fatal, have been traced to imprudence in this respect. That the activity of the disease is promoted by it there can be no doubt. And in the not improbable event of pregnancy, the risk encountered is vital.

The internal use of remedies is greatly limited to the fulfilment of special accidental indications. The bowels commonly demand attention. Constipation is a troublesome complication. It must be met by suitable aperients, and by enemata.

Bromine and iodine internally were greatly relied upon by Boinet. Iron seems indicated by the degraded state of the blood. But it is not often well borne. Salines I have found of great service. Bismuth, strychnine, hydrocyanic acid will occasionally be required to allay irritability of stomach. I have seen in many cases remarkable benefit from cod-liver oil.

CHAPTER XXVIII.

THE DISEASES OF THE VAGINA.

COLPITIS (VAGINITIS): SIMPLE, INFECTIOUS, ACUTE, CHRONIC; DISPLACEMENTS; WOUNDS; DILATATION; ATROPHY; CONTRACTION; SYPHILITIC, TUBERCULOUS, CANCEROUS ULCERATIONS; SLOUGHING; CICATRICES; LACERATIONS OF THE CERVIX UTERI; VESICO-VAGINAL AND RECTO-VAGINAL FISTULÆ; RUPTURED PERINEUM; NEW FORMATIONS: FIBROUS TUMORS; SARCOMATA; CYSTIC TUMORS; HÆMATOMA; CALCULI.

SOME of the abnormal conditions of the vagina have been described in the preceding chapters (see Atresia, Leucorrhœa, etc). It will here be necessary to describe those which have received insufficient attention.

Vaginitis or Colpitis.

Acute vaginitis sometimes follows labor, the result apparently of contusion of structures in a state of exalted vascularity. In these cases exfoliation or desquamation of the epithelial layer is very active, so that the bared surface presents a raw velvety-red angry appearance. Even during pregnancy the intense vascularity of the vagina disposes to free shedding of epithelium, which often collects about the summit of the vagina in the form of a creamy pasma, or in shreds or pellicles.

Acute vaginitis may also occur from exposure to cold during a menstrual period, from injury, from direct infection, from the introduction of foreign substances, from the use of irritating powders or injections. In children it may be caused by ascarides, by neglect of cleanliness, by improper manipulation. I have referred to the association of vaginitis with the eruptive fevers. Scarlatina, especially, affects the genito-urinary mucous tract, and thus I have known intense vaginitis produced. The

first case of the kind I saw was that of a young woman in Chomel's wards at the Hôtel-Dieu, in 1840. In these cases there is prolific generation and casting off of epithelium, attended and followed by a severe form of leucorrhœa.

Leucorrhœa in children is not very uncommon, and when observed is sometimes the source of most distressing suspicions. It is therefore eminently necessary to call attention to the fact that children are liable to non-virulent discharges, depending upon accidental causes. The symptoms of vaginitis and vulvitis in children are: in the acute stage, the patient complains at the onset of itching or burning at the vulva. This is increased during micturition. A whitish opaque moisture is formed over the surface of the labia, and these are often redder than in the normal state. The patient has often a difficulty in walking, the friction increasing the irritation of the inflamed surfaces. In the chronic state the discharge is a serous or lactescent moisture; there is little pain in the vulva, but sometimes a dull pain above the pubes, spreading to the groins and inner part of the thighs.

This form of vulvo-vaginitis has been noticed at the time of dentition, from indigestion, from exposure to heat and fatigue—as from dancing—from constitutional diathesis, especially the strumous, resembling in this respect the tumid chronic inflammation of the conjunctiva and nares.

The treatment consists in putting the child in a warm bath every two or three days, applying demulcent lotions, as poppy-head, mallow, or linseed decoctions, or weak acetate of lead, and in regulating the secretions; in the use of iron, iodine, and cod-liver oil.

The most common cause of acute or sub-acute colpitis is *gonorrhœal infection*. In this case the mucous membrane, especially at the fundus of the vagina, is intensely red. There is copious muco-purulent secretion of a yellowish or greenish tint, sometimes tinged with blood. This is found chiefly at the fundus of the vagina, surrounding and bathing the vaginal-portion of the uterus, which is involved in the like condition.

