

Diseases of the rectum and anus / by Alfred Cooper and F. Swinford Edwards.

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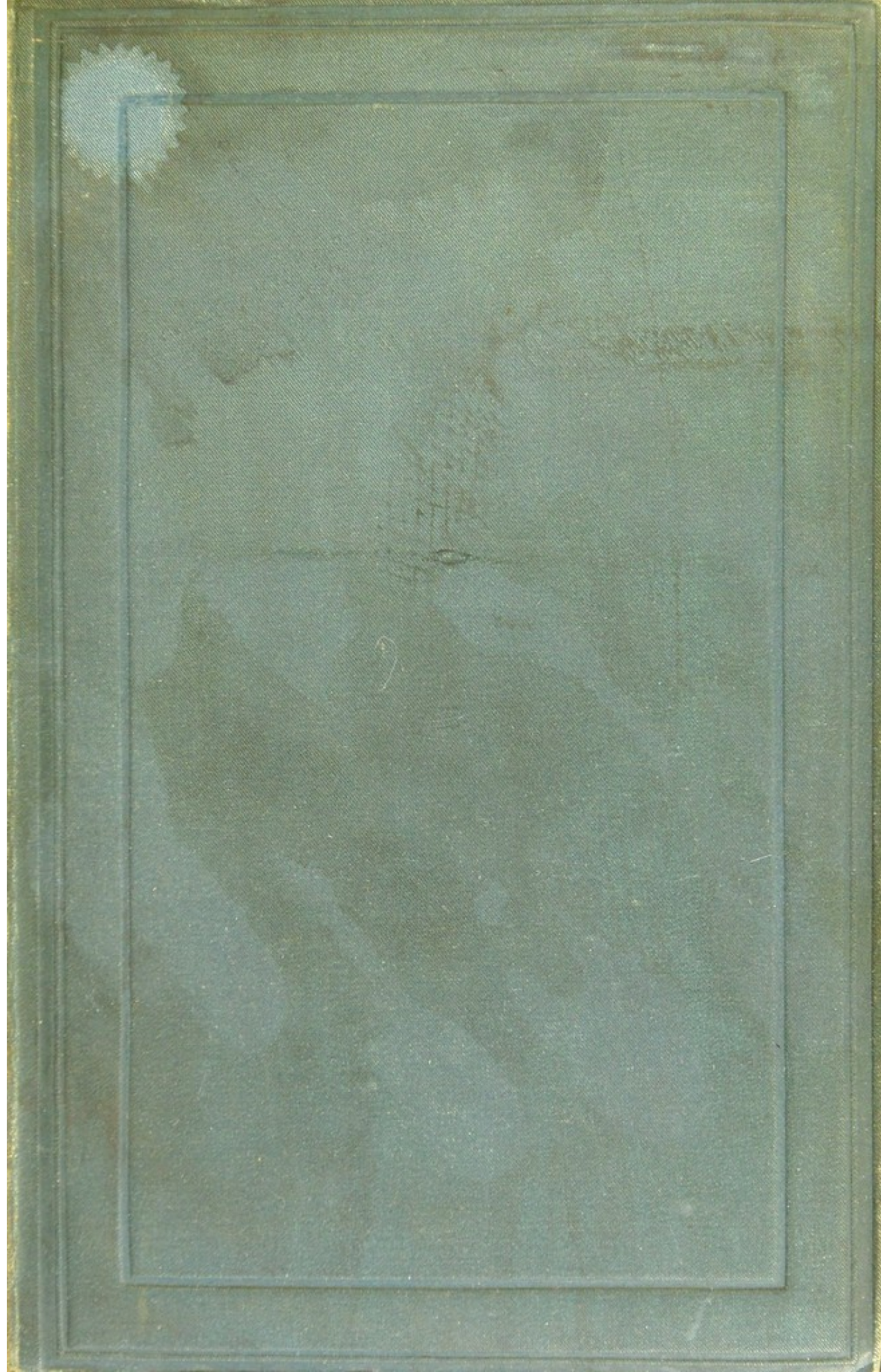
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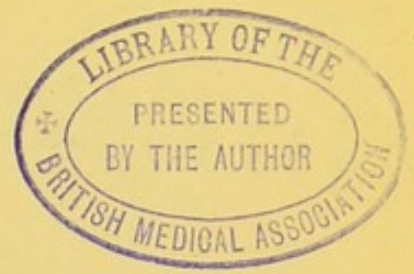
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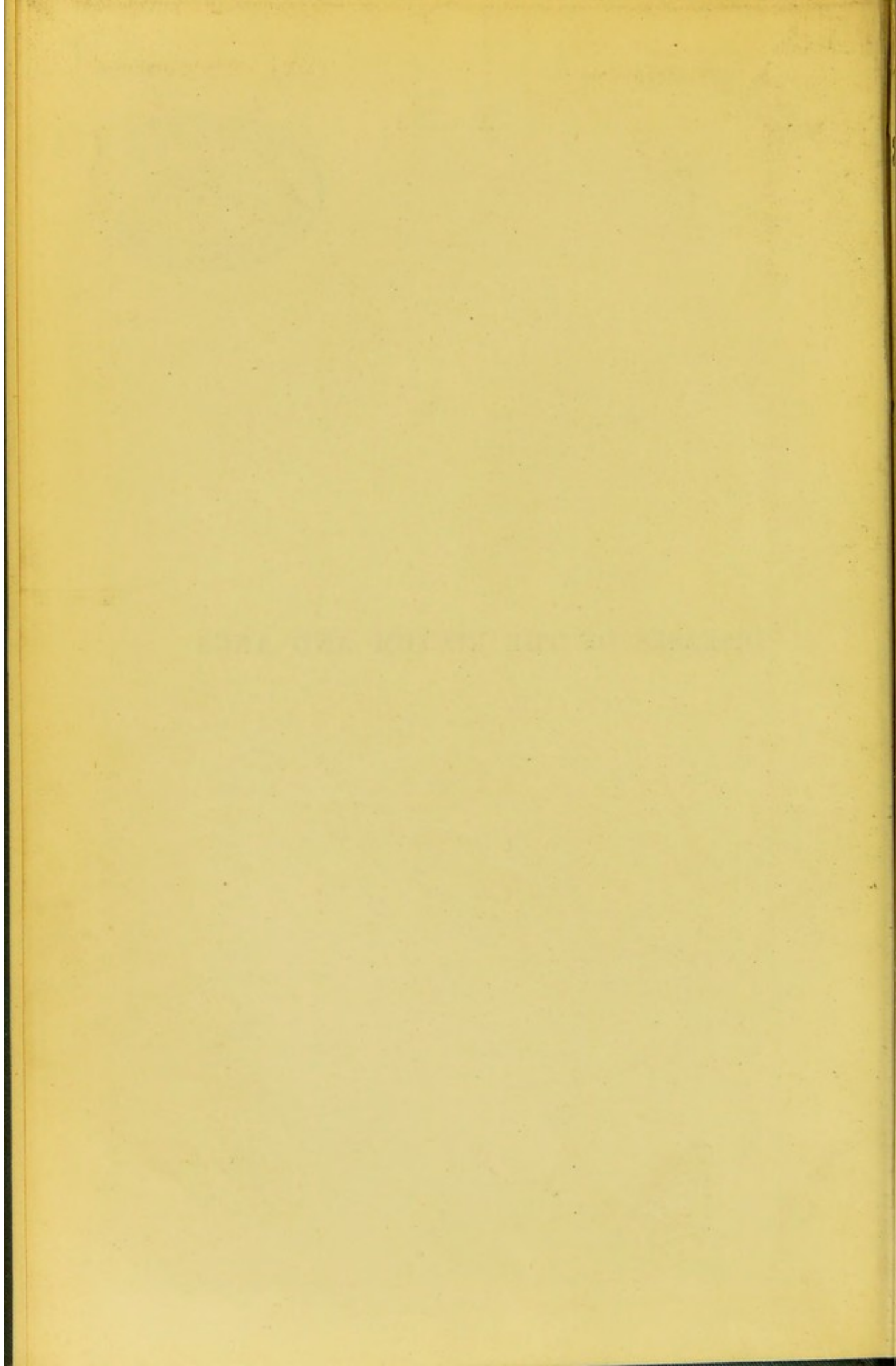


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DISEASES OF THE RECTUM AND ANUS



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PLATE I.



TYPICAL CASE OF FISTULA IN ANO.

DISEASES
OF THE
RECTUM AND ANUS

BY
ALFRED COOPER, F.R.C.S.

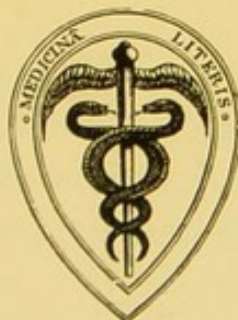
SENIOR SURGEON TO ST. MARK'S HOSPITAL FOR FISTULA AND OTHER DISEASES
OF THE RECTUM, ETC.

AND

F. SWINFORD EDWARDS, F.R.C.S.

SURGEON TO THE WEST LONDON AND ST. PETER'S HOSPITALS, AND SENIOR ASSISTANT
SURGEON TO ST. MARK'S HOSPITAL

SECOND EDITION
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PREFACE TO THE SECOND EDITION.

IN preparing for publication a second edition of this work, many alterations have been deemed necessary. All the chapters have undergone a careful revision; several have been almost entirely rewritten, while new chapters have been added on Statistics of Rectal Diseases, the Anatomy and Physiology of the Rectum, Excision, Inguinal Colotomy, Coccygodynia, etc. The chapter on Electricity in Rectal Surgery, prepared for the former edition by the late Dr. Steavenson, has been omitted in the present one, for we find in practice but little if any use for this remedy. Most of the conditions to which it has been applied can be better and more readily treated by other means.

During the last few years considerable advances have been made in Rectal Surgery. New plans have been suggested for the relief or cure of Hæmorrhoids and Prolapsus, and some of them have so far stood the test of experience. With regard to Fistula, we would invite attention to the account given of the so-called "horseshoe" form, and to the operation devised for its cure. We believe that this important form of fistula, and the proper method of dealing with it, have not hitherto been thoroughly recognised.

The scope of the operation, known as Excision of the Rectum, has been much enlarged, and surgeons

are now able to deal with malignant growths in a portion of the bowel formerly considered out of reach.

The question of the relative advantages of inguinal and lumbar colotomy has, we venture to think, been definitely settled in favour of the former operation, the *technique* of which has been considerably simplified, while its risks have been markedly diminished. These gratifying changes are due to the efforts of many surgeons in various countries. We believe that, while giving our own experience on all these topics, we have not omitted to refer, when necessary, to that of other surgeons.

In order to illustrate many of the subjects considered in the following pages, we have added a few reports of cases under our care in St. Mark's Hospital and in private practice. For a similar reason, we have inserted a large number of engravings, some drawn for the purpose, and others borrowed from various sources.

We trust that the work has been decidedly improved by the changes and additions we have made, and that it will be found to be a useful and trustworthy guide to all who may be called upon to treat rectal diseases.

ALFRED COOPER.

9, HENRIETTA STREET, CAVENDISH SQUARE.

F. SWINFORD EDWARDS.

55, HARLEY STREET, W.

May, 1892.



PREFACE TO THE FIRST EDITION.

THE object I have sought to attain in the preparation of this work is to present a concise and thoroughly practical treatise on the diseases of the rectum. My opportunities for the investigation and treatment of these diseases have been ample, both in private practice and at St. Mark's Hospital, with which Institution I have been connected for upwards of twenty years. I have, however, omitted, as tending to expand too far the size of this book, all clinical records, and for the same reason, all unnecessary details have been avoided in describing pathological appearances.

I wish to express my thanks, for much kind assistance, to my friends Dr. W. E. Steavenson and Mr. Swinford Edwards. The former has contributed the chapter on the Uses of Electricity in Rectal Surgery, while my colleague Mr. Edwards has revised the proofs and made several valuable suggestions. I trust that this little volume may be found to assist practitioners in diagnosing and treating a class of diseases often met with in practice, but not always properly attended to.

ALFRED COOPER.

9, HENRIETTA STREET, CAVENDISH SQUARE,
May, 1887.

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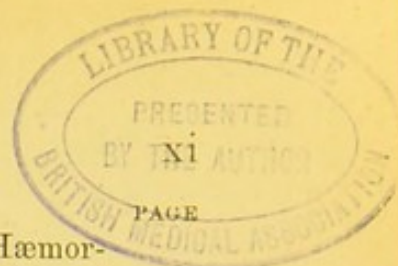
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DISEASES OF THE RECTUM AND ANUS.

CHAPTER I.

INTRODUCTION AND STATISTICS.

DISEASES of the rectum are very common among all classes of people; they induce many symptoms of a more or less severe kind, and are the cause of much suffering and disability. It is sometimes stated, and perhaps with truth, that they are especially prevalent among civilised communities; but only general statements with regard to peoples not thus classified are available for purposes of comparison. The difference is accounted for by supposing that many forms of rectal disease are due to sedentary habits, improper feeding, constipation, abuse of purgatives, etc. Causes of this kind are very frequent among civilised peoples, and especially among those who dwell in towns. In countries, however, in which such intestinal disorders as dysentery and diarrhœa are endemic and of a severe type, it might well be expected that certain kinds of rectal disease would likewise be common. Accordingly we find that in India cases of severe proclivitas recti among natives very often come under the care of European surgeons. A similar prevalence doubtless exists in other tropical countries, but definite information is as yet wanting.

* STATISTICS OF OUT-PATIENTS, ST. MARK'S HOSPITAL, 1872-91.

	Males.	Females.	Total.	Percentage of Males.	Percentage of Females.
Total number of Patients ...	16,060	9,569	25,629	62.66	37.34
DISEASES.					
Fistula, not further defined	1,906	1,084	2,990	11.24	11.32
Sinistra ...	1,546	510	2,056	9.62	5.32
Dextra ...	1,361	605	1,966	8.47	6.32
Dorsal ...	561	300	861	3.49	3.13
Perineal ...	104	36	140	.65	.37
Blind internal ...	282	122	404	1.75	1.27
Horseshoe ...	27	3	30	.16	.12
Semi-horseshoe ...	7	4	11	.04	.09
Complicated with Phthisis	35	4	39	.21	.09
Total ...	5,829	2,668	8,497	36.29	27.88
Fissure ...	1,081	906	1,987	6.73	9.44
Internal Hæmorrhoids	3,347	2,165	5,512	20.84	22.62
External Hæmorrhoids	288	109	397	1.79	1.13
Thrombotic Hæmorrhoids	305	70	375	1.89	.73

Syphilis of the Anus	...	...	...	...	682	2.81	2.40
Internal Ulceration	...	...	...	...	1,208	4.27	5.45
Stricture ...	...	...	...	...	717	1.41	5.12
Stricture and Ulceration	...	...	...	...	163	.42	.99
Malignant Disease	...	...	...	...	775	3.37	2.43
Pruritus Ani	...	...	...	...	1,176	5.08	3.77
Abscess, not defined	...	...	...	...	760	3.58	1.92
Recto-Vaginal Fistula	...	...	...	...	22		.22
Constipation	...	...	...	...	1,204	3.41	6.84
Villous Tumour	...	...	...	...	16	.07	.05
Polypus and Polypoid Growths	...	...	...	...	237	.84	1.05
Prolapsus Recti	...	...	...	...	388	.99	2.38
Ruptured Perinæum	...	...	...	...	15		.15
Malformation of Anus	...	...	...	...	5	.03	
Foreign Bodies in Rectum	...	...	...	...	11	.06	.01
Neuralgia of Rectum	...	...	...	...	23	.06	.13
Verrucae	...	...	...	...	23	.13	.02
Cases not classified	...	...	...	...	1,436	5.84	5.19
					16,060	9,569	25,629

* This table has been compiled from statistics kindly drawn up by our House Surgeon, Mr. W. Phayre Ryall.

In order to determine the relative frequency of the diseases which occur in the rectum, we have compiled a tabular statement of the out-patients at St. Mark's Hospital during the twenty years, 1872-1891. The numerical predominance of males over females will at once be noticed. It cannot, however, be inferred that the proportions represent the relative liability of the two sexes to rectal disorders. Many females suffering from these complaints apply for treatment at hospitals for diseases of women, and a considerable number do not come under treatment at all unless the disease be of a very painful or disabling character. It will be observed that fistula is by far the most common disorder among the patients at St. Mark's, very nearly one-third of the total number being affected therewith. It is more common among males than among females: in both sexes the dorsal form of fistula is far more common than the perinæal variety. Fissure, internal piles, procidentia, ulceration, stricture, and constipation are more often met with among females; while males are more prone to suffer from thrombotic piles, malignant disease, pruritus, verrucæ, and abscess.

The infrequency of phthisis as a complication of fistula is due to the fact that only when very apparent is the pulmonary disease noted in the out-patient registers. On admission as in-patients all cases are subjected to a strict examination, and the condition of the lungs and other organs is noted on the cards; but, unfortunately, not entered in the register. As to horseshoe and semi-horseshoe fistulæ, notes have been kept of the former of these varieties only for five years, and of the latter for two years, and the numerical accuracy may well be questioned. From his observations, extending over a period of nine years, in the out-patient department, Mr. Edwards

is led to believe that semi-horseshoe fistula occurs almost as frequently as any other variety. Horseshoe fistula, though also frequent, is not nearly so common; it may constitute, perhaps, 10 per cent. of all cases. In private practice the percentage would probably be lower, as patients earlier seek medical advice, and the abscess is not allowed to extend on both sides of the bowel.

The lodgment of foreign bodies swallowed with food occurs much more frequently in males than in females, the proportion in our table being 10 to 1. Among Mr. Goodsall's twenty cases, published in the twenty-third volume of "St. Bartholomew's Hospital Reports," there were nineteen males to one female. Such a disproportion might be expected, owing to the difference in the rectum in the two sexes. In the female, this portion of the bowel is straighter in its lower part, and more capacious; the sphincter is also more yielding—all of which peculiarities favour the passage of foreign substances.

The large number included under the heading "Cases not Classified" requires some explanation. It is in great measure due to the fact that in one year the diagnosis in 540 cases was omitted to be entered in the register.

Under this heading likewise are included cases of rectal hæmorrhage, spasm, epithelioma of anus, eczema marginatum, hypertrophy of sphincter, incontinence, diarrhœa, ulceration of anus due to various causes, and one case of sarcoma, besides many cases unfitted for treatment in this special hospital.

CHAPTER II.

GENERAL SYMPTOMS OF DISEASES OF THE RECTUM AND METHODS OF EXAMINING THE BOWEL.

BEFORE describing the various affections met with in the rectum, it seems advisable first to enumerate the symptoms which generally arise, and secondly, to point out the extent to which their presence and character serve as a guide to the diagnosis. Abnormal sensations, pain of various kinds in the bowel itself and in the back of the pelvis and legs, protrusion from the anus, discharges of blood, pus, and mucus, constipation and diarrhœa, are the most common symptoms of rectal diseases, and when several of these are present, a careful examination of the part should always be made. The concluding portion of this chapter will contain a description of the manner in which such an examination is best accomplished.

In a normal condition of the part and except during defæcation, no sensations are experienced in the rectum, which serves only as a canal for the passage of the fæces from the colon to the anus. Until shortly before an evacuation, this portion of the bowel is *normally* devoid of fæces, which do not pass beyond the lower end of the sigmoid flexure. When defæcation takes place, the peristaltic movements of the colon are communicated to the rectum, in which definite sensations are experienced. These, however,

cease soon after evacuation of the fæces, to recur only when excited in a similar manner.

In most morbid conditions of this part of the bowel the sensory nerves are more or less violently affected, and hence alterations of sensation, varying from *slight discomfort* to *intense pain*, are among the most common symptoms. Many varieties of pain are experienced, and in examining a patient complaining of this symptom, it is well to inquire as to what relation the pain bears to the act of defæcation, viz., whether it be spontaneous or be excited by the act in question, and in the latter case, whether it precede, accompany, or follow expulsion, whether it be prolonged and continuous, or of brief duration or intermittent. According to the answers given to these questions, some idea may be formed of the nature of the ailment.

Pain is a symptom of *fissure*, of *hæmorrhoids*, of *ulceration*, and of certain *morbid growths* within the rectum. In *fissure* the pain is peculiarly severe, and out of all proportion to the size of the lesion. It comes on just at the beginning of defæcation, and is most intense during the act and for some time afterwards; it often lasts for several hours. It is described as of a hot, smarting, tearing character, very severe, and radiating towards the coccyx. When a patient complains of pain in the terms just described, it is almost certain that there is fissure.

Pain due to *hæmorrhoids* varies greatly according to the condition of the parts. When uninfamed, piles, especially if external, cause at most a sense of fulness or uneasiness. A thrombotic pile always causes pain. With a slight degree of inflammation, there is a sensation of heat and pain in the part, much aggravated by pressure and during defæcation. The sensation of fulness and swelling about the

rectum will also be increased, and a desire to strain is frequently superadded. Internal hæmorrhoids likewise may cause a sensation of fulness in the rectum, as if a foreign body were present. When they become extruded beyond the sphincter, inflammation is apt to be set up, and the pain rapidly becomes very severe.

In *ulceration* of the rectum, the pain varies according to the situation and stage of the lesion. If low down and involving the integument, the pain is always more severe than when the upper portions of the bowel are affected. In the latter case there is often discomfort rather than pain. The symptoms are aggravated during defæcation.

In *malignant disease* there is every possible variety of pain as a symptom. At first there may be simply uneasiness, and this increases as time goes on. The first attacks of severe pain are wont to occur after exercise, and when hard fæces are discharged. When ulceration sets in, the pain becomes much aggravated, especially during attacks of diarrhœa. There is a constant sensation of fulness in the bowel. The pain is of a burning, smarting character, and often extends to the coccyx and sacrum, and shoots into the groins and down the thighs. As in other rectal diseases, when the cancerous deposit is situated near the anus, the pain is always greater than when it is higher up in the bowel. In some cases of cancer of the rectum, pain is but little complained of throughout the whole course of the disease.

Protrusion.—In connection with the inquiries with regard to the character of the pain, the patient should be asked whether anything *protrudes* from the anus at the time of defæcation or upon exertion, and, if so, whether it goes back spontaneously or has to be replaced, and also whether bleeding occurs at the

same time. A protrusion under such circumstances might be due to *prolapsus*, to *internal hæmorrhoids*, to *polypi*, or to *villous growths*. In *prolapse*, the whole circumference is involved, while the size of the protrusion varies; the tumour is soft and smooth; unless ulceration be present, the protrusion is unattended by severe pain or loss of blood. In protrusion of *internal hæmorrhoids*, there is pain and one or more tumours; and the symptoms are liable to become much increased as a result of strangulation by the sphincter. The protrusion may be accompanied by hæmorrhage, often profuse and going on for some time. In old-standing cases, the hæmorrhoids are apt to come down, not only as a result of defæcation, but after the least exertion, and to remain outside until replaced by the fingers. In earlier stages the protrusion is wont to occur only on defæcation, and replacement is spontaneous as soon as the straining efforts cease. Protrusion of *polypi* is also liable to take place after defæcation, the extent of the protrusion depending mainly upon the length of the pedicle. They are generally retracted spontaneously, but strangulation and gangrene of a protruded polypus have been known to occur. *Villous tumours* are very rare; they are soft, are wont to protrude during defæcation, and more or less blood and large quantities of sticky mucus are apt to be discharged.

In order of frequency, **hæmorrhage**, as a symptom of rectal disease, comes next to pain. The blood may be voided pure and unchanged, or mingled with fæculent matters, or disposed in streaks on the surface of hard fæces. Mucoid discharges, more or less deeply coloured with blood, are very common. A discharge of blood is a common symptom of *internal hæmorrhoids*; the amount varies in different cases. The hæmor-

rhage in these patients is usually excited by straining at stool; sometimes only a few drops escape; sometimes there is a continuous dripping, lasting for an hour or more. The blood is usually venous, but in some cases it is bright-coloured, and comes from one or more small arteries. The hæmorrhage is often accompanied by protrusion of the hæmorrhoids. The discharge consists of pure blood, unmixed with pus or *débris* of tissue.

Hæmorrhage from the rectum is not a necessary symptom of *prolapsus*, but it is likely to occur if, as sometimes happens, the prolapsed part be ulcerated.

In *fissure of the anus*, the bleeding, if any, is comparatively insignificant; it will occur after defæcation. In *ulceration*, the amount of blood lost varies greatly in different cases, and the discharge seldom consists of pure blood, but muco-purulent matter is mixed with it, and in many cases the blood only tinges the fluid discharge and the fæces. When the latter are solid, it may appear in streaks upon them. In severe rapidly spreading syphilitic ulceration, the hæmorrhage is often considerable. When *stricture* exists, the blood is often retained for some time within the bowel, and is altered in colour. In such cases the discharges resemble coffee-grounds. In the early stages of stricture of the rectum, small quantities of grumous matter are often passed from time to time.

In *malignant disease* of the rectum, hæmorrhage almost invariably takes place during the progress of the case. In the early stage it depends upon congestion, but when ulceration occurs the bleeding is due to erosion of vessels, venous or arterial or both. It often accompanies defæcation, but is liable to occur independently of that act: sometimes, at one period of the case, the fæces are streaked with blood.

It is often very profuse, and not infrequently causes a fatal termination. At first it is usually attributed to piles.

Hæmorrhage is also a symptom of *polypi* and of *villous* growths, and is sometimes very profuse. The bleeding generally accompanies defæcation and continues for some time afterwards, but it may occur at other times.

As a matter of course, hæmorrhage from the rectum may be caused by *wounds* and by the presence of *foreign bodies*.

It must not be forgotten that in some cases the *stomach* is the source of blood found in the stools; for example, the blood in gastric ulcer is sometimes not got rid of by vomiting, but passes downwards through the intestine; such discharges are commonly of a blackish-red or brown colour. A case of this kind was in St. Mark's Hospital some years ago. There had been a copious discharge of blood from the bowel for several days before admission, and soon afterwards another attack came on and proved fatal. The source of the bleeding was an ulcer of the stomach, opening into the gastric artery. There had been no hæmatemesis, and there was no other lesion in the intestinal canal.

The next symptom, more or less commonly met with in diseases of the rectum, is **constipation**. There is, of course, nothing characteristic about this symptom, as it may depend simply upon sluggish peristaltic action and a variety of other causes. When occurring in connection with diseases of the rectum, it may be due to *stricture* and *malignant disease*. Constipation also occurs in *fissure*, owing to the way in which the patient restrains the action of the bowels, because of the pain which defæcation causes. It is also a symptom of *impaction of fæces*

and of *compression of the rectum* by a displaced uterus, by tumours of the prostate, etc. Constipation is frequently associated with hæmorrhoids, of which it is a potent cause.

Constipation is often one of the earliest symptoms of simple *stricture* of the rectum, being due to the mechanical impediment. It varies with the extent to which the calibre of the bowel is occluded, and it often alternates with diarrhœa. It is associated with straining during defæcation, and in stricture this symptom gradually increases as the condition becomes more marked. In *malignant disease* there is generally some amount of constipation in the early stage, but sooner or later this gives place to diarrhœa. Complete obstruction sometimes results from the occlusion of the canal, and occurs early in some cases.

Diarrhœa and discharges from the bowels form a group of symptoms met with in many diseases of the rectum, and in all suspected cases it is very important that the excreta should be carefully examined. Besides alterations in the shape and consistence of the fæces, various abnormal matters, such as blood, pus, mucous secretions and elements of tissue, can frequently be detected in the stools.

Diarrhœa is a symptom of *ulceration* of the rectum, whether dysenteric, tubercular, or syphilitic in its origin. Besides fæces, the matters voided consist of muco-purulent matter mixed with blood, the discharges often resembling coffee-grounds. The diarrhœa is apt to be specially troublesome after rising from bed and after any kind of exertion and exposure to cold. The discharge often consists merely of sanious mucus. When *stricture* exists, the diarrhœa follows constipation and afterwards alternates therewith. The calls to stool are wont to

become very numerous, the matters discharged being scanty and fluid in character. The same symptoms invariably attend *malignant disease* of the bowel, and the diarrhœa is often associated with accumulation of fœces above the seat of the lesion. Mucoid and purulent matters are also discharged in varying quantities, they are often dark-coloured, and pure blood and fragments of *débris* are frequently discoverable. The discharge has a peculiarly offensive odour.

Polypus of the rectum does not cause diarrhœa, but there is often more or less hæmorrhage from the bowel at short intervals. *Villous tumour* likewise causes hæmorrhage, and, in addition, the discharge of a thin viscid fluid, sometimes in considerable quantities.

The *fœces* undergo *alterations in shape* whenever the calibre of the bowel is much reduced, as in stricture, especially if the lesion is situated low down. They sometimes resemble pipe-stems, sometimes they are grooved and sometimes flattened and ribbon-like. When the fœces are soft, these differences in form may be due to spasmodic contraction of the sphincter; they are, therefore, not necessarily indicative of organic disease; moreover, in cases of stricture high up in the rectum, the fœces, if soft, may accumulate between the lesion and the sphincter, and when discharged may be of comparatively normal size and form. *Enlargement of the prostate* also influences the shape of the fœces, and has been known to cause total obstruction of the bowel. *Fœcal incontinence* occurs in some cases of cancer of the rectum, and is often present in cases of old-standing prolapsus.

Pus is found in the motions, and is sometimes passed in small quantities, almost pure and unmixed,

as the result of the bursting of *abscesses* into this part of the bowel. In cases of *ulceration* of the rectum, the pus is mixed with varying proportions of blood and mucus. In *chronic rectal inflammation*, and sometimes in *internal piles* and cases of *prolapsus*, the discharge from the bowel is mainly of a mucoid character. Sometimes the fæces are coated or streaked with mucus. A discharge of mucus at stool is sometimes the only symptom of *invagination* or intussusception of the rectum. In *villous growths*, as already mentioned, there is often copious discharge of a watery fluid.

Tissue-elements and *débris* occur in the stools in ulcerative affections of the rectum, and notably in malignant disease. If any little masses can be detected, they should be examined under the microscope.

Having thus considered the general symptoms of diseases of the rectum and their diagnostic import, it remains to describe the various methods of examining the bowel in cases in which any one or more of these symptoms are stated to exist. Such an examination is all-important as regards diagnosis, prognosis and treatment. The majority of patients suffering from rectal disorders attribute their trouble to "piles," and if this diagnosis be accepted and acted upon, the result cannot be otherwise than unsatisfactory. Mistakes must be made, treatment will necessarily fail to relieve, and valuable time will probably be lost.

Examination of the rectum and anus is made by the eye (assisted in some cases by a speculum, with or without the electric light), and by the finger and bougies. The external parts should first be examined, and for this purpose the patient, if a female, should be placed on either side on a couch, the buttocks close to the edge and the knees drawn

up towards the abdomen. For examining male patients, the genu-pectoral position is the best. On separating the buttocks the orifice of the anus will come into view and should be carefully examined. The radiating folds should be separated with the fingers, and *cracks*, *excoriations*, and *fissures* should be looked for. *External hæmorrhoids* will also be noticed. By passing the finger round the anus and making pressure, any *induration* that exists will be detected; this may be due to abscess or fistula. If the parts are covered with *discharge*, this should be wiped away and its source traced, whether from the external opening of a fistula, etc. *Eruptions* of any kind, eczematous, syphilitic or otherwise, must also be noticed.

The next step is to examine the *interior of the rectum*, and as a preliminary measure it is desirable to administer an enema of warm water. When this has come away the examination should be resumed, and any protrusion that has taken place should be minutely inspected. This may be due to *prolapsus*, *internal hæmorrhoids* or *polypus*, and these are without difficulty distinguishable from each other. A prolapsus means a descent of the whole circumference of the bowel, and in slight cases consists only of mucous membrane; in severe ones, it may include all the coats of the bowel, not excepting the peritoneum. The lumen of the intestine is seen in the centre; the tumour is soft and uniformly smooth, and is destitute of a pedicle. Internal hæmorrhoids are more or less tense, rounded and lobulated, or like a bunch of grapes. A polypus, whether hard or soft, is pedunculated.

The forefinger, with the nail cut short, and well anointed with ointment of a thickish consistency,*

* At St. Mark's we generally use calomel ointment to which a little oil of eucalyptus has been added.

should next be introduced gently into the bowel, and the first thing to be noticed is the *state of the sphincter* as regards contractility. To facilitate the passage of the finger, it is well to direct the patient to strain down, as if at stool. In young subjects the muscle forcibly resists the introduction of the finger. In elderly people it is often much relaxed, and the orifice of the anus is sometimes patulous, especially in old-standing cases of prolapsus and internal hæmorrhoids. In cases of fissure there is generally firm contraction of the sphincter, and the introduction of the finger causes severe pain. It must not be forgotten that *two or more* rectal affections not infrequently *co-exist*. Thus it is common to find polypus or a polypoid growth complicating a fissure. Malignant disease may co-exist with fistula and hæmorrhoids, etc. While ascertaining the presence of one affection, the surgeon should take care not to overlook any complicating disorders.

The finger passed carefully into the rectum will detect polypi, foreign bodies, impacted fæces, internal fistulous openings and fistulous tracks, hæmorrhoids, ulceration and diminution of the calibre of the bowel. About four inches of the rectum can be thus examined, and by placing the patient in the erect position and making him strain down, another inch can be brought within reach. As a matter of course the examination should be made with the utmost gentleness. *Polypi* are somewhat easily detected, as the pedicle is usually within reach. *Foreign bodies* likewise, in this portion of the bowel, can be readily examined with the finger. *Internal hæmorrhoids*, when not protruded, are difficult to detect by the finger, though an experienced one may discover a fulness and a redundancy of mucous membrane. If the patient strains down after the enema has come

away, some portions of any existing internal hæmorrhoids will usually protrude, and their exposure will be facilitated by separating the margins of the anus with the tips of the fingers. Thus brought into view internal piles will appear as smooth reddish or purplish tumours, bright and polished-looking; they vary in size, some being as large as a walnut. It not infrequently happens that a rim of mucous membrane is prolapsed at the same time.

Internal fistulous openings are in most cases within an inch of the anal orifice, but a sinus may run up the bowel for two or three inches further, and will feel like a hard cord. In external and complete fistulæ, the external opening will usually be found not far from the anal orifice; it is sometimes in the centre of a little elevated nodule. Special directions for examining the bowel in cases of fistula will be given in the chapter devoted to that subject.

Ulceration of the rectum can generally be detected with the finger. There is an absence of the uniform soft velvety feeling, and there are sometimes irregular depressions, with indurated margins; in these places the mucous membrane is not freely movable over the subjacent parts. Ulceration can sometimes be felt to extend completely round the bowel. When, as often happens, the parts are very sensitive, an anæsthetic should be administered before the examination.

For the detection of *stricture of the rectum*, examination by the finger is of the greatest importance. The stricture is generally within reach, *i.e.*, within four inches of the anus. The obstruction may be such as to allow the finger to pass, or may entirely block up the bowel. Sometimes the contraction is sudden, sometimes it is gradual, so that the contracted portion is conical in shape. It often happens that only the tip of the finger can be introduced into

the stricture. When the lesion is situated higher up in the bowel, beyond the reach of the finger, the diagnosis is much more difficult. A small hollow bougie should be carefully introduced, and if an obstruction be met with, a little water should be injected. The onward passage of the bougie is apt to be checked, either by the promontory of the sacrum, or by a fold of mucous membrane; in the latter case the water will remove the obstruction. The greatest gentleness is necessary, in order to avoid injuring the bowel. Further details of the methods of examining the rectum in cases of suspected stricture beyond the reach of the finger, will be given in a subsequent chapter.

