fungi that, judging from analogous plant diseases, it is very probable several species have to be dealt with. Amongst the ascomycetes some botanists place the so-called sprouting or yeast fungi (saccharomyces), one member of which, *Oidium albicans*, is so well known to us. The parasitic ascomycetes include the fungi which cause the peach blister—"bladder" or "pocket plums"—the vine and the hop mildew, the larch disease, the canker of apple trees, and the caterpillar sphæria. To the same group belongs the fungus which furnishes us with ergot. The interesting family of lichens in which the parasite and its host are mutually beneficial to one another was also described. The basidiomycetes, like the other groups, contain both saphrophytic and parasitic species. Amongst the last named the Uredineæ and their associates, the Ustilaginæ stand prominent in causing the rust and mildew in wheat, as well as smut and bunt, diseases of economic importance, and not mere scientific curiosities. The large family known as the hymenomycetes was the subject of the last lecture, of which the mushroom is the best known and certainly the most highly appreciated member in this country, but which also contains such harmful species as the dry rot fungus and various tree-destroying parasites. After describing the gasteromycetes, the puffballs, the *Nidulariæ*, the curious phalloidei, the course concluded with an account of the remarkable life-history of the myxomycetes, which presents so many analogies to the animal kingdom that some botanists have gone so far as to rechristen them the mycetozoa.

ENTERO-VESICAL FISTULA TREATED BY LAPARO-ENTERECTOMY.

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WHEN consulted in a case of rare occurrence one naturally looks to published cases for guidance. In this case I found very valuable information and much assistance from the perusal of Mr. Harrison Cripps's monograph, *The Passage of Air and Fæces from the Urethra*, and it was with surprise I found such a small proportion as 9 of the 63 cases mentioned by him were due to malignant ulceration, as I was under the impression that a very much larger proportion of cases were due to this condition. I cannot but think that this is owing to a large proportion of the cancerous cases not being published.

As owing to his investigations Mr. Harrison Cripps considers laparotomy impracticable, the publication of this case may be of service to surgeons, as showing that at least in a certain number of cases successful operation may be entertained by abdominal section with removal of the diseased or implicated portion of bowel and suture of the vesical opening.

In March, 1891, a medical gentleman, aged 36 years, consulted me under the following circumstances: In March, 1890, he had a severe attack of influenza, from which he apparently recovered fully, but in October of the same year he was affected for the second time, and subsequently never regained his strength fully. In December he was much troubled by pain in the hypogastric region and the internal aspect of the thighs, this being soon followed by frequent painful micturition and tenesmus.

In January, 1891, he sailed as ship surgeon to America, although feeling feverish, with bad appetite and generally out of sorts, accompanied by severe continuous pain in the lumbar region, irritability of the bladder, and frequent micturition; during the voyage he noticed what he believed to be fæces in the urine. On the return voyage his symptoms became so aggravated that he was unable to leave his bed, the pain in his hypogastric region and scalding during micturition being very severe; his bowels were confined and when relieved by medicine, which gave a liquid stool, fæcal material was always to be noticed in the urine. On his return to Liverpool he consulted a surgeon who recommended rest, so he came to Dublin and remained under medical treatment until I saw him.

The patient, full bodied and stoutly built, stated he had

not lost much weight since the commencement of his illness; his pulse was 80, regular and of good volume; his bowels had a tendency to constipation but were readily moved by medicine; he had a furred tongue. The urine was acid, light in colour, specific gravity 1012, with a faint cloud of mucus and a slight deposit of phosphates, but no fæcal material could be discovered in the specimen examined. With the concurrence of his medical attendant the patient was placed under the influence of chloroform, and a full examination of his rectum made, but no tumour or communication with the bladder could be discovered. A Thompson's sound was now passed into the bladder, which was found to be somewhat rougher than usual, but no other abnormal evidence could be obtained. Milk injected through the sound did not pass into the bowel, although considerable pressure was resorted to. A few days after this examination a large simple enema containing a small quantity of sodium salicylate was administered; this did not give rise to more pain than one would expect from the use of a large enema in a healthy condition of the bowel. Within a few minutes the patient was requested to micturate, and the urine tested by perchloride of iron, when a relatively large quantity of the sodium salicylate was found to be present.

Fearing the milk test employed in the case of the bladder was not delicate enough, a solution of sodium salicylate was injected into the bladder, on a subsequent occasion, but no evidence of its having passed into the bowel could be obtained.

As the result of this examination, taken with the previous history, the case was diagnosed as a simple ulcerative communication between the superior fundus of the bladder and the large intestine in the region of the sigmoid flexure, and that this communication was valvular in its nature, allowing material to pass from the bowel to the bladder, but not from the bladder to the bowel. Hoping that the opening, which was apparently of small size, might be induced to close without resorting to operative procedure, the patient was kept in the horizontal position, and was given food of the most nutritive nature in small quantities and in such form as was most readily absorbed. He was also given opium in such quantity as to arrest the peristaltic action of the bowel; in addition, an attempt was made to keep the bladder in a condition of contraction by tying in a catheter; it was, however, found that the catheter gave rise to such irritability of the bladder and constitutional disturbance that it had to be removed in thirteen hours.