An experienced practitioner will generally recognize the specific character of this inflammation; but it is easy to fall into error in diagnosis. The moral and social complications are at times so intricate, and the reasons for dissimulation on the part of the patients are so strong and various, that even in the presence of the most convincing clinical proof, it will rarely be wise to commit ourselves to a plain expression of opinion. The subjects themselves may, moreover, be perfectly innocent and unconscious of the nature of the affection. And we must not always expect to be dealt with candidly. What we say will perhaps be misinterpreted or misrepresented. A circumspect reticence therefore becomes a virtue and a duty in the physician.

Gonorrhœal colpitis is very apt to invade the cervical canal, and thence to pass into the chronic stage, a condition analogous to gleet in the male. It may spread upwards to the uterus and Fallopian tubes, and thus lay the foundation of an obstinate chronic metritis, and even give rise to peritonitis.

It is also apt to spread along the urethra. This is more frequent, says Guérin, than is commonly thought. Occasionally the orifice of the urethra is inflamed, swollen, dotted with red points or pimples, corresponding to

the openings of the lacunæ, and in such cases recognition of urethritis is easy; but when the disease is internal, and when no mucus or pus appears externally, detection becomes more difficult. When any doubt exists, the patient should be prevented from emptying the bladder for several hours; the finger should then be introduced into the vagina, and drawn along the anterior wall, so as to press out any purulent matter collected within the urethra.

Chronic catarrhal inflammation commonly occurs after repeated acute inflammations, as from menstrual suppression, gonorrhœal infection, childbed, in chlorotic or scrofulous persons, from uterine catarrh, the irritation of uterine polypi, or hypertrophied vaginal-portion, dislocations of the uterus, the formation of morbid growths, and ulcerative processes. It is also frequent, and often at first acute in character, in newly-married women from excess or awkwardness in intercourse.

Vaginal catarrh is of importance from its liability to spread to the uterus, and thence to the tubes; and it disposes to intussusception and prolapsus of the vagina.

Inflammation of the sub-mucous fibrous coat of the vagina is not common apart from traumatic causes. Kiwisch has called attention to the occurrence of abscesses in this tissue during pregnancy.

But there is a chronic form, not very uncommon, the result in most of the cases which I have seen of imperfect or irritating intercourse. It is marked by thickening of the walls of the vagina, the formation of abscesses, and a degree, sometimes considerable, of atresia of the canal.

Symptoms and Diagnosis.—In the acute stage there is pain, often severe, characterized as "burning" in the part. Dyspareunia is almost necessarily present. Some febrile excitement attends. Unlike metritis, it is very rarely complicated with peritonitis. Hence the local and constitutional symptoms are less severe. Dysuria generally attends the gonorrhœal form. In this form also there is leucorrhœa of the character described. But absolute diagnosis can only be made out by the aid of the speculum, when we can take note of the vivid red mucous membrane, and see the discharge *in sitû*.

In the chronic and non-specific forms, pain is not so much complained of. I must refer to the chapter on "Leucorrhœa" for further information on this subject. When the disease has involved the cervical canal, vaginal injections are inefficient. Topical applications inside the cervix are essential. One form of pain, "Vaginismus," has been described in connection with "Dyspareunia."

The *treatment* of colpitis consists greatly in observing rest and cleanliness. To aid in securing rest, an essential condition often is to keep the inflamed walls of the vagina apart. This is accomplished by wearing Sims's or my vaginal rest for several hours during the day; by using a plug of cotton-wool steeped in tannin and glycerine, changing it two or three times a day, or by simple rest in the recumbent posture. Douches of tepid water or poppy-head decoction are often of signal service. In the more acute stages injections of lead in proportion of one drachm to a pint of water are best borne; later, sulphate of zinc, chloride of zinc, alum, tannin are more serviceable. The gonorrhœal inflammations may be treated exactly on the same principles as the similar affection in the male. The quickest method of cure is undoubtedly to touch the diseased surface lightly every other day with solid nitrate of silver, solid or in solution, or with tincture of iodine.