In cases of *malignant disease* of the rectum, the lesion is most often within reach of the finger. In the earliest stages some amount of induration will be felt, perhaps two inches from the anus, while the mucous membrane below is quite normal. There may be a single nodule or several nodules, or a more or less diffused induration and thickening, with irregularity of the surface. When ulceration has taken place, the finger will detect the hard raised edges surrounding one or more firm depressions. As the deposit increases in volume, the calibre of the bowel will be more or less blocked up; distinct hard tumours will be felt in some cases and softer fungous masses, bleeding freely when touched, in others. In a third class of cases, the deposit takes place pretty uniformly round the bowel, and a puckered annular stricture is thus produced.

In *malignant adenoma* soft masses are sometimes felt which may be mistaken for villous tumour. The latter, however, though soft, is somewhat resistant and not friable; its presence does not affect the general health, except by causing anæmia, and the

tumour discharges blood and a quantity of viscid colourless fluid; such a growth, moreover, may exist for some years. Malignant tumours are often friable, bleed freely when portions are detached, increase rapidly and always cause great disturbance of the general health, and yield a discharge consisting of blood and *débris*. Blood is apt to flow during the examination. Enlargement of the inguinal glands will occasionally be detected, and in some cases a fungous mass protrudes from the anus.

In the large majority of rectal diseases, digital examination is sufficient for purposes of diagnosis, but for some cases the use of the speculum is a desirable adjunct. Rectal specula are made in a variety of forms.

FIG. 1.

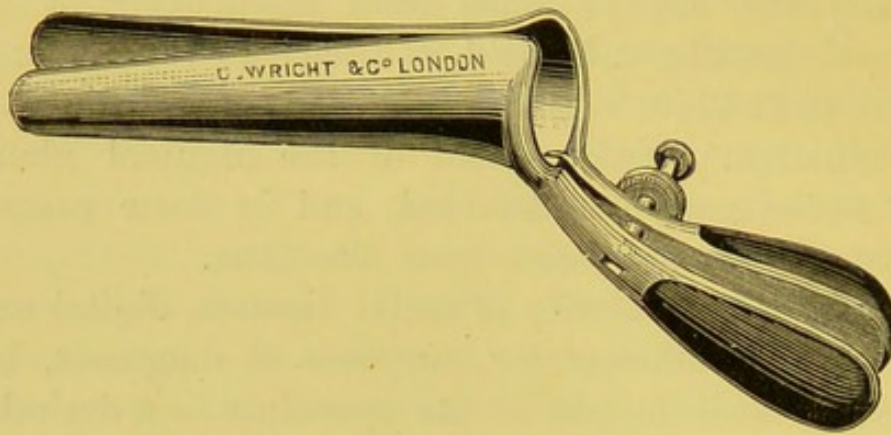


GOWLLAND'S SPECULUM.

The one most generally used consists of a metallic tube, open at both ends and slightly tapering. For convenience of introduction, it is furnished with a plug which is withdrawn when the speculum is *in situ*. The wall of the tube is fenestrated, *i.e.*, deficient along its whole length (Fig. 1). For introduction the apex of the instrument is applied to the anus, the fingers of the other hand being used to open the orifice. It is directed at first backwards and then directly upwards. By its means the interior of the rectum can be examined for three or four inches; ulceration, internal fistulous openings, and fissures can be thus detected. We prefer, however, one or other form (Figs. 2 and 3) of bivalved specula, the blades or

plates of which can be separated to the requisite extent by means of a screw apparatus. In rectal operations Davy's wire speculum (Fig. 4) is a useful

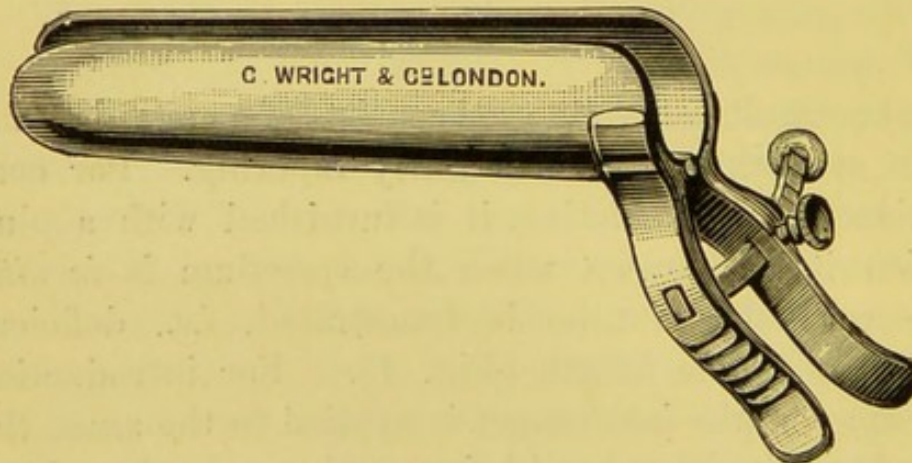
FIG. 2.



BIVALVE SPECULUM.

instrument; before its introduction, the patient should always be placed under the influence of an anæsthetic. The employment of the rectoscope, with the electric light, will be described in a subsequent chapter.

FIG. 3.



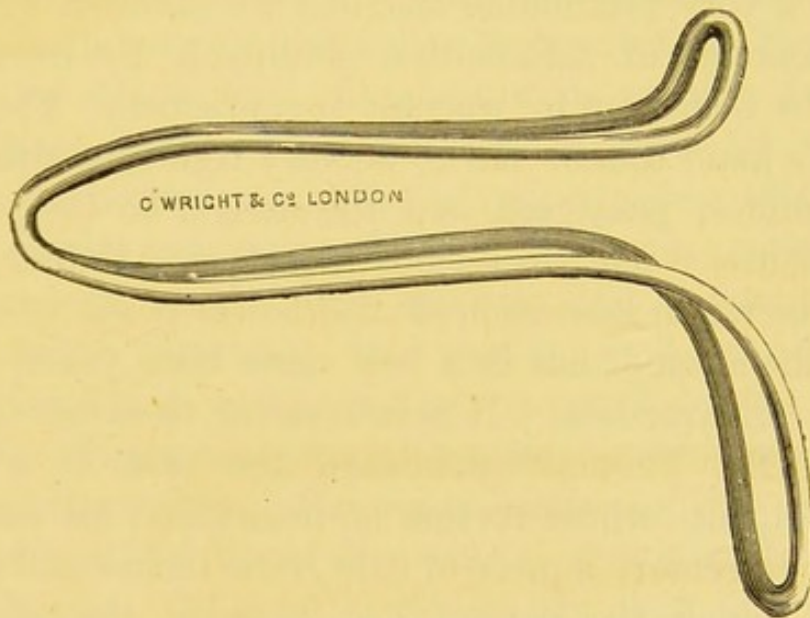
BIVALVE SPECULUM.

In order to bring as much as possible of the rectum into view, it is sometimes desirable to place the patient in the prone position, with pillows under the pelvis, in a good light and on a table of sufficient height. The intestines gravitate towards the dia-

phragm, and when the sphincter is thoroughly dilated and the margins of the anal orifice held asunder by means of retractors, a good view is obtained of the interior of the rectum.

For the detection of lesions situated high up in the bowel and to make a complete examination, especially in cases of obstruction, it has been recommended to pass the hand into the rectum. In practising this manipulation (which is more easily accomplished in the female than in the male subject) a *very small hand*

FIG. 4.



DAVY'S WIRE SPECULUM.

and the utmost care are absolutely necessary. An anæsthetic should be administered and the sphincters well dilated as a preliminary. The fingers, well covered with ointment, are held so as to form a cone, which is gradually introduced through the anus. The difficulty is to get the broad part of the hand through the ring of the internal sphincter. Mr. Maunder,* in 1868, advocated this method for the diagnosis of obstructive disease of the rectum. He stated that the hand should be introduced "with the backs of

* "Lancet," 1868, vol. i. p. 586; vol. ii. p. 409.

the fingers and knuckles towards the hollow of the sacrum, up which it will glide as soon as the knuckles have passed the sphincter, either by dilating or rupturing it." Mr. Walsham,* who recommended the same plan a few years later, for the purpose of detecting stricture high up in the rectum or in the sigmoid flexure, states that there is no risk of rupture of the sphincter or of incontinence of fæces; that there is no pain or inconvenience as an after result, and that in many cases, the hand can be passed into the sigmoid flexure. The proceeding is, to say the least, a very formidable one, and we question whether the amount of information obtainable by its means can be sufficient to warrant the practice. The surgeon's hand cannot fail to be very tightly compressed and almost paralysed, and the danger to the patient constitutes a not less serious objection. Unless great care be taken laceration of the bowel is apt to occur, and the attempt has in a few cases been followed by fatal consequences. It is interesting to notice that in 1812 Mr. Thomas† published the case of a male subject, into whose rectum he introduced his hand in order to remove a piece of cane, nine inches and a-half long, which the patient had been in the habit of passing into the bowel for the relief of constipation.

* "St. Bart. Hosp. Reports," 1876, p. 223.

† "Med.-Chir. Trans.," 1812, vol. i.

CHAPTER III.

THE ANATOMY AND FUNCTIONS OF THE RECTUM.

The rectum, or lowest portion of the large intestine, is about eight inches in length, and extends from the sigmoid flexure of the colon to the anus. For purposes of description, the rectum is usually divided into three parts. The *first* commences at the sacroiliac synchondrosis on the left side, passes obliquely downwards, and with a slight curve to the right, and reaches the middle line opposite the centre of the third sacral vertebra. This part is about three inches and a-half long, and is entirely invested by the *mesorectum*. The *second* part (about three inches in length) follows the curve of the lower portion of the sacrum and ends at the tip of the coccyx, at which the third part begins. This latter (about one inch and a-half in length) curves backwards and terminates at the anus.

This description, however, is somewhat inaccurate; Dr. Symington* has pointed out that the posterior inferior wall of the second part of the rectum does not change its direction at the tip of the coccyx, but continues to pass downwards and forwards for an inch or more, "lying beyond the coccyx on a segment of the pelvic floor, which may be called the ano-coccygeal body." This latter is situated between the tip of the coccyx and the anus, and (like the perinæal

* "Journal of Anatomy and Physiology," vol. xxiii. p. 106.

body in the female) is composed of muscular and fibrous tissue, and forms an equally important part of the pelvic floor. On section, either mesial or coronal, it is seen to be quadrilateral in form, and to measure about an inch in three directions. It is in relation with the coccyx behind and with the anal canal in front; the rectum rests on its upper surface, while the lower approaches the integument. Its muscular tissue is derived mainly from the levator ani and the two sphincters. Dr. Symington maintains that the portion described as the *third part of the rectum* should be termed the *anal canal*. In works on anatomy the *anus* usually signifies merely the *aperture* situated at the junction of the skin with the mucous membrane, *i.e.*, only an *orifice* or *ring*, and not a passage of any appreciable length. This view "conveys erroneous conceptions of the normal condition of the part, and leads to incorrect ideas as to the physics of the pelvic floor and the mechanism of defæcation." According to the more correct view, the anus forms a passage, about an inch in length, with its long axis directed downwards and backwards, at about a right angle with that of the second part of the rectum.

The upper part of the rectum is in contact in front with the posterior surface of the bladder in the male, and with the uterus in the female, though it may be separated from these organs by a convolution of the small intestine. On the left side are the ureter and some branches of the internal iliac artery, while behind are the sacrum and the meso-rectum, the pyriformis muscle and the sacral plexus of the left side. The peritoneal covering of the rectum gradually becomes less and less complete, until towards the middle of the second part, the membrane leaves the intestine altogether, and passes forwards, in the male,

to the back of the bladder, and in the female to the back of the upper part of the vagina and of the uterus. The pouch of peritoneum between the rectum and bladder may extend downwards to within an inch of the base of the prostate; but this distance is liable to considerable variations, the differences depending upon the age of the subject, and the degree of distension of neighbouring organs. In the new-born child the peritoneum reaches to the upper border of the prostate, and is distant about one inch from the anus. After the fifth year the distance increases as the vesiculæ seminales become developed; in old age, with enlargement of the prostate, the peritoneum rises still further upwards. In the female, the peritoneum covers the upper part of the posterior wall of the vagina for about one-fifth of an inch; but the pouch is raised upwards, and more or less obliterated by distension of the bladder and enlargement of the uterus. In the adult male, the pouch is distant on an average from three to four inches from the anus; in the female the distance may be somewhat more. As the peritoneum passes from the sides of the rectum to the posterior and lateral aspect of the bladder, it forms the posterior false ligaments of the latter organ.

Below the spot where the peritoneum is reflected from it, the rectum is attached posteriorly to the sacrum and coccyx, and at the sides to the coccygei and levatores ani muscles. In front, it is in contact with the triangular part of the base of the bladder, and with a vesicula seminalis on each side; after leaving the bladder, it lies in close contact with the under surface of the prostate. At the apex of this gland, the rectum bends downwards and backwards, so as to become continuous with what is generally called the third portion. "This bend in the anterior rectal wall sometimes forms a distinct *cul-de-sac*, which lies

below the prostate, and points towards the membranous part of the urethra and the bulb. This pouch may become much developed as a result of distension of the rectum" (Symington).

The portion of the rectum below the prostate, or the *anal canal*, is invested by the fibres of the internal sphincter and supported by the levatores ani and by the lower part of the triangular ligament of the urethra; at the anal orifice, it is surrounded by the external sphincter. This canal forms an antero-posterior slit, having its lateral walls in close contact with each other; in the lower part of the rectum, above the anal portion, the opening is transverse, and has its anterior and posterior walls in contact.

The orifice of the anus is surrounded internally by mucous membrane and externally by the integument, which is more or less deeply pigmented and provided with papillæ, hairs, and sebaceous follicles. The orifice is freely dilatable, and, when closed, the surrounding skin is thrown into numerous radiating folds.

The **internal sphincter** is a flat muscular belt, lying immediately above the external sphincter, from which it is separated by the levator ani muscle and by connective tissue containing many fat cells, to which is partly due the so-called "white line." It extends upwards for nearly an inch; it is about one-sixth of an inch thick, and its fibres are paler than those of the external sphincter. It is formed by the increased development of the circular muscular fibres of the rectum, which become thicker towards the anus. United with the internal sphincter are two unstriped muscular bundles, about one-sixth of an inch broad, which arise from the anterior surface of the coccyx (recto-coccygeus muscle). They pass downwards and forwards, diverging like a fork so

as to embrace the lower end of the rectum, which they draw up towards the apex of the coccyx, after it has been forced downwards in defæcation.

The **external sphincter** is a flat, thin muscle, which is elliptical in form, about half an inch in breadth, and surrounds the lower part of the rectum. It is attached posteriorly by a small tendon to the tip and back of the coccyx and to the superficial fascia in front of that bone; the fibres pass forwards on each side of the anus and unite in front of that aperture. Some are inserted into the central point of the perinæum, while others are blended with the accelerator urinæ and transverse muscles on each side, but in the female they decussate with the sphincter vaginae. The superficial sphincter is essentially a subcaudal sling, segmented from the levator ani, constricting the anus, and suspending it to the vertebral column (Macalister). It is supplied by the fourth sacral nerve.

A portion of the **levator ani** muscle is closely connected with the rectum; but the anatomy of the muscle, its function, and its relations to the bowel are subjects upon which different views are held. It is commonly described as arising in front from the posterior surface of the pubis, near the symphysis and midway between its upper and lower borders; behind from the spine of the ischium, and between those points from the pelvic fascia along the line of attachment of the obturator fascia, and somewhat above this level. The fibres of the muscle proceed downwards and inwards towards the middle line of the floor of the pelvis. "Its posterior fasciculi are inserted upon the side of the lower end of the coccyx; the bundles immediately in front of the coccyx unite in a median raphé with those of the opposite side as far forwards as the margin of the anus; the middle and larger

portion of the muscle is prolonged upon the lower part of the rectum, where it is connected with the fibres of the external sphincter, and slightly with those of the internal; and, lastly, the anterior muscular bundles pass between the rectum and the genito-urinary passages, and descending upon the side of the prostate, unite beneath the neck of the bladder, the prostate and the neighbouring part of the urethra, with corresponding fibres of the muscle of the opposite side, and blend also with those of the external sphincter and deep transverse perinaeal muscles" (Quain).

When the muscle acts, it is said to elevate the lower part of the rectum and invert its anal border, after the protrusion and eversion which accompany defæcation.

Dr. Macalister's description of the muscle runs as follows :

"The levator ani muscle forms a boundary for the lower outlet of the pelvis; it arises from the posterior surface of the inferior ramus of the pubis opposite the lower third of the symphysis, and from the white line of the fascia, which stretches backwards from thence to the spine of the ischium along the upper angle of the ischio-rectal fossa. Its fibres pass backwards and inwards, converging towards those of the opposite side, and are inserted by a very few of the foremost fibres around the anterior extremity of the prostate, by a small number of the middle fibres, into the border of the rectum between the superficial and the deep sphincter; but the largest number of the fascicles pass backwards on each side of the anus to be inserted behind it into the ano-coccygeal raphé and into the side of the coccyx. The fibres which arise from the ischiatic spine, and which pass to the coccyx on the ventral side of the

lesser sciatic ligament, are separable from the rest of the muscle and are called the *coccygeus*.

“The levator ani is primarily a pubo-ischiatic depressor of the tail, but the atrophy of this organ and the enlargement of the pelvic outlet in man have modified the muscle. Its hinder ischiatic part, attached to the rudimentary caudal vertebræ, has become the *coccygeus*; its ischio-fascial portion, which is inserted post-anally into the raphé by the approximation of its ventral border to that of its fellow forms a diaphragm for the pelvic outlet; while the smaller, specialised pubo-anal and pubo-prostatic fibres respectively can elevate the anus and prostate. . . .”

Professor Esmarch asserts that the levator ani is, strictly speaking, wrongly named, inasmuch as its action upon the extremity of the bowel is comparatively small. Its principal function is to form the muscular basis of the floor of the true pelvis, and, as a diaphragm guarding the outlet, to resist the abdominal pressure from above. Some of its fibres which unite with the external sphincter may certainly draw the anal portion upwards and forwards, and thus assist the action of the longitudinal fibres; this consisting in pressing the anal orifice against a mass of fæces and lifting it over the latter.

Mr. Cripps* denies the accuracy of the usual description of the levator ani, and states that “a large portion of the fibres arising from the inner surface of the symphysis and from half an inch of the anterior portion of the white line pass obliquely downwards and backwards to be inserted on the sides of the coccyx. The upper half of the muscle is tendinous, while the lower half, or that attached

* “Diseases of the Rectum and Anus,” 2nd edition, p. 9.

to the coccyx is muscular. The posterior edge of the muscle is somewhat thicker, and forms a distinct and free border, which crosses the rectum at very nearly right angles; the point of bisection being an inch and a-half to two inches from the anus." When both muscles contract simultaneously, "so far as the coccyx is movable, they will tend to draw that bone upwards towards the symphysis; but since in most bodies the coccyx scarcely moves, they will act powerfully as compressors of the rectum, squeezing the sides of the canal together as it passes between their two inner surfaces. In fact, when contracted, owing to their insertion near the middle line, they assume a shape like the letter V, the arms of which only diverge about an inch from each other at their attachment to the symphysis."

When the finger is passed into the bowel, and the patient is directed to draw up the part as much as possible, the contraction that is sometimes felt an inch and a-half from the anus is attributed by Mr. Cripps to the action of fibres of the levator ani, and especially of those which pass from the neighbourhood of the symphysis to the sides of the coccyx.

The remaining muscle connected with the rectum, the coccygeus (sometimes described as a portion of the levator ani) assists in closing the outlet of the pelvis. It is triangular in shape, and arises by its apex from the spine of the ischium and the small sacro-sciatic ligament; its base is attached to the side of the coccyx and lower part of the sacrum. The inner surface is in contact with the rectum on the left side; the anterior border is parallel to the levator ani, while the posterior is close to the pyramiformis muscle. The muscle is supposed to assist the levator ani in elevating the lower part of the rectum and everting its anal border.

The relations of the **pelvic fascia** to the rectum and to the adjoining structures are of considerable importance. The membrane lining the pelvis is a prolongation of the fascia transversalis of the abdomen: at the level of a line extending from the lower part of the symphysis pubis to the spine of the ischium it divides into two descending layers, named respectively the *obturator* and *recto-vesical* fasciæ. Along the upper angle of the ischio-rectal fossa, the obturator fascia divides into the two layers which bound that space. One of these, the *obturator fascia proper*, is attached below to the tuber ischii, and to the falciform edge of the greater sciatic ligament. The inner layer (anal fascia) is thin and indistinct, and covers the perinæal surface of the levator ani muscle. In front, these layers reunite close to the inner edge of the ischio-pubic ramus, and the conjoint layer thus formed is attached to the inner and upper edge of the pubic ramus, and from this forwards to the symphysis. Below and in front of the prostate, a lamella is continued inwards on each side, forming the posterior layer of the triangular ligament.

The *ischio-rectal fossa* is bounded posteriorly by the border of the gluteus maximus, whose investing fascia turns inwards to be attached to the underlying great sacro-sciatic ligament. Anteriorly is a fold of the deep fascia stretching from the front of the tuber ischii to the central perinæal point, while internally and externally the fossa is bounded by the anal and obturator fasciæ. The junction of these latter closes the fossa above; the angle of union recedes gradually as the fossa extends backwards to a narrow point towards the spine of the ischium. The ischio-rectal fossa is occupied by adipose and connective tissue, which forms an elastic support for the side of the rectum, and keeps the bowel closed by its pressure.

The *recto-vesical layer* is the direct continuation of the pelvic fascia downwards and inwards from the white line extending between the lower part of the symphysis pubis and the spine of the ischium. It covers the pelvic surface of the levator ani muscle, and is continuous with the vesical fascia as it descends over the back of the bladder, and anteriorly with the superficial capsule of the prostate, through which it is traceable forwards to the front of the levator ani to join with the subpubic fascia. The vesiculæ seminales, vasa deferentia, and prostatico-vesical plexus of veins lie more or less embedded in this layer (Macalister). A deep process of fascia dips in between the levator ani and the side of the rectum. This rectal fascia degenerates below into connective tissue on the wall of the bowel. Mr. Cripps points out that the close connection of the fibrous tissue of the rectum, with portions of the pelvic fascia, explains the liability of pelvic cellulitis and the subsequent contraction to produce rectal stricture. The pelvic surface of the levator ani muscle, covered by fascia, forms the floor of a space described by Richet as "superior pelvi-rectal." This space, which is occupied by loose connective tissue, lies between the muscle and the parietal aspect of the peritoneum as the latter is reflected from the walls of the pelvis over the rectum and bladder (Van Buren). It is sometimes the seat of abscess.

The rectum differs from the rest of the large intestine in *not being sacculated*, and in *not presenting separate longitudinal bands*. Its walls are three to four mm. thick; when contracted, the circular fibres measure almost three mm., and the diameter of the tube is sixteen mm. When distended to the fullest extent, it fills a large portion of the pelvis. The external, or longitudinal fibres, reach nearly to the lower end of

the intestine, where the circular fibres become more numerous.

Internally, the rectum presents several *transverse folds*, some of which are permanent, while others are effaced when the bowel is distended. The permanent folds vary considerably in number and position in different individuals. According to Houston,* the average number is three, but sometimes there are four, and sometimes only two are present. The largest and the most regular is situated three inches from the anus, and opposite the base of the bladder; the second is at the upper end of the rectum, and the third is midway between these; the fourth (rarely present) is attached to the side of the bowel, one inch above the anus. These folds form semilunar valves with convex borders fixed to the side of the rectum, and occupying from one-third to one-half the circumference. The surfaces are sometimes horizontal, but more usually oblique. The margins are defined and sharp, concave and directed a little upwards. The breadth varies; in the widest part it is from half to three-quarters of an inch. The valves consist of duplicatures of the mucous membrane, including some connective tissue and a few circular fibres.

With regard to their relative positions, the valve opposite the base of the bladder most often projects from the anterior wall; the valve next above, from the left; and the uppermost, from the right wall. The valve near the anus is towards the left and the posterior wall. Many deviations occur, "but the arrangement is always such that a sort of spiral track is formed in the cavity of the gut." The office of these folds is to support masses of fæces, and to prevent them from passing too rapidly towards the anus.

* "Dublin Hosp. Reports," vol. v. p. 158.

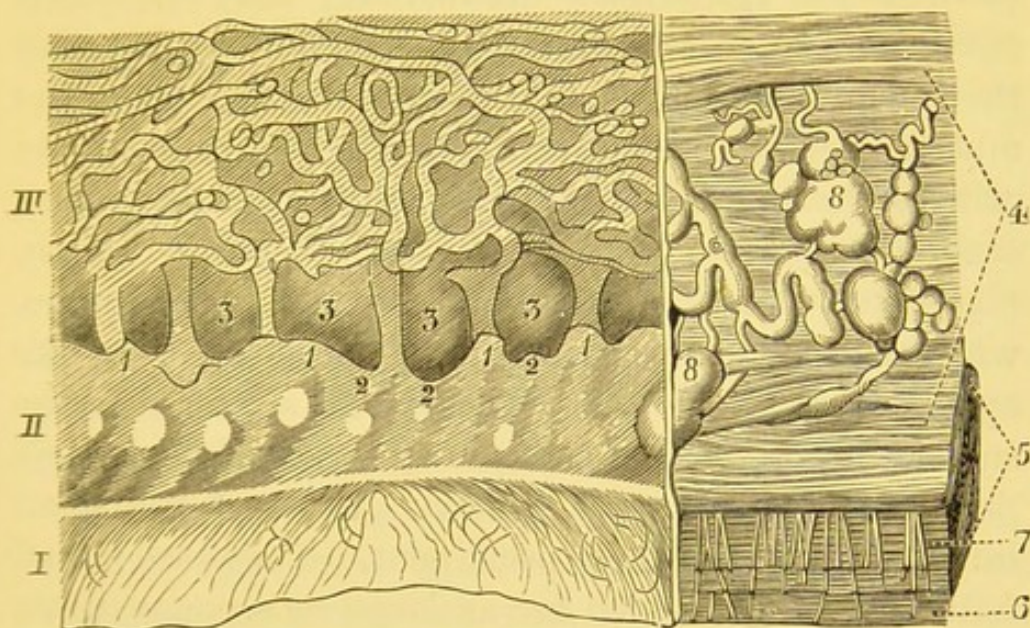
According to some anatomists, the folds described by Houston are the result of flexures of the rectal wall. Such folds disappear when the bowel is straightened after removal; it is alleged that Houston's method of hardening the bowel in alcohol caused them to become permanent. Henle, following Kohlrausch, describes one fold as being generally present; this is situated about six cm. above the anal orifice, and extends from the right to the anterior wall of the rectum, forming a crescentic fold, at most fifteen mm. in breadth. The longitudinal fibres take no part in its formation, but pass over its adherent border. Sappey states that there is only one fold, six to nine cm. above the anal orifice; but this is by no means frequently present, for he was able to find it only three times in thirty cases. On the other hand, H. Baur regards the fold as constantly present; he found it in twenty-one cases without exception. In addition to these valves, a third sphincter muscle (in the middle portion of the rectum, and consisting of specially developed bands of circular fibres) has been described by some anatomists. As a general rule, there is no muscular ring, deserving to be termed a sphincter, in that part of the bowel.

Near the anus, the mucous membrane presents several longitudinal folds or projections, the *columnæ recti* of Morgagni; these are from five to eight in number, and are placed at almost equal distances from each other (Fig. 5). The folds are rounded, or somewhat angular, and project from one to two mm. above the surface of the mucous membrane. They become pointed in an upward direction, but increase in breadth towards the margin of the anus; the opposite margins of adjacent folds become confluent, forming a row of semilunar pouches, the concavities of which are directed upwards. These pouches are especially

developed in old people, and foreign bodies and hardened fæces may easily lodge within them.

The mucous membrane covering the columns of the rectum and the depressions between them is distinguished from that of the upper part of the rectum

FIG. 5.



STRUCTURE OF THE LOWER END OF THE RECTUM.
On the right the mucous membrane has been removed.

- I. Skin-covered area of anus.
- II. Anal part of mucous membrane.
- III. Rectal part of mucous membrane.
 - 1. Columns of Morgagni.
 - 2. The valves of Morgagni.
 - 3. The lacunæ of Morgagni.
 - 4. Internal sphincter and circular muscular fibres.
 - 5. External sphincter.
 - 6. Subcutaneous connective tissue.
 - 7. Longitudinal muscular fibres.
 - 8. Varicose anal veins.

by the absence of glands, and by the presence of a considerable number of papillæ. The epithelium is thick, and consists of several layers of pavement cells, those of the superficial layer being smaller than those of the mouth. The region of the columns exhibits the transition between the mucous membrane and the

integument. The columns themselves consist mainly of unstriped muscular fibres, running parallel to the long axis of the bowel, and many nerve-fibrils are to be found in the loose connective tissue between the muscular bundles.

Above the columns, the mucous membrane is covered by cylindrical epithelium; the surface is redder and more vascular than that of the colon, and the membrane itself moves more freely upon the muscular coat. Its surface is marked all over by the orifices of *simple tubular glands* (crypts of Lieberkühn), each about three-quarters of a millimetre in length, placed very closely together, and causing the membrane, when viewed through a lens, to present a sieve-like appearance. Below these glands, and scattered in the substance of the membrane, are the *rounded lymphoid follicles*, resembling the solitary glands of the small intestine, but much less prominent. These are closed follicles, some of which are as large as a poppy seed; in catarrh, they are apt to increase in size and number so as to give the surface a granular appearance. Their position is marked by a superficial depression from which tubular glands are absent.

Vessels and Nerves of the Rectum.—The arteries of the rectum are the superior, middle, and inferior hæmorrhoidal, the first of these being a single trunk, and the other two in pairs. The *superior hæmorrhoidal* is the direct continuation of the inferior mesenteric artery; it passes behind the rectum, and divides into two branches, which extend, one on each side of the intestine towards the lower end. About five inches from the anus these subdivide into six or seven smaller branches, which traverse the muscular coat and run down beneath the mucous membrane, and parallel to each other, to the lower end of the bowel. These branches communicate in loops near the internal

sphincter and anastomose with the middle and inferior hæmorrhoidal arteries. In the first part of their course they form but few communications.

The *middle hæmorrhoidal arteries*, one on each side, are usually supplied by the inferior vesical (from the internal iliac), but sometimes proceed from other sources. They pass to the sides of the middle third of the rectum, and send branches upwards and downwards to anastomose with those of the other hæmorrhoidal arteries.

The *inferior hæmorrhoidal arteries*, two or three in number on each side, are given off from the pudic artery as it passes outside the ischio-rectal fossa above the tuber ischii. They cross the fossa, and are distributed to the lowest part of the rectum and anus and to the sphincter and levator ani muscles.

The *hæmorrhoidal plexus* of enlarged and freely anastomosing *veins* is situated beneath the mucous membrane in the lower part of the rectum. From it proceed the superior hæmorrhoidal vein, which returns its blood to the vena portæ, and the middle and inferior hæmorrhoidal veins, which are tributaries of the internal iliac.

According to Duret,* the middle hæmorrhoidal is formed from two venous trunks, the radicles of which unite in a plexus around the external sphincter. The inferior hæmorrhoidal forms a plexus between the skin and that muscle. The superior hæmorrhoidal vein commences in small branches which originate close to the verge of the anus, and ascend in parallel and flexuous lines to unite into five or six trunks. About three inches from the aperture of the anus, the veins perforate the muscular coat, and pass upwards

* "Recherches sur la Pathogénies des Hémorrhoides." Arch. Gén. de Méd., December, 1879, quoted by Kelsey, "Diseases of the Rectum and Anus," p. 14.

along the external surface of the rectum, appearing on the sides and posterior part of the bowel. Each of the venous radicles has its origin below in a minute pouch-like dilatation, about as large as a grain of wheat, and these small sacs are arranged in a circular form around the extremity of the rectum. Kelsey states that a vein connected with the external hæmorrhoidal plexus also communicates with each of these sacs, and that many of such branches, between the external and internal hæmorrhoidal systems, pass through the substance of the external sphincter. Contraction of this muscle would, therefore, prevent the flow of blood through these venous channels.

It is stated in most works on anatomy that the hæmorrhoidal plexus forms a very direct communication between the portal and general venous systems. Mr. Cripps,* however, has shown by experiment (1) that the hæmorrhoidal plexus cannot be injected through the iliac veins, thus proving that if a communication exist, the flow of blood in this backward direction must be prevented by valves; (2) the plexus can be at once injected through the inferior mesenteric, but the injection will not pass on into the iliac veins. The communication, if it exist at all, must, therefore, be very slight.

The *lymphatics of the rectum* are frequently of considerable size and are arranged in two layers, one being beneath the peritoneum and the other between the mucous and muscular coats. Immediately after leaving the intestine, some of them pass through small glands which lie contiguous to it, and finally they enter the lymphatic glands, situated in the hollow of the sacrum or those higher up in the loins. At the anus their capillary network is continuous with that of the cutaneous lymphatics (Quain). These

* *Loc. cit.* p. 6.

latter pass to the inguinal glands, which therefore become enlarged in cases of malignant disease of the anus. When the rectum is the seat of cancer, the sacral glands are liable to be thus affected; but enlargement of the glands in the groin has also been found in cases in which the disease in the bowel had not extended to the anus.

The *nerves* of the rectum and anus are very numerous, and are derived from the third and fourth sacral nerves, and from the inferior mesenteric and hypogastric plexuses of the sympathetic. The levator ani muscle is supplied by branches from the lower part of the sacral plexus, and by small twigs from the anterior branch of the superficial perinæal nerve. The external sphincter is supplied by branches of the inferior hæmorrhoidal nerve (from the pudic), and by a branch from the fourth sacral. The integument surrounding the anus contains many of the terminal ramifications (perinæal and hæmorrhoidal) of the pudic nerve; some of these communicate with the inferior pudendal branch of the small sciatic. The pudic nerve is connected with the same portion of the cord as the sciatic; irritation applied to its branches may be transferred to those of the latter nerve, and make itself felt in distant parts. Hence, rectal disorders are not infrequently accompanied by pain and cramps in the legs. Mr. Hilton alludes to pain in the heel as a frequent concomitant of anal fissure. Pains in the feet (as in a case recorded by Sir Benjamin Brodie) are sometimes caused by internal hæmorrhoids. The fact that the pudic nerve supplies the urethral muscles as well as the parts about the anus, accounts for the frequency with which disorders of micturition are associated with affections of the lower part of the bowel. The upper and middle portions of the rectum are far less sensitive than the lower, and

as a general rule the pain attendant upon rectal lesions is in proportion to their nearness to the anus.

The *sympathetic* nerve supplies the rectum through the inferior mesenteric and the inferior hypogastric or pelvic plexuses, which are derived from the hypogastric plexus. This latter is formed by eight or ten nerves on each side, which descend from the aortic plexus, and it receives branches from the lumbar and first two sacral ganglia. Thus, the sympathetic nerves supplying the rectum are really derived from the aortic plexus, and through this they are further connected with the semilunar ganglia, the solar plexus and its branches.*

FUNCTIONS OF THE RECTUM.