This treatment was continued for ten days, and although the bowels acted, no fæcal material passed through the bladder. It was, however, noticed that a much larger quantity of gas passed from the bladder when the urine was voided than had been the case before he was placed under this treatment. A change then occurred, and fæces appeared in the urine in a relatively large quantity, which gave rise to much irritability of the bladder and constitutional disturbance, vomiting being frequent. A consultation was held, when it was determined that operative interference was indicated. To this the patient gave a willing assent, only stipulating that on no account should a colotomy be performed. The abdomen was opened by an incision through the linea alba extending from about an inch below the umbilicus to about an inch above the symphysis pubis. On examining the posterior aspect of the bladder, I found that it was adherent near its fundus to the sigmoid flexure of the colon, immediately above the brim of the true pelvis; this adhesion was of such a character as to be readily broken down by my finger, and the two structures separated. I now found an opening into the bladder about the size of a pea, through which the mucous membrane of the bladder protruded; the surface of the bladder was revived for about half an inch around this opening, and the raw surfaces brought into contact by silk sutures, taking care that the sutures did not include the mucous membrane; a second row of sutures were then passed so as to bring the serous membrane over the wound into apposition.

On turning my attention to the bowel, I found a mass of dense tissue implicating the bowel in its entire circumference to the extent of 2 inches. About the centre of this mass, on its anterior aspect, I found an opening into the bowel corresponding to that which existed in the bladder.

It being now evident that this mass must give rise to such an amount of occlusion of the gut that any attempt to close the opening without removal of the mass could only afford a temporary relief, I determined to remove the affected portion of the bowel, which was done to the extent of 3 inches, and the extremities of the bowel united by Czerny-Lembert suture.

The patient rallied well after the operation, but in a couple of days became restless, vomiting frequently, his pulse rising rapidly to 120, and becoming very feeble; whilst the highest temperature recorded was 99.8° F. Delirium supervened, and he died on the fourth day with all the evidences of collapse.

On *post-mortem* examination of the abdomen, no evidence of peritonitis could be noticed; the sutured bowel was firmly united, as was also the opening into the bladder.

Microscopic examination of the portion of the bowel, which was removed at the time of operation, proved that it was affected by columnar epithelioma.

Although a fatal termination occurred in this case, I consider it fully demonstrated the feasibility, in certain cases, of laparotomy as a treatment, and, further, should it have been found that enterectomy and suturing were impossible after the abdomen was opened, the surgeon would be in a much better position to perform a laparo-colotomy than if laparo-colotomy was undertaken as the primary operation, being able to see the most favourable position to open the bowel.

I would draw attention to the fact that the bowel in this case was affected by malignant disease, although the symptoms pointed to simple ulceration; and, indeed, such might have been the diagnosis after operation were it not that the microscope proved otherwise.

VESICO- AND RECTO-VAGINAL FISTULÆ.¹

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I. VESICO-VAGINAL FISTULÆ.

COMPLETE as the labours of Gosset, Simon, and Sims appear to have been in instituting and establishing rational operative procedures for the cure of vesico-vaginal fistulæ, yet a

Fig. 1.

few failures, with consequent disappointment to patient and

¹ Read before the Manitoba Branch of the British Medical Association, Winnipeg.

surgeon, lead one to believe that the present methods of treatment may be considerably improved. Disappointing results, obtained by methods that are old and tried, induced the writer to venture an improvement of which "flap-splitting" is the central idea. As in the repair of the perineum, the success of the operation depends largely on the principle that no tissue is removed. No originality is claimed except as to the manner in which the flaps are formed and coapted by a deep buried suture.

The fistulous opening being exposed an incision is made through the mucous membrane of the vagina at the distance of the full eighth of an inch from the margin of the fistula; this incision is extended till it completely encircles the opening.

The line of incision is carefully deepened till the lining membrane of the bladder is reached, and great caution is exercised in retaining the integrity of that membrane. A stream of sterilised water directed on the wound keeps it free from blood. In this manner a circumferential flap, hinged by the mucous membrane of the bladder, is obtained. This flap is inverted into the bladder, thus forming a roof for the broad raw surface exposed, and it is held in such position by a continuous suture of fine chromic catgut, inserted in such a manner that the stitches do not pierce the wall of the bladder.

A narrow strip of vaginal mucous membrane, which, owing to its density, retains a suture well, becomes part of the lining of the bladder, and causes no disturbance in its new position. The artificial opening is now closed and watertight, and to complete the operation it is only necessary to pass and tie silkworm gut sutures on the vaginal surface in the ordinary way; great care must be taken lest these sutures include the mucous membrane of the bladder.

Fig. 2.

Fig. 3.

The vagina is carefully packed with iodoform gauze. This packing is left *in situ* for about eight days; it is then removed, the vagina is thoroughly irrigated, any loose suture withdrawn, and the packing renewed. This cleaning and dressing is repeated every five or six days for about three weeks.

In my opinion all the sutures should not be taken out on the eighth or tenth day (as recommended by so many operators); as long as a stitch is not easily moved in its bed it had better be left alone till fibrous tissue is fairly formed. When the vagina, cervix, and when necessary the uterus, have been rendered aseptic before the operation was begun, and the wound treated as above, direct union by first intention should ensue.

Figure 4 shows a sectional view of the flap inverted, sutures, and the projection into the bladder.

The chief advantages of this operation are:

1. There is no loss of tissue.
2. A very broad, raw surface is obtained for apposition.
3. At the site of the operation there is a projection into the bladder which forms a roof for the raw surface, and urine cannot trickle along sutures.
4. Should the mouth of a ureter be exposed at the edge of the fistula it is not injured, but merely turned into the bladder.