Diphtheritic inflammation most frequently occurs in childbed, and especially in lying-in hospitals; but I have seen an example in home practice. There is a form of vaginitis in which the mucous membrane is covered by pedicles, or flakes, white, very brittle, to which the name diphtheritis is sometimes given. At best this should be called pseudo-diphtheria. It is not usually attended by febrile symptoms. The vaginitis is not very acute, it is strictly limited to the mucous membrane, and the pellicle consists almost entirely of agglomerated epithelium-scales. The formation of the pellicle seems simply due to the preponderance of the scales over the mucous plasma. If the mucous plasma were more abundant, the discharge would be called leucorrhœa.

Displacements of the Vagina.—Displacements of the vagina can hardly arise without the preliminary condition of relaxation, or of displacement of the uterus. Whether prolapsus of the uterus be the cause or the effect of prolapsus of the vagina is a question already discussed. No doubt, prolapsus of the vagina is commonly associated with prolapsus of the uterus, but I believe prolapse of the vagina may exist independently. There is a preparation in St. George's Museum (No. xiv. 106) which seems to show that vaginal rectocele may exist without prolapse of the uterus.

Hernias consist in an inversion of the anterior wall of the vagina with the bladder—*cystocele vaginalis;* or in inversion of the posterior wall from the lower end of the rectum—*rectocele vaginalis;* or in a *hernia vaginalis posterior—enterocele vaginalis.* This last form consists in dilatation of Douglas's pouch to a hernial sac, so that the peritoneum is carried deeply down behind the wall of the vagina to the perineum. The intestinal folds contained in it drag upon the vagina, then tilt it from behind, pressing from above downwards more and more of its circumference, according to the degree to which the uterus follows the traction and descends. The prolapsus of the vagina thus produced gradually proceeds to a complete inversion, which contains in its cavity the prolapsed uterus, which in consequence of this traction undergoes very frequently a considerable or even monstrous elongation of its cervix. Commonly the rectum is also protruded to a prolapsus by the hernia. In rare cases, in consequence of the mass of intestinal convolutions accumulating in the hernial sac between the uterus and the inverted vagina, laceration of the posterior wall of the vagina has occurred with a fatal issue.

The tendency to rectocele is found in the natural bulging of the pouch or expansion of the rectum just above the sphincter ani. This is always seen in operations for restoration of the perineum. To dissect a flap of mucous membrane from this pouch constitutes one of the niceties of the operation. When this pouch loses the support of the perineum, it becomes larger. It is also increased to rectocele under fecal accumulation, retention, and straining at stool.

The treatment of vaginal prolapse and hernia in most cases merges in that which is indicated for prolapsus of the uterus. In some few cases a Hodge or stem-pessary may be useful. Astringent injections are almost

always serviceable. But when the prolapse is great, so that folds of vagina protrude through the vulva, becoming liable to chafing and inflammation, surgical treatment is necessary to remove the redundant portion. A piece of the mucous membrane of size and form indicated by the conditions of the case must be dissected off, and the edges brought together, so as to contract the canal. It will commonly be necessary to combine this proceeding with the perineal operation.

The vagina is liable to *wounds* from the introduction of foreign bodies, from accidents, and from surgical operations.

The most frequent cause of the lesions that come before the surgeon is severe labor. The vagina is liable to undergo laceration, contusions, leading to partial necrosis or sloughs. Hence result cicatrices which may lead to occlusion of the vagina, or fistulous opening into the bladder or rectum. *Vesico vaginal fistula* may be produced by the mere pressure of the head, long continued, jamming the bladder against the pubes.

In precipitate labor, or in protracted labor in primaparæ where the vulva is rigid, the perineum is apt to undergo laceration backwards to the anus.

The anterior commissure also, as I pointed out many years ago (*see Tyler-Smith's Obstetric Medicine*), is liable to rupture, whence severe hemorrhage may arise.

There is a singular preparation in the Museum of St. George's Hospital (Series xiv. 108). It is a case of laceration of the vagina from coition. There is a rent passing along the upper two inches of the vagina dividing the mucous membrane and the adjoining fibres of the muscular coat. The rent deepens as it ascends, and on a level with the os uteri has broken through into the peritoneal cavity. The hole in the peritoneum is not quite large enough to admit the little finger. The subject was an old woman.