The contents of the bowels remain about twelve hours in the large intestine, where they become less watery and assume the character and form of the fæces. They pass gradually through the sigmoid flexure into the rectum, their progress being arrested to some extent by the transverse folds of this part of the bowel. These folds, and especially the one which is most often present, act as subsidiary sphincters, and assist in preventing the escape of solid fæces when the action of the sphincter muscles has been impaired by injury or disease. They do not, however, always keep back the contents of the bowel from descending towards the anus till just before the act of defæcation, for, when examining the lower bowel, the surgeon's finger not infrequently passes into a mass of fæces.

* See an article by Mr. S. Craddock on "Reflected Nerve Symptoms in Disease of Rectum and Uterus." ("Medical Annual," 1891, p. 421.)

During the intervals between evacuations, the anal orifice is kept closed by the tonicity of the surrounding parts, and especially of the two sphincters. When the fæces are in the sigmoid flexure they do not excite any sensations; but on passing into the rectum they provoke the desire for defæcation, and the action of the sphincters is more decidedly called into play. The centre presiding over these movements is in the lumbar region of the spinal cord. The external sphincter can be closed voluntarily, but the condition can be maintained only up to a certain degree. When the bowel becomes distended, the action of the external sphincter is reinforced by that of the internal, until the muscles are exhausted or their power is overcome by the weight of the mass of fæces.

Defæcation is generally preceded by active peristaltic movements of the large intestine; these gradually pass downwards to the rectum. By stimulating the sensory nerves of the bowel, the fæces excite the action of the sphincters, and their escape is thereby checked. There seems, however, to be a centre which inhibits the reflex action of the sphincters, and the action of this centre is apparently excited by voluntary impulses. Its seat is believed to be in the optic thalamus, whence fibres pass through the peduncles of the cerebrum to the lumbar part of the spinal cord. When this inhibiting apparatus is in action fæces pass through the anus without inciting it to close in a reflex manner (Landois).

The peristaltic movements which precede defæcation are increased by the resistance of the sphincters. When the latter give way the fæces pass through the anus, their expulsion being aided by the pressure of the abdominal muscles, particularly of the internal oblique, and of the diaphragm and levator ani. . When

defæcation requires a great effort, the soft parts in the floor of the pelvis descend in the form of a cone, and the mucous membrane becomes everted at the anus. Landois states that the function of the levator ani is to raise voluntarily the soft parts in the pelvic floor, and to pull the anus to a certain extent upwards over the descending fæces. At the same time, it prevents undue distension of the pelvic fascia. "As the fibres of both levatores converge below and become united with the fibres of the external sphincter, they aid the latter during energetic contraction, or, as Hyrtl puts it, the levatores are related to the anus like the two cords of a tobacco pouch." The contraction of the diaphragm assists materially in forced defæcation; a deep inspiration is taken, and the breath is held while the flat muscles of the abdomen likewise contract. Expulsion of the fæces is usually followed by vigorous contraction of the external sphincter, and this condition remains for some time.

The sensation in the rectum which precedes defæcation may be likewise induced by a diseased condition of the mucous membrane, or by contact with secretions from disease in the colon. The reflex contraction may be so violent as to overcome that of the sphincters, and to result in the ejection of the contents of the bowel. The accompanying sensation, which is termed *tenesmus*, is a common symptom in cases of dysentery. It is also sometimes experienced in connection with piles, fistula, polypoid growths, and malignant disease of the rectum.

CHAPTER IV.

CONGENITAL MALFORMATIONS OF THE ANUS AND RECTUM.

THESE malformations are of rare occurrence, but statistics as to their frequency exhibit considerable variations. From a large number of cases collected by Dr. Collins, of Dublin; Dr. Trelat, of Paris; and others, it would appear that one such malformation occurs in 11,000 births. This proportion is, however, in all probability much less than would be obtained if every instance of malformation were recorded. Dr. Leichtenstern states that in about 40 per cent. of the cases collected by him, there was an abnormal opening of the rectum into the bladder, urethra, or vagina. According to the same authority, in 375 cases the proportion of the sexes was 241 males and 134 females.

In order to explain the occurrence of congenital malformations of the anus and rectum, it is necessary to refer to the mode in which these parts are developed in the embryo.

The following account is taken from Professor Macalister's "Text-book of Human Anatomy":—

"In the body of the embryo a tube of hypoblast forms the terminal part of the intestine, which inferiorly shows a trace of its prolongation into the neurenteric canal. This latter communicated dorsally with the central canal of the spinal cord; but this

post-anal gut speedily vanishes, leaving the intestine closed behind. At the spot on the surface where the anal opening is subsequently found, there is a pit-like invagination, termed the *proctodæum*, and lined by epiblast. This extends inwards from the surface beneath the tail-fold, opposite the blind end of the hypoblast, into which its fundus ultimately opens. In cases where the proctodæum is undeveloped or misses the hypoblast, the foetus presents the condition of imperforate anus. In such cases a weak cord, the obliterated post-anal gut, is often recognisable, and is sometimes sufficiently distinct to be a useful guide to the surgeon."

Congenital Malformations of the Anus and Rectum may be classified as follows:—*

I. Imperforate anus :

1. Congenital narrowing of the anus, without complete occlusion, but sometimes accompanied by a fæcal fistula.

2. Closure of the anus by membranous tissue.

3. Entire absence of the anus, the rectum ending in a blind pouch at a varying distance from the perinæum.

4. Imperforate anus, with fæcal fistula opening (*a*) into the vagina; (*b*) into the male bladder or urethra; (*c*) on the surface of the body.

II. Imperforate rectum, with anus in normal position :

5. Membranous obstruction of the rectum.

6. Extensive obliteration or total absence of the rectum.

* Slightly modified from Holmes' "Surgical Treatment of Children's Diseases," p. 153.

1. **Narrowing of the Anus or Rectum without Complete Occlusion.**—This class of cases comprises the least serious form of these malformations. The condition is that of stricture implicating the anus or lower part of the rectum, or both portions of the bowel. It may be very slight or so decided as to obstruct and prevent the escape of meconium. It is usually annular, and when pronounced it will give rise to such symptoms as distension of the abdomen and constant vomiting. When only slight there may be no symptoms beyond constipation and difficulty in passing solid fæces. Congenital narrowing of the anus tends to produce fissure in adult life. In the female the condition is sometimes complicated by a fæcal fistula opening into the vagina, through which the greater portion of the fæces will escape.

The *diagnosis* is for the most part easily made; the narrowing is generally at or near the margin of the anus, and can be felt as a ring with firm edges.

The *treatment* consists in incising the dorsal part of this ring with a blunt-pointed bistoury; the bowel should then be washed out with an antiseptic solution, and the parts are dressed with powdered iodoform and covered with absorbent cotton-wool dressing. The finger or a suitable bougie should be passed daily, in order to keep the opening well dilated. Any fistulous opening into the vagina generally becomes obliterated after the proper canal has been restored.

2. **Closure of the Anus by Membranous Tissue.**—This is, likewise, one of the simplest and least serious of these malformations. The anus is merely closed by a more or less firm and thick membrane, through which, especially when the child cries, the bulging of the bowel may be clearly seen and felt. Spontaneous rupture of the membrane has been

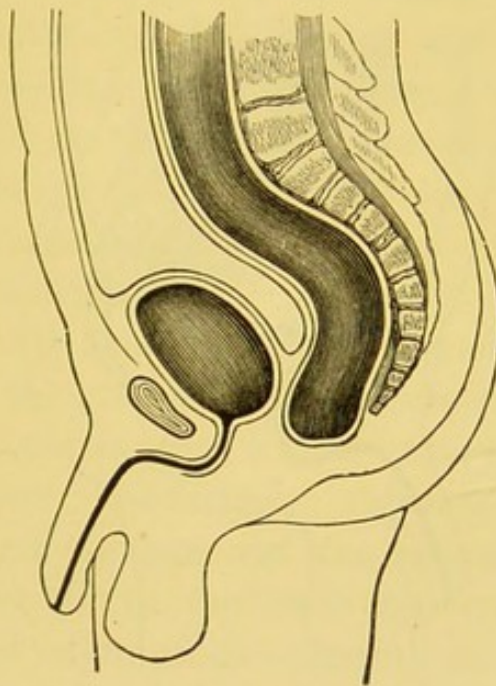
known to occur. If neglected, the occlusion will result in increasing distension of the abdomen, vomiting of meconium, and ultimately collapse and death. In rare cases the anus is only partially closed by membrane.

The *treatment* consists in making a free incision through the membrane, exactly in the middle line. In cases in which the septum is very thick and the impulse indistinct, it is well, as a preliminary, to make an exploratory puncture with a grooved needle. If no meconium escape, the case will belong to another category, to be subsequently described. If the bowel has been reached, and its contents can freely escape, it is unnecessary to use tents or bougies to keep the orifice dilated. The occasional passage of the finger through the anus will prove sufficient. In all cases of this kind the external sphincter is usually well developed, and hence, as time goes on, there is no difficulty in retaining the fæces. Even if the external sphincter were absent, its function would, at least in great measure, be performed by the circular fibres of the bowel. When there is a deficiency of the lower part of the rectum, and the latter is found at a slight depth below the skin, it is well to draw down the walls of the gut, and by means of sutures to attach the mucous membrane to the margin of the incision. The operation will be described in the treatment of the succeeding form.

3. **Entire Absence of Anus, the Rectum ending in a blind Pouch at a varying distance from the Perinæum** (Figs. 6 and 7).—This class contains some of the most difficult and serious cases. In place of the anal orifice, the integument is found to be continuous from behind forwards and from side to side; presenting in some cases a slight circular

depression, and in others a little button-like elevation, in the region of the anus. The space between the *cul-de-sac* of the rectum and the perinæum is occupied by connective tissue, in which a distinctly fibrous cord, the obliterated post-anal gut, may sometimes be felt (Fig. 7). Other abnormalities are liable to be associated with this condition of the parts. Thus the pelvis may be smaller than natural, the tuberosities of the ischia brought closer together,

FIG. 6.



IMPERFORATE ANUS.

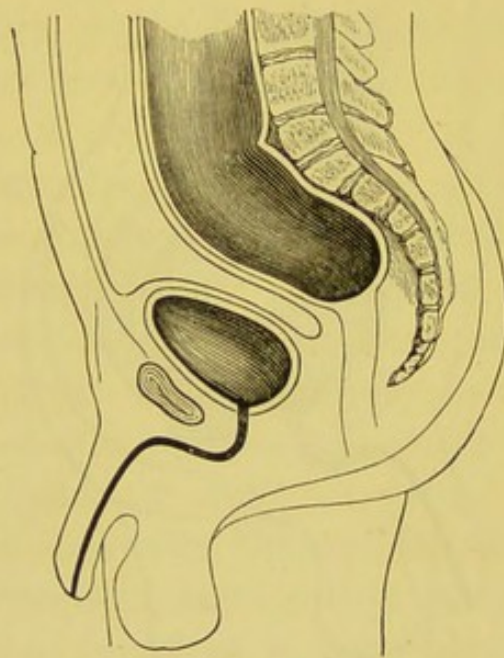
Pouch of rectum near perinæum.

and the normal measurements otherwise diminished. In the new-born well-developed male child these latter are stated by Bodenhamer to be as follows: From one ischial tuberosity to the other, 1 inch to 1 inch and 1 line; from the coccyx to the symphysis pubis, 1 inch $1\frac{1}{2}$ lines to 1 inch 3 lines; from the coccyx to the promontory of the sacrum, 1 inch 1 line to 1 inch 2 lines.

In cases of malformation belonging to this cate-

gory, if the rectal pouch be not too high up, fluctuation may sometimes be detected by applying a finger to the perinæum, whilst pressure is made with the other hand over the abdomen. In a female infant, the pouch may sometimes be felt through the vagina. But if the rectal pouch be more than an inch and a-half from the surface of the perinæum, no impulse will be felt, and the discovery of the position of the rectum becomes almost impossible. The

FIG. 7.



IMPERFORATE ANUS.

Pouch of rectum at some distance from perinæum.

condition is very serious; but if the symptoms are not urgent, it is best to wait for some hours in the hope that the pouch may become distended by meconium, and that its presence may be revealed. If fluctuation can then be felt, the choice lies between making a puncture by means of a trocar, and cutting down from the spot where the anus ought to exist towards the curve of the sacrum.

The same plan may be adopted supposing that fluctuation cannot be felt in the perinæum, and that

the symptoms are urgent. For the performance of the operation, the child should be placed upon its back, with its thighs separated and drawn up by an assistant. The surgeon makes his incision in the middle line of the perinæum from just in front of its centre to the point of the coccyx, and the parts are carefully divided till the tense bag containing meconium is reached. This should then be detached from its connections with a blunt knife, and by pressing on the abdomen, it will project into the external wound, to the extremities of which it should be fastened by means of two sutures and then opened. After the meconium has been allowed to flow away, the part should be thoroughly cleansed with a warm solution of the perchloride of mercury (1 to 3000). The edges of the mucous membrane are then to be drawn down, and fastened carefully to the margins of the incision in the integument by means of fine sutures.

In making the preliminary incisions there is risk of wounding the peritoneum if the knife be carried too deeply in front; posteriorly, towards the coccyx, there is no such danger, and the incisions should be freely made so as to facilitate the search for the bowel. If the edges of the opening made in the gut are not attached by suture to the integument, contraction is likely to take place, and to necessitate further interference. The daily insertion of a vulcanite plug, and its retention for several hours, will tend to prevent contraction.

Much difficulty will necessarily arise if the *cul-de-sac* of the rectum be at some distance from the perinæum. Manipulation of the parts is by no means easy, and neighbouring organs are liable to be injured.* Under

* In a case recorded by Mr. Erichsen, the intestine was found at a depth of three inches from the perinæum. The operation proved fatal from diffuse peritonitis and cellulitis.

these circumstances the question will arise whether it is better to continue the search for the blind extremity of the bowel, or to make an artificial anus either in the groin or in the left lumbar region. As a matter of course, the restoration of the normal opening is for all reasons the most desirable result, and it is worth while to run some risk for its attainment.

If it be determined to persevere with the operation, the external incision should be carried backwards beyond the point of the coccyx, and, in order to get more room, the excision of this bone has been recommended. The same result may, however, be achieved by prolonging the incision backwards on each side of the bone. The edges of the wound thus made are held apart with hooks, while the surgeon, using a blunt knife, searches with the forefinger of his left hand for the *cul-de-sac* of the bowel, which will be covered by the levator ani muscle. If a projecting portion be discovered, it should be carefully incised on a curved director. The bowel always takes the course of the sacrum, and the *cul-de-sac* is likely to be found near the upper part of this bone, which serves as a guide in the exploration. The termination of the bowel may not be quite in the middle line, but on either side or towards the front. As a guide to its position, it is well to have a staff passed into the bladder or vagina, according to the sex, and kept in the middle line by an assistant. When the bowel is discovered it should be detached as far as possible from the parts around. It is generally situated within two inches of the surface. As a general rule in these cases, no attempt should be made to attach the edges of the opening in the bowel to the borders of the wound in the integument. It is unadvisable to use a trocar for the purpose of discovering the blind end of the bowel, for the latter

may easily be missed by the point of the instrument, and even if it penetrated the gut, the opening would prove insufficient. There is, besides, the risk of wounding the peritoneum or some branch of the internal iliac artery.

In some cases belonging to this category, the rectum, as demonstrated by Amussat, ends in a free bulbous extremity, "which floats on a mesentery, and at a variable distance from the perinæum."* If somewhat loosely attached, an attempt may be made, but with all possible gentleness, to draw down the bowel, and before incising it to pass a double ligature through its wall and the skin of the perinæum. After the bowel has been opened and the meconium has been washed away, the margins of the wound in the bowel may be attached by suture to the opening in the integument.

If there be much difficulty in finding the bowel from the perinæum, we think it better to resort to colotomy at once rather than run the risk and danger which a prolonged search in the pelvis entails. Statistics show that, in such cases, death often results from peritonitis or cellulitis. The operation of colotomy will be fully described in a subsequent chapter; it will here be sufficient to specify the various modifications necessitated by the conditions incident to the operation in very young children.

(a) A smaller incision is required; one of an inch and a half long being sufficient.

(b) In children it is most important not to omit the use of the deep suture carried through the abdominal parietes both above and below the wound, and through the mesentery. This not only forms a good spur, but keeps all taut, and is, perhaps, the best means at our disposal for preventing any escape of intestine between

* Holmes, *loc. cit.* p. 159.

the upper edge of the wound and the sigmoid—an accident otherwise liable to occur when the infant strains, coughs, or cries. As an additional safeguard, under these circumstances, it is well to instruct the nurse to support the part by pressure with the hand.

(c) On account of the liability to shock, the operation should be performed as rapidly as possible, and the little patient should not be exposed more than is absolutely necessary. As a general rule in children, this operation does not present any serious difficulties. The wall of the abdomen is thin, and the sigmoid flexure is usually movable, and can be discovered in the wound in the groin. There is the possibility, but only a remote one, that immediately below the splenic flexure the colon may make a very oblique bend, and terminate in the *right* groin, and hence it has been recommended to make the incision on this side instead of the left. This suggestion was acted upon by Mr. Bryant* who, after failing to reach the bowel by an exploratory operation in the perinæum, cut down on the right side by a “vertical incision, at a distance of one inch from the anterior superior spinous process, towards the umbilicus,” and at once found a portion of large intestine, which was proved, after the death of the patient, to be the descending colon. The advantage of making the incision on the right side is said to be that some portion of the large intestine is certain to be reached; but, as a matter of fact, in the large majority of cases, in the new-born child, the sigmoid flexure is placed on the left side and not on the right. Out of 134 autopsies performed by Giraldès † upon children under a fortnight old, the sigmoid flexure was found on the left side in 114, and the bowel occupied the same position in 85 out of 100

* “Surgical Diseases of Children,” p. 40.

† Quoted by Holmes, *loc. cit.* p. 179.

cases examined by Mr. Curling. As Mr. Holmes points out, it is by no means a matter of indifference whether the part opened be the descending colon or the cæcum; and the left side should always be chosen. It has been recommended that the original incision in this spot should have a vertical direction, since, if the sigmoid flexure does cross to the right, a slight upward prolongation of the incision will enable the surgeon to reach it.*

4. **Imperforate Anus, with Fæcal Fistula.**—In this category the anus is wanting, but a communication exists between the rectum and vagina in the female, and the urethra or bladder in the male, or between the bowel and the surface of the body, at some point in the perinæal or sacral regions. When the rectum communicates with or ends in the vagina, the fæcal discharge is generally sufficient to prevent distension of the abdomen and vomiting, and the condition may be indefinitely prolonged. Women, indeed, have been known to live to an advanced age with this malformation, and apparently without being conscious of any abnormality. When the bowel communicates with the vagina, the treatment is comparatively simple. A curved director is passed through the fistula, and its point made to project in the anal region, and a free opening is then made through the centre of the perinæum until the groove in the instrument is reached. If the mucous membrane can be recognised, the coats of the intestine should be drawn down and fastened by sutures to the wound in the skin. The fistulous opening may then close; but in most of the recorded cases the communication remained, and another operation was required. One method is to lay open all the parts from the fistula to the natural situation of the anus, and to encourage

* Ashby and Wright, "Diseases of Children," p. 113.

the wound to heal from the bottom by granulation. In another plan the edges are pared, and then brought together with sutures.

In dealing with these malformations it is well not to delay the performance of the operation, for the insufficiency of the outlet may cause the large intestine to become enormously dilated and to lose all capacity of contraction. Under such circumstances, the result of any operation would be altogether negative, as the bowel would have no power of emptying itself of its contents, and the symptoms of retention, even if temporarily relieved, would speedily return.

The existence, however, of this malformation, even for many years, may be attended with very little inconvenience. Dr. Karl Abel has recently reported the case of a woman, aged twenty,* who applied to Dr. Landau, of Berlin, concerning a congenital malformation. From birth she passed her motions through the vagina. On one occasion the bowels did not act for eight days, and headache and vomiting set in. At the end of that period the bowels were opened spontaneously. The catamenia were regular, and the general health was good. The patient asked if, under the circumstances, she was justified in accepting an offer of marriage. She was well nourished, the breasts well formed, and hair developed in the axilla and on the pubes. The mons and labia majora were ill-developed; the nymphæ rather large, especially the right. A dark-coloured raphé ran from the posterior fourchette towards the coccyx; the perinæum was thin and weak. On parting the labia majora the anal orifice appeared. It lay a short space in front of the fourchette. The sphincter ani was fairly resistant to the finger. The

* "Archiv. für Gynäk.," vol. xxxviii. part 3, p. 493.

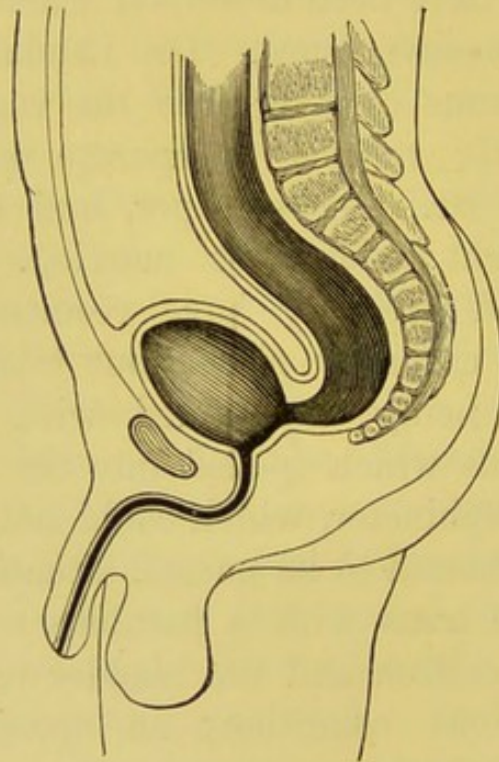
rectum began immediately behind and above the anus. In front of the anus lay the hymen, which was intact. The vagina and urethra were normal ; the uterus and ovaries small. Ricord related a similar case where the patient was twenty-two. As in Dr. Abel's case, the fæces could be held, and were periodically evacuated without trouble. The patient's husband, to whom she had been married for three years, had never discovered any malformation. Four similar cases at least have been described where the patients suffered no inconvenience. Dr. Landau thinks that cases of an anus opening into the vagina are best left alone. He refused to operate on the patient described in Dr. Abel's paper, and informed her that she might safely get married. Meddlesome surgery would probably have resulted in an unnatural anus, naturally placed but totally unable to retain fæces, being unprovided with a sphincter, whilst the anus which opened into the vagina had a very efficient sphincter, which could not be dissected up and transplanted to its normal situation.

Imperforate anus with a fistulous communication between the rectum and the bladder or urethra is a far more serious condition ; an opening into the bladder is more common than a communication with the urethra (Figs. 8 and 9). In the former case there may be either a narrow passage running obliquely towards the bladder and opening in its base, or a simple aperture of varying size. If the opening be tolerably free, the contents of the bowel will pass into the bladder, and for some time there may be no symptoms of distension. Sooner or later, however, the passage of urine will become obstructed by semi-solid fæces, with retention as a speedy result. These cases for the most part require colotomy. If the bowel open into the bladder, it is very doubtful

whether it can be reached from the perinæum, as it is generally on a level with the brim of the pelvis, and has a peritoneal covering on its under surface. If, however, the fistula open into the urethra, the bowel will run lower down and may be accessible.

A very remarkable case of congenital recto-urethral fistula has been recorded by Mr. F. Page,* of Newcastle-on-Tyne. The patient, a man aged fifty-four,

FIG. 8.



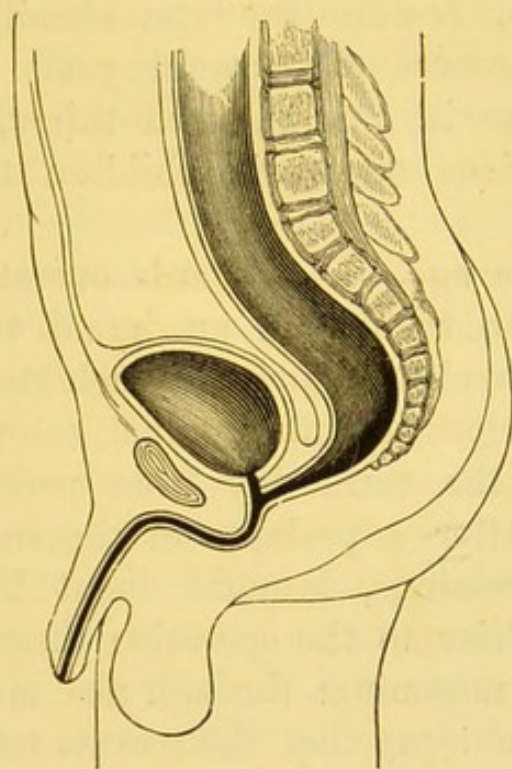
IMPERFORATE ANUS, WITH RECTO-VESICAL FISTULA.

had throughout his life passed his fæces and urine by the urethra. Soon after birth it was discovered that the anus was imperforate, and an attempt was made to establish an opening in the natural situation; the operation, however, was not successful. When he was ten years old, the urethra became blocked by hardened fæces, and relief was obtained by incising it immediately in front of the scrotum. Through the fistula thus formed the patient continued, though

* "British Medical Journal," 1888, vol. ii. p. 875.

with great difficulty, to pass fæces and urine, the proceeding being a very tedious one, and being aided by the daily use of aperients. Sometimes the fistula would become blocked, and sometimes the urethra; urine, generally clear, escaped from the anus from time to time. Contraction of the fistula and blocking of the urethra led the patient to apply for relief; but he would only submit to an operation for the enlarge-

FIG. 9.



IMPERFORATE ANUS, WITH RECTO-URETHRAL FISTULA.

ment of the fistula, although Mr. Page found that a probe could be passed through the anal aperture. The urethra was accordingly slit up, and the mucous membrane fastened by sutures to the skin, thus converting the fistula into an opening of fair size, through which fæces and urine could easily pass. Four months after the operation the patient reported that he was more comfortable than he had ever been before, and that his bowels acted regularly without medicine.

Even when the opening is into the bladder, life may be prolonged for some time. In a case recorded by Dr. Rowan,* fæcal matter passed by the urethra for two months, without causing any signs of irritation, and the rectum was filled with well-formed, hard fæces. When the communication is with the urethra, the meconium will be observed to flow away without being mixed with urine. The prospect is not so bad as when the bladder is involved; in several cases, besides the one already mentioned, life was preserved for several years. Dr. Gross† cites one case in a man, aged thirty, and Bodenhamer mentions others in children three or four years old.

Some years ago Mr. Edwards operated on a case of imperforate rectum in an infant two days old. After vainly endeavouring to reach the bowel from below, he performed left inguinal colotomy. Death occurred on the third day from peritonitis, which supervened after a prolapse of the small intestines under the dressings, brought about by crying and straining. Prior to the operation there had been a discharge of meconium through the urethra; it was found at the autopsy that the rectum terminated in a narrow canal in the prostatic portion. This case shows the necessity of instructing the nurse to support the parts when the patient cries or strains.

When the lower part of the rectum is obviously deficient, and fæcal matter escapes by the urethra, the position of the opening of communication is a point of great importance. As already stated, in some cases the rectum terminates in the bladder or urethra just below the level of the brim of the true pelvis;

* "Australian Med. Journal," March, 1877, quoted by Kelsey, *loc. cit.* p. 36.

† "System of Surgery," vol. ii. p. 657.

but in others, it descends almost to the perinæum. It then communicates with the urinary passages either by a small fistulous track, or "by a simple opening between the rectum and urethra, such as would be made by the total removal of the lower part of the prostate, and the portion of the gut upon which it rests." In a case of this kind, recorded by Mr. T. Holmes, the rectum had been punctured, but fæces continued to escape from the penis much more freely than from the anal aperture, the size of which was insufficient. This aperture was dilated and a staff passed into the bladder, and it was then ascertained that a communication with the urethra existed in the position of the prostate gland, through which a little urine passed occasionally into the rectum, while a portion of the fæces passed pretty constantly in the opposite direction. The opening would admit a No. 10 catheter. The child was only three months old, and as the fæces at that age are almost fluid, but little inconvenience was experienced. The treatment adopted was to enlarge the opening of the anus and to attach the mucous membrane to the lips of the wound, so as to afford a passage for the fæces.

Imperforate anus with a fæcal fistula opening through the integument presents many varieties in the position of the abnormal aperture.* In a small proportion of cases there is more than one orifice; but it seldom happens that the tracks are sufficiently capacious to provide for the complete escape of the fæces. The opening may occur (1) in various points of the perinæum; (2) at the posterior portion of the scrotum; (3) at the fourchette in the female; (4) at the root of the penis; (5) in the glans penis; (6) at the symphysis pubis; (7) in the right gluteal region;

* For further details see Bodenhamer "On Congenital Malformations of the Rectum and Anus," 1860.

(8) in the lumbar region, and (9) through an opening in the sacrum.

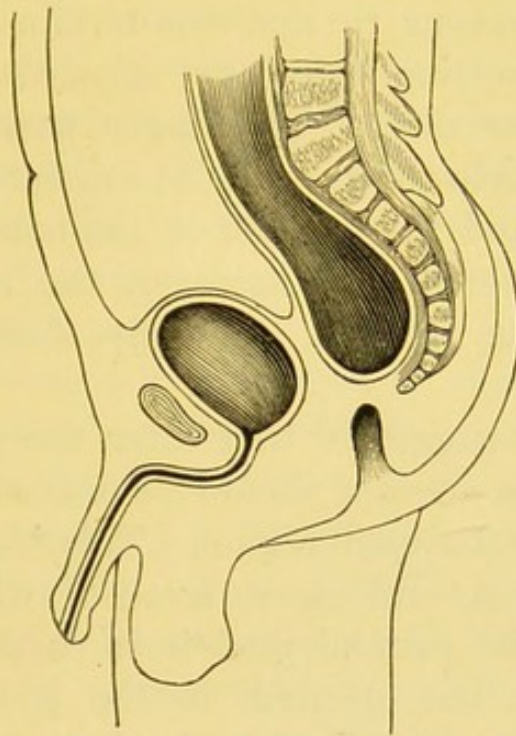
The *treatment* of these malformations depends, of course, upon the position of the opening; in some cases the abnormal anus, especially if dilated, is sufficient for the passage of fæces. But if the opening and fistula be very small, an operation of some kind is advisable. When the fistula is near the position of the anus, a probe may easily find its way into the rectum, which in these cases is generally not far from the integument. The best plan then is to make an incision down to the rectum, separate it from its attachments, and draw it down and attach it to the skin by sutures. The abnormal opening should then be closed, and the most effectual method is to dissect out the track of the fistula and unite the parts by means of deep sutures. When the sinus runs towards the coccyx, a free incision should be made into it from the position of the anus; the mucous membrane is then drawn down and attached to the wound.

In the case of two fistulæ, either being sufficiently large to allow fæces to pass easily, surgical interference is unnecessary; but if both openings be small the septum between the fistulous tracks should be divided.

II. It now remains to consider the cases belonging to the second division, viz., those in which the rectum is imperforate, but the anus is in the natural position. These again may be divided into two classes; in the first of these the **obstruction in the rectum is membranous in character**; in the second, there is **total deficiency or extensive obliteration of the rectum**. These cases are always of a serious character, for inasmuch as the anal orifice is normal, the condition of the rectum is not suspected until the constipation

and the distension of the abdomen have existed for some time (Fig. 10). When, however, the rectum is simply obstructed by a membrane, a simple operation is likely to afford relief. The condition is detected by passing the finger into the anus, when the obstruction will be felt, and an impulse communicated to the finger as the child cries. If such impulse be not felt, it may be taken for granted that the obstruction is more than membranous.

FIG. 10.



IMPERFORATE RECTUM, WITH ANUS IN NORMAL POSITION.

When, however, the sensation communicated to the finger is such as to induce the belief that the bowel is within easy reach, a grooved needle or small trocar should be passed through the membranous septum; if meconium escape, the opening should be enlarged with a blunt-pointed bistoury, so that it will admit the finger or a small bougie. A little warm water should be injected to clear out the bowel, and the bougie will be required daily or every other day for some time.

In the second class the *cul-de-sac* of the rectum is too far from the anus to allow any impulse to be felt, and the condition is much more serious. The child will die unless some outlet for the fæces can be obtained, and the surgeon has to choose between an exploratory incision in the perinæum and the performance of colotomy. If the other parts are properly developed, he may adopt the former course, and make an incision with a probe-pointed bistoury from the bottom of the anal *cul-de-sac* to the tip of the coccyx, and then endeavour to find the termination of the bowel by dissecting carefully upwards along the curve of the sacrum. The finger passed into the wound will enable the surgeon to estimate the nature of the parts, and the position of the bowel may possibly be discovered. If, however, the rectal pouch cannot be thus reached, colotomy should be performed.

It has been suggested that after the performance of colotomy, an attempt should be made to establish an opening in the anal region. This idea has been acted upon in several cases, some of which proved successful. The plan adopted is to pass a bougie or sound through the opening in the groin into the *cul-de-sac* of the bowel, which is then gently pressed downwards towards the perinæum. If the extremity of the sound can be distinctly felt, an incision is made so as to reach it. In a case operated upon by Dr. Byrd, of St. Louis,* in order more easily to “meet the sound from below, an incision was made about two inches deep, up from the anus and back to the coccyx, large enough to permit the passage of the index finger. The sound was carried along until it could be felt only about one-eighth of an inch from the tip of the finger passed from below, when it would

* Quoted by Kelsey, *loc. cit.* p. 45.

pass no further with ease. Force enough was then used to pass the sound through the intervening space, and the point was brought out at the anus." In the after treatment much ingenuity was exercised in order to draw down the mucous membrane towards the new opening, but the subsequent history of the case is not given. It was hoped that the opening in the groin would close "without further operative interference, except the wearing of a well-adjusted pad;" but another operation for its closure would be performed, if necessary.

Dr. Kronlein* records a successful case in which the second operation was performed when the child was seven months old. On the other hand, two cases in which Mr. Owen† attempted to establish a new anus in the normal position terminated fatally from shock and peritonitis.

In serious cases of imperforate anus or rectum, even if an outlet has been established in the normal situation, the result is liable to be unsatisfactory, owing to the tendency to contraction, which is always more or less marked. To obviate the consequences of this tendency, a bougie of suitable size should be passed daily for some weeks or months. The child should be frequently examined by the surgeon, and if the passage be insufficient a dorsal incision should be made through the contracted portion. Even after such an operation constant care is necessary to prevent the opening from becoming inadequate.

* "Berlin. Klin. Woch.," 1879, Nos. 34 and 35.

† "Harveian Lectures," 1879.

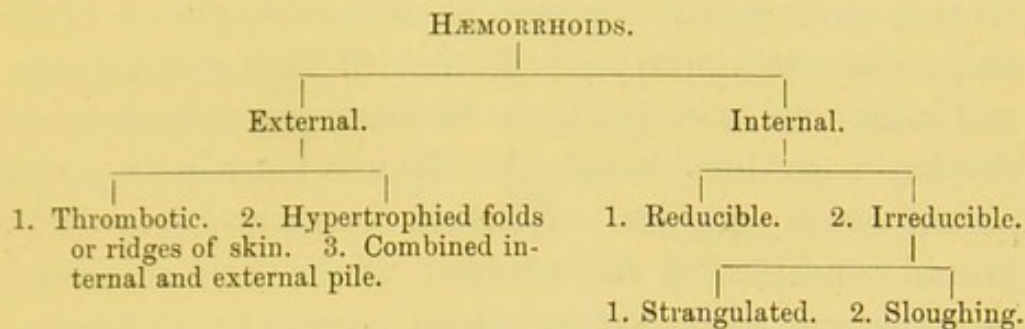
CHAPTER V.

