. Disinterested spectators and subsequent investigators have by this time come to the conclusion that Mr. Freyer placed the suprapubic operation upon broader and sounder bases, and has achieved results which are more constant, uniform, and dependable than any that previously existed. Before the Manchester meeting, I had performed McGill's operation on five occasions, but owing to the narrow range of its application, and the uncertainty as to the ultimate result, I found that most patients, after the risks and probable result of the operation had been explained to them, did not care to undergo it. Under present circumstances, when patients are informed that they can be cured, but that the risk to life is about 10 per cent., I have been astonished at their readiness to undergo operation, notwithstanding strong advice to the contrary by other medical men. One of my reasons for bringing before your notice to-day the result of my experience is due to this particular attitude on the part of some members of the profession. It is common practice, I believe, for prostate patients to consult a number of doctors, and after they have undergone operation to express much gratitude at the result, incidentally reflecting approvingly upon their own judgement by enumerating the doctors who did not agree with their decision to having their prostates removed.

My own cases number 15 prostatectomies—13 suprapubic and 2 perineal—with 2 deaths.

Of the latter, one (my eighth case) died as the result of the operation in about forty-eight hours, the other (my twelfth case) died from pneumonia about nine days after. The first death made me adopt the perineal route in the next two cases, but afterwards wrong diagnoses, due to unexpected pathological conditions causing symptoms pointing to malignant disease, brought me accidentally back to the suprapubic route.

The ages of my patients varied from 56 to 77. The prostates removed ranged in weight from 1 oz. to 6 oz.; my last two cases supplying the extremes in weight, and both these patients suffered from serious heart trouble. Two were corpulent—one 5 ft. 10 in. in height, weighed 220 lb., the other, 5 ft. 5 in., scaled 196 lb., so that after operation a very deep wound was left to granulate up, but notwithstanding this fact the heaviest man left the private hospital in twenty-six days, the urine having entirely passed per urethram from the eighteenth day after operation.

It seems to me that, owing to the necessity of possessing strong, talon-shaped nails on the forefingers, there are at least two types of surgeons who cannot perform Freyer's operation—the one is handicapped by nature and the other is a victim to ceremonial: the first are those who naturally possess soft flexible nails; the second, men who cut their nails down to the quick. For these the perineal is undoubtedly the route best suited.

In several of my suprapubic operations no instrument was used except scalpel and catheter, and no ligatures were required; I prefer the transverse incision through the skin along the fold at the lower part of the abdomen, because it is parallel and practically on the same level as the upper portion of the pubes. And after dividing the sheath over the recti and pyramidal muscles, the left forefinger acts as retractor, and the opening becomes lozenge shaped, giving a good view down to the bladder wall, then the silver prostatic catheter in the bladder is pushed against the finger so that an opening is forced through the anterior wall of the bladder and is immediately enlarged downwards, whilst the catheter remains as guide to the upper end of the opening in the bladder; the left forefinger delivers the prostate into the bladder. A rubber glove is worn on the right hand as a protection against infecting the fingers when introduced into the rectum. I have on some occasions had the prostate freed from its sheath and delivered into the bladder under two minutes, but I must confess that I have had some trouble in extracting it from the bladder.

My earliest cases happened to be very septic, and after operation I immediately packed the bladder and wound with iodoform gauze and left it in for twenty-four hours, but in one instance where I had used Stonham's ribbon gauze I found that the bladder and urethral muscles extruded part of it through the meatus and had given rise to symptoms of dysuria. Since that experience I confine packing of the bladder to septic cases with paralysed bladder and to using the ordinary gauze.

As far as the perineal operation is concerned, my limited experience left the impression that it is easily performed, and that an excellent view of the whole field of operation is gained by adopting the curved transverse incision through skin and superficial fascia and by bringing down the base of the bladder by Young's prostate retractor, and by using Proust's bulb retractor. Parker Syme's rubber prostate retractor and Leguen's three-bladed instrument are not quite so convenient as that of Young for lowering the prostate.

My views as to the indication for operation are necessarily narrowed on account of the fact that I do not see patients until they have tasted the discomfort, the worry, and to some the humiliating outlook of catheter life. Many a strong man is utterly disheartened or even demoralized when he feels he is losing control over micturition; he fancies that the overflow of urine is a sign of second childhood, the want of control over the mechanical obstruction at the neck of the bladder being misinterpreted as loss of control over its nervous mechanism.

I would draw attention to my fourth case of prostatectomy, as the patient decided for himself the course of treatment to be adopted. One morning he failed to pass urine, and was relieved by my friend, Dr. Arthur Taylor, by catheter. In the evening of the same day I saw him in consultation; after again relieving him, he asked if no other treatment but that of catheter was open to him, and mentioned that his brother had died the previous year in great misery after using an instrument for some months. After explaining to him my views of Freyer's operation, he decided to have it done without delay, and next morning I removed complete in its capsule, together with the prostatic portion of the urethra, the prostate shown in Fig. 1. He was 72 years of age, 5 ft. 5 in., and weighed 196 lb. He afterwards remarked that the profession did not realize the misery and the lives that might be saved by adopting his views with regard to treatment! This man's prostate was removed within twenty-four hours of the first signs of trouble. I cannot but think that there is much

*Read before the South Wales Branch of the British Medical Association at Cardiff, December 8th, 1904.