The most trivial *wounds* of the vagina are sometimes followed by profuse bleeding. This is especially the case during pregnancy. But at any time the slightest nick, puncture, or incision may give rise to profuse bleeding if the patient assume the erect posture and be exposed to any exertion. A surgeon nipped off a very small warty excrescence from the vagina just inside the vulva. The woman nearly bled to death. Plugging and the application of styptics failed to arrest it. I passed a curved needle armed with a suture so as to get quite under the little wound. The suture drawn tight effectually controlled the bleeding. This is the surest plan to adopt. A short sewing needle held in a forceps might on emergency answer. But in some cases, steady pressure with a pad of lint steeped in perchloride of iron or other styptic may be enough, absolute rest in recumbent posture being understood.

Professor E. Martin describes (*Monats. f. Geburstk*, 1869) a *temporary dilatation of the fundus*, not the result of stretching or distension, but which is caused by a pathological action of the neighboring ligaments; that is, the pubo-vesico-uterine, and the sacro-uterine, the muscular bundles of which contract. The examining finger finds the roof of the vagina so wide that it seems as if its walls were applied close to the sides of the pelvis. This condition is found when there is hemorrhage with uterine colic, and in secondary puerperal hemorrhage. I have commonly observed it during abortion. It seems to be associated with expulsive effort. In such cases the os uteri is open, and the roof of the vagina seems higher than usual. Under the use of means to arrest the bleeding this dilatation disappears completely in twenty-four hours. I have observed a more permanent dilatation of the fundus vaginæ forming a large cavity in some cases of perimetritis.

There is a form of *atrophic contraction of the vagina* which takes place in advancing age. The walls loose elasticity, the canal becomes smaller, sometimes funnel-shaped or conical, the apex being at the roof, where the remains of the atrophied cervix uteri may be felt. Some cases of this kind are not easy to distinguish from the strictures which ensue occasionally upon cancer. This atrophic contraction is most common in women who have abandoned the habit of sexual intercourse. It explains the rupture in the specimen in St. George's Museum just alluded to (Series xiv. 108). In some cases the vagina is almost obliterated.

The vagina may be the seat of various *ulcerative processes*.

Excoriations occur from catarrhal suppuration or the chafing of fibroid polypus, of pessaries, etc.

Syphilitic sores may occur in any portion of the vaginal canal, but the most frequent locality is the fold or duplicature at the fundus, into which the vaginal portion of the cervix uteri is inserted. This is commonly attended by colpitis. To the touch an excavated syphilitic sore may at first impose upon the surgeon for the os uteri.

The *tuberculous and cancerous ulcerations* generally begin on the vaginal-portion, and spread to the roof of the vagina. The latter especially are unhappily frequent, and often lead to destruction of the walls between bladder and rectum, establishing cloacæ or fistulæ.

The vagina is sometimes ulcerated from without, through the burrowing of sub-peritoneal abscesses which make their way into the vagina.

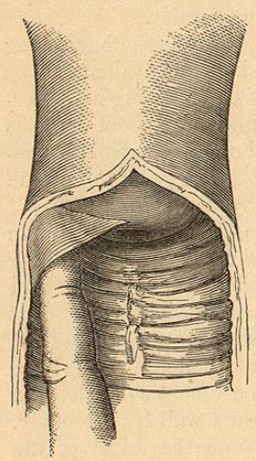
Sloughing of the vagina occurs as the result of the bruising and pressure encountered during protracted labor, from diphtheria, from necrosis in severe fevers, from perivaginal hæmatoceles and abscesses, from necrosis resulting from the pressure of fibroid tumors so large as to become impacted, or from the impaction of a retroverted gravid uterus.

The healing of vaginal sloughs by granulation frequently results in the formation of cicatrices. Those cicatrices which lead to atresia or stenosis of the canal have been described, in their pathological and therapeutical bearing, under "Dysmenorrhœa from Retention." But cicatrices, in the form of bands or falciform projections into the vagina, not extensive enough to close the canal, are not uncommon. They produce distress of a different kind. They may form crescentic or falciform bands seizing the os uteri by one horn and the vaginal wall by the other. This, contracting, may half shut off the os uteri from the canal of the vagina below, forming a pouch or sac above. It also not uncommonly pulls the cervix uteri to one side, or forwards or backwards, producing deviation of the uterus. But cicatrices are not uncommon which do not thus project as folds. They are felt as dense cords when the vaginal roof is stretched by the finger. They contract the fundal space, interfere with the mobility of the uterus, and maintaining a constant irritation, cause leucorrhœa, neuralgia, dyspareunia, and other distress.