HÆMORRHOIDS.

Hæmorrhoids or piles constitute the best known, though not the most common affection of the rectum, at least in hospital practice. It must not be forgotten that patients suffering from any form of pain and discomfort in the lowest part of the bowel, almost invariably jump to the conclusion that their troubles are due to piles. The necessity of a proper examination, when medical aid is sought, would seem too obvious to need insisting upon, were it not for the fact that the patient's diagnosis is often accepted, and the treatment, in not a few cases, correspondingly misdirected.

A hæmorrhoid may be defined as a varicose enlargement or dilatation of a vein in one or both of the following parts:—(*a*) the subcutaneous tissue of the anus; (*b*) the submucous tissue of the lower part of the rectum. According to their place of origin hæmorrhoids are broadly classified as (1) external and (2) internal; the former originate and remain outside the external sphincter, while the latter are formed within the bowel. There is, however, a third and a very numerous class, comprising hæmorrhoids which are partly external and partly internal, being covered by mucous membrane above and skin below. In addition to this, piles formed within the bowel often protrude externally in a subsequent stage.

The following table exhibits a convenient classification of hæmorrhoids, according to their origin and condition:—



Pathology and Causes.—The rectum is freely supplied with veins, which form a complex interlacement termed the hæmorrhoidal plexus. Some of these discharge their blood into the internal iliac veins, and thus into the inferior cava; the remainder join the inferior mesenteric vein, and their contents are conveyed to the liver. These veins, like the other veins of the portal system, are destitute of valves. Verneuil has drawn attention to the fact that the veins of the rectum, which go to form the superior hæmorrhoidal vein, pass through oval slits in the muscular coat about three inches from the anal orifice. These slits are unprotected by any fibrous canal, and hence the veins are liable to be compressed and the flow of blood retarded during contraction of the muscular coat. There are likewise other causes which account for the frequent occurrence of varicose enlargements in the hæmorrhoidal plexus. Venous congestion is of course the starting-point, and this to a great extent results from *mechanical* hindrances to the emptying of the veins. *Direct irritation*, however, plays an important part in the development of hæmorrhoidal congestion; and these two causes frequently co-exist. It is desirable to discuss them somewhat minutely.

Mechanical pressure on the abdominal veins may

be caused by accumulation of fæces, by enlargements and displacements of organs, and by morbid growths. The passage of solid fæces from the colon into the rectum necessarily compresses the columns of blood and causes temporary congestion of the rectal veins, and this condition tends to become permanent when the fæces are long retained. Hence constipation is a potent cause of piles. Next in frequency comes the gravid condition of the uterus; while various morbid growths, *e.g.*, of the liver, spleen, ovary, prostate, etc., are less common, but by no means rare causes of piles. These all act by impeding the escape of blood from the hæmorrhoidal plexus. Muscular exertion of various kinds, and especially those efforts which are attended with forcible contraction of the diaphragm and abdominal muscles, are decided aids to the development of piles. Their effect is to impede the venous current through the levator ani and sphincter muscles. Thus there is a second reason why constipation should cause piles, for straining efforts are necessary to produce an action of the bowels. Difficult micturition, due to obstruction in the urethra or bladder, acts in a similar manner; hence piles often accompany cases of stone and stricture which have been neglected. Impeded circulation of blood through the liver, as, for example, in oft-repeated congestion of the portal system and in cirrhosis, must be included in the category of mechanical causes of piles. Congestion of the liver is almost always associated with hæmorrhoids. Obstructive disorders of the heart and diseases of the lungs accompanied by destruction of capillary vessels play a similar, though a subordinate part. To these mechanical causes must be added the influence of gravity, which materially affects the circulation in the rectal veins. The mucous membrane of this part of the bowel is very distensible, and

the loose submucous tissue affords but little support to the veins. The second division of the causes of hæmorrhoids comprises those which act by irritating the mucous membrane. Chief among these are the accumulation of fæces, the frequent use of drastic purgatives, exposure to cold and damp, sexual excesses, immoderate eating, etc. All these tend to set up a catarrhal condition of the rectum, with relaxation of tissue and venous dilatation as a consequence. Habitual constipation, with accumulation of fæces, acts in a three-fold manner: the veins of the rectum are subjected to undue pressure, the mucous membrane is irritated by the hardened fæces, and excessive straining is necessary for their expulsion.

Hereditary predisposition is often noticed in connection with piles, and is a prominent factor in their causation; the complaint is said to be more common in men than in women, but this statement is probably based on the fact that women do not apply for treatment until the piles have become very troublesome, and the majority prefer to seek relief at hospitals for women's diseases. Our statistics (see page 2) show that women are more often affected with internal hæmorrhoids than men. The majority of the sufferers from piles are of middle age, but no period of life is exempt. The well-to-do classes furnish the largest contingent of patients, and sedentary habits are a predisposing cause. At St. Mark's Hospital, cobblers and tailors are the most frequent sufferers. On the other hand, piles are apt to be developed in persons who are obliged to stand for many hours daily. Musicians who play upon wind instruments are liable to become affected; their work necessitates the erect position, and the abdominal viscera are compressed by the muscular action. Piles are often associated with

general plethora, being due to the same cause, viz., free living and immoderate use of nitrogenous food and stimulants. Congestion of the portal system of veins takes place during normal digestion, and is apt to become excessive under the conditions just specified. Such congestion, frequently repeated, must lead to enlargement of those tributaries of the vena portæ which are especially prone to be affected.

Speaking generally, it may be stated that constipation is the most potent cause of piles, and tends greatly to aggravate their condition. In some patients, however, looseness of the bowels is the prevailing condition, and in these cases the hæmorrhoids must be attributed to the constant irritation.

General Appearance and Structure of Hæmorrhoids.—Hæmorrhoids, whether external or internal, vary much in the appearances they present, and are subject to many changes; but whatever forms they may assume, all varieties, with the exception of the thrombotic pile, are developed in a similar manner, and are identical in structure in the early stage. External piles first appear as small, more or less oval growths at the verge of the anus. They are bluish or bluish-white in colour according to their degree of turgescence and the relative proportions of skin and mucous membrane involved. When swollen, but not too painful to be handled, pressure between the finger and thumb causes the swelling to diminish, but the little tumours again become tense when the pressure is taken off. When examined after death, even severe forms of hæmorrhoids are much less prominent than during life. The swollen condition is due to venous congestion, and is generally reduced by any measures which tend to diminish the quantity of blood in the intestinal veins. Thus, free purgation often makes a great difference in the ap-

pearance of hæmorrhoids, causing them to become soft and collapsed, while constipation is attended by opposite results.

After external hæmorrhoids have existed for some time, there are often signs of irritation about the anus and perinæum, such as slight cutaneous inflammation, watery or mucous secretions, eczematous eruptions, cracks and excoriations. As a result of the irritation, the connective tissue becomes increased and indurated, and the skin is thicker and more adherent to the tissues beneath it. As time goes on, pendulous flaps of hypertrophied skin are apt to form. Some of them may contain a vein which at some time or other has been troublesome.

On section, external hæmorrhoids are found to be composed of enlarged veins and hyperplastic fibro-cellular substance, in varying relative proportions in different cases. They present, especially in their early stages, a truly cavernous structure, composed of irregularly shaped spaces which are filled with blood and communicate freely with the hæmorrhoidal veins, their inner surface being continuous with the lining membrane of the vessels. These spaces are supported by more or less connective tissue. They are probably formed in the first place from the veins which distend and break through into each other as a result of destructive pressure on the intervening tissue (Wilks). They are not cut off from the venous system, "as under favourable circumstances injection from the veins can be effected."

The condition of external hæmorrhoids is much affected by a variety of circumstances. Various forms of irritation cause them to become swollen, tense, very painful, and dusky blue in colour. Blood is then found to be extravasated into the connective tissue, and the veins contain clots of varying consist-

ence. The term "thrombotic" has been applied to this form of pile. Inflammation is a further development of such a condition, and the above appearances are then much more marked. Suppuration of a thrombus sometimes occurs in external piles, and is a not uncommon cause of fistula, but it much more often happens that the inflammation subsides, the effused blood is absorbed, and the parts regain their previous condition. The piles are then represented by cutaneous nodules or radiating ridges of skin at the verge of the anus, giving rise to little or no inconvenience until congestion or inflammation is again induced by some one or other of the exciting causes already specified.

The Structure of Internal Hæmorrhoids is very like that of the external forms, but the vascular element is more marked and abundant, and the tumours are softer and covered by mucous membrane instead of skin. Cavernous sinuses are often formed, as a result of absorption of the walls of adjacent venous saccules. Not only veins, but, in many cases, small arteries have a share in their formation. They vary in size; some being very small, perhaps as large as a pea; others reaching the size of a walnut. Sometimes a single pile exists, but more often there are several such tumours; they usually have a broadish base, but sometimes, and especially in long-standing cases, in which protrusion is common, the growths become pedunculated. Their colour varies, being red when the arterial element is abundant, and dark purple when the blood is mostly venous in character. The surface is often found to be eroded and bleeding. Internal piles are, as already stated, formed within the bowel, but they often protrude externally as time goes on. They then appear as roundish tumours, occupying the aperture of the anus and dark purple

in colour. When this condition persists, the mucous membrane becomes dry, indurated and thickened, and semi-cutaneous in appearance. In the growth and development of internal piles there are three stages which are especially important as regards the treatment. In the first of these the piles protrude when the bowels act, and are afterwards spontaneously retracted. In the second the protruded piles remain outside the anus until replaced. In the third even slight exertion of any kind causes protrusion, and manual replacement is requisite.

There is a second form of internal hæmorrhoid, in which the dilatation involves the superficial vessels in a circumscribed patch. These have been termed "capillary hæmorrhoids," as they are composed of capillary vessels and connective tissue. Such a patch is sometimes found alone, and sometimes it constitutes a portion of the surface of a large venous hæmorrhoid. In a third form the tumour contains not only dilated veins, but one or more arteries of considerable calibre.

Symptoms of External Hæmorrhoids.—External hæmorrhoids cause various degrees of trouble or suffering to the patient according to their condition. There may be a little uneasiness, due perhaps to increase of moisture in the part or to eczematous eruption; in other cases the presence of swelling may inconvenience the patient. The thrombotic variety is often very tender to the touch, but the second form, those classed as tabs or hypertrophied ridges of skin, give rise to no discomfort, but only necessitate frequent ablutions. When the upper portion of the pile is covered by mucous membrane, the symptoms produced by irritation are still more severe. The swelling is dark blue in colour, firm and exquisitely tender when touched, and there is

more or less œdema around the anus. The irritation extends to the sphincter and levator ani muscles, and their spasmodic contraction increases the local symptoms, to which signs of constitutional disturbance are often superadded. In such cases feverishness, headache, and general malaise are frequently observed. The bowels are usually constipated; there is a sensation as if a foreign body were present in the anus, and straining efforts at stool greatly increase the pain. In some patients these symptoms are easily excited by even slight excess in either alcoholic stimulants or animal food, and subside under opposite conditions of diet and the use of a brisk purgative. When excoriations or fissures co-exist with piles the pain is always more intense and the swelling more marked.

With rest and proper treatment all these symptoms are prone to subside; the hæmorrhoids become much smaller, but do not entirely disappear. In place of tense, livid or reddish swellings, they present themselves as small tumours, soft to the touch and pale in colour. Sometimes they are elongated, and almost pedunculated, forming loose flaps of skin surrounding the anal orifice. They may continue in this state for indefinite periods, causing little if any inconvenience; but under the influence of irritation they are liable to become swollen and painful, and to present the appearances described in a former paragraph. The so-called "œdematous" pile is the result of irritation acting upon these cutaneous flaps, and if this condition be frequently developed the size of the tumours will become permanently increased. As causes of irritation may be mentioned excesses of various kinds, constipation, the development of fissures or of eczematous eruptions. Fissure is a frequent complication, and always tends to aggravate

hæmorrhoids, the enlargement of which is apt to be complicated by general œdema of the tissues around the anus.

A small so-called "sentinel" pile is frequently present in cases of fissure; it is crescentic in shape, and the fissure ends in its concavity. Abscess is another complication of inflamed external piles, and sometimes results in their spontaneous cure, but more often in fistula. It must also be remembered that œdematous and hypertrophied flaps of skin surrounding the anus are frequently present in cases of rectal stricture. Hæmorrhage is a very rare symptom of external hæmorrhoids; a few cases have been noticed by Quain, Ball, and Van Buren.

Diagnosis.—External piles are easily diagnosed, provided that a proper examination be made. When the hæmorrhoid is in a quiescent state, on separating the buttocks it will appear as an enlarged flap or ridge of skin, containing venous structures. When inflamed, it will take the form of a round, tense, smooth swelling, very tender to the touch, of a pinkish colour, and surrounded by œdematous tissue. The thrombotic pile is hard to the touch, as if a pea or bean had been inserted under the skin; it usually shows the clot of blood extravasated under the integument. Flaps of redundant skin near the anus are frequently mistaken for piles in a quiescent state. Such hypertrophies are often due to pruritus and ascarides, and these growths do not contain dilated veins and are not liable to sudden enlargement.

Treatment of External Hæmorrhoids.—The cause should be discovered and dealt with as far as possible. Errors in diet and mode of living should receive proper attention, and the bowels should be kept open by the aid of mild purgatives. If, as often happens, there be indications of congestion of the

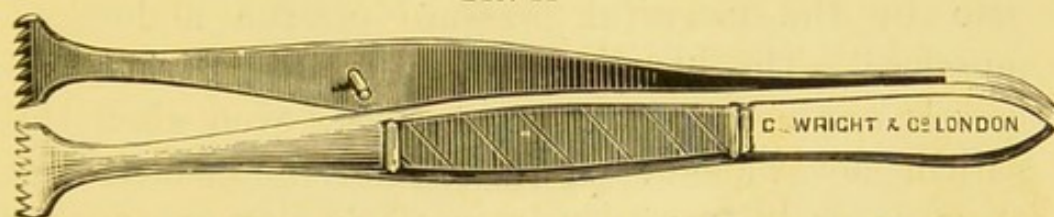
liver, a few doses of blue pill at bedtime, followed by a mixture containing sulphate of magnesia and liquid extract of taraxacum, will constitute the best treatment. Lead lotion, either warm or cold, is the best local application for an inflamed external pile. Cold is generally preferable; but the application of ice is not to be recommended. A useful formula is as follows:—

℞	Liq. Plumbi Subacet.	...	...	...	ʒj.
	Lactis	...	...	...	ʒj.
	Mix.				

This forms a thick paste, and should be applied on cotton wool. The application of a mixture of extract of belladonna and glycerine, followed by a warm stupe or poultice, will also relieve pain and lessen swelling. Warm applications are more suitable for inflamed external piles occurring in pregnant women. In all cases until the inflammation has subsided, the patient must be kept in bed and placed on low diet. Mr. Cooper believes that the practice of incising a thrombotic pile is fraught with danger, owing to risk of phlebitis and pyæmia; but Mr. Edwards has been in the habit of evacuating the clot at once, and has never known any ill results to arise therefrom; the relief is immediate and the cure speedy. An incision is of course necessary whenever suppuration has taken place. Cutaneous tabs about the anus, when causing much inconvenience, may be snipped off; Salmon's scissors and forceps (Figs. 11 and 14) are suitable instruments for the purpose. Care should be taken not to cut away too much integument; cases are by no means rare in which stricture has been caused by the too free use of the scissors. In treating a case of external piles it is desirable to ascertain whether internal hæmorrhoids are likewise present.

After the active symptoms of external hæmorrhoids have been relieved, the patient's diet and habits of life should receive careful attention. Constipation, if present, must be obviated by mild purgatives; confection of senna, compound liquorice powder, or some one or other of the natural bitter waters may be taken with advantage. Carlsbad salts are especially useful when a gouty tendency exists. The diet should be simple and contain a large proportion of vegetables; stimulants should be prohibited, and over-exertion of all kinds should be avoided. The skin should be attended to, and the parts about the anus should be washed night and morning with cold water.

FIG. 11



FORCEPS FOR HOLDING OR GRASPING PILES AND SKIN.

Symptoms of Internal Hæmorrhoids.—Internal piles are more serious than the external form of the complaint, and are apt to cause far greater trouble to the patient, though they sometimes remain comparatively quiescent. The two forms frequently co-exist. The peculiar feature of internal piles is their tendency to bleed; in many cases hæmorrhage from the bowel during or after defæcation is the first symptom which attracts the patient's attention. The bleeding results from slight laceration of the mucous membrane during straining, the membrane itself having become stretched by the pressure of the dilated veins. But before hæmorrhage occurs, internal piles often cause various uncomfortable sensations in the rectum and about the anus. The patient complains of fulness,

weight, and throbbing in the rectum, of a frequent desire to strain, of spasmodic contraction of the sphincter, or of sensations of itching and burning; these symptoms being aggravated by constipation and relieved by free action of the bowels. Sometimes there is mucous discharge and tenesmus, indicative of catarrh of the rectum.

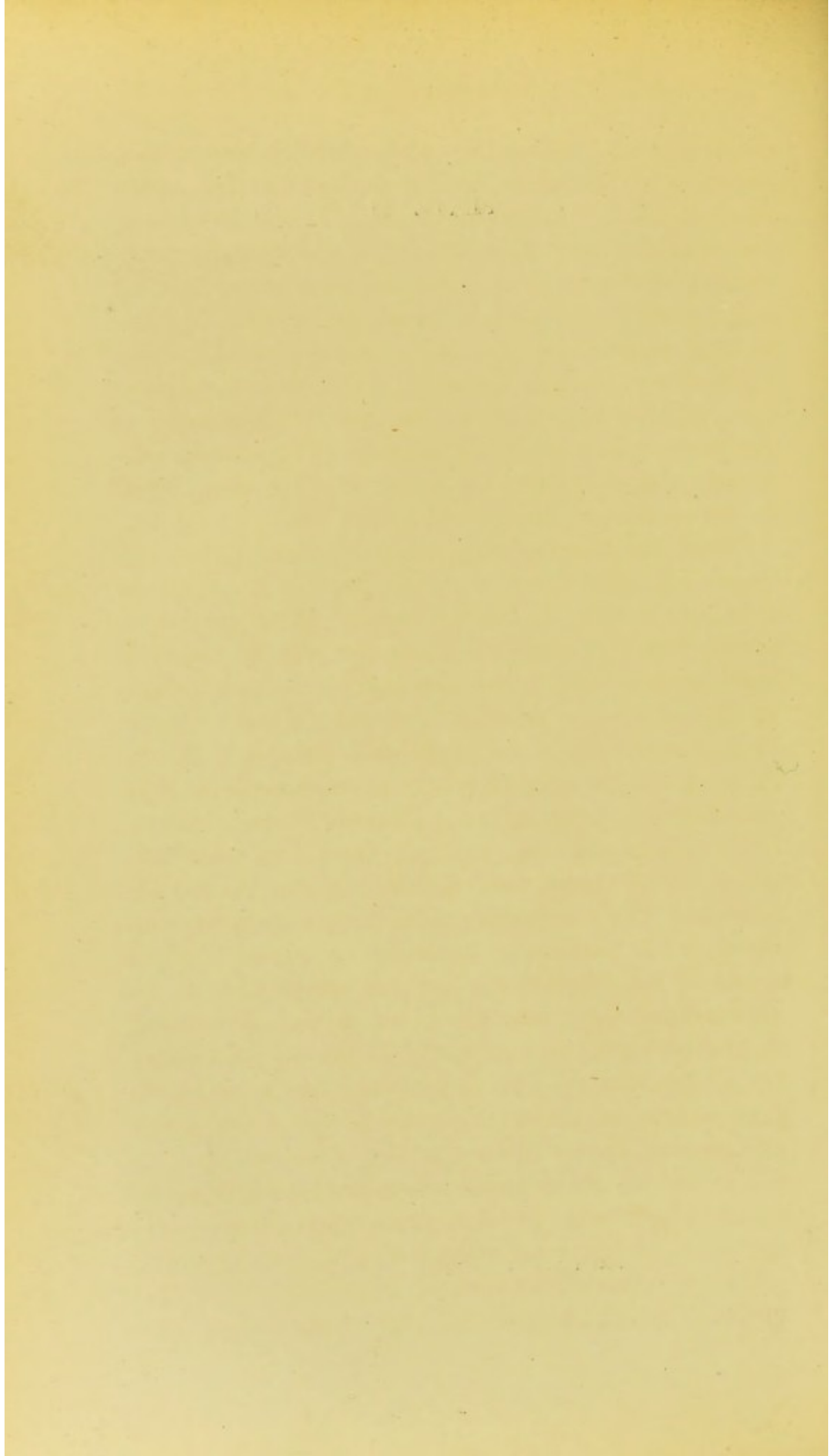
Hæmorrhage as a symptom of internal piles varies greatly as regards the quantity and the character of the blood lost. Sometimes there is a mere oozing; in other cases the hæmorrhage is profuse, amounting to half a pint or more. Mr. Cripps thinks that an artery is never the source of the hæmorrhage, but that the jets are caused by the blood "being forced as a regurgitant stream through a small rupture in a vein by the powerful pressure of the abdominal muscles." The bleeding generally occurs when the bowels are moved, but in some cases even when the patient moves about. Recurrence of the hæmorrhage at more or less regular intervals is not uncommon. At first the local symptoms are relieved by the hæmorrhage, and the patient feels more comfortable in every way; but as the loss of blood becomes more frequent the ordinary signs of anæmia begin to show themselves, and when the hæmorrhage is allowed to continue unchecked the results soon become very marked. In extreme cases life is sometimes imperilled by the hæmorrhage.

The protrusion, which constitutes a marked stage in the development of internal piles, is a frequent cause of suffering to the patient and is often accompanied by hæmorrhage. As a general rule, protrusion first occurs during straining efforts at defæcation, after which the piles disappear within the bowel. As time goes on, however, protrusion becomes more and more frequent as the mucous membrane loses its elas-

PLATE II.



PROLAPSED HÆMORRHOIDS.



ticity and the sphincter offers less resistance, and under these circumstances the patient has to employ the fingers to effect replacement. In the absence of remedial measures the condition of the parts becomes worse. The hæmorrhoids increase in size and number, and protrude not only during defæcation, but on making slight exertion and during coughing, etc. Hæmorrhage is less frequent and abundant than in the two previous stages, but the profuse mucous discharge causes great discomfort. This almost permanent state of protrusion constitutes the third stage in the course of internal hæmorrhoids.

When the hæmorrhoids remain protruded for any length of time, they are apt to become strangulated owing to spasm of the sphincter. The return of venous blood is checked, while the arterial influx is less interfered with. The hæmorrhoids then form a cluster of livid, vascular tumours, which become larger, more and more tense and painful. If the strangulation be unrelieved, the process advances from inflammation to gangrene, attended with constitutional symptoms, such as high fever and vomiting. Retention of urine, due to reflex spasm, is not infrequent. As a further result, the gangrenous mass sloughs off, leaving a granulating surface, which sooner or later cicatrises. In this way a cure of the hæmorrhoids may take place, but at the risk of producing stricture of the bowel if the entire circumference be affected. As a general rule, however, the process does not involve all the hæmorrhoids which are present, but only one or two of them.

Internal piles sometimes become inflamed while still within the bowel. Under such circumstances they act as a foreign body and cause pain and straining, often accompanied by vesical irritation. They then protrude through the sphincter, forming one or more

dark-red oval masses, very painful and tender to the touch. What is termed "an attack of the piles"—that is, when the local symptoms become marked—is generally the result of irritation and inflammation, and the chief importance of hæmorrhoids arises from their liability to these various accidents, viz., bleeding, protrusion, with subsequent strangulation and inflammation.

Diagnosis of Internal Hæmorrhoids.—When a patient states that blood escapes from the anus after a motion has been passed, a digital examination is always necessary in order to ascertain the source of the hæmorrhage, which in the majority of cases is due to piles. The best plan is to inject a pint of warm water, and to examine the part after the injection has come away. For this purpose, the patient should be placed on the left side on a couch in a good light, with the legs drawn up. The anus is then exposed, and the patient is directed to strain down gently, while the surgeon with the tips of his fingers separates the margins of the orifice. Sometimes the piles will gradually protrude, the surgeon's fingers helping to draw them down. If not, the finger is passed into the bowel, when some amount of fulness of the mucous membrane will perhaps be detected by the experienced surgeon. Such swelling is not tense and defined, as hæmorrhoids are when protruded. For application to his fingers the surgeon should use some simple ointment of good consistence. Olive oil and vaseline are not sufficiently thick. We recommend one of the following:—Vinolia cream, unguent. hydrarg. subchlorid. B.P., with gr. xxx. of cera alba to the ounce, ung. zinci (P.B.), or an ointment called lanolia.

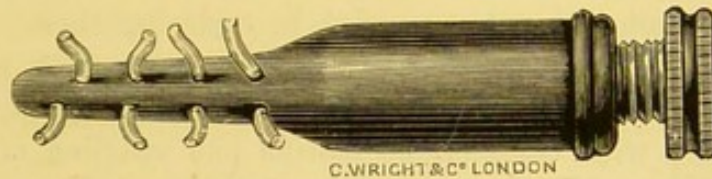
If, however, the piles are exposed to view during the examination, they will appear as reddish or

purplish tumours, varying in size and degree of firmness. Their surface is bright and polished, but irregularly dimpled rather than smooth. As a general rule, only a small portion of the pile comes into view, except in chronic cases, in which protrusion has been common for some time. When examining the bowel, the surgeon should ascertain whether any other disease or complication exists, *e.g.*, fissure, polypus, fistula, ulceration, stricture, or malignant disease.

Treatment of Internal Hæmorrhoids.—This may be discussed under two heads—(*a*) Palliative and (*b*) Radical.

In all cases of internal piles the cause of the malady should be discovered and treated or removed if possible. If, as often happens, there be evidences of

FIG. 12.



ALLINGHAM'S OINTMENT-TUBE.

hepatic congestion, attention to diet, the withdrawal of stimulants, and the use of alteratives and laxatives will relieve the hæmorrhoidal troubles; and this kind of treatment, if adopted in the early stages, may preclude the necessity for operative interference. It is especially indicated for cases in which the patients decline to submit to an operation. Suitable laxatives have been already mentioned (see page 75). An enema of cold water before each action of the bowels will aid in constringing the dilated vessels, and calomel ointment, or hazeline cream, or an ointment containing the subsulphate of iron (gr. x. to ʒj.), applied by means of a suitable instrument (Fig. 12, Allingham's, or Cousins'), will have a similar effect. While this treatment is being carried out, the patient

should adopt the recumbent position as much as his avocations will permit.

When internal piles become protruded and inflamed, the patient must be kept in the recumbent position, and warm lead-lotion will be found the best application; the diet must be low, and laxatives are generally indicated. If strangulation has occurred, and the hæmorrhoids cannot be returned within the bowel, or if they again protrude after replacement, it is best to attempt their radical cure, either by means of the ligature or some one or other of the methods to be presently described. This plan of treatment proved efficacious in the following case:—

CASE 1.—MR. A. D., aged thirty-five, had been troubled with hæmorrhoids for some years, and consulted Mr. Edwards in August, 1890. The piles had come down twenty-four hours previously, and the patient had not succeeded in replacing them. He complained of great pain, much aggravated on attempting to walk or sit down. Examination revealed two large sloughing internal hæmorrhoids, with considerable œdema and swelling of the surrounding skin. The patient was ordered to bed; cocaine was injected to relieve pain, and hot linseed-meal and charcoal poultices were applied to the anus. Two days afterwards ether was administered and ligatures were applied to the piles; several portions of œdematous skin were also removed. The patient made a good recovery, and was well in less than a month.

When strangulation of protruded hæmorrhoids is followed by gangrene, the ordinary treatment of this condition is indicated. Poultices of linseed meal and charcoal should be applied until the part becomes detached. Some amount of constitutional disturbance is likely to occur, and hæmorrhage may take place when the slough separates.

In many cases of internal hæmorrhoids, constitutional and local treatment, aided by suitable diet and habits of life, will relieve troublesome symptoms, and gradually cure the disease. Such a result cannot,

however, be attained without great care on the part of the patient, and in not a few cases the necessity for further treatment sooner or later becomes urgent. Oft-recurring hæmorrhage, even if only slight in quantity, frequent protrusion of the hæmorrhoids, causing much pain and distress to the patient, and repeated attacks of inflammation are the principal symptoms which render an operation necessary. It may be laid down as a general rule that an operation is required for the cure of hæmorrhoids which have reached the second and third stages (see p. 71).

Cases in which the bleeding affords relief to cerebral or other symptoms of congestion form the exceptions to this statement, inasmuch as an operation is likely to be followed by serious consequences. Mr. Cooper has known more than one case of death resulting from apoplexy after ligature of piles. In one case in which he assisted in the operation in the year 1863, the patient being a plethoric man and the hæmorrhoidal trouble extensive, death occurred from apoplexy fourteen days afterwards.

Destruction of the hæmorrhoidal tumours is the object aimed at in the various operations suggested and performed for the cure of piles. The destruction should be complete and lasting in its effects, and should be achieved in such a manner as to injure the mucous membrane as little as circumstances will permit, while the risk of bad consequences to the patient should be as small as possible. An operation fulfilling these conditions has, for some years, been practised at St. Mark's Hospital, and although many other methods have been suggested, the one referred to, viz., the application of a ligature, will be found suitable for ninety-nine out of every hundred cases. A description of this operation will first be

given, and the other methods will be afterwards discussed.

Instruments.—The following is a list of the instruments, etc., required in Salmon's operation of ligature:—

Salmon's hooks, in two or three sizes, with 2, 3, and 4 prongs respectively.

Salmon's scissors.

Artery forceps.

Plaited silk ligature, size No. 12.

Straight round silver rod, for insertion of cotton-wool after operation.

Cotton-wool and T bandage.

Vulcanite rectal tube or Benton's tampon in case of hæmorrhage.

Before operating, it is desirable that the bowels should be thoroughly freed from any fæcal accumulation, and accordingly a colocynth and blue pill should be given over night, and a saline aperient early in the morning of the operation. To make quite sure that the rectum is empty, an enema should also be administered two or three hours before the operation.

The patient, fully under the influence of an anæsthetic, is placed on the right side with the knees well drawn up towards the abdomen, the couch being so arranged that the buttocks are exposed to a strong light. The left buttock is raised by an assistant, and the surgeon thoroughly dilates the sphincter. This process is thus effected. The fore-fingers of both hands are inserted into the anus, and gradually separated as far as possible, so as to dilate the bowel. If sufficient force cannot thus be employed, the thumbs should be used instead of the fingers. At least three minutes should be thus expended, and when the resistance of the sphincter

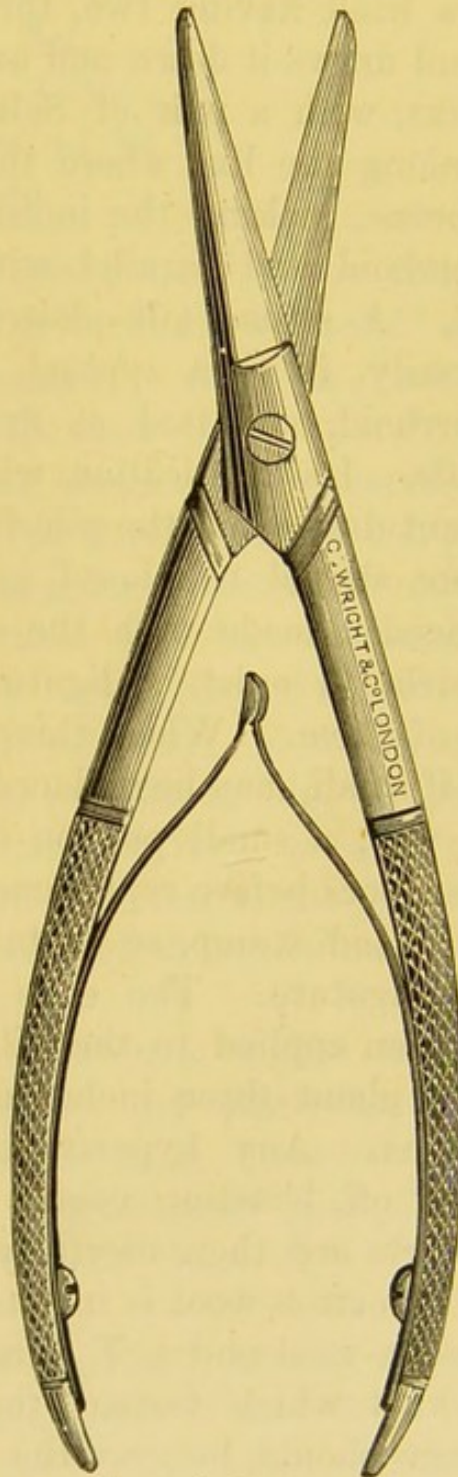
has subsided, the manœuvre may be regarded as successful; its effects should continue for at least

FIG. 14.

FIG. 13.



SALMON'S HOOK.



SALMON'S SCISSORS.

three or four days. This preliminary much facilitates the application of the ligatures, and lessens the tendency to, or altogether prevents, that spasmodic

contraction of the muscles which often causes great pain after the operation. Dilatation having been accomplished, the surgeon seizes each hæmorrhoid with a hook having two, three or four prongs (Fig. 13) and draws it down and away from its attachment; he next, with a pair of Salmon's scissors (Fig. 14), cuts along the line where the skin joins the mucous membrane, making the incision on each side of the hæmorrhoid and parallel with the long axis of the bowel. A strong silk-plaited ligature, well waxed previously, is then applied round the base of the hæmorrhoid, and tied as firmly and as high up as possible. Its application will be facilitated if the assistant draws out the pile from its attachment; the ligature should be placed in the groove formed by the incision made with the scissors. When several hæmorrhoids exist, a ligature must be applied to each of them. When this has been effected, the piles, if small, may be replaced within the bowel; if of large size, a small portion of each may be cut off with scissors before replacement, care being taken to leave a good stump, so as to guard against slipping of the ligature. The ends of the ligatures which have been applied to the piles may now be cut off, leaving about three inches of them protruding from the anus. Any hypertrophied tabs may now be snipped off, bleeding vessels being properly secured. The parts are then carefully sponged, and a small piece of cotton-wool is inserted into the anus; a pad of cotton-wool and a T bandage are finally applied. The knot which fastens together the ends of the bandage should be over the pad, so as to concentrate the pressure upon the anus.

After the operation, the patient must, of course, be kept quiet and in bed, and low diet should be prescribed. The bowels should be restrained from

acting for four days, for which purpose we usually order the following mixture :

℞ Liq. Ammon. Acet. ℥j.
 Tinct. Opii, ℥x.
 Tinct. Card. Comp. ℥j.
 Aq. Cinnam. ad ℥j.
 4 tis horis sumend.

On the evening of the fourth day a couple of aperient pills may be given, and followed in the morning by a saline draught. After an interval of two or three days, if the bowels do not act spontaneously, the aperients should be repeated. The diet should at this time be improved, but the patient should keep in the recumbent position until the separation of the ligatures has taken place; this usually occurs about the eighth day after the operation, when a little simple ointment should be applied daily to the bowel. The patient should, for another week or two, abstain from any form of active exercise. After three weeks or a month, the granulating surfaces will have healed and the cure will be permanent.

Retention of urine sometimes occurs after the operation, and may continue for some days. It is due to spasm of the urethral muscles. Warm fomentations over the pubes and genital organs should first be tried, and if these fail, a catheter must be introduced.

Hæmorrhage is an accident which sometimes attends operation on piles, and it may occur during the operation, a few hours afterwards, or when the ligatures come away.

Bleeding during the operation is easily dealt with.

Recurrent hæmorrhage appearing a few hours after the operation comes from some vessel or vessels

which were divided during the operation, but did not bleed at the time. This is certainly the most serious complication which attends the operation, and unless soon recognized and dealt with may speedily end in fatal collapse.

Secondary hæmorrhage, or that which occurs when the ligatures come away, is also serious, and the chance of its occurrence must not be lost sight of. It is generally venous in character and is most prone to occur in debilitated persons and in those whose constitutions have been impaired by excesses. The quantity of blood lost may be very great. This form of hæmorrhage is, in our experience, very rare, though we have heard of its occurrence after the use of the clamp and cautery.

Recurrent and secondary hæmorrhages require active treatment, inasmuch as the effects may speedily become serious. Recurrent hæmorrhage is usually due either to slipping of the ligature which has been applied to the pile, or to a small artery in the outer surface of the incision, which escaped notice at the operation. The bleeding is usually internal, and a considerable quantity of blood may be lost before the condition of the patient is such as to attract notice.

If the bleeding is all outside and but slight in quantity, a little extra pressure of pad and bandage may be sufficient to check it; but if a vessel is pumping, it should be secured with a ligature, and this may be done without general anæsthesia. If, however, there are general symptoms of loss of blood, such as a quick and feeble, perhaps intermittent pulse, great pallor, sighing respirations, coldness of extremities, clammy sweat, etc., hæmorrhage is evidently taking place inside the bowel. The surgeon should at once introduce his finger, previously well covered with ointment. There will probably be an

escape of blood and clot, and he will feel that his finger is embedded in a soft mass. The finger of the other hand may now be introduced, and the anus stretched, or rather opened, as after the forcible dilatation practised at the operation, there will be no resistance offered. The stretching of the orifice will be followed by the expulsion of large quantities of dark blood-clot. A vulcanite rectal tube (Fig. 15), having a diameter of at least seven-eighths of an inch, should now be inserted, and the bowel washed out through this by means of a Higginson's syringe or douche, with a warm sublimate solution, about 1 in 4,000.

The tube should be left in for at least twenty-four

FIG. 15.



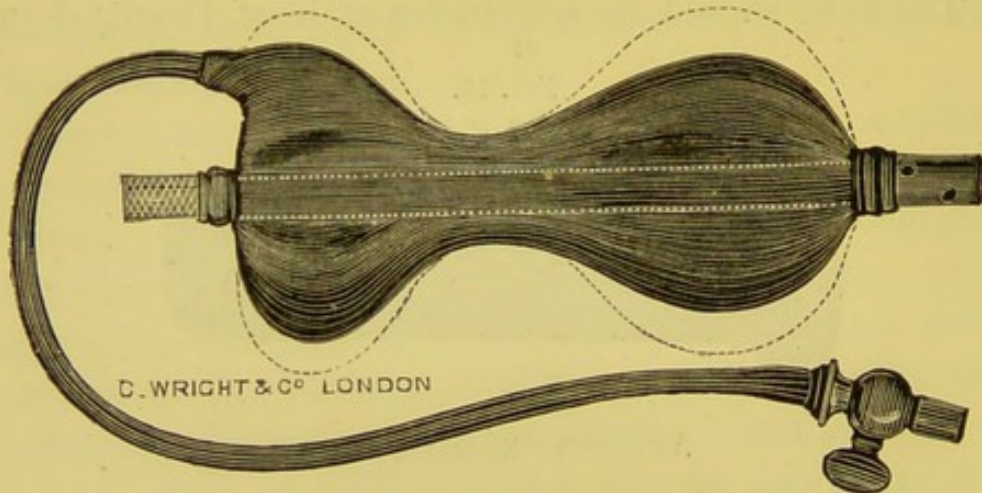
VULCANITE RECTAL TUBE.

hours, both to control bleeding and to allow of the discharge of old blood-clot. If the presence of the tube alone be insufficient to control the bleeding, absorbent cotton-wool or styptic wool may be packed around it.

There is another method of dealing with these forms of hæmorrhage. A sponge of suitable size and shape is armed with a double ligature, and after being wetted and squeezed dry, is passed several inches up the rectum. Below this, cotton-wool well covered with powdered alum is to be gradually introduced, until the bowel is filled. Another sponge is placed outside the anus and between the ligatures,

which are then pulled taut and securely fastened around it; in this way great pressure can be kept up on any bleeding spot. The tube is, however, most convenient for application and retention; it may be kept in for several days, opium and catechu being administered to restrain action of the bowels. A preparation of wool impregnated with iron is an excellent styptic in these cases. Dr. Ehrle's *Blutstillende Charpiebaumwolle* is well adapted for the purpose. The patient must, of course, remain in the recumbent position, and nutriment must be administered according to circumstances. Patients in whom

FIG. 16.



BENTON'S HEMOSTATIC BAG.

this hæmorrhage occurs are often much reduced, and nourishing food, tonics, etc., are generally required. If retention of urine follow the introduction of the plug, it must be relieved by the catheter. Accumulation of flatus is sometimes troublesome; it will not, however, occur if the tube be used. In from twenty-four to forty-eight hours the plug may be carefully removed; it is best not to promote any action of the bowels until several days have passed.

To check hæmorrhage from the rectum, the late Mr. S. Benton suggested an india-rubber tampon, such as is used in lithotomy, but having an hour-glass

contraction, thus resembling a Barnes's uterine bag. The tampon has been improved upon by Mr. Edwards (Fig. 16).

If proper precautions are taken, it rarely happens that the destruction of hæmorrhoids by means of the ligature is followed by any unpleasant results. Sometimes, however, the wound left after separation of the ligature refuses to heal kindly, and an ulcer results which gives rise to pain and the passing of a little blood on defæcation. This, however, seldom occurs except in debilitated subjects. It should be treated by rest, the use of laxative medicines to keep the stools soft and the application of solid cupri sulph. Black wash and a lotion of sulphate of copper (gr. iv. to ʒj.) injected into the bowel are also suitable for these cases.

Contraction at the anal orifice, and even higher up in the bowel, is another, though a very rare sequel. In the former case the stricture is due to the removal of skin; in the latter, to the cicatrices left after removal of a large area of piles. Risk of contraction at the orifice can be prevented by taking care not to include any integument within the ligature. Contraction of the mucous membrane may be cured by the daily use of a bougie for a few weeks.

Judged by the results, both as regards cure of the disorder, and almost entire absence of risk of any kind, the treatment of internal hæmorrhoids by the ligature must be pronounced most satisfactory. Many surgeons of large experience have never had a single fatal case, or one in which any serious symptoms presented themselves. Indeed so great is the freedom from danger and so certain are the results, that any improvement upon this operation is, in our opinion, scarcely within the range of probability. There are, however, other methods of operating

which require to be noticed, and these are—(a) the application of nitric acid to the surface; (b) the injection of acids and styptics into the substance of the pile; (c) removal by means of a clamp and cautery; (d) removal by means of a screw-crusher; (e) removal by means of the galvano-cautery; (f) the use of the Paquelin cautery; and (g) Mr. Whitehead's method.

(a) **The Application of Nitric Acid** has been largely employed by some surgeons, but it is suitable only for small capillary hæmorrhoids. These, as their name indicates, partake more of the character of dilated capillaries than of enlarged veins, and are usually of a bright red colour, or nævoid in aspect. It is easily applied, but it is impossible to destroy large hæmorrhoids by its means. For the treatment of capillary hæmorrhoids, in which there is no distinct tumour, but a circumscribed red vascular area of dilated capillaries, it may be applied on a glass rod or brush after the surface has been well dried. Any excess of acid should be neutralized by sponging the part with a saturated solution of bicarbonate of soda. A little oil should then be applied. A yellowish slough forms, leaving on detachment a superficial ulcer which heals with a certain amount of contraction. Care should be taken to apply no more acid than is *absolutely necessary* and to protect the parts around. If these precautions be neglected, there will be risk of serious hæmorrhage on separation of the slough, and likewise of contraction of the bowel when the ulcer heals. Strong carbolic acid may be used as a substitute for the nitric acid.

(b) **The Injection of Acids and Styptics into the Substance of the Pile.**—Carbolic acid, caustic potash, and solutions of subsulphate of iron are the principal remedies that have been used in this manner, and of these the first-named appears to be the most suitable.

During the last three years Mr. Swinford Edwards has treated over 100 cases of hæmorrhoids by means of carbolic acid injections. He uses the following formula :—Carbolic acid, gr. xij. ; glycerine and water, of each ʒj., or one in ten ; and for severe cases the strength is increased to one in five.* If the piles are not protruded an enema is given, and when the patient has strained down he is placed on a couch on his elbows and knees. A hypodermic syringe, with a needle of good lumen, having been filled with the solution, an injection of from two to five minims is made into the centre of each pile in turn, this being done slowly in order to give time for the fluid to diffuse itself. The piles are now anointed with vaseline and returned within the bowel. No action of the bowels should be permitted for twenty-four hours, and if protrusion occur the piles should be at once replaced. A mixture of the sulphates of iron and magnesia, dilute sulphuric acid, and infusion of quassia is ordered to be taken thrice daily, and an ointment of the subsulphate of iron (gr. x. to ʒj.) is to be passed into the bowel before and after each stool. As a general rule, after a week's interval the patient reports that bleeding and prolapse have lessened or disappeared. A fortnight or more should be allowed to elapse before the injections are repeated, though this may not be necessary. In the majority of cases, one injection proves sufficient.

The method is, of course, adapted only for internal piles, every variety of which may be thus treated, though it is less likely to prove advantageous in those which are indurated or semi-cuticular. Sloughing and prolapsed hæmorrhoids, which are irreducible, are beyond the reach of the remedy. There are certain cautions which it is desirable to

* "British Medical Journal," October 13, 1888.

mention. The rectum should be carefully examined in order to see that no other disease co-exists. Before operating, the bowel must be empty and the piles well protruded. If they do not appear when the patient strains down after an enema, the operation can scarcely be considered to be necessary. The needle must be inserted into the centre of each pile; and after the injection swelling rapidly occurs, so that the hæmorrhoid should be returned as soon as possible. The result of the injection is to cause inflammatory thickening and thrombosis; after a time the swelling shrinks, and finally disappears. The patient must be warned to replace the piles immediately should any protrusion subsequently occur. Neglect of this precaution will involve great and unnecessary pain.

The advantages of this method are that it does not necessitate confinement to bed or even to the house, and no anæsthetic is required; it causes little or no pain, and no risk to life from hæmorrhage, tetanus, erysipelas, or pyæmia. Abscess is a very rare complication. The patient commences to get better immediately after the first injection, and is able to attend to his usual occupation during the whole course of treatment. In this respect the operation contrasts very favourably with all others. Mr. Edwards' statistics of this method contain 111 cases, of which 103 were in hospital and 8 were private patients. Of the former—

- 63 were cured;
- 12 lost sight of;
- 8 much improved, probably cured;
- 2 underwent ligature afterwards;
- 18 still under treatment.

Of the latter—*i.e.* those treated in private—

- 6 were cured;

1 lost sight of ;

1 returned after three years.*

Amongst those cured there were four cases of sloughing of one pile, owing to prolapse and strangulation. In one case pain came on twenty-four hours after the injection, and for an hour or two, the patient says, he partially lost the use of his legs.

(c) **Removal by means of a Clamp and Cautery.**—In this operation each hæmorrhoid is drawn down by means of a hooked forceps, and a clamp is applied to its base. The pile is then cut off with a pair of curved scissors, and the cautery iron, at a dull red heat, is applied to the stump thus left. The operation is sometimes varied by searing off the pile by means of the knife of the Paquelin cautery. When the scissors are used, the division should not be made too close to the clamp. After the cautery has been applied, the clamp should be slightly opened, so as to see whether any blood escapes, in which case the cautery is to be again applied after the clamp has been tightened. Its hold is again to be relaxed, and if there be no appearance of hæmorrhage, the instrument can be removed. Oil is applied and the parts replaced within the rectum.

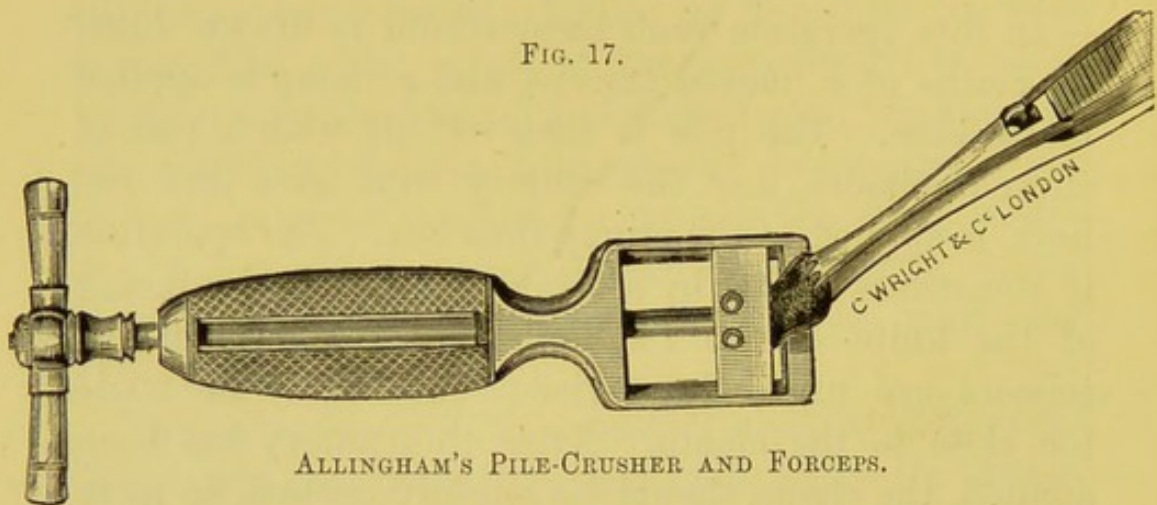
Several deaths from hæmorrhage have been known to take place after this operation, so that we do not consider it as safe as the ligature. Mr. Henry Smith, its great advocate in this country, claims that the cure is more speedy and attended with less pain. Moreover, Kelsey and other American surgeons now adopt this plan for the treatment of almost all cases.

(d) **The Removal of Piles by means of a Screw-Crushing Instrument.**—There are several forms of

* Those put down as cured had been under observation for six months (in most cases), without any recurrence of symptoms.

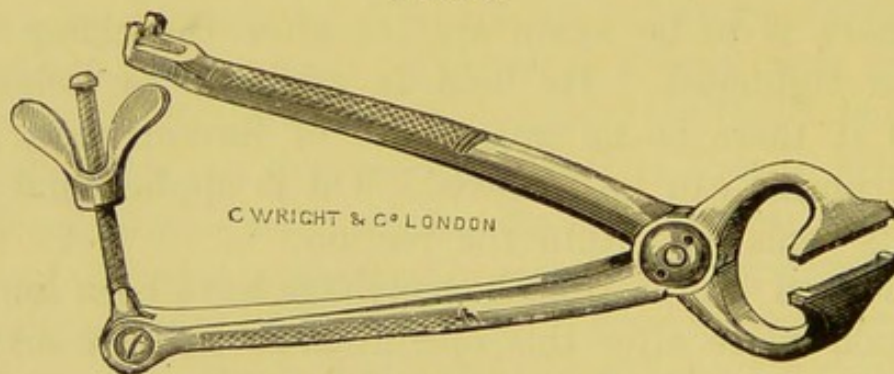
this instrument (Figs. 17 and 18): one is made of solid steel, and has at one end an open square in which a second bar of steel slides up and down. This bar is connected with a screw apparatus, but it has a sliding movement as well. The instrument is used in this way; the bar being withdrawn so as to open the square, the hæmorrhoid is drawn into the latter by means of a hook or vulsellum; the bar is pushed

FIG. 17.



ALLINGHAM'S PILE-CRUSHER AND FORCEPS.

FIG. 18.



POLLOCK'S PILE-CRUSHER.

down so as to compress the base and then screwed home as closely as possible. A knife or scissors are then used to detach the pile, and the crusher is kept in position for two or three minutes and then removed. Hæmorrhage rarely takes place after the operation, but may occur at the time owing to too great haste or insufficient power being used. Contraction is somewhat liable to ensue unless great care

be taken not to remove too much tissue with the hæmorrhoids.

We can only repeat that, judging by the results of our own experience, the use of the ligature is, as a general rule, to be preferred to any of the methods just described. For a certain proportion of cases other plans are doubtless worthy of adoption. Mr. Edwards thinks that the treatment of piles by means of the crusher has much to recommend it, and that it is particularly advantageous for cases in which time is an object of importance. Patients can generally be allowed to move about within from four to seven days of the operation, whereas a longer period of recumbency is usually required after the use of the ligature.

In the two following cases recovery was complete a week after undergoing this treatment:—

CASE 2.—Mr. F. H., a farmer, aged fifty, was operated on by Mr. Edwards, ether being administered by his friend, Mr. Rickard Lloyd. After forcible dilatation, two large internal piles were removed with Allingham's crusher, which was kept *in situ* in dealing with one pile for two, and with the other, for three minutes. On unscrewing, in both instances, there was slight loss of blood. Two external tabs were also removed; and a wool-pad sprinkled with powdered iodoform was then applied. Retention of urine followed, but lasted only twenty-four hours; it was relieved by catheterism. On the fourth day the bowels were moved with the aid of *ol. ricini* ℥j, and on the eighth the patient was out for a walk. On examination on the following day no wound could be detected in the bowel, and the patient expressed himself as feeling quite well.

CASE 3.—Mr. S. D., a gentleman from Australia, who had suffered from bleeding and prolapse for eighteen months, placed himself under Mr. Edwards' care. He was troubled with one large internal hæmorrhoid, and consented to an operation if it would not prevent his leaving London for Australia within ten days. As time was all-important, the crushing operation was selected. Allingham's instrument was used, for Mr. Edwards finds it lighter and more handy than Pollock's or Benham's. As in the former case, forcible dilatation was first practised, ether having been

administered by Mr. Lloyd. A morphia suppository was inserted after the operation, and the patient complained of little or no pain. The bowels were opened on the fourth day; on the eighth the patient got up and the anus and rectum appeared quite normal. On the tenth day he left for Australia, feeling quite well.

Cocaine has received a fair trial at St. Mark's Hospital in these operations, and has acted very satisfactorily in cases where, owing to thoracic disease, the administration of ether or chloroform was contra-indicated. Three or four minims of a five per cent. solution are used for injection by means of an ordinary hypodermic syringe, which should be inserted at the junction of the skin and mucous membrane of each pile, *i.e.* at the site of the incision. After an interval of five minutes the operation may be begun, and without causing pain. Merely mopping and painting the piles with the solution are absolutely useless. The subcutaneous injection of cocaine cannot, however, be regarded as a perfect substitute for general anæsthesia, inasmuch as cases sometimes occur in which after the first few steps have been taken a more prolonged operation than was previously contemplated is found to be necessary. Under such circumstances general anæsthesia can scarcely be dispensed with.

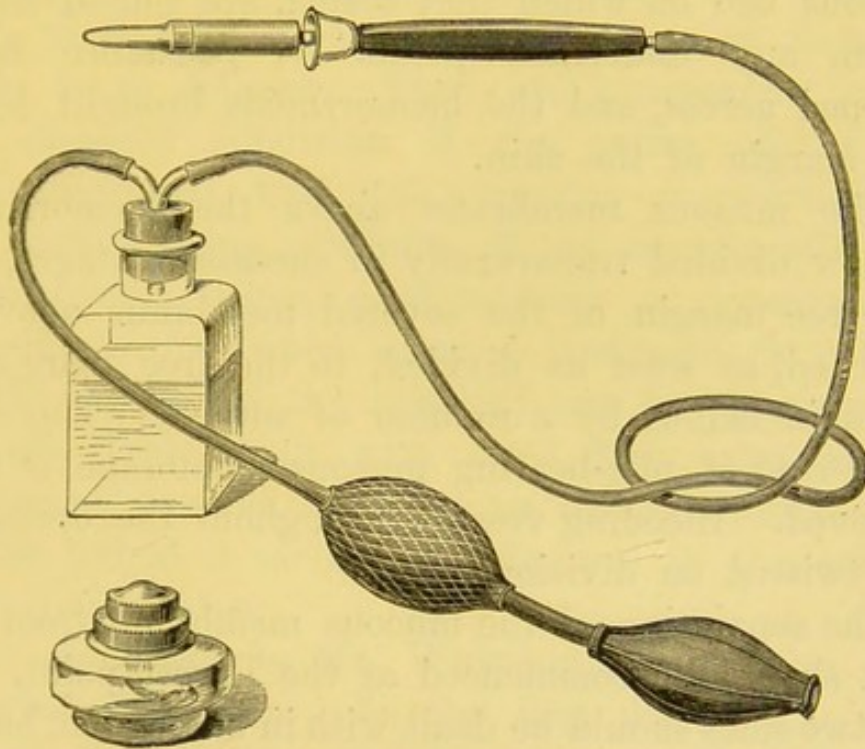
(*e*) **Removal by means of the Galvanic Cautery.**—Hæmorrhoids may be removed by means of a galvanic wire *écraseur*; but the battery is cumbrous, and requires special knowledge in order to use it properly. We do not consider that this plan has much to recommend it.

(*f*) **Igni-puncture by means of the Paquelin Cautery.**—The treatment of hæmorrhoids by thrusting a red hot cautery into their substance is by no means new; but the suggestion has recently been made*

* "Lancet," 1877, vol. i. p. 229.

that Paquelin's instrument (Fig. 19) should be used in this manner.* The method of operating is very simple: the patient being under the influence of an anæsthetic, the cautery is thrust into the centre of each pile, allowed to remain for a few seconds, and then withdrawn. If the tumours be large, the cautery should be introduced at several points. The result is the production of more or less consolidation in the

FIG. 19.



PAQUELIN'S CAUTERY.

tissues of the pile; but complete shrinkage is by no means certain to follow, and the formation of abscess is not infrequent.

(g) **Whitehead's Method of Removing Hæmorrhoids by Excision.**—The details of this method are as follows: †—The patient, under the complete influence of an anæsthetic, is placed on a high narrow table, in the lithotomy position; the sphincters

* When used for igni-puncture, the point of the cautery should be much finer than is represented in the woodcut.

† "Brit. Med. Journ.," 1887, vol. i. p. 449.

are thoroughly dilated, so that the hæmorrhoids can easily descend. By the use of scissors and dissecting forceps, the mucous membrane is divided at its junction with the skin round the entire circumference of the bowel, every irregularity of the skin being carefully followed. The external and the commencement of the internal sphincter are then exposed by a rapid dissection, and the mucous membrane and the attached hæmorrhoids, thus separated from the sub-mucous bed on which they rested, are pulled bodily down, any undivided points of resistance being snipped across, and the hæmorrhoids brought below the margin of the skin.

The mucous membrane above the hæmorrhoids is now divided transversely in successive stages, and the free margin of the severed membrane above is attached, as soon as divided, to the free margin of the skin below, by a number of sutures. The complete ring of pile-bearing mucous membrane is thus removed. Bleeding vessels throughout the operation are twisted on division.

The separation of the mucous membrane from the skin should be commenced at the lowest point, and the two sides should be dealt with in succession, before completing the circle above. The incisions should be made through the mucous membrane, and not through the skin. Before closing the wound, iodoform should be insufflated between the surfaces; carbolised silk is the best material for the sutures, which come away of themselves. The introduction of a suppository containing two grains of extract of belladonna, and the application to the parts of powdered iodoform, a strip of oiled lint, and a T bandage, constitute the after-treatment. An aperient is given on the morning of the fourth day, and the patient can resume work within a fortnight. Mr.

Whitehead contends that this method of operating is in perfect harmony with the best principles of surgery; that it can be performed with instruments always at hand; that it is a radical cure; safe as regards consequences; that the subsequent pain is comparatively slight; the loss of blood during the operation very small, and the risks of secondary hæmorrhage less than those attendant upon the use of the clamp or ligature. Mr. Whitehead's view with regard to the nature of hæmorrhoids is as follows: They are component parts of a diseased condition of the entire plexus of veins associated with the superior hæmorrhoidal, each radicle being similarly, if not equally affected by an initial cause, constitutional or mechanical. He believes that when surgical treatment is called for, the extent of the mischief can be appreciated and effectively dealt with by a free exposure of the diseased vessels, and that no method fulfils this purpose unless it include the removal of the entire hæmorrhoidal area.

The objections to Mr. Whitehead's operation are somewhat numerous. In the first place, it is not easy of performance, and the time required varies from twenty to thirty minutes. Secondly, the bleeding is usually much more free than in the other methods of operating. Another objection consists in the fact that there is some risk of stricture of the rectum if the entire circumference be removed. The ligatures employed to unite the mucous membrane with the skin may cause ulceration and fistula. The method is unsuitable whenever complications exist; and, lastly, in the majority of cases, hæmorrhoids can be cured by a far less serious operation. Mr. Herbert Allingham has devised an instrument which facilitates the first steps of the operation.

CHAPTER VI.

FISTULA-IN-ANO.

Fistula is one of the most common affections to which the lower part of the bowel is subject. It consists of a passage, lined by granulation tissue, and situated in or near the wall of the lower part of the rectum. It originates in an abscess, the starting-point of which may be either outside the bowel or an ulcer in the

FIG. 20.

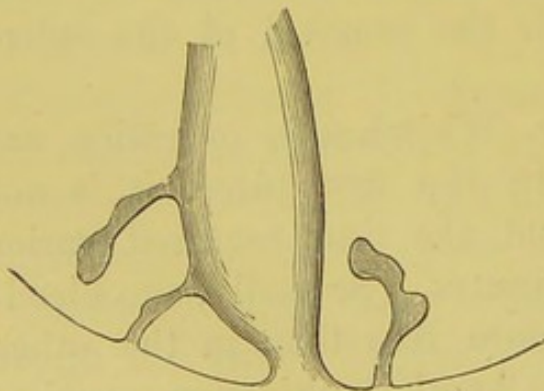


DIAGRAM SHOWING COMPLETE FISTULA, BLIND INTERNAL, AND BLIND EXTERNAL FISTULA.

FIG. 21.

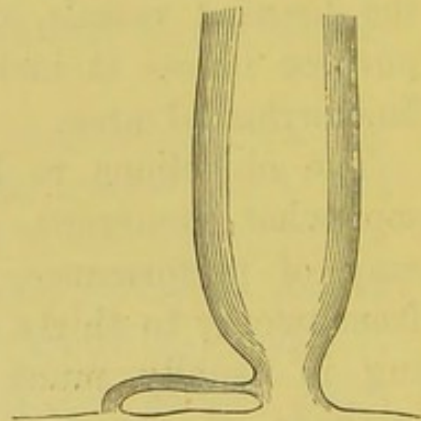


DIAGRAM OF FISTULA HAVING ITS INTERNAL OPENING IN THE ANUS. It might be called a Complete External Fistula.

mucous membrane, through which irritant matter passes into the connective tissue. When an abscess forms in the anal or rectal region and bursts externally, and the track fails to close, it constitutes what is termed *blind external fistula* (Fig. 20). This kind of fistula is most frequently the result of a subcu-

taneous abscess close to the anus. When there is an opening into the bowel alone, it is called a *blind internal fistula*; and when there are two openings, one in the bowel and the other in the integument, and these are connected by a sinus or passage, the fistula is said to be *complete*. We have met with instances of complete fistulæ whose internal orifices were so low down as scarcely to be considered as in the bowel at all (Fig. 21). On the other hand, the internal variety may have two openings in the bowel, one high and

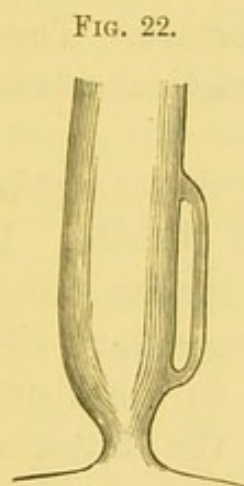


FIG. 22.
DIAGRAM OF COMPLETE
INTERNAL FISTULA.

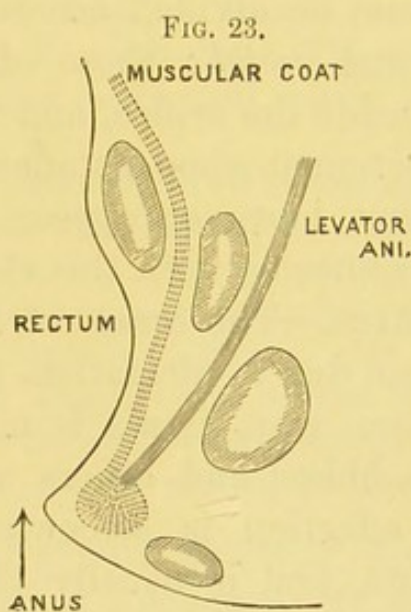


FIG. 23.
DIAGRAM SHOWING THE VARIOUS POSITIONS OF
ABSCESSES IN CONNECTION WITH THE RECTUM.

the other low down, with a simple sinus connecting them; this might be called a *complete internal fistula* (Fig. 22). Both these varieties are rare, and the treatment of the latter is the same as for a blind internal fistula. Mr. Swinford Edwards* has pointed out that internal fistula is sometimes due to the formation of an abscess between the bowel and the levator ani muscle, or in the so-called "peri-rectal space." An abscess, therefore, may be situated in one of the four following localities: (1) subcutaneous

* "St. Bart. Hosp. Reports," vol. xiv. p. 354.

tissue; (2) submucous tissue; (3) ischio-rectal fossa; (4) peri-rectal space (Fig. 23). Usually, this order is that of their gravity; the treatment of the first variety is in most cases a simple matter, while that of the fourth may extend over three or even six months. As a matter of course, the tendency in a blind internal fistula is to become complete, as suppuration is apt to recur and advance towards the surface. A similar cause may convert the blind external variety into the complete form. *Fistulæ* may also be divided according to their position into *anal* and *rectal*; those of the former class opening just inside the orifice, and those of the latter piercing the rectum at some distance from the aperture. There does not, however, appear to be any practical advantage connected with this classification.

Causes.—The *causes* of *fistulæ*, with the exception of those due to ulceration, are somewhat obscure. In a general way, fistula is most common among tailors and cobblers and others who lead a sedentary life. The affection is somewhat frequent in phthisical patients, and is usually the result of the breaking down of the tuberculous deposit in the bowel. Irritating matters pass into the connective tissue and cause inflammation and suppuration. In these cases where there is an external opening, it is generally undermined and of a bluish tint; the internal orifice is often large and irregular, and the fistula secretes a thin, unhealthy pus. Another cause of fistula is a suppurating thrombotic pile, and anal fissure frequently gives rise to a small dorsal fistula. Fistula in children may be due to the presence of ascarides. Fistula may likewise be caused by injuries to the part, and by foreign bodies, as bones or pins, which have been swallowed; in some cases, the formation of an abscess in the ischio-rectal fossa has been preceded

by exposure of the part to cold and damp. A similar result is sometimes due to necrosis of the pelvic bones. Fistulæ often coexist with ulceration and stricture of the rectum.

The following cases are examples of fistula produced by anal fissure:—

CASE 4.—Mr. G. B. consulted Mr. Edwards for symptoms of fissure (great pain at and after stool) from which he had suffered for about a year. He stated that he had been treated for piles. Examination revealed a well-marked fissure, with internal and external tabs. On pressure over the latter, a drop of pus was seen to exude from under it, indicating the existence of a small sinus. The operation for fissure and fistula was performed in the usual manner, and the patient made a rapid recovery.

CASE 5.—G. P., aged fifty-nine, had suffered for two months from great pain at and for several hours after defæcation: a month ago noticed a little discharge from the bowel. On examination, a well-marked fissure was seen, with a small fistula extending outwards from it, and opening through the skin towards the coccyx. Mr. Cooper operated for fistula in the usual manner. The account given of the symptoms showed that the fissure was developed first, and subsequently gave rise to the burrowing which constituted the fistula.

Fistula-in-ano may occur at any period of life, and is sometimes congenital. It is comparatively rare in very young subjects, and most common in middle life; males are more liable to it than females. The following case is an instance of congenital fistula:—

CASE 6.—A male child, one year old, was admitted into St. Mark's with a small fistula on the right side. His mother stated that she had noticed it very shortly after the child's birth; it had been discharging ever since. The little patient made a good recovery after operation.

Symptoms.—In almost every instance the development of a fistula is preceded by the symptoms of abscess, the site and extent of which will determine their severity; and sometimes, in addition, by those of ulceration of the bowel. In a few cases the precursory symptoms are very slight; after a little pain

and swelling the integument gives way and more or less purulent fluid exudes. There is often great pain when a large abscess is forming. The external aperture of a fistula is more often at the side of the anus than in front or behind it. It is generally round and has elevated margins; and is sometimes partially occluded by one or more button-shaped granulations. In other cases it is narrow and slit-like and concealed within folds of skin near the anal orifice. There are sometimes several external openings, at varying distances from each other, the intervening integument being discoloured and indurated. In bad cases the perinæum and buttocks may be completely riddled with fistulous openings, and the intervening skin is not infrequently ulcerated, and large irregularly shaped open sores are thus formed. The inner opening is usually small and single, several external apertures being far more common than a plurality of internal ones; but two or three of these latter not infrequently coexist, more especially when ulceration has been the starting-point. In most cases the internal opening is within one inch of the anus, and between the two sphincters; it is usually situated dorsally and in the middle line.

There often seems to be a definite relation between the external and internal orifices of a fistula; for fistulæ having their external apertures situated behind a plane passing transversely through the centre of the anus usually have their internal orifices in the middle line posteriorly, and therefore have a somewhat curved course (Fig. 24); whereas those which are anterior to this supposed plane generally have their internal openings immediately opposite the external, and on the same side, thus constituting the simplest form of complete fistula. Our friend and colleague,

Mr. Goodsall, first directed our attention to this point. It will frequently be found that these simple fistulæ run over and not under the external sphincter, so that when they are laid open, no division of the muscle takes place. The recognition of this relationship between the external and internal orifices of a fistula is a decided aid towards the discovery of the internal opening, when small and not well marked; its site can then be confirmed by the passage of a probe-pointed director through it. In some cases the track runs through both sphincters, and sometimes it passes in the connective tissue external to

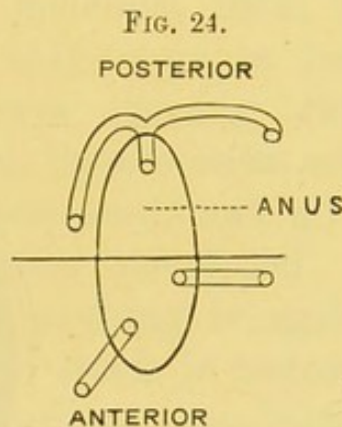


DIAGRAM SHOWING RELATION OF EXTERNAL OPENING OF A FISTULA
TO INTERNAL ORIFICE.

these muscles and opens high up in the rectum. In this latter variety the external opening is generally near the anus. After a fistula has existed for some time, its walls become hard and contracted, and on deep pressure can often be felt like the stem of a clay pipe under the skin.

The communication between the bowel and the integument by no means always forms the whole of the sinus, for the latter often extends up outside the intestine for some distance above the opening into the bowel (Fig. 25). Moreover, two distinct fistulæ may coexist. When fistula accompanies stricture, the sinuses are apt to be numerous and extensive.