I have seen these cicatrices follow labor, instrumental and not instrumental, also cauterization of the os uteri by potassa cum calce, and even by nitrate of silver incautiously applied. They have also followed the use of too concentrated chromic acid and perchloride of iron.

The *treatment* consists in dividing the cicatrices so as to allow the vaginal wall to resume its natural form. When the cicatrix extends up the vaginal-portion this part should be set free, by dividing the horn which seizes and binds it to the vaginal wall. The first step is to dissect off the adventitious membrane from the vaginal-portion, so as to restore this part to its normal condition; and then several nicks should be made at different points of the crescentic edge, as deeply as is felt to be safe, taking great care of course not to go through the vaginal wall. This operation is best done without the speculum. The cicatrix is made tense by the forefinger of the left hand, and then the edge of a Simpson's metrotome is turned upon it. When thus nicked these cicatrices have a tendency to disappear. But it is likely that the incisions will have to be repeated from time to time before they are overcome. Sometimes the bleeding attending this operation is very profuse; and it is, I think, always prudent to plug the vagina firmly with pledgets of lint soaked in olive oil and carbolic acid. The operation should in every case, however slight it may seem to be, be performed on the patient in bed. Absolute rest in the recumbent posture should be rigidly enforced for four or five days afterwards. If these precautions are adopted there will probably be no bleeding of importance; if neglected, profuse, even fatal hemorrhage may result. Under no consideration should the operation be performed in the out-patient's room of a hospital, or in the physician's consulting-room.

Fig. 176.



Cicatricial Band binding Os Uteri to roof of Vagina (R. B.).

A day or two after the operation it is desirable to apply a Hodge-pessary, so shaped that it will keep the roof of the vagina on the stretch, so as to obviate the disposition to contract, which the scar frequently manifests. I have seen extensive cicatrices gradually disappear under this continual stretching. In one case, that of a lady who had suffered extensive sloughing after labor, the vagina was very contracted. But in a year the canal was so nearly restored to its natural state that she subsequently bore a child at term without artificial aid. Fig. 176 represents a not uncommon form of utero-vaginal cicatricial band. Raised on the finger it is made tense for division.

Lacerations of the Cervix Uteri.—Emmet calls attention to the frequency of lacerations of the cervix, and to the serious distress they entail (*Amer. Journ. of Obst.*, 1874). They are most frequent, he says, in the median line, and more frequent in the anterior than in the posterior lip. If in the median line and confined to the cervix, they generally heal rapidly. But when the lacerations extend through the vesico-vaginal septum a fistula may result; and this part of the rent may not heal. Lacerations through the posterior lip also heal readily; but sometimes when they extend far back inflammation may arise, and cause an intractable form of retroversion. A cicatricial band is left which must be removed before relief is obtained. But it is the lateral lacerations with which we are chiefly concerned in practice. Whenever the rent has extended to the vaginal junction or beyond, there will exist a tendency for the tissue to roll out from within the cervical canal. Hypertrophy and cystic degeneration of the lips ensue; involution is arrested; partial obliquity of the uterus is produced. On getting about the woman is soon the subject of great distress; leucorrhœa, menorrhagia, dysmenorrhœa, difficulty in walking impel her to consult her physician. The attendant abrasion, glandular inflammation, hypertrophy, leucorrhœa are readily recognized; and many such cases are treated for "ulceration" ineffectually for months. Emmet has successfully treated more than two hundred such cases, by paring the edges of the fissure and uniting them by silver sutures, so restoring the cervix to its normal shape. I can confirm the accuracy of Emmet's views. I have performed his operation with satisfactory results.