A peculiar variety of fistula is known by the name of **horseshoe fistula**. This is a term applied to a fistula having one or more external orifices on either side of the anus, and an internal one in the middle line behind (see Fig. 26). The outer openings may be equi-distant from the anus, and quite anterior to it; or they may be at different distances, and placed wide from the anal orifice far out on the buttock. The abscess which precedes and gives rise to this variety of fistula is situated at the lower and back part of the bowel, and instead of breaking through the skin

FIG. 25.

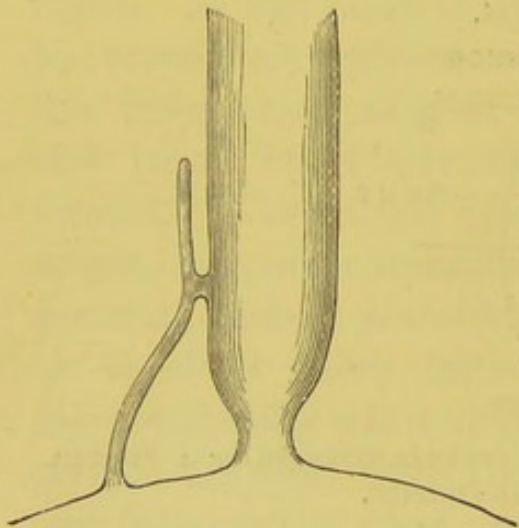
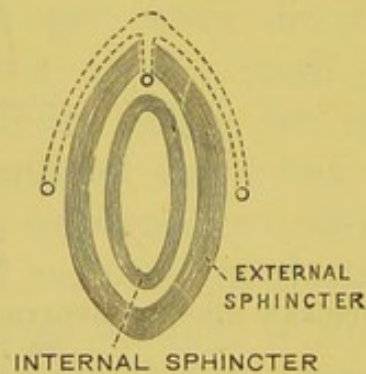
DIAGRAM OF COMPLETE FISTULA WITH
HIGH-LYING SINUS.

FIG. 26.

INTERNAL SPHINCTER
EXTERNAL SPHINCTER
DIAGRAM OF TYPICAL HORSE-
SHOE FISTULA.

immediately over it (being stopped presumably by the fibrous raphé extending from the tip of the coccyx to the anus, also by the insertion of the levator ani and superjacent sphincter), it courses forwards on either side, escapes from under the sphincter, and breaks through the subcutaneous tissue and skin.

The discharge from a fistula varies in quantity and quality; it is generally slight and watery after the condition has become established, but as a result of fresh irritation it is liable to be increased in quantity and purulent in character. The constant oozing,

however, is a cause of much discomfort to many patients; the parts become sodden and irritable, an eczematous eruption is often developed, and sometimes there are warty growths, which become a source of fresh trouble. It is rare for fæcal matter to escape externally, as the inner opening is usually small and may be covered by a fold of mucous membrane; but when ulceration is present, this opening is apt to be wide, and fæces are liable to pass through. In most cases of complete fistula there is escape of flatus from time to time. So long as the track of the fistula and the external opening remain patent, there is generally little, if any, pain complained of, but only more or less uneasiness; if, however, the lower opening close, or the track become obstructed, the secretion accumulates, tension and pain are experienced, and all the symptoms of abscess soon become developed. These disappear when an external opening is again established and the patency of the track is restored. Mr. Edwards once noticed a curious complication in a case of fistula, viz., the protrusion through the track of a polypoid growth. The latter presented at the external orifice in the form of a roundish mass, like a small mulberry, which could be pushed back into the bowel through the fistula. It had, of course, an elongated pedicle.

It rarely happens that any form of fistula-in-ano heals spontaneously, and there are several reasons to account for the permanence of the condition. In the early stages the walls of the abscess are kept asunder by the accumulation of the pus, which moreover is apt to become putrid, and then prevents the development of healthy granulations and favours ulceration. In addition to this, owing to the surrounding parts, the walls of the abscess and of a

fistulous track cannot be retained in a condition of rest, which is essential for the healing process. Not only during defæcation, but in various movements of the body and during respiration, the structures in the anal region are disturbed, and the suction-like action of the sphincters upon the ischio-rectal fossæ tends in an especial manner to draw open any cavity in that situation. Other causes which prevent healing are the liability of the secretion to become retained, and of irritating substances to enter the inner opening of the fistula. The action of the sphincters constitutes the greatest obstacle to the healing process. But in spite of these unfavourable conditions, spontaneous healing sometimes occurs, while partial adhesions of the walls of fistulous tracks are by no means uncommon.

The **diagnosis** of fistula-in-ano rarely presents any difficulty, provided that the parts be carefully examined. The patient perhaps complains only of discomfort and discharge and moisture about the anus. For purposes of examination the patient should be placed on whichever side is most convenient, with the legs drawn up towards the abdomen. The right side is the more convenient for most surgeons, but it is generally best to place the patient on the side on which the swelling, etc., exist. A male patient may be placed in the genu-pectoral position, with the buttocks towards the light. The parts round the anus should be separated and felt by the fingers, and when an external orifice exists it often comes into view at once. When the fistula is of the *blind internal* variety, some amount of thickening and induration is generally perceptible on deep pressure being made at some spot near the anus. Having discovered an external opening, a probe-pointed director may be gently passed into it, and

allowed, so to speak, to find its own way along the track. It will sometimes pass straight into the bowel; but if an obstacle is experienced no force must be used, the forefinger of the other hand should be passed into the bowel and an endeavour made to find whether an internal opening exists. In a complete fistula the opening can generally be felt by the finger and the director can be guided towards it. The opening, as already mentioned, is often considerably lower than the upper end of the fistulous track. There may, of course, be more than one internal opening, and when single it may not be situated in the bowel opposite to the external aperture. In examining for a fistula it is well to discover whether the bowel is in other respects normal, or whether hæmorrhoids, ulceration, stricture, or malignant disease are likewise present.

If there be no internal opening the finger in the rectum will feel a layer of tissue between it and the director. If, however, an internal opening be suspected to exist, but cannot be discovered, it is well to introduce a speculum into the bowel, and then, by means of a syringe, to inject a little milk or coloured fluid into the track of the fistula. When the case is one of blind internal fistula, the opening can sometimes be felt by the finger, and if a speculum be previously introduced, a bent probe can be passed into it. This variety is much less common than the others, and, when it exists, it does not necessarily cause any external change in the parts about the anus. It is often associated with an ulcer in the bowel, from which sinuses may run both upwards and downwards.

As a general rule, for diagnostic purposes, no probing is necessary. The external opening can be seen; the track leading from it can be felt, and if an

internal opening exist, as it does in the majority of cases, it should be detected by the finger in the bowel. Patients naturally dislike instruments, and the speculum, probe, etc., should be used as little as possible.

In all forms of fistula, but especially in the complete variety, diverticula from the main track not infrequently exist, and these should be carefully searched for at the time of the operation. An intermittent discharge is suggestive of the presence of diverticula: when the discharge is profuse and purulent a large cavity is indicated; when slight and watery, and apparently continuous, there is probably an old-standing and uncomplicated fistula. The peculiarities of fistulæ in tuberculous patients have already been noticed (see page 102), and will be further described in a subsequent chapter.

Treatment.—Before describing the treatment applicable to fistulæ, it is well to point out the measures which should be adopted for preventing their formation. To abscesses in the neighbourhood of the rectum, the same rule applies as to all other acute collections of pus, viz., that a free opening should be made as soon as possible. The best method of operating is to place the patient on a couch on the side on which the swelling exists; the forefinger of the left hand is then introduced into the bowel, and pressed against the swelling so as to make it more prominent towards the surface. In the case of a subcutaneous abscess, a curved bistoury is thrust into the outer part of its circumference, and a free incision made towards the anus. Unless the abscess be very small, a crucial incision will be advantageous. In dealing with an abscess in the ischio-rectal fossa, the incision should be made from behind forwards, and, if the suppuration be extensive, it may be necessary to make another cut at right angles to the first and in an outward direction,

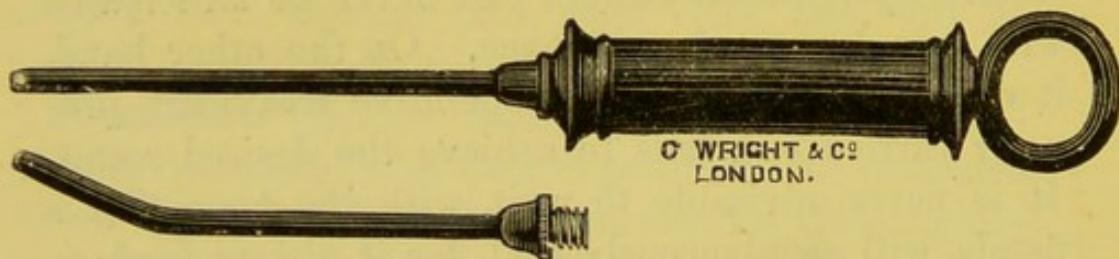
thus making a T-shaped incision. Into the wound thus made, a piece of absorbent cotton-wool should be passed, in order to prevent union by first intention, and a hot linseed-meal poultice should be applied as soon as convenient. After a few hours the wool may be removed, but poultices and hot ablutions should be continued for some days, the cavity being syringed out at least twice daily with weak carbolic acid solution or Condy's fluid and water. The wound should heal from the bottom by granulation. After a few days, if a local stimulant be necessary, a lotion of sulphate of zinc or sulphate of copper may be applied.

When a fistula already exists, an operation of some kind is necessary for its cure, in the large majority of cases. Spontaneous closure can never be anticipated with any degree of confidence. On the other hand, it very seldom happens that operative treatment, properly carried out, fails to achieve the desired result. It is never advisable to wait, with the hope that a fistula will spontaneously heal, for it always tends to burrow and grow worse. A blind external fistula may, and very often does, remain without change for a considerable time; but the other two varieties, and especially the blind internal form, are almost certain to become aggravated as time goes on. In the case of the latter, renewal of the suppuration is the general course, with the formation of sinuses and an external opening as the ordinary results, and when this stage has been reached, fresh suppuration and multiplication of sinuses are but too prone to occur. An operation affords the only means whereby the occurrence of these evils may be prevented; and the operation in its simplest features consists in laying open the track of the fistula, and dividing the parts between it and the rectum, including probably the external sphincter.

It sometimes happens, however, that patients ex-

hibit a great aversion towards any kind of operation, and inquire whether any other method can be practised with any chance of success. If the fistula be uncomplicated, there are a few plans that may be tried in such cases, but the patients must be warned that failure is highly probable, and that much time and attention will assuredly be required. The setting up of healthy action in the fistulous track is the object to be aimed at, and this may be accomplished by the application of various stimulants. But it is generally necessary in the first place to enlarge the external opening, so that any discharge may have a free exit. To excite healthy action along the track, pure tincture

FIG. 27.



SYRINGE FOR INJECTING FISTULOUS TRACKS.

of iodine injected into the sinus forms the best application. In successful cases the track is gradually closed by granulations. Other stimulants, *e.g.*, sulphate of copper and nitrate of silver have sometimes been tried, and with good results.

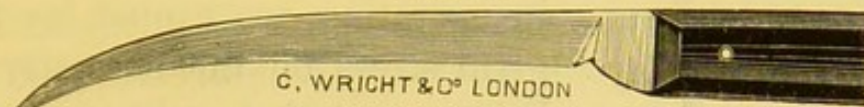
For making the injections, this syringe* (see Fig. 27) will be found very useful, and especially for sinuses lying high up in the bowel. This plan of treatment is more likely to be successful in blind external fistulæ than in the complete form.

In the large majority of cases of fistula, the laying

* It was originally made for Mr. Edwards by Messrs. Arnold, of Smithfield. Messrs. Wright, of Bond Street, also keep these syringes, which are furnished with nozzles of different lengths and curves.

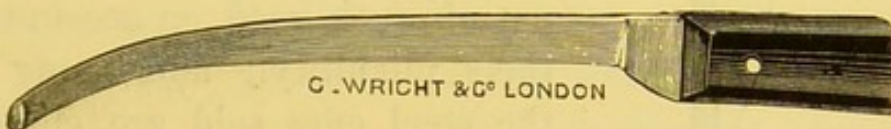
open of the sinus from end to end is the only method that can be recommended. By way of preparation, as it is desirable that the bowels should not be moved for some days after the operation, some aperient should be given on the previous day, and it is well to give an enema in the morning in order to make sure that the rectum is empty. The surgeon should be provided with the following instruments, etc. :—

FIG. 28.



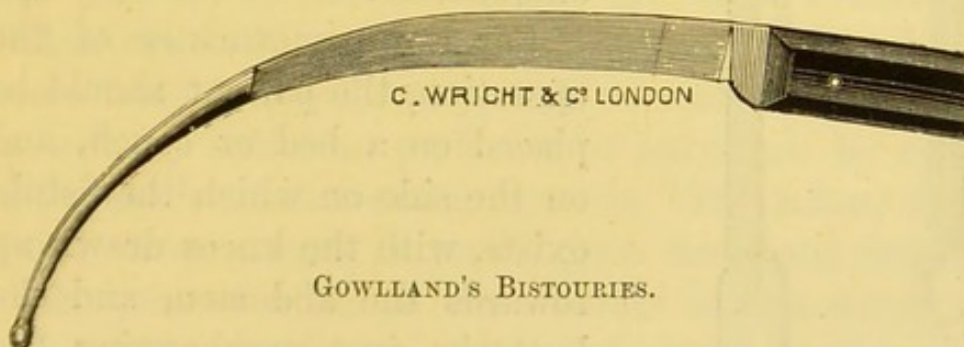
SHARP-POINTED CURVED BISTOURY.

FIG. 29.



BLUNT-POINTED CURVED BISTOURY.

FIG. 30.

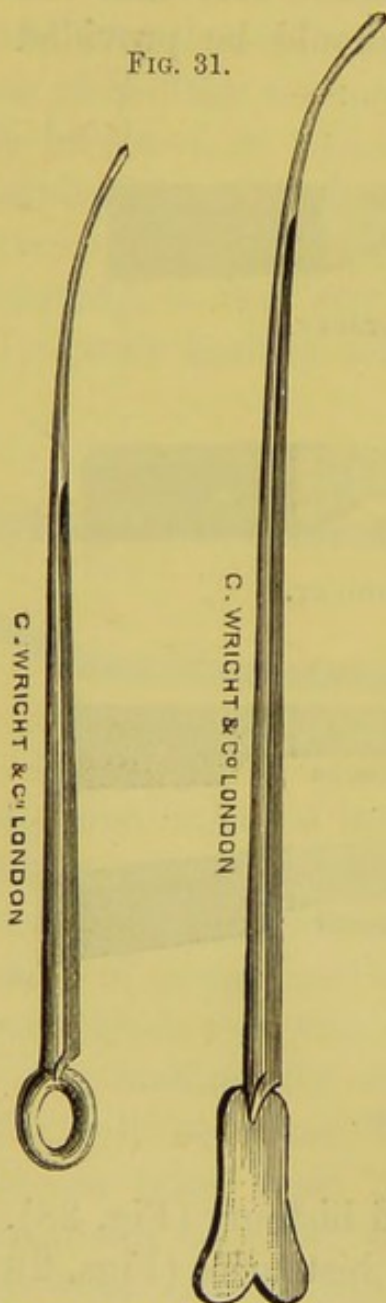


GOWLLAND'S BISTOURIES.

1. A strong sharp-pointed curved bistoury (Fig. 28).
2. Several blunt-pointed curved bistouries (Figs. 29 and 30).
3. A straight blunt-pointed bistoury.
4. Several steel probe-pointed directors, the probe points being of various thicknesses (Fig. 31).
5. An ordinary steel director.

6. Salmon's scissors and forceps (Figs. 11 and 14).
7. Several hæmostatic forceps.
8. A vulcanite rectal tube.
9. Elastic ligature apparatus.
10. Silk ligatures.

11. Sponges.
12. Cotton-wool.
13. Bandages.



PROBE-POINTED DIRECTORS.

For convenience and success in operating, we cannot lay too great stress on the necessity of being provided with several probe-pointed steel directors of various shapes. Silver ones are not of much good, on account of their pliability; and many of the steel ones sold are clumsy and their points are too thick. This may be considered a small matter, but we have seen it make all the difference between failure and success.

For the performance of the operation, the patient should be placed on a bed or couch, and on the side on which the fistula exists, with the knees drawn up towards the abdomen, and the buttocks just overhanging the side of the bed. The administration of an anæsthetic is most advisable, though simple fistulæ may be slit up painlessly after the subcutaneous injection of π v. to x. of a 5 per cent. solution of cocaine. A probe-pointed director is then to be passed along the track of the fistula as far as its internal opening.

If this be near the anus, the forefinger of the left hand is introduced into the bowel, and the end of the director can be easily made to protrude from the anus. The parts lying upon the director are then to be divided with a sharp bistoury.

In strumous cases the granulations lining the track should be scraped away with a Volkmann's spoon. When the external orifice is puckered and the skin drawn in, Salmon's back cut may be adopted with advantage. This method consists in incising the roof of the fistula and the external aperture with a blunt-pointed bistoury, thus relieving all tension. The healing process will be facilitated by removing with scissors all overlapping edges of skin and mucous membrane.

The simple procedure above described may not be practicable when the internal opening is more than an inch from the anus. A probe-pointed bistoury should then be introduced into the track upon a director, so that its point impinges upon the finger in the rectum. The necessary incision is then made as the instrument and the finger are both withdrawn. When the track of the fistula is much indurated, and more force is therefore required to make the incision, it will be better to perform the operation by means of Salmon's scissors and a director. The latter, which has a deep groove, is passed into the sinus and the probe-pointed blade of the scissors is run along the groove, the forefinger of the left hand having been introduced into the bowel. The parts are then divided with the scissors.

A common error in operating consists in not keeping to the fistulous track; owing either to impatience or insufficient delicacy in manipulation, the point of the director is thrust through the sinus-wall, and is then free to roam whither the

operator wills in the cellular tissue of the part. In this way we have seen a portion of the main track of the fistula left, whilst considerable incisions, altogether unnecessary, have been made through skin and subcutaneous tissue. This accident can always be avoided by taking plenty of time over the operation, and by careful sponging of the track already laid open, which ought always to show the granulation-tissue lining it.

With regard to a sinus extending above the internal aperture, authorities differ as to the proper

FIG. 32.

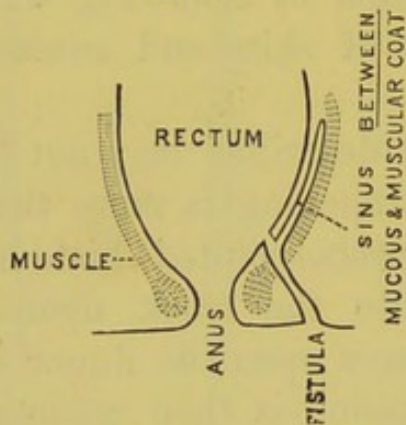


DIAGRAM SHOWING POSITION OF HIGH-
LYING SINUS BETWEEN MUCOUS
AND MUSCULAR COATS.

FIG. 33.

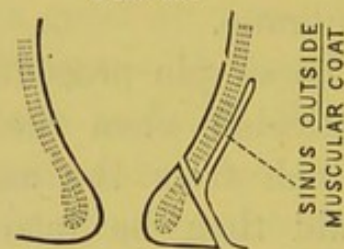


DIAGRAM SHOWING SINUS OR
FISTULA LYING OUTSIDE
MUSCULAR COAT.

course to pursue. Some insist upon its being laid open; others, equally well qualified to give an opinion, hold the opposite view. We consider that it depends upon the position of the sinus with regard to the muscular coat (Figs. 32 and 33). If it be submucous, there can be no reason why it should not be freely laid open, and this, we think, is the best method of dealing with it. If, on the other hand, it extend outside the muscular layer, it is better left alone, especially if its division involves also that of the internal sphincter; for where both sphincters have been divided, incontinence may

follow, and the patient will be placed in a most uncomfortable and distressing position.

In operating for the cure of blind external fistulæ, a spot can generally be found where only a thin layer of tissue intervenes between the finger in the bowel and the director in the track of the fistula. Through this the point of the director should be carefully pushed, and the operation is then completed in the usual way.

The operation for a blind internal fistula is necessarily of a somewhat different character. If there be a hard swelling in the anal region, an incision should be made into it, and then the wound can be examined with a probe-pointed director. Supposing that the director passes into the bowel, the operation is completed as above described.

If there be no external signs, such as swelling or induration, a probe-pointed director should be bent at a right angle, and then being introduced into the bowel, an endeavour is made to pass the bent portion through the internal opening. The point can then be felt subcutaneously and cut down upon, and the remainder of the operation completed.

There is seldom much hæmorrhage after an operation for fistula, but if a large vessel has been divided it should be secured by a ligature. If there be profuse general oozing, the rectum may be plugged with wool, or a hollow vulcanite rectal tube may be inserted, a long piece of absorbent wool having been first introduced into the whole length of the wound.

After the operation a little absorbent cotton-wool should be gently placed between the surfaces of the wound. A pad of wool and a T bandage are then applied. The dressing in the wound is allowed to remain until it comes away with the motion when the bowels act for the first time. Afterwards the

insertion of a little cotton-wool will suffice to keep the edges of the wound from uniting. The patient should remain in bed or on a couch, and on the fourth night after the operation, if the bowels have not previously been moved, two pills (containing five grains of blue pill and compound colocynth pill) may be given, and followed by a draught in the morning. After the bowels have been moved the wound should be syringed out with sublimate, carbolic or Condy's fluid and warm water in order to remove any faecal matter, and the syringing should be repeated after each action of the bowels. If the healing process goes on satisfactorily, no other dressing will be required; but if the granulations are sluggish, and the discharge is thin and serous, it will be well to syringe the track of the wound with some stimulating lotion, and to dress it with the same. Under favourable circumstances, and provided that it has not been necessary to make a very deep incision, complete healing may be expected in about three weeks. For severe cases, two months may be required. The patient should be kept at rest, and not allowed to walk about, until the wound has thoroughly healed. Fistulae due to the presence of a foreign body, *e.g.*, a fish-bone, heal up much more quickly after operation than those connected with constitutional disorders. Fistulae vary very much in character, and it is often necessary to modify the operation in order to suit the circumstances of the case. When the track is superficial, it may involve the external sphincter in such a way as to pass through it; and in such a case, if only the superficial fibres are divided, the wound will not heal, owing to the action of the deeper portion which has escaped the knife. To obviate this result, after the fistula has been laid open, an incision should be

made through the remaining fibres of the external sphincter. Also, in cases in which the walls of the fistula are much indurated, it is desirable not only to divide the sphincter, but to make one or more linear incisions into the hardened tissues.

In operating upon a horseshoe fistula (Figs. 26, 36, and 38), it is, first of all, most necessary to recognise it, *i.e.*, to understand its conformation, for a casual observer might think he had two separate fistulæ to deal with, and operate accordingly. Even were he to recognise that he was dealing with a horseshoe fistula, if he followed the usual plan, he would slit

FIG. 34.



DIAGRAM SHOWING WRONG METHOD
OF OPERATING IN HORSESHOE
FISTULA.

FIG. 35.



DIAGRAM SHOWING THE METHOD
RECOMMENDED IN OPERATING
UPON HORSESHOE FISTULA.

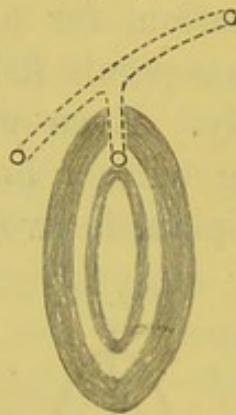
up first one sinus and then the other; thus dividing the sphincter in two places and obliquely through its fibres, proceedings generally fraught with dire consequences to the patient (Fig. 34).

If this fistula can be laid open in such a way as to entail only one division of the sphincter, and that at right angles to its fibres, there will be a minimum amount of risk of subsequent incontinence. It can be done in this way (Figs. 35, 37, and 39):—First pass a probe-pointed director through the internal aperture, and on its point incise the skin in the middle line behind; now push the director through, and slit up. Secondly, slit up the lateral sinuses on directors passed in at the external openings and

brought out at the dorsal incision. These lateral sinuses may take either a straight, curved, or even rectangular direction. Fistulæ taking these different courses are shown in Figs. 26, 36, and 38.

The first incision will have divided the sphincter, but the other two will only have divided tissue

FIG. 36.



A DIAGRAM OF ONE VARIETY OF HORSESHOE FISTULA.

FIG. 37.

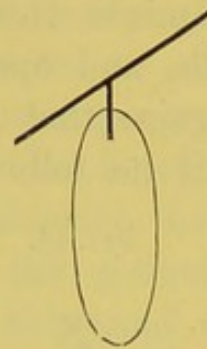
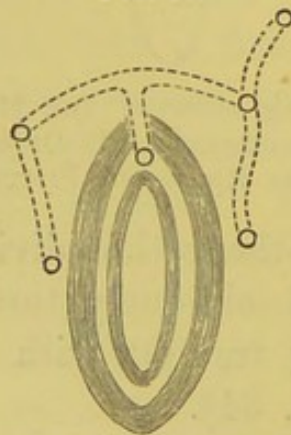


DIAGRAM OF INCISIONS NECESSARY.

FIG. 38.



A DIAGRAM OF SEVERE HORSESHOE FISTULA, WITH FIVE EXTERNAL OPENINGS.

FIG. 39.

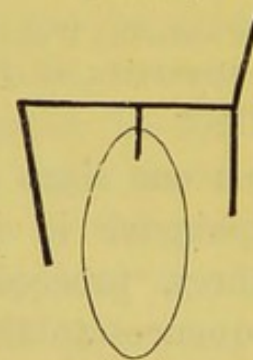


DIAGRAM SHOWING INCISIONS NECESSARY FOR THE CURE OF FOREGOING WITH ONE DIVISION OF SPHINCTER.

external to it. Should the external apertures be so placed that a straight line drawn from the one to the other would pass behind the anus (as in Fig. 36), the steps of the operation could be reversed, and a director be passed in at one external orifice and out at the other, and the tissues divided. Now pass the director from the wound in the middle line into the

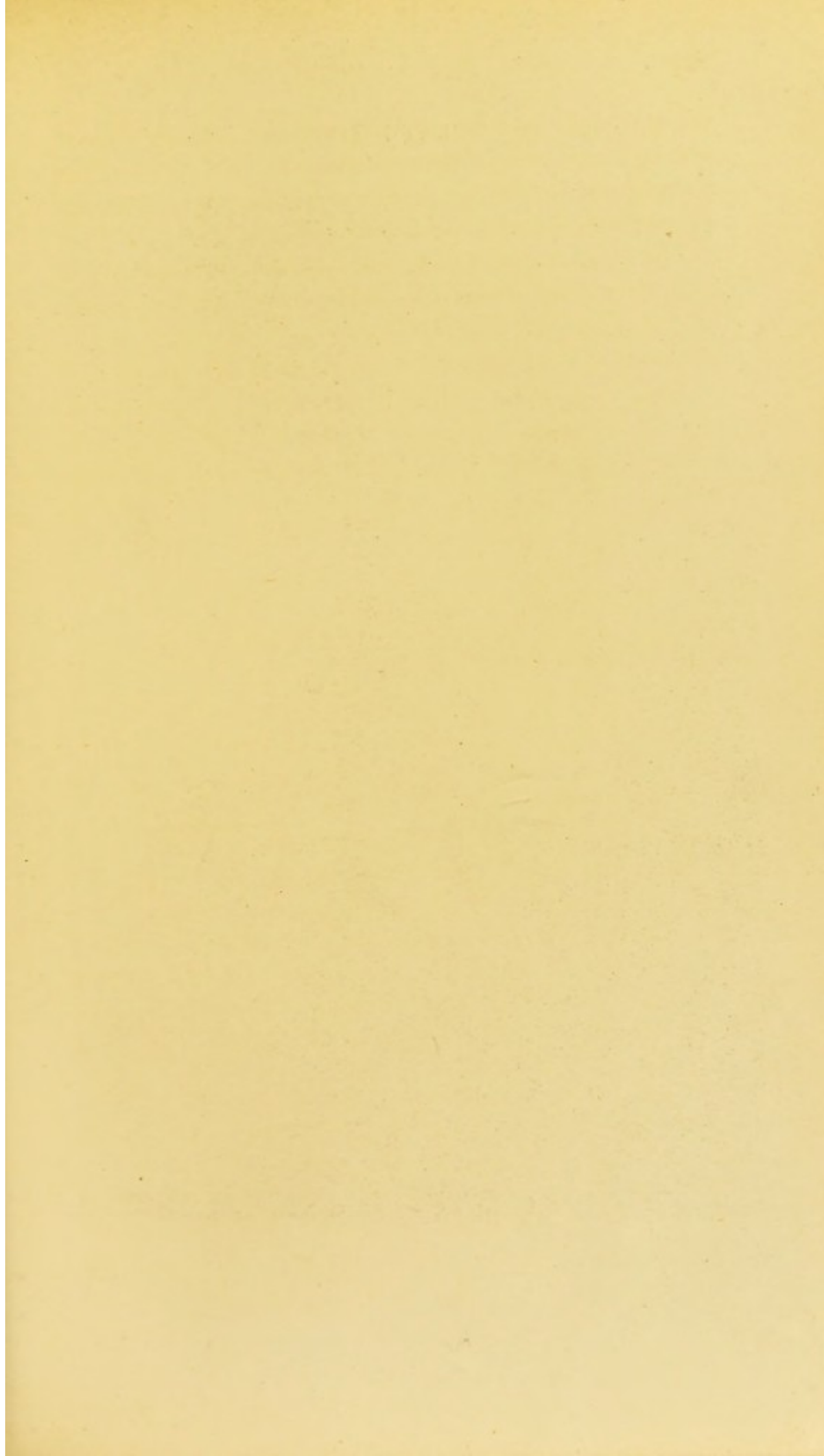
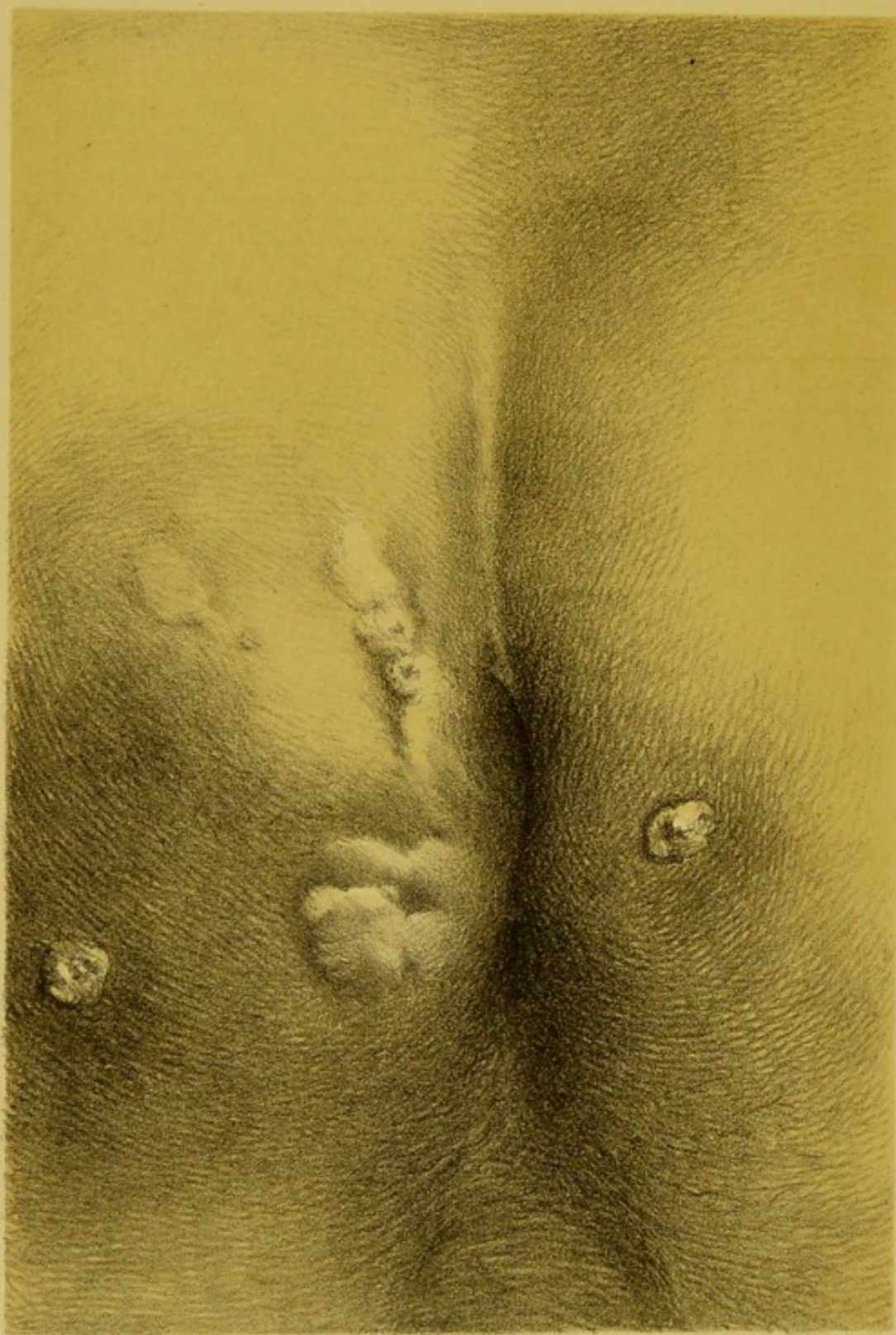


PLATE III.



HORSE-SHOE FISTULA WITH SEVERAL EXTERNAL OPENINGS.

bowel, through the internal opening and slit up the tissues with the included sphincter. In this way the incisions will be found to be more or less T-shaped, the stem corresponding to the dorsal cut. We are not aware that this method,* of some importance it seems to us, is to be found described in any of the text-books or monographs on the subject.

The following case is an example of horseshoe fistula dealt with as above described :—

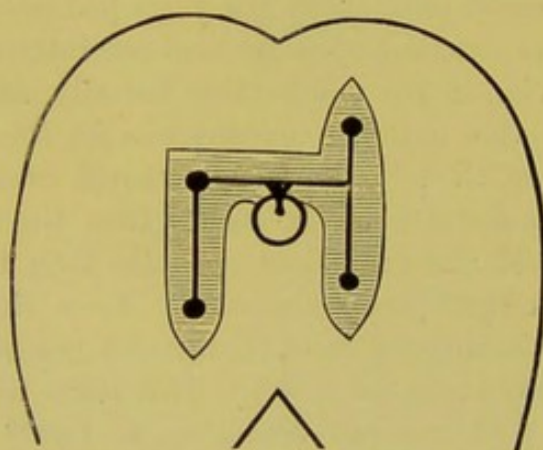
CASE 7.—A gentleman, aged forty-three, was brought to Mr. Edwards (by Mr. F. Wallace, of Clapton) with a very extensive horseshoe fistula, which had commenced, in India, seventeen years previously. Several abscesses had been opened, but no great trouble had been experienced until about ten years had passed. Examination revealed four external openings and one internal, the latter in the usual site, viz., in the middle line dorsally, and between the two sphincters. One external opening was on the right side, and the other three on the left, one being situated over the great trochanter, and at a distance of six inches from the anus. Assisted by Mr. Wallace, Mr. Edwards laid open the long track extending from one buttock right across the other. From this incision, at a spot immediately behind the anus, the director passed easily through the internal opening into the bowel. This sinus was then slit up, as the patient preferred one operation to two (see photo-print of case before and after operation). With the exception of an attack of dysentery, to which the patient had been subject while in India, the progress was very satisfactory, and five weeks after the operation he was able to leave London for his own home. One deep sinus which ran up by the side of the bowel was treated by injections of a solution of nitrate of silver (gr. xxx. to ʒj.). Eight weeks after the operation the cure of the fistula was almost, if not quite, complete. At the patient's first visit Mr. Edwards expressed the opinion that he would be fortunate if he got well within three months.

The operation above described may be done *à deux temps*, and if the fistula necessitates many and deep

* See a paper "On Some of the Rarer Forms of Rectal Fistulæ," read by Mr. Edwards before the West London Med.-Chir. Society, May 6, 1887, and published in the "Brit. Med. Journ.," July 2, 1887.

incisions this modification will be found very advantageous. The first operation will consist in laying open all the outlying sinuses, and when these are nearly healed, it will only be necessary to make the dorsal cut through the sphincter; in other words, this second operation will be merely one for an ordinary dorsal fistula. This method, although necessitating two administrations of ether, has these two advantages: (1) the wounds after the first operation may be treated as wounds elsewhere, as there has been no interference with the bowel; (2) there is always a

FIG. 40.



HORSESHOE FISTULA. Case of W. T.

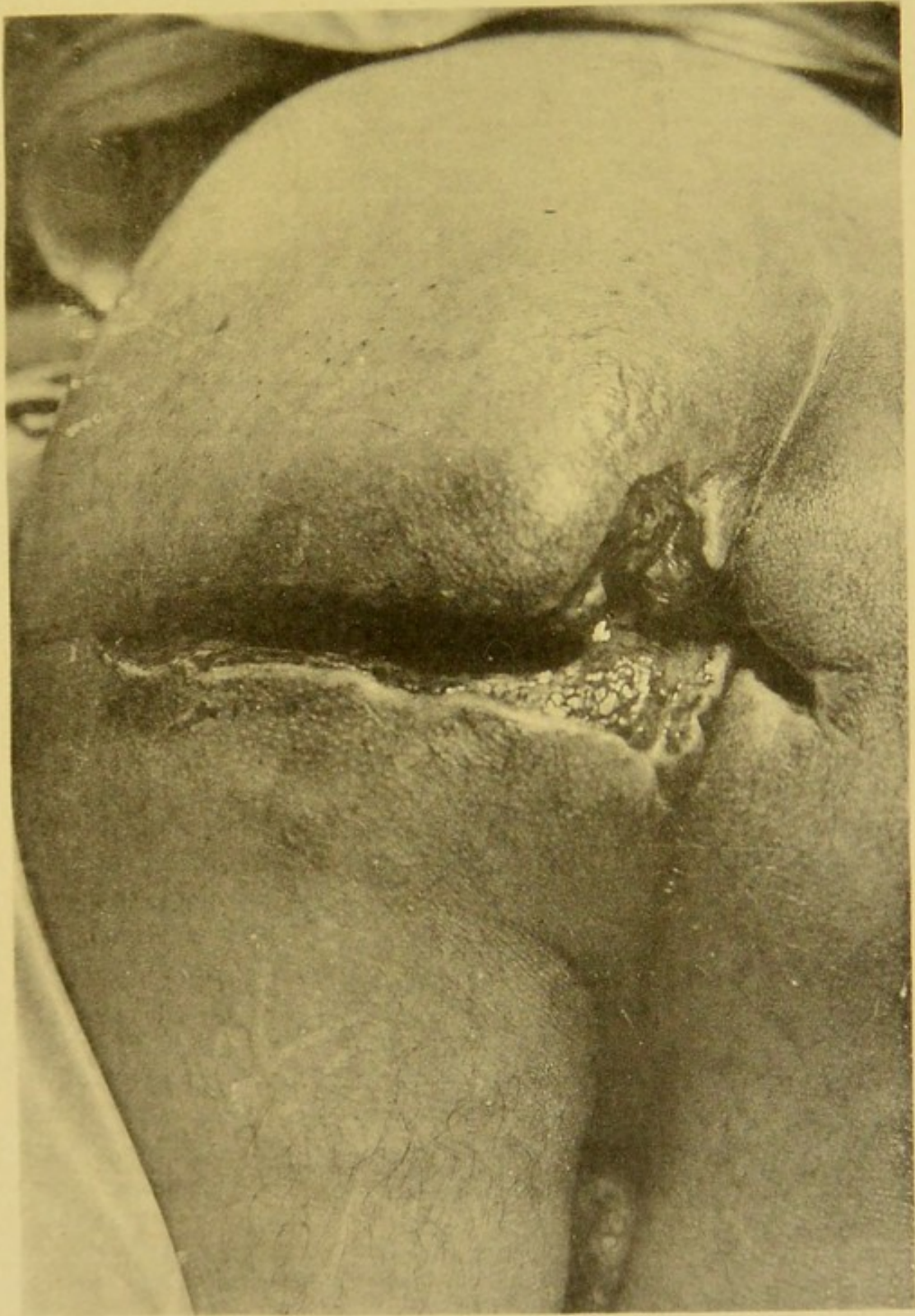
chance that the fistula may heal without subsequent division of the sphincter.*

From amongst others we select the two following cases, as examples of this operation *à deux temps* :—

CASE 8.—W. T., aged forty-three, came to St. Mark's Hospital eighteen years ago, with fistula on the right side; had previously been to St. Bartholomew's, where an abscess was opened, and he was subsequently admitted for hæmoptysis. Fourteen years ago he again applied at St. Mark's on account of several abscesses in the anal region; these were opened, and he attended for a year as an out-patient. Since that time he has been an out-patient at the

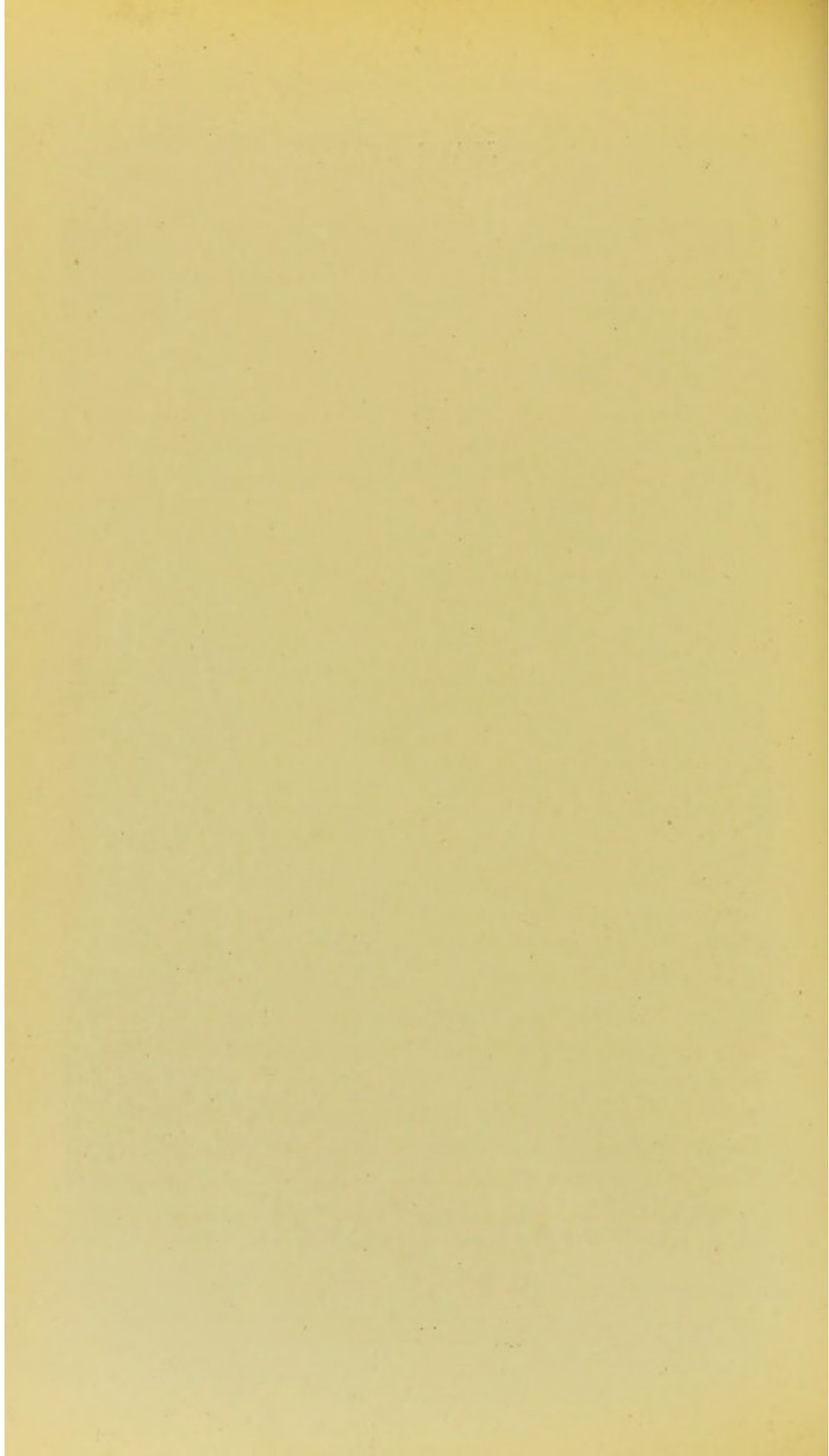
* This plan was first suggested to Mr. Edwards by his colleague, Mr. Goodsall.

PLATE IV.



SAME CASE.

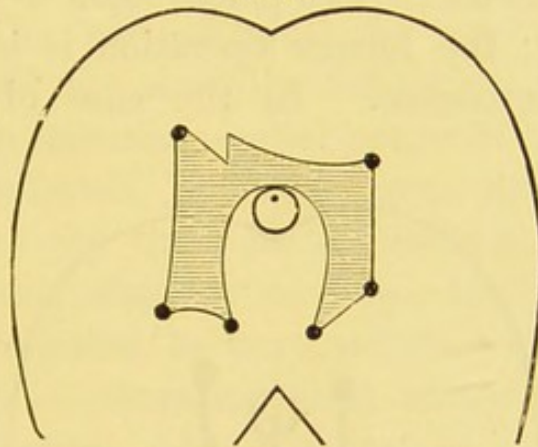
TAKEN A FORTNIGHT AFTER OPERATION.



City Road Chest Hospital. On March 1, 1890, he came again to St. Mark's with a typical horseshoe fistula, having four external openings (Fig. 40). He was placed under chloroform (this being preferred to ether owing to the state of his right lung), and Mr. Edwards laid open the sinuses as shown in the diagram; the sphincter was not divided. March 29: Discharged apparently cured, only a small dorsal sinus remaining. This latter was laid open on May 7, no anæsthetic being used; recovery was rapid and complete.

CASE 9.—J. G., aged fifty-seven, suffering from a dorsal horseshoe fistula, with six external openings; the history of the complaint extended over eight years. The first operation was performed December 31, 1890, incisions being made as shown in the accompanying diagram (Fig. 41); the internal opening and the bowel were left untouched. January 21, 1891, operation completed by

FIG. 41.



HORSESHOE FISTULA. Case of J. G.

dividing the dorsal sinus and sphincter. Patient left the hospital on February 14, and attended for one month as an out-patient; then discharged cured.

The shaded area in these diagrams shows the appearance of the wound after undermined skin had been cut away.

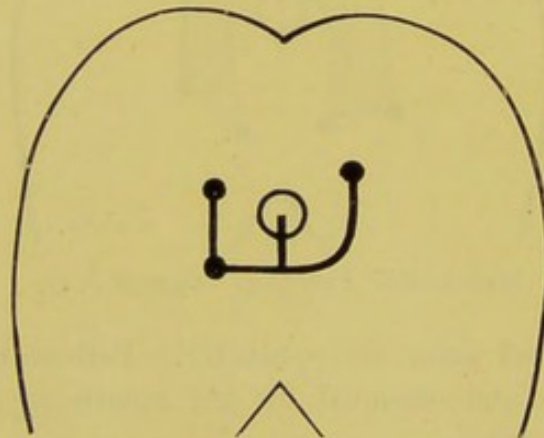
Before leaving the subject of horseshoe fistula, mention must be made of the fact that although the dorsal variety is by far the most frequent, the anterior is not unknown, though very rare. The following is an instance of this latter kind:—

CASE 10.—S. M., aged fifty-four, three years ago noticed swelling all round the anus, causing obstruction and pain at stool. Poultices

were applied, and three weeks later the abscess broke. On examination a month afterwards three external openings were seen, one being on the right side and two on the left, with one internal orifice in the middle line anteriorly. These communicated with each other in front across the middle line. Mr. Edwards performed the operation as shown in the accompanying diagram (Fig. 42), and the patient was discharged cured two months afterwards.

In operations upon fistulæ when deep incisions are necessary, the risk of permanent incontinence of fæces as a result of dividing both sphincters must be borne in mind. There is little, if any, danger of more than temporary incontinence, if the internal sphincter is not interfered with. It is better to divide the external sphincter in two places than to cut through both muscles; the former operation is less likely to produce incontinence. In the case of women, it

FIG. 42.



ANTERIOR HORSESHOE FISTULA. Case of S. M.

should be borne in mind that, on account of the anatomical relations of the parts, free division of the sphincter anteriorly is liable to be followed by a permanent incontinence. In dealing with a fistula situated anteriorly in a female subject, after free division it would be well to scrape it thoroughly with a Volkmann's spoon, and then to insert deep sutures as in a case of ruptured perinæum, thus endeavouring to obtain union by first intention.

After an operation for fistula, supposing that all goes on well, the discharge gradually diminishes, until it ceases with the healing of the wound. More or less sudden increase of discharge is an indication that burrowing has taken place somewhere in the track of the wound, and, if this be permitted to continue, it may not only prevent the wound from healing, but may prove to be the starting-point of a new sinus. Search should therefore be made for any accumulation of pus, and if a lateral sinus be discovered it should be at once incised. In another class of cases, viz., those in which the healing process is sluggish, local and constitutional treatment will be required. The patient must be kept at rest, the bowels should be carefully regulated, and a nutritious but non-stimulating diet prescribed. Tonics are generally indicated, and astringent solutions should be applied to the track of the wound.

In the great majority of cases the treatment by incision is followed by very satisfactory results, and the operation is contra-indicated under comparatively few circumstances. As a matter of course, its performance would be unjustifiable in the subjects of very serious organic disease in which a fatal termination was evidently not far distant. In elderly people also, a blind external fistula which has been quiescent for some time may be safely let alone. Only those cases in which the fistula is connected with phthisis are likely to cause any difficulty in coming to a decision for or against operative interference.

These cases will be discussed in the next chapter, which will also contain a description of other methods of treating fistula, and will treat of loss of sphincter-power after operations.

CHAPTER VII.

FISTULA IN PHTHISICAL SUBJECTS—THE ELASTIC LIGATURE AND OTHER METHODS OF TREATING FISTULA—IMPAIRED POWER OF SPHINCTER ANI.

THE appearance of a fistula in a **phthisical subject** is characteristic of the constitutional malady. The part is, as a rule, unusually hirsute; the ischio-rectal fossæ are drawn in, owing to absence of fat; the sphincter is weak and offers no resistance to the introduction of the finger. The skin around the orifice is bluish and often considerably undermined, and the discharge is thin and watery. The internal orifice is often large, and the mucous membrane around it is also undermined. Statistics show that about 5 per cent. of phthisical subjects also suffer from fistula, and that about 12 per cent. of fistulous patients are the subjects of tuberculosis.

It is difficult to lay down general rules with regard to operating in phthisical patients, for there are several forms and many stages of the disease, and each case requires special consideration. One objection to operating in these cases is based upon the supposition that the cure of the fistula, even if attainable, would cause the cessation of the discharge, and that the pulmonary disease would therefore be likely to advance with renewed virulence. This view is, however, rendered untenable by the fact that in not a few cases of operation for fistula in phthisical subjects

the incisions have healed quickly and satisfactorily, and the health of the patients has subsequently improved. It would seem quite safe to assert that in cases in which the lung-affection is chronic, an operation may be performed with a very fair prospect of success and of benefit to the patient, provided always that the *treatment can be conducted under favourable hygienic conditions*. In chronic tuberculosis, if the fistula give rise to much discomfort and pain, and appear to be undermining the patient's health and depressing his spirits, it is well to try and cure it. If, however, the lung-mischief be rapidly advancing, and the local trouble do not cause any annoyance to the patient, it is better to let it alone. If in a case of active phthisis an anal abscess form, (being probably due to ulceration and perforation of the mucous membrane,) the best plan is to open it freely, so as to provide sufficient drainage and thus prevent much pain and suffering.*

Special precautions are necessary, both before and after an operation, in such cases. Besides attending to the cough, the general health of the patient should be improved in every possible way. A few weeks at the seaside or in fresh country air, a nourishing diet including plenty of milk, the administration of various tonics, especially iron and cod-liver oil, are the best measures to be adopted by way of preparatory treatment. In performing the operation it is advisable not to incise the sphincter too freely in these cases, and, if possible, to avoid the muscle altogether; the reparative power is low, and the risk of incontinence of fæces must be borne in mind.

After the operation the patient should not be kept long in bed, but in two or three days should be moved

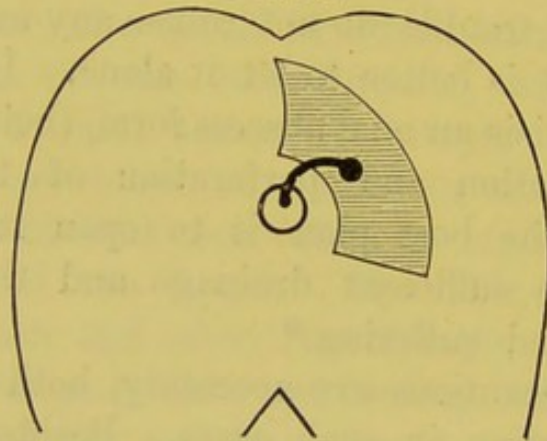
* Our colleague, Mr. Herbert Allingham, read a valuable paper on this subject before the Medical Society of London, on March 3, 1890.

to a couch in an airy well-ventilated room, the diet and tonics being continued as before. The wound should be dressed as already indicated; if granulation goes on sluggishly, stimulant and astringent applications will probably be required.

The following case shows that in phthisical subjects the fistula may be cured, at all events for a time, without cutting through the sphincter, if only the abscess be freely incised:—

CASE 11.—G. C., aged twenty-seven, admitted into St. Mark's Hospital, under Mr. Edwards' care, April 14, 1891, suffering from

FIG. 43.



FISTULA IN A PHTHISICAL SUBJECT. Case of G. C.

fistula and phthisis. He stated that nine months ago he coughed up a large quantity of blood, and that since that time blood has occasionally appeared in the expectoration. Four months ago an abscess formed on the right side of the anus; this was poulticed and afterwards painted over with iodine. Now complains of frequent and severe cough and sweating at night. Moist sounds heard over right apex, back and front, also over left apex in front. April 15: Mr. Edwards freely laid open an abscess in the right buttock (Fig. 43), from which much foul discharge escaped. The incision did not involve the sphincter. He also excised the blue undermined skin over a large area and scraped the floor of the cavity: the wound was dressed with iodoform. A month after the operation the patient was sent into the country, as the wound was healing very slowly. Some months afterwards the wound was found to be completely healed, and there was no sign of fistula, although at the time of the operation a probe-pointed director passed easily through a small dorsal opening in the bowel.

In phtthisical cases, where an operation is either objected to by the patient or thought unadvisable by the surgeon, the injection of the fistula with some stimulating fluid may be attended with the best results, as the following case shows:—

CASE 12.—Dr. S. B., a tubercular subject, and suffering from an anal abscess, came under the care of Mr. Edwards in September, 1887. The abscess was opened, and a probe passed into it could be felt just under the mucous membrane, but there was no internal opening. On the sixth day the sinus was injected with *lot. rubra*, and this treatment was continued for a fortnight, when the track was found to be healed. The patient remained well for twelve months; afterwards the fistula again began to discharge. A repetition of the injections caused it to heal, and it remained closed three years afterwards.

In nearly all cases of fistula the operation of laying open the track by the aid of a bistoury and director is followed by excellent results, but there are other methods which may be adopted, either as substitutes for the knife or as auxiliaries to a cutting operation. Of these the ordinary and the elastic ligature, immediate suture, and the actual cautery are all that require to be noticed.

The treatment of **fistula by ligature** was practised in very early times, and a description of it has been given by Celsus. In its simplest form it consists in the insertion of a piece of stout thread into the track of the fistula; one end is passed into the rectum and brought out through the anus, and this is tied in a firm knot with the other end, which projects from the external opening. The tissues between the track and the rectum are thus strangulated, and the ligature gradually cuts its way out. This method, however, causes a great deal of pain, and, as regards the cure of the fistula, the results are far from satisfactory. There is a modification of this plan, in which the thread is not drawn tight, so as to strangulate the

parts, but the ends are loosely knotted together, so as to keep the ligature in its place. Some weeks are required for the thread to cut its way through, and it is not necessary to confine the patient to bed while the process is going on. The result, however, is uncertain, and in most cases in which the ligature has been tried in this way, it has been necessary to complete the operation by the aid of the knife.

The **elastic ligature** yields far better results. It exercises a continuous pressure, and does not in some cases cause much pain or irritation; it generally cuts its way out in from five to ten days. It is suitable for cases in which there is great dread of the knife, or where confinement to bed is impossible or undesirable. Anæsthesia is unnecessary; there is no hæmorrhage, and but little suppuration while the ligature is cutting its way out. The method is well adapted for phthisical subjects, as the patient can be allowed to move about in the open air. It is also a valuable auxiliary to the knife in dealing with cases where a sinus runs up for some distance along the bowel, where hæmorrhage might be difficult to control. When this condition is present, the ligature is often used at St. Mark's; the following case furnishes a good example:—

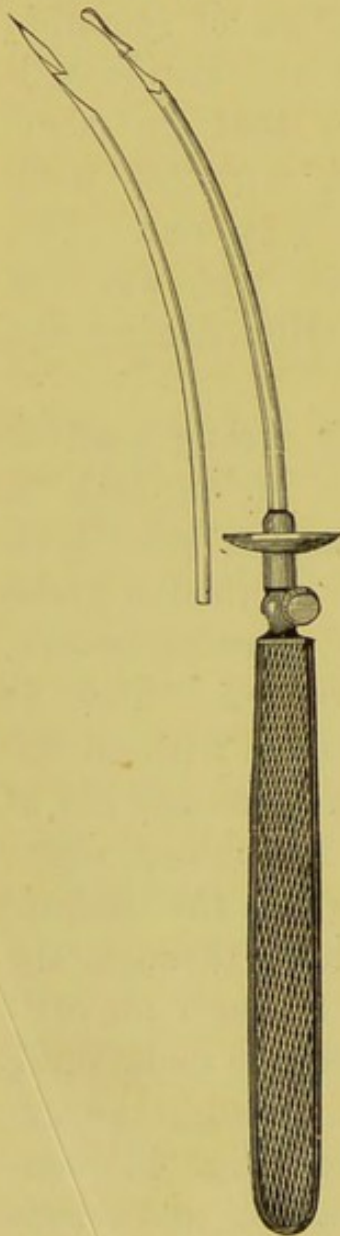
CASE 13.—H. T., aged fifty-nine, was operated on for fistula twenty-three years ago at St. Mark's Hospital by Mr. Cooper, and remained well for eighteen years. Eighteen months ago he noticed that a lump was forming under the old scar; this burst, and has been discharging ever since. Examination showed a complete fistula, with a sinus running up for some distance above the internal opening, which was on the right side, and two inches above the anus. After dividing with the knife the tissues between the external and internal openings, Mr. Edwards applied the elastic ligature, by means of Allingham's instrument, to a sinus running up the bowel for at least two inches. The ligature came away on the eighth day, and a month from the date of the operation the patient was sent home cured.

The drawbacks connected with the use of the elastic ligature, as a substitute for the knife, are not many, but they are such as to militate against its general applicability. The principal objection is that it affects only the main track of the fistula along which it is passed; any branches or sinuses that exist are left untouched. Under such circumstances, even if the wound heals, accumulation of secretion will take place in the sinuses and the fistula will recur. One of its advantages is that in some cases the patient is able to go on with his work while the ligature is cutting its way out. Mr. Cooper once operated upon an actor, who was not prevented from following his avocation during the treatment.

The elastic ligature consists of a strong cord of solid india-rubber, about one-tenth of an inch in diameter. Various plans and instruments have been devised for its introduction. In one method a probe is used, having at one end a rounded opening or eye, through which the ligature is threaded. This is passed through the fistulous track from without inwards, and then drawn through the rectum and out at the anus. Our former colleague, Mr. Allingham, senr., devised an instrument by means of which the ligature can be drawn from within the rectum, through the internal opening of the fistula (or through an artificial opening, if it has been necessary to make one), and thence into the track and out through the external opening. The instrument (see Fig. 44) consists of a curved probe fixed in a handle, and terminating in a blunt point. A cannula is fitted to the probe, and when drawn back, exposes a notch which receives the loop of india-rubber. The probe is passed along the track till its extremity protrudes in the bowel. The forefinger of the other hand, with

a loop of india-rubber around it, is passed up the rectum till it meets the probe. The cannula is then drawn back and the loop is directed over the end of the probe and caught in the notch. Lastly, the cannula is pushed forward so as to hold the ligature firmly in the notch, and the instrument is then with-

FIG. 44.



ALLINGHAM'S INSTRUMENT
FOR INTRODUCTION OF
ELASTIC LIGATURE.

drawn along the track. A double ligature has thus been introduced through the fistula and the bowel. The second cord can be utilised if the first one breaks in tying, but in order to fasten the ends it is better to use a leaden clamp or a small oval ring of soft metal. Through this the ends of the ligature are passed and drawn as tightly as is requisite, and the ring is then firmly closed over them by means of a strong pair of forceps. The second ligature can then be withdrawn.

Immediate Suture.—There is yet another method of operating for fistula, and one which has been much discussed in America; it consists in the immediate suture of the wound after the fistula has been excised. Dr. Stephen Smith has an article on the subject in the "New York Medical Journal," June 12, 1886, detailing the steps of the operation as practised by him. He uses carbolised silk sutures, very much in the same

manner as in the ordinary operation for ruptured perinæum. Dr. F. Lange, of New York, has also employed this method. After excision of the entire fistulous track, together with all lateral sinuses, the deep tissues are brought together by means of buried sutures of iodoform catgut, and the edges of the mucous membrane are likewise brought into accurate apposition. Of thirteen cases recorded, one, a deep-seated fistula, was cured in two weeks; in four cases, primary union took place without suppuration; and in three the same result was obtained, but with slight suppuration. In four, the wounds healed by granulation, but in a shorter time than would have been requisite after one of the old operations.

Dr. R. F. Weir, at a meeting of the New York Surgical Society, February 9, 1887, reported eight cases treated by this plan, which he calls Jenks' method. In three cases, in which the fistulæ were not deep, the patients did well; in the other five, the fistulæ had deeper internal orifices, and in two instances there were outlying sinuses or diverticula, so that it was difficult to dissect out the fistulæ. The final introduction of the sutures was by no means easy, especially in the attempt to close the rectal ends of the incisions, and failure took place in four out of the five cases.

We have not treated any cases by this method, though we quite believe that it would be well adapted for simple fistulæ, with the internal openings near the anus. In our hands it has proved useful for obtaining immediate union of long incisions in the buttocks, thereby shortening considerably the period of convalescence.

The Actual Cautery.—The last method which needs description involves the use of the cautery for

the division of the tissues. Paquelin's thermo-cautery is the best instrument for this purpose. The red-hot knife may be used instead of the bistoury, in cases in which there is reason to fear profuse capillary hæmorrhage. The divided parts are covered with an eschar, and but little subsequent dressing is required. In performing the operation with the cautery, a proper speculum and guard must first be introduced into the rectum.

Loss of Sphincter-Power after Operations for Fistula.—There can scarcely be a more distressing complaint than that of anal incontinence; only a like condition of the urinary apparatus could prove equally annoying. When impairment of sphincter-power is complained of, in the absence of nervous disorders, it will be found to have resulted from an operation for fistula, in which probably either both sphincters have been cut through, or the external sphincter has been divided in two or more places. Incontinence of fæces has also been known to follow a very oblique division of the sphincter, although only in one place. In phthisical and other debilitated subjects this untoward event is all the more likely to occur. But the more pressing question to be dealt with refers not so much to the cause of the condition as to its cure and the measures which are likely to produce this result.

General tonics and local astringents may be of use; but their application is limited to cases of slight disability. Whenever the patient cannot, to any appreciable extent, grasp the finger which has been inserted into the anus, some operative measure is advisable. The choice lies between two methods of this kind—(1) *the actual cautery*, used as in a case of proidentia recti, the description of which will be

found in a subsequent chapter ; (2) *a plastic operation*, based on the lines of Lawson Tait's operation for ruptured perinæum.

This operation consists in an incision one to one and a-half inches long, carried right through the fibres of the sphincter (or what remains of them), and parallel with their course, and consequently with the anus. Deep sutures of silk or of silk-worm gut are now inserted, the first being passed from one extremity of the wound to the other. Three or four sutures having been inserted and tied, the long axis of the wound, instead of being parallel with the sphincter, will be placed at right angles to it. The anus will be found to be considerably contracted ; indeed, by this means it can be rendered quite impervious to the finger. For some days after the operation the bowels should be kept confined by means of astringents. Mild aperients will probably then be required in order to render the stools soft and to facilitate their passage.

The drawback to this operation is that, on account of the great tension to which they are exposed, the sutures are apt to give way or to cut through the parts. Such accidents, we think, are especially likely to occur when the site of the incision is lateral. We should not expect so much tension if the operation were performed dorsally to the anus, and in a suitable case we hope to carry out a successful repair in this situation.

We agree with our friend and colleague, Mr. Allingham, junr., that the treatment by the cautery answers very well in the majority of cases. It is desirable at the same time to remove any prolapsed mucous membrane, often present in these cases, either by ligature or clamp and cautery.

The knife of a Paquelin cautery should be applied to the anus in radiating lines, and allowed to burn deeply into the tissues in three or four places, one being in the site of the original scar. Considerable contraction may result; it is, therefore, better to do too little than too much. A second application of the cautery can always be undertaken.

CHAPTER VIII.

RECTO-VESICAL FISTULA.

IN the male subject, the rectum may communicate with either the bladder or urethra, by means of a fistulous track; in the female, an abnormal opening may exist between the rectum and vagina. Cases belonging to the last category usually come under the treatment of gynæcologists, inasmuch as the fistula is best dealt with from the vagina; they will, therefore, not be further discussed here.

Recto-vesical fistula may be due to several causes, of which the most common are direct injuries (*e.g.*, incised, punctured, and gun-shot wounds), cancer, abscess, and ulceration. It may be caused by the careless use of a metallic catheter or bougie, and it has also been known to result from the pressure of a calculus permanently arrested behind the prostate gland and producing ulceration of the bladder.

Symptoms.—When an opening exists between the rectum and the bladder, the contents of each organ will tend to pass into the other; thus urine will escape from the bowel, and fæculent matter and air from the urethra. The skin around the anus becomes excoriated, and the passage of fæcal matter into the bladder is liable to produce retention of urine, cystitis, and the formation of concretions. In recto-urethral fistula, the escape of urine into the bowel but rarely occurs, and

only during micturition. In recto-vesical fistula, the passage of air by the urethra at the end of the act of micturition is usually the first symptom. Irritation of the bladder is soon experienced, and fragments of animal and vegetable fibres are discoverable in the urine, which gives off a distinctly fæcal odour. As time goes on, the symptoms become more severe, and large quantities of fæcal matter collect in the bladder and become partially dissolved. Symptoms of a like kind may result from a fistulous communication between the bladder and the ileum, or the bladder and the colon, and some doubt may arise as to the actual position of the opening. The history of the case and a careful examination of the rectum and bladder will generally lead to a correct diagnosis. Urine but rarely escapes into the rectum, except when the opening is low down and very patent.

Treatment.—When the condition is due to malignant disease, local measures are for the most part unavailing; cases of this kind require colotomy. This rule also applies to a cancerous communication between the rectum and vagina, which does not admit of removal. When the recto-vesical fistula is the result of injury or abscess, the anus should be forcibly dilated in order to get a good view of the orifice of the fistulous track; and if sufficient room be not thus obtainable, posterior proctotomy may be performed. Should the communication not be a large one, *i.e.*, due only to slight loss of tissue, the galvano-cautery may be applied to the entire track. Mr. Edwards has had two cases in which this method proved quite successful. If, however, there has been much loss of substance, the edges should be pared and then brought together by means of silver sutures, care being taken to include all the tissues, with the exception of the vesical mucous membrane. In all cases, forcible dilatation

of the sphincter should constitute a preliminary measure. It will diminish the resistance to the passage of fæces when the bowels act for the first time after the operation, and there will be less chance of the stitches giving way.

In cases of **recto-urethral fistula** a stricture of the urethra is usually present, and is indeed the cause of the abnormal condition. This cause must be removed, either by dilatation or some form of urethrotomy, and this treatment (provided that the stricture has been thoroughly dilated) may alone be sufficient to cure the fistula. If further measures are required, it is best to lay open the fistula to within half an inch or less of the urethra, and then either cauterise the opening into the urinary passage, or refresh it and apply sutures. In a case of recto-urethral fistula, the result of prostatic abscess following gonorrhœa, Sir H. Thompson,* after trying other plans, effected a cure in three months by making the patient micturate in the prone position. Urine ceased to pass altogether by the rectum in a month, and in two more the patient could pass it in the upright position without any escape. In cases of **recto-vesical fistula**, where fæces have passed into the bladder, before performing any operation it is advisable to determine the state of that viscus as to cystitis or calculus. One or both of these may be present, as a direct result of the irritation set up by the fæcal matter. It is obvious that no operation can possibly be successful until these complications are removed. For appropriate treatment reference must be made to works on urinary surgery.

When the communication between the bladder and rectum is out of reach, colotomy is the only effectual means of relief. The operation in the left groin is

* Holmes' "System of Surgery," vol. iii. 3rd edit. p. 227.

indicated when the rectum is clearly involved, but in the right when the opening is higher up in the large intestine.

As palliative measures, when an operation is declined, the rectum should be kept as free as possible from fæcal matter by the aid of suitable enemata. In recent traumatic cases, opium should be given to keep the bowels from acting for some days; the recumbent posture must, of course, be adopted; the diet should be of the simplest character, and fluids should be taken as sparingly as possible. In the further progress of the case, the closure of the fistula may be expedited by the careful use of an elastic catheter at regular intervals.

CHAPTER IX.

PROCTITIS AND PERIPROCTITIS.

THE rectum is not infrequently the seat of inflammatory processes, due to various causes. The inflammation may be either acute or chronic, circumscribed or diffuse. Injuries and the presence of foreign bodies, either introduced through the anus or having passed through the intestines, are common causes of acute circumscribed inflammation.