Fistulæ of the genital organs may be divided into four classes: 1. Between the bladder or urethra and vagina; the most common. 2. Between bladder and uterus; rare. 3. Between rectum and vagina; not very rare. 4. Between rectum and uterus; very rare. To these might be added uterine fistulæ, communicating with an abscess in the pelvis; and fistulæ opening into the vagina from perimetric abscesses or retro-uterine hæmatocele.

The most common seat of the vesico-vaginal fistula is near or half an inch below the anterior edge of the os uteri.

Symptoms.—The urine may either be retained for a few days after labor, or it may flow by the urethra with more or less pain. But at the end of a week or so the patient becomes conscious that her water runs away by the vagina more or less continuously; in fact, that she cannot hold it; that she is, as the expression goes, "always wet." Excoriation of the external genitals is a frequent consequence. Phosphates collect in the vagina and cause further irritation. Sometimes, in the recumbent posture, the vulvar sphincter being unimpaired, the vagina forms a pouch, which will retain a considerable quantity of urine, acting the part of a subsidiary bladder. But on rising or exertion this accumulation is discharged, and the dribbling goes on. The incontinence begins from the falling of the slough. This leaves a hole in the septum between bladder and vagina, the edges of which gradually cicatrize. In this process the hole contracts, often so much that there may be great difficulty in finding it. But a hole that will barely admit a fine probe is big enough to drain off the urine as fast as it is secreted. The hole may be big enough to admit the tip of the finger. The greater part of the urethra may be destroyed. In some cases the lower segment of the uterus is lost, as well as the base of the bladder. The anterior lip of the os uteri is not uncommonly lost. In one case I could find no cervix. There was nothing in the roof of the vagina to be found, but a fistulous opening

admitting the tip of the finger. This was cured in two operations; and the patient menstruated through the bladder.

The *diagnosis* is established by sight and by touch. Whenever incontinence of urine has come on after labor, examination by finger and sound, and by speculum is indicated. The patient in semi-prone posture, the sound is passed into the bladder, and the forefinger in the vagina carried to the os uteri, and then brought down along the course of the urethra, feeling for the sound through the fistula, if one exists. Generally the puckered cicatrix of the fistula is felt, and guides to the opening. Through this opening is felt projecting a velvety nipple-like mass, the mucous membrane of the bladder. Through this the point of the sound is sometimes carried from the bladder. This evidence, complete in itself, may be extended by the use of Sims's speculum. The perineum being lifted away the aperture may usually be seen; the mucous membrane of the bladder bulging like a cherry or a raspberry, and urine oozing or dribbling through it. The point of the sound may be seen in the fundus of the vagina. When the opening is very small or overlapped by mucous membrane, it may be made out by injecting milk through the bladder. This will be visible when the source of clear urine might not be detected.

In the case of recto-vaginal fistula, the opening may have become so contracted that escape of feces into the vagina is only occasional, that is, when the stools happen to be liquid. It may require some pains to detect the opening. It usually lies rather low down, at the point where the floor of the perineum begins to incline forward from the hollow of the sacrum. It may be made evident by finger and sound.

The etiology of fistulæ properly belongs to obstetrics. It is, however, important to state here that fistulæ are caused in two distinct ways. 1. By *slough*, the result of long pressure between the child's head and the pelvic bones, or between an edge of the forceps and the pelvis. The latter is comparatively rare; the timely and skilful use of the forceps is indeed the best way to obviate the danger of sloughing from pressure of the child's head. 2. By *laceration*, extending from the edge of the os uteri into the bladder. This, according to Emmet, whose experience is unsurpassed, is frequent. The laceration of the os uteri may heal, and yet the opening into the bladder may remain. In these cases there is no loss of tissue.

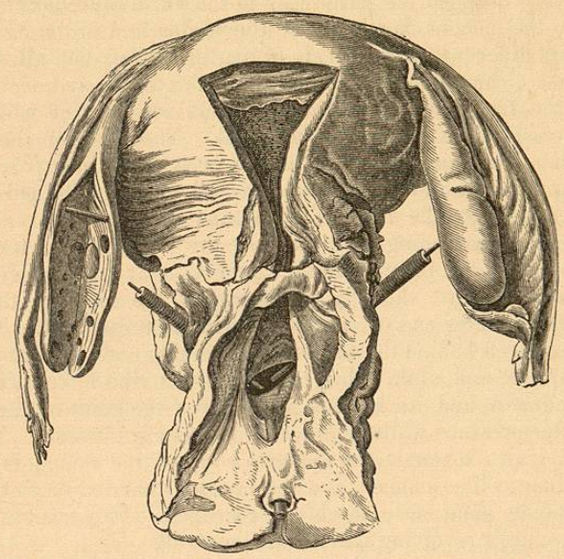
Any constitutional taint should be carefully treated.

Before operating, the fitness of the parts should be tested. The edges of the fistula should be seized at opposite points with a tenaculum, and the degree of tension estimated by approximation in different directions. Wherever a contraction-band is thus brought into prominence, it should be divided. Very free hemorrhage may follow this proceeding. It will be controlled by rest and plugging.

The *time* selected for the operation should be a week after the cessation of menstruation. If done later the operation is very apt to precipitate menstruation; and this process may mar success. No operation should be attempted during pregnancy. The bowels should be relieved by enema the day before operating.

Preparatory Steps.—Emmet insists (*Vesico-vaginal Fistula, etc.*, New York, 1868) strongly upon the necessity of carefully preparing the parts before attempting to close the fistula. All phosphatic deposit must be carefully removed by a soft sponge, and the raw surface touched with

FIG. 177.



Showing the relations of the Ureters to Vesico-vaginal Fistula (R. B.).

The specimen is seen from the posterior aspect. The cavity of the uterus is laid open. Bougies are passed into the ureters, the ends project into the bladder, and are seen at the orifice of the fistula. A bougie in urethra meets them. (From a preparation in St. Thomas's Hospital.)

weak solution of nitrate of silver (or iodine). Warm sitz baths and irrigating the vagina with warm water render great service. After bathing, the external parts should be protected from urinary irritation by annointing with cerate. The greatest care should be taken to lessen the contact of urine with the parts. A healthy condition, fitted for operation, is not reached until the hypertrophied and indurated edges of the fistula have attained a natural density and color. This, says Emmet, is the secret of success: without it the most skilfully performed operation is almost certain to fail. No pains to remove cicatrices can be superfluous. Cicatricial contractions may pull upon the edges of the fistula and frustrate union. Cicatrices are generally best made out by the touch. When thus put upon the stretch they are felt as tight bands. They may be divided or nicked in several places by scissors or knife. And to promote relaxation they should be kept stretched by wearing a vaginal rest of glass or vulcanite. I have found a Hodge pessary answer well. This nicking and stretching may have to be repeated several times before perfect smoothness and mobility of the tissues are attained.

The Operation.—The posture of the patient may be either the semi-prone, the knee-elbow, or the lithotomy. The American operators mostly

prefer the semi-prone. If the semi-prone posture is adopted, an assistant holds back the perineum with Sims's duck-bill speculum. If the lithotomy-posture is adopted, the ankles and wrists may be secured by Pritchard's anklets, whilst assistants on either side hold open the vulva by fingers or retractors, and the perineum is depressed by the duck-bill speculum. In this way sufficient access to the wound may generally be attained. But Simon usually dragged the parts near to the vulva by hooks and strings attached to the mucous membrane of the vagina and to the os uteri.

Operators differ as to the mode of performance; but all aim at the same end—a clean paring of the margin of the fistula and accurate adaptation of the fresh wound. Emmet prefers scissors, of which several pairs, expressly curved, must be at hand. The edge of the fistula is seized with a very fine tenaculum at the most depending part, and then the edge is removed in a continuous strip all round. The paring should be extended as near the mucous membrane of the bladder as possible, without actually wounding it. To pass the sutures, the tenaculum is again introduced, the point towards the fistula at a convenient distance from its vaginal edge; then by a rotation of the hand in the opposite direction, the bladder end of the fistula will be turned out. The needle is then introduced behind the tenaculum, bringing out its point just at the bladder surface, and while still grasping it with the forceps, the tenaculum is withdrawn, and its hook is passed over the point of the needle to make counter-pressure whilst the needle is passing through. The needle seized and drawn through, the opposite edge of the wound is seized by the tenaculum in like manner, and the needle is carried on, introduced at a corresponding point near the bladder-surface. If a transverse wound is made Aveling's revolving needle answers well.

Four to five sutures to the inch should be used, and one or more should be passed at each extremity beyond the fistula.

Sometimes a good flap for removing by knife can be seized by a broad toothed forceps, or Hilliard's three or four-pronged fork may serve.

The simple interrupted suture is much to be preferred. The wire may be secured by simple twisting, or by Aveling's coil-clamp and shot.

It was long thought that the recent success attained was mainly due to the use of silver wire sutures, upon which the revivers of the operation, Sims, Bozeman, and others, have so much insisted. But the antecedent experience of Charles Brooke has been strangely overlooked in the history of this operation. More than thirty years ago this surgeon cured fistulæ by silk sutures secured by his beads. He was also, as I testify by personal observation, eminently successful in curing perineal lacerations by his bead sutures. Indeed I am not sure that any considerable improvement has been made upon his perineal operation.

The paring the edge of the fistula may be done either in the transverse or in the long axis of the vagina. The choice is determined greatly by the direction of the longest diameter of the fistula. Where the opening is circular, the transverse paring is to be preferred, because the mobility of the walls of the bladder is greater in the longitudinal direction than from the sides. When the opening is very large and irregular in shape, the paring and line of union will be also irregular, perhaps oblique, or even Y shaped or T shaped.

The *after treatment* consists mainly in rest. As to emptying the bladder the different practice of surgeons seems to show that the method to be selected is not of essential importance. Emmet and Bozeman retain a catheter in the bladder. Simon thought this unnecessary. The catheter may be passed every eight hours, or the patient may be permitted to empty the bladder in the usual way.

Accidents that may Occur During and After the Operation.—One is the presence of the ends of *the ureters of the fistulous opening*, so that they might be included in the stitches. It is to illustrate this complication that I have introduced Fig. 177. The ureters may sometimes be seen yielding urine *stillatim*. To avoid stitching up these orifices, we may so pass the needles as to run between the two mucous membranes, or as Simon did in one case, we may slit up the ureter for half-an-inch inside the bladder, so as to secure an opening higher up out of the way. More frequently the fistulous opening being smaller, the orifices of the ureters are not visible; still they are liable to be taken up by the stitches. Generally they are avoided, because they are placed near the extremities of the pared wound where the needles penetrate less deeply; if one lip only of the orifices is included, no obstruction to the flow of urine occurs; and even if the whole orifice be taken up, the urine will commonly find a passage along the tract of the suture, and thus re-establish the orifice. *Primary and secondary hemorrhages.* In one case in which the vesico-vaginal artery was divided, Simon tied it with silk, and brought the ends of the ligature down through the bladder and urethra, in order to avoid its interference with the healing of the wound. But in two other cases he had equal success by bringing the ligature out into the vagina. He insists that tying the artery, if at all big, is the only security. But oozing is almost always stopped by pressure, cold, and by approximation of the wounded surfaces by the stitching. *Secondary hemorrhage* may take place either into the vagina or into the bladder. In the first case, if arterial, it may be necessary to undo the stitches and secure the vessel by a ligature. Occasionally a vessel may be cut by the needle in passing the sutures, so that time should always be given for the fresh bleeding to stop before tightening the sutures. Bleeding into the bladder almost necessarily frustrates the closure of the fistula. Alarming symptoms attend. The bladder may be so distended as to reach the umbilicus, and the urethra being perhaps obstructed by clot, there is retention of urine. Severe pain and vesical colic arise. At length the blood and clots may be expelled through the stretched-open wound and through the urethra. To stop the bleeding ice may be applied to the abdomen, and to ease pain morphia-injections may be made. But it may be necessary to reopen the wound and to dilate the urethra to break up the clots and to empty the bladder.

A source of hemorrhage I have witnessed several times is the unexpected *return of menstruation*. This event is very apt to be provoked by vaginal operations.

Peritonitis may supervene. The peritoneal fold between bladder and anterior uterine wall may come very near the range of the operation, and might in some cases of fistula high up be wounded. But peritonitis is far more likely to happen from extension of irritation from the proximate