Diffuse inflammation of the rectum, of an acute character, occurs in some cases of *dysentery*; it may also be provoked by the use of violent purgatives and by the presence of hard scybalous masses in that part of the bowel. Catarrhal discharges often accompany various neoplasms of the rectum. Arsenic and corrosive sublimate in poisonous doses cause violent inflammation of the rectum and of other portions of the bowels. Thread-worms in children and exposure of the part to cold and damp are occasional causes of proctitis. *Gonorrhœal* proctitis is sometimes met with, being more frequent in women. *Diphtheritic* inflammation, generally spreading from the perinæum, has also been observed in this part.

Symptoms.—These vary with the cause and form of the disorder. In *catarrhal proctitis*, which is most often seen in children, tenesmus is a prominent symptom; the sphincter is spasmodically contracted,

and straining efforts at defæcation increase the distress. The motions consist of fæces and mucus stained with blood, and their passage gives rise to œdema and eversion of the mucous membrane and even to some amount of prolapse. The patient complains of heat and pain in the rectum, inner sides of thighs, and sacrum. There is more or less feverishness and general discomfort, and vomiting in severe cases. Irritability of the bladder and retention of urine are commonly superadded, and all the symptoms are aggravated by movement. Simple catarrhal inflammation, in the absence of complications, will generally terminate in a week or ten days, but some amount of muco-purulent secretion may be observed even for a longer period. If the inflammation extend to the colon, the symptoms of colitis will be superadded. If the condition become chronic, all the symptoms are much moderated, and the patient complains only of a sensation of more or less fulness and weight in the part. Defæcation may be painful and the fæces are coated with mucus or muco-pus. When ulceration has been set up, more or less blood and pus will be found in the stools, and other symptoms will be experienced; these will be described in a subsequent chapter. Œdema of the mucous membrane and submucous tissue may also result from chronic proctitis, and if the condition persist for some time, the tissues may become indurated and contracted, and a process is set up which gives rise to stricture of this part of the bowel. Polypoid excrescences are another result of chronic inflammation of the rectum.

Dysenteric Proctitis.—In tropical dysentery, the rectum is often severely affected, and the symptoms referred to this part of the bowel are very marked. The tenesmus is a source of great distress to the patient, and the desire to go to stool becomes almost

incessant, and is aggravated rather than lessened by the passage of small quantities of bloody mucus. The irritation is very apt to extend to the bladder; there is dysuria, frequent micturition, and sometimes retention of urine, from spasm due to reflex action. In favourable cases all these symptoms subside, but the condition not infrequently becomes chronic, and the acute symptoms are prone to recur. Ulceration and extensive destruction of the mucous membrane occasionally follow. Inflammation of the rectum, due to the virus of **gonorrhœa**, is of very rare occurrence; it may result from unnatural coitus or from want of cleanliness. Cases due to the latter cause are sometimes seen in women; the gonorrhœal discharge, escaping from the vagina, comes into contact with the mucous membrane at the anus. Such a result would be somewhat likely to follow in cases of hæmorrhoids and prolapsus, and whenever excoriations exist at the verge of the anus.

The *symptoms* are of an acute character; the mucous membrane near the anal orifice is swollen and reddened and more or less protruded; the discharge is copious and purulent. Defæcation is attended with much pain; at other times the patient suffers from a continuous burning or itching sensation and frequent tenesmus. The secretion has a disagreeable odour, and is often mixed with blood; it escapes continually from the orifice, and in larger quantities when fæces or flatus are passed; it is liable to produce cracks and excoriations about the anus. The complaint very rarely passes into a chronic stage.

The *diagnosis* is likely to be difficult, except in the case of a woman suffering likewise from ordinary gonorrhœa. It must be remembered that a mucopurulent secretion frequently accompanies other disorders of the rectum, *e.g.*, catarrhal proctitis, hæmor-

rhoids, etc. Syphilitic condylomata near the verge of the anus yield a foul-smelling, viscid secretion; and chronic eczema of the perinæum gives rise to more or less moisture of the part and to much irritation and itching, often especially marked at the orifice of the anus.

As a result of gonorrhœal proctitis, the inflammation may spread to the connective tissue and give rise to abscess and fistula. The development of papillary outgrowths is another result; in neglected cases, these may become so large as to block up the anal aperture.

Diphtheritic inflammation very rarely attacks the anus; Trousseau * refers to a case in a nursing sister at the school of La Flèche, who was suffering from malignant sore throat. After the disease had made great progress on the tonsils, it appeared at the anus. "The part was very much swollen, painful, of a livid red colour, and covered with a diphtheritic pellicle, which could only be detached bit by bit and very slowly." In a few very rare cases, diphtheritic lesions in the perinæum have preceded the throat-affection. An example of this kind was reported to the Harveian Society by Mr. W. Hill.† An outbreak of sporadic diphtheria occurred in a gentleman's family at Gosport. The dwelling was in a very insanitary condition, and the soil-pipe of the closet was untrapped. Of four persons using this closet, three caught diphtheria, and two of these were first attacked in the perinæum.

Treatment.—The *treatment* of inflammation of the rectum varies with the cause. If due to the presence of a foreign body, the latter must be carefully removed by the finger, forceps, or with the aid of

* "Clinical Medicine," New Syd. Soc. vol. ii. p. 515.

† "Lancet," 1889, vol. i. p. 43.

enemata, according to circumstances. If there be hard scybalous fæces in the bowel, the action of enemata may be reinforced by a dose of castor oil. In cases of acute proctitis attended with purulent discharge, constant irrigation is the best method of treatment. For this to be carried out, the anus is forcibly dilated; a wire speculum is then introduced and kept in position, so as to separate the inflamed surfaces. While acute symptoms continue, the patient should be kept at rest and on low diet; the daily use of a warm hip-bath will tend to relieve pain and discomfort. When worms are suspected, enemata of salt and water, and santonin internally should be administered. In cases of dysentery when the rectum is especially involved, besides the ordinary ipecacuanha treatment, enemata of starch and laudanum and warm sitz-baths, will serve to allay the distress. If the ipecacuanha fail to relieve, or be not tolerated, recourse may be had to the solution of perchloride of mercury, of which ℥ x. to xv. should be given every three hours. When proctitis becomes chronic, the bowels should be kept open by non-irritating laxatives, and injections containing sulphate of zinc, alum, or other astringents should be employed. The confection of black pepper may be given internally, and old-standing cases are generally benefited by cubebs. When the inflammation is due to the virus of gonorrhœa, the bowels should be well cleared out by means of a saline aperient; afterwards continuous irrigation with warm water forms the best method of treatment. The patient should be kept at rest and on low diet, and a little opium may be given to relieve pain and to restrain the action of the bowels. After a few days sublimate solution (1 in 2,000), black wash, or a solution of alum (gr. v. to ℥j.) may be injected twice daily. Excoriations

and ulcers should be dressed with calomel ointment. If the injections fail to check the discharge, recourse may be had to nitrate of silver (gr. v. to ℥j.); this should be allowed to remain for a few minutes in the bowel, and then followed by a copious injection of warm water.

Inflammation in the Tissues surrounding the Rectum—Periproctitis.—The rectum is connected with neighbouring parts by loose cellular tissue, in which inflammation is somewhat apt to occur, and to be followed by suppuration, which may be either circumscribed or diffuse. When purulent formation takes place in this site, it constitutes the fourth variety of rectal abscess, or abscess in the pelvi-rectal space (see chapter on Fistula, page 101). The process may be due to a variety of *causes*, viz., injuries to the bowel or adjacent parts, foreign bodies in the rectum, the extension of inflammation from the rectum itself, ulceration of the bowel, whether tubercular, syphilitic, or catarrhal. When ulceration exists, fragments of fæces are apt to become impacted in the submucous tissue, and to set up inflammation and suppuration. The disintegration of gummatous deposits in the tissues surrounding the rectum may give rise to abscesses in this region. In some cases of periproctitis no assignable cause can be discovered. Sometimes the inflammation spreads from other organs, as the urethra, prostate and bladder, or from the uterus or vagina. In other cases the process occurs in the course of pyæmia. Chronic suppuration in the tissues surrounding the rectum is most common in tuberculous subjects; in some of these it results from ulceration in the bowel, in others the pus is derived from caries of the vertebræ, or from suppuration of some of the pelvic glands.

Cases of periproctitis may be divided into two

classes: in the first, the process originates in the parts external to the bowel, which may or may not become involved; in the second, the coats of the rectum are the starting-point of the inflammation which spreads to the surrounding tissues. When the process begins external to the rectum, it may assume various forms, three of which have been recognised as the *phlegmonous*, *erysipelalous*, and *gangrenous* respectively. The first is most often seen, and may result from local causes, such as injury or exposure to cold, or may occur during the course of some exhausting illness. Men are more liable to be affected than women, and the patients are usually middle-aged.

The *symptoms* of acute periproctitis are generally severe and well marked. There is acute pain in the neighbourhood of the anus, increased by pressure and defæcation. Swelling accompanied by increase of heat can be felt by the finger, introduced into the bowel, and when pus has formed, fluctuation is manifest. There is severe tenesmus, and the bowels are generally constipated. Irritability of the bladder and difficulties in micturition are likely to occur. Constitutional symptoms are often prominent; there is more or less fever, and the attack is not infrequently ushered in by rigors.

The course of the inflammation varies; suppuration is the rule, but sometimes resolution takes place. The abscess may open (1) on the surface; (2) into the rectum; (3) into adjacent parts, *e.g.*, the bladder, vagina, uterus, or into the peritoneum. More than one organ may be invaded: thus the abscess may burst into both rectum and bladder, or into the vagina and rectum, forming in the one case a recto-vesical, and in the other, a recto-vaginal fistula. In some cases the quantity of pus is enormous, and

extensive destruction of tissue takes place. The pus from these abscesses is always very offensive, and in severe cases symptoms of pyæmia are almost certain to be present.

In chronic periproctitis the process is of a much less severe character; there is more induration and less pain and fever. Pus is, however, formed, and sometimes in large quantities, and the abscess opens as in acute cases. Sometimes there are several fistulous openings in the perinæum.

In the *treatment* of periproctitis, before fluctuation can be detected, endeavours should be made to promote resolution. With this object, the patient should be kept in bed; the diet should be low, and the bowels kept open by mild laxatives. When the abscess is the result of periproctitis above the levator ani, it will bulge into the rectum, and no signs of its existence will appear externally. In such a case, dilatation of the sphincter and incision of the abscess from the rectum constitute the proper treatment. A large drainage-tube should be inserted through the opening in the rectum and kept in position, its end protruding from the anus. Through this tube, the cavity of the abscess should be washed out two or three times daily. If the resulting sinus remain unhealed, an operation for blind internal fistula will be required. On the other hand, if the rectal opening be allowed to close over too soon, the abscess may burrow and so require opening outside, with a subsequent operation for fistula.

Such was the course of events in the following case :

CASE 14.—A young man, aged twenty-five, was sent to Mr. Edwards by Dr. Ferrier Clarke, of Mitcham, under whose care he had been for two months for urethritis. He now complained of weight and uneasiness about the bowel, and it was a question as to whether he had not some prostatic affection. On passing my finger into the bowel, I at once came upon a semi-elastic swelling about

two inches up on the right side, which clearly contained fluid. Accordingly, two days afterwards, with the aid of his medical man, I freely incised the swelling from the bowel, and gave exit to quite a teacupful of pus. A roll of cotton-wool was passed through the opening in order to keep it patent, and removed the following day by his doctor, who was to syringe the cavity out daily with some antiseptic solution. After a few weeks he appeared to be quite well, and remained so for five or six months, when I again saw him on account of a tender and indurated spot to the right of the anus. This was evidently the original abscess about to break externally. As it appeared that an extensive operation would be required, I took him into St. Mark's, and placing him under ether, I incised the indurated spot, evacuating some pus. A probe-pointed director was then passed through this opening, and through an internal aperture high up in the bowel. With some force I was able to turn the point out at the anus, and so divide the included tissues. On examining again, another internal aperture above the first was found, and this I laid open by means of Salmon's scissors. The overlapping edges of skin and mucous membrane were then trimmed off, and the cavity and wounds carefully dressed with wool, the dressing, after the first four days, being carried out daily with the addition of an iodine injection into the abscess cavity. The case did uninterruptedly well, and left the hospital in six weeks, convalescent. The cavity and deep incision through the sphincter were steadily granulating up, and in another six weeks completely healed over. Although both sphincters were divided, the patient has regained complete control even over flatus.

The treatment of abscesses in the ischio-rectal fossa has been described in the chapter on Fistula.

The *erysipelalous* variety of periproctitis presents no special characteristics. It commences in the skin near the anus, and spreads laterally for a greater or less distance. The *treatment* is that of erysipelas elsewhere. Should abscess follow, it must be dealt with in the ordinary way.

Gangrenous periproctitis is a much more formidable disease, but is rarely met with.* It is most liable to occur among heavy, middle-aged men, eating and

* See a clinical lecture on this subject by Furneaux Jordan, "Brit. Med. Journ.," 1879, vol. i. p. 73. Also Jackson, "Brit. Med. Journ.," 1879, vol. i. p. 186.

drinking freely, actively employed, and often exposed to cold and wet. The mischief may begin anywhere in the vicinity of the rectum, and either superficially or in the deeper structures. In the latter case, it soon comes to the surface; in the former, it rapidly extends to the connective tissue in the ischio-rectal fossæ. A swelling forms on one or both sides of the anus, and extends outwards to the tuberosity of the ischium. Its development is attended with severe pain. The skin becomes more and more tense, hard and dusky red, and in the absence of treatment soon gives way; a mass of dead, black, and fœtid tissue is thus exposed. These sloughs gradually separate, leaving large ragged chasms. The gangrenous process is attended with fever and marked prostration; the cavities around the bowel close up very slowly, and there is some tendency to relapse and to extension of the destructive process, which, however, rarely involves the adjacent portion of the rectal wall. The disease may prove fatal from septicæmia, peritonitis, or extension to the bladder.

The *treatment* must be conducted on general principles; in the early stage, deep incisions should be made into the swelling, and charcoal poultices and antiseptic dressings of various kinds should be subsequently applied. The patient's strength must be kept up as much as possible by suitable food and stimulants.

Periproctitis, the result of *lesions in the wall of the rectum*, may be either circumscribed or diffuse. Examples of the former kind are those abscesses which are caused by perforation due to ulcers or injuries. The escape of fæcal matter is liable to be followed by inflammation and suppuration, and the formation of an internal fistula, which may subsequently become complete.

Diffuse periproctitis is a much more serious condition. It may result from accidental injury or from operations upon the bowel. The symptoms are due to septic poisoning, and take the form of rigors, febrile disturbance, copious perspirations, vomiting, depression, and failure of the heart's action. Evidences of peritonitis are generally present; the abdomen is swollen and tender, especially at the lower part; the patient lies on the back with the legs drawn up, and collapse speedily sets in. In another class of cases, the symptoms indicate pelvic cellulitis of a diffuse character. There is more or less tenderness on pressure over the lower part of the abdomen, dull aching pain and pyrexia; difficulty in micturition may also be a prominent symptom. The exudation may become absorbed or may end in diffuse suppuration as indicated by rigors, perspirations, increase of pyrexia, and of local tenderness and localised pain. The inflammation is liable to spread to the peritoneum. An abscess thus formed burrows in the direction of least resistance; it may open into the bladder or vagina; it may pass through the floor of the pelvis and open near the anus, or through the sacro-sciatic notch. The *treatment* of diffuse periproctitis consists in facilitating the removal of morbid products, and endeavouring to check the development of the process on which the symptoms depend. Free incisions should be made into any collections of matter near the rectum, antiseptic solutions should be freely injected, and drainage tubes inserted. Tonics, stimulants, and nutritious food will of course be required. Symptoms of peritonitis will require appropriate treatment, which will probably consist in abdominal section, flushing the peritoneal cavity with hot water, and free and efficient drainage.

CHAPTER X.

FISSURE AND IRRITABLE ULCER OF THE ANUS AND RECTUM.

IN this affection, the anus and the lowest part of the rectum are the seat of a superficial sore, taking the form either of a fissure or crack or of a small ulcer. The ulceration is a secondary stage, and is due to the action of the sphincter and to contact with irritating matters. Intense pain on defæcation and for a varying time afterwards, and spasm of the sphincter are the principal symptoms.

Causes.—The affection is more common in women than in men, and most often occurs in middle life; unless due to congenital narrowness of the anal aperture, it is rare in children. In women it is sometimes caused by the pressure of the child's head in labour. In other cases fissure coexists with displacement of the uterus. It is most frequently attributable to constipation (which becomes much aggravated after the fissure has been produced) and to the passage of hard and dry fæces, and no doubt is sometimes due to the straining often associated with diarrhœa. Fissure and small ulcers at the anus are not infrequent accompaniments of polypus in the rectum, being caused by the straining to which the presence of the growth gives rise. Congenital contraction of the anus is a frequent predisposing cause of fissure. Herpetic and other eruptions about the anus, *e.g.*, those due to syphilis, are occasional causes.

Symptoms and Appearances.—Fissure of the anus is a very painful complaint and frequently causes an amount of suffering out of all proportion to the extent of the lesion. The pain is usually paroxysmal, and is most intense for some time after the act of defæcation. It is not accompanied by any protrusion from the anus. In some cases the pain subsides after an interval varying from one to several hours, but only to recur when the bowels are again moved; in others, it continues almost indefinitely with slight, if any, diminution of intensity. The pain is described as being of a burning or tearing character; it often radiates from the perinæum to the sacrum, urinary and genital organs, and thighs. The paroxysms are accompanied by spasmodic contraction of the sphincter and levator ani, and sometimes by spasm of the urethral muscles, causing retention of urine. The pain during and after defæcation is so great that many patients restrain the action of the bowels for as long a time as possible; the suffering is of course aggravated by the passage of the hardened fæces, and a little blood sometimes escapes. Mr. Cooper has seen very severe bleeding in several cases of deep fissure, occurring in patients of the hæmorrhagic diathesis. In male subjects spermatorrhœa often accompanies fissure of the anus.

In some cases the pain is not of the intense character just described, and is much diminished or even passes off altogether soon after the bowels have been relieved. The differences are probably due to variations in the depth and position of the fissure. When both skin and mucous membrane are equally involved, the pain is always greater than when the lesion affects the mucous membrane alone.

When a fissure of the rectum has existed for any length of time the patient's general health almost

invariably suffers. The seat and intensity of the pain, anxiety as to its cause, the symptoms produced in neighbouring parts, and the constipation which generally coexists, often induce severe depression of mind and body and other forms of disorder. Not a few, however, of these patients, in spite of their manifold sufferings, allow months or even years to elapse before seeking medical advice.

When a patient complains of the local symptoms above described, a careful examination of the part should always be made. In the majority of cases the fissure is situated in the posterior part of the circumference of the anal orifice. In some patients, on examining the folds at the orifice, the fissure can be seen extending from the skin at the verge of the anus and passing upwards into the bowel. In other cases the lesion is situated higher up in the bowel, *i.e.*, close to the lower edge of the internal sphincter, or between this and the anus. It then assumes the form of a small ulcer, either more or less rounded or elongated and pear-shaped. In order to see this completely a speculum must be introduced, but the finger alone will detect a rough surface with somewhat hard edges, near the orifice of the bowel and generally on its posterior aspect.

The lesions, whether fissure or ulcer, vary in depth; sometimes they are quite superficial, while in other cases they involve the whole thickness of the skin or mucous membrane, so that the base of the sore consists of the fibres of the sphincter. In order to make a complete examination, an anæsthetic is generally required, as the parts are often exquisitely tender, and the sphincter and levator ani muscles are spasmodically contracted and resist the introduction of the finger or speculum. In all cases, careful examination by the finger is of the highest importance,

not only for the sake of a correct diagnosis, but in order to determine the presence of complications, and especially of a polypus. If any such complication be overlooked, an operation dealing only with the fissure will be unsuccessful.

The ulcers are generally single, but occasionally more than one are present. The base of the sore is sometimes red and irritable, and bleeds freely when touched; sometimes it is grey and indolent in appearance. On examining with a probe, it will often be found that one or two points only are acutely sensitive, while the remainder of the sore is less tender. In some instances the edges are undermined, with little sinuses extending from beneath them, and these ulcers may burrow with fistula as a result. A tab of skin not infrequently projects from the lower portion of the ulcer, thus acting as a sign-post to the lesion above, and several of the anal folds are often swollen and inflamed. When a polypus exists, it will be found near the upper part of the fissure.

The peculiar pain and the spasmodic contraction of the sphincters, characteristic of anal fissure, are accounted for by the fact that the lower end of the bowel is very freely supplied with sensory nerves; stimulation of these nerves causes, by reflex action, contraction of the sphincters. When a fissure or ulcer of this kind exists, the exposed nerve-fibrils are liable to irritation from fæcal matter, and become stretched or even torn when the bowels are moved. The impressions made on these fibrils are conveyed to that part of the spinal cord whence the lumbar, sciatic, and pudic nerves originate; hence it is easy to explain the pains in the back, legs, and urinary organs, and the spasmodic contraction of the sphincters of the bowel and bladder, which so often accompany anal fissure.

Pain, more or less resembling that caused by fissure, and accompanied by spasm of the sphincters, is occasionally noticed in persons who on examination are found to be quite free from any rectal lesion. Such cases are rare, and unless a very careful examination be made, there is always the possibility that a minute fissure or ulcer has been overlooked. In the absence of any lesion of the rectum or adjacent parts, it may be presumed that the condition is due to neuralgia. It must not be forgotten that spasm of the sphincter is observed in acute and chronic inflammation of the rectum, but in these cases the pain or discomfort is very different from that which characterises fissure.

Treatment.—In cases in which the fissure is tolerably superficial and of recent origin (*i.e.*, of not more than six months' standing) and the patient can be placed under favourable conditions, a cure may often be effected by the use of a few simple measures. Inasmuch as constipation is generally present and tends greatly to aggravate the lesion, laxatives should be administered in order to keep the bowels open and to render the stools soft. The confections of senna and of sulphur in combination, the compound liquorice powder, and one or other of the well-known purgative waters are well adapted for these cases. The patient should carefully sponge the anus with warm water after each action of the bowels. The diet should be of an easily digestible, non-irritating character, and as much rest as possible should be enjoined. There are various local applications which may be tried, calomel ointment being generally the most efficacious. For the relief of pain an ointment containing cocaine (gr. v. to x. to ʒj.) may be applied with advantage. Resin ointment promotes healing in some cases, and suppositories containing belladonna

or cocaine are useful in subduing pain. Caustic applications of all kinds are useless and mischievous.

It is seldom advisable to persist in the use of these local remedies for any length of time, as they are apt to prove inefficacious, especially when the ulcer or fissure is of long standing, and an internal or external tab, or both are present. There are two operative measures easily performed, either of which rarely fails to effect a cure. These are (1) forcible dilatation of the sphincter, and (2) free incision of the base of the fissure. A combination of the two methods, viz., a limited incision after forcible dilatation also yields good results.

Forcible dilatation of the sphincter, as usually practised, owes its efficacy to the fact that it causes a temporary paralysis of the sphincter. It is also probable that the stretching of the nerves aids in lessening the sensitiveness of the ulcer.

As a result of dilatation spasmodic contraction ceases, and one great hindrance to the healing process being thus removed, a healthy action is soon set up in the ulcer, and cicatrisation follows. In order to effect dilatation no great amount of violence should be employed, and the process can be completed more efficiently by the hands alone than by any form of dilator. An anæsthetic is generally required, and the patient should be fully under its influence. Any existing growth should be first removed. The surgeon introduces first one thumb and then the other, back to back, into the anus; the thumbs are separated and the sphincter is thus forcibly dilated. By altering the position of the thumbs and pressing in different directions, all portions of the sphincter are equally stretched, and these manipulations should be continued until the muscle has lost all trace of hardness, and has become quite pliant and unresisting.

This dilatation may produce a little ecchymosis around the anus, and a few drops of blood may escape from the bowel, but there should be no extensive lacerations of the mucous membrane. In successful cases the operation affords immediate relief to pain and spasm, and when the bowels act, the peculiar sensation of burning or tearing will no longer torment the patient. The bowels should be kept confined for a few days after the operation, an enema being subsequently used in order to obtain an easy action.

Dilatation of the sphincter proves successful in comparatively recent and uncomplicated cases, for simple fissures near the verge of the anus, and in cases of congenital narrowness. It is also best adapted for old and debilitated subjects and for fissure occurring in phthisical patients. When the fissure is deep, large and of long standing, another form of operation is likely to be required. It consists in incising the base of the fissure, and dividing the fibres of the external sphincter. An anæsthetic is generally necessary, and a speculum may be required if the fissure runs up the bowel for some distance, but in most cases it can be dispensed with. The fissure is exposed by the fingers of the left hand, and a probe-pointed bistoury (Fig. 45) is drawn through its base so as to incise the subjacent muscular fibres at right angles to their course. If a speculum be necessary, the fenestrated form of instrument is the one best suited for the purpose. When this has been introduced and the plug withdrawn, the ulcer will be fully exposed.

The question as to the depth of the incision is of some importance. The operation, when first practised, was of a formidable character, for both sphincters, the cellular tissue, and the integuments, were freely divided. The result was an extensive

triangular wound, with the apex above and base below. A free incision of this character is, however, quite unnecessary; on the other hand, simple scarification of the ulcer is insufficient. When incision is combined with forcible dilatation, at least the superficial layers of the fibres of the sphincter must be divided, and it is well to begin a little above, and to end the incision a little below the ulcer, so as to ensure its being carried quite through the sore. Any excrescences from the mucous membrane should at the same time be removed with a pair of scissors. If any complications, such as piles or polypus, co-

FIG. 45.



BISTOURY FOR INCISING FISSURE.

exist, they must be dealt with at the same time, for the reason already mentioned, and redundant skin should be removed. As a general rule we find that complete division of the external sphincter, the knife being carried through the fissure, proves to be the most satisfactory method.

After the operation, a little cotton-wool should be placed in the wound; rest for a few days, and a little opium to restrain the action of the bowels, are to be prescribed. The remainder of the treatment consists in providing that the wound shall heal from the bottom, as after the operation for fistula. The deeper the incision, the greater is the necessity for local and general rest. Enemata should afterwards be used to open the bowels. The relief afforded by the operation is very marked; the peculiar pain and the spasm of the sphincter completely pass away, and in almost all cases a permanent cure results. The healing process is usually complete in a fortnight or three

weeks. In unsuccessful cases insufficient division of the sphincter is the ordinary cause of failure.

A simplified method of treating fissured anus, based on a new view of its pathology, has been recently advocated by Mr. C. B. Ball,* of Dublin. He believes that fissure of the anus is not necessarily due to over-distension during the passage of hard fæces, but that it often arises from laceration of one of the mucocutaneous processes termed "anal valves" (see chapter on the Anatomy of the Rectum, page 34). One of these is caught by some projection in the fæcal mass, and its lateral attachments are torn; the sore is reopened and possibly enlarged at each motion, an ulcer results, and the torn-down valve becomes swollen and œdematous, constituting the so-called sentinel pile of the fissure. This torn anal valve may be compared with the little bits of torn skin often found at the sides of the finger-nails.

With regard to treatment, Mr. Ball asserts that removal of this little tag will cure the fissure. The method of operating is as follows:—The bowels having been previously fully relieved, and the patient being under the influence of an anæsthetic, the anus is thoroughly dilated with the fingers and the fissure or ulcer is exposed. The torn-down anal valve, often much hypertrophied, is seized with a suitable forceps and removed by a V-shaped incision with a pair of scissors. Any unhealthy granulation-tissue must then be scraped off with a sharp spoon, and the surface well dusted over with powdered boric acid. The other anal valves should be carefully examined, and any that may have been torn down should be similarly treated. The cure will then be as immediate and certain as when the little "torment" at the side of the finger-nail is shaved off level with the

* "Brit. Med. Journ.," September 12, 1891.

skin. Mr. Ball reported ten cases thus successfully treated.

We are scarcely prepared to accept as universally applicable Mr. Ball's explanation of the etiology of fissure, though it may hold good in some cases; nor do we see how this treatment can be employed when, as is often the case, the external tab is absent. It is, moreover, clear that Mr. Ball's plan involves much more than the mere removal of the tab, and we think that the good results attained must be largely ascribed to the preliminary dilatation.

CHAPTER XI.

ULCERATION OF THE RECTUM.

Ulceration due to various causes somewhat frequently occurs in the rectum. Erosions of the mucous membrane are often the starting-point of ulceration as a result of the irritation to which the bowel is exposed from the presence and passage of fæces. Wounds of all kinds and foreign bodies are obvious causes of ulceration; and a similar condition sometimes follows catarrhal inflammation, especially that form of it which is due to the application of gonorrhœal virus. Ulceration from this latter cause is apt to be severe and extensive; if it persist for any length of time, the submucous tissue may become hypertrophied, thickened, and indurated. In women, ulceration and stricture of the rectum are sometimes attributable to injury of the bowel during parturition. Prolapsed internal hæmorrhoids are another cause of ulceration. As a result of inflammation, they sometimes become gangrenous and are detached in fragments, leaving ulcers behind, which are very prone to bleed. Operations for the removal of hæmorrhoids and for fistula are occasionally followed by ulceration. Follicular ulceration is sometimes noticed in children who have suffered from chronic diarrhœa, and in adults towards the close of exhausting diseases. The solitary follicles

become inflamed and disintegrated, and finally open upon the surface of the bowel. These openings, at first very small, gradually enlarge, and small ulcers are formed, showing no tendency to heal, but rather to spread both superficially and deeply into the sub-mucous tissue. In this way the edges become undermined and soon disappear with the extension of the process. Union of the ulcers is another way in which the mischief spreads, and thus great loss of substance is apt to ensue. The muscular coat may be perforated, and the ulceration may extend into the bladder, vagina, etc.

Ulceration of the rectum is also caused by specific processes, the most important of these being *dysenteru*, *struma* or *tuberculosis*, and *syphilis*. In addition to these, rodent ulcer sometimes occurs in this part, and ulceration is, of course, a frequent concomitant of the malignant growths, and of stricture of the rectum.

Dysenertic Ulcers result from destruction of small patches of mucous membrane, and also from inflammation and disintegration of the follicles. The loss of substance is considerable, and rapid in its progress; the ulcers are large, deep, and irregular in form, and are apt to invade all the coats of the bowel; they are generally situated high up towards the sigmoid flexure, but they may extend almost to the anus. In the course of time the surface becomes uneven and slate-coloured, and puckered in places owing to partial cicatrisation. Destruction of the muscular coat is not uncommon in severe cases, and this is liable to be followed by abscesses, fistulæ, and sometimes by fatal peritonitis and pyæmia. If these ulcers heal, some amount of diminution of the calibre of the bowel is a certain result, and in severe cases bad forms of stricture are produced. Dysenteric ulcera-

tion for the most part occurs only in those who have lived in the East, and is always preceded by attacks of diarrhœa, with or without melæna.

Strumous or Tuberculous Ulceration of the rectum is seldom of primary origin; it occurs most often as a secondary process in persons suffering from pulmonary consumption. These ulcers are caused by the disintegration of small tuberculous nodules deposited in the mucous membrane and submucous tissue. They are sometimes scattered and sometimes closely packed together. The nodules, at first greyish in colour, soon become yellow as a result of softening; the surface gives way, and lenticular ulcers are formed. The bases and edges of these ulcers are dotted over with similar nodules, which soon become disintegrated, and thus the process extends both superficially and deeply. By the coalescence of several ulcers a large raw surface is formed, sometimes embracing the entire circumference of the bowel, the base and edges being, as before, studded over with grey and yellow nodules. These latter appearances are characteristic of this form of ulceration. Some of the deeper deposits may run a less rapid course, and, instead of softening, may become indurated and calcified. On the other hand, in much debilitated subjects disintegration and ulceration are the rule, and the latter process sometimes takes place without any previous deposit of tubercles.

Tuberculous ulceration rarely heals completely, but a few separate ulcers may undergo cicatrisation, which may be followed by contraction of the calibre of the bowel. In the majority of cases the ulceration progresses slowly but steadily, perforating all the coats of the rectum, and opening either into the peritoneum and causing fatal peritonitis, or into the ischio-rectal fossæ and giving rise to abscess and

fistula. This latter result is often witnessed in cases of pulmonary consumption. If the process advances, death generally occurs from exhaustion consequent upon hæmorrhage or diarrhœa.

A form of scrofulous ulceration has been distinguished from the tuberculous by the fact that the solitary follicles are the seat of caseous degeneration, which is followed by ulceration and deposition of tubercles around the ulcers. This, like the tuberculous form, occurs in cases of phthisis, and the only difference would appear to be as regards the place in which the deposit first occurs.

Another form of ulceration, termed *lupoid*, has been described as occurring in the rectum. It would seem to be closely allied to, if not identical with, tuberculous ulceration. Van Buren* suggests that such ulcers "are the result of bad habits of life in women of strumous constitution upon which syphilis has been ingrafted."

It is worthy of note that tuberculous ulceration sometimes involves the orifice of the anus and adjacent parts. The distinguishing characteristics of such an ulcer are its chronic course, and the presence on its surface of many yellowish nodules, especially near the margin, some being in a state of disintegration. The diagnosis would of course be aided by the discovery of symptoms of tuberculosis in other parts. The crucial test is the presence of the bacillus tuberculosis.

Syphilitic Ulceration will be described in a subsequent chapter.

The **symptoms** of ulceration of the rectum vary according to the stage and situation of the lesions, but as a general rule they resemble those of more or

* *Loc. cit.* p. 232.

less severe chronic proctitis. When the ulcers are small and high up in the rectum, they may exist for a long time without giving rise to any discomfort; but when the ulcers are large or near the anus they cause more or less distress and tenesmus. Frequent calls to stool and diarrhœa are prone to occur, the matters passed containing blood, mucus, and pus, and often being composed only of these materials. Sometimes constipation alternates with diarrhœa. In some cases diarrhœa occurs when the patient leaves his bed, the discharge consisting mainly of brownish mucus: When the mucous membrane covering the sphincters is the seat of ulceration, the pain is very severe and burning in character, and increased on defæcation. When the ulcers are higher up, the pain is often felt in the sacral region. In cases in which ulceration is associated with hæmorrhoids, severe bleeding is not infrequent. When contraction takes place, other symptoms are superadded; these will be described in the chapter on stricture of the rectum. Constitutional symptoms are almost always present in cases of ulceration of the rectum. The patient loses flesh and strength, and suffers from irregular febrile attacks. The stomach is often irritable, and vomiting is troublesome. Abscesses in the ischio-rectal fossæ and fistulæ are apt to occur, and the health is still further reduced. In chronic cases hectic sets in, and there is often amyloid degeneration of internal organs.

In **examining** cases of ulceration of the rectum, the sphincters are generally found to be firmly contracted, and the introduction of the finger or of the speculum causes severe pain. It is, however, necessary to make a careful examination of the part, and for this purpose an anæsthetic is sometimes desirable. An enema of warm water should first be

administered, and, after the sphincter has been dilated, the surface should be further cleansed by means of pieces of cotton-wool mounted on sponge-holders. Ulceration can usually be detected by means of the finger; but the speculum is sometimes required, and the rectoscope with the electric light is very useful. Examination with the finger alone enables us to judge of the extent of the ulceration, its depth, the condition of the base and margin, and likewise to determine the presence or absence of tumours or other growths. In cases of ulceration the skin around the anus is generally swollen and soddened by the discharges.

Leiter's "Panelectroscope"* (Fig. 46) is a very convenient instrument, and enables the surgeon to obtain a good view of the lower four or five inches of the rectum, and at the same time it allows of various topical applications being made through it to ulcers or other lesions. The mirror *Sp* is placed behind the lamp *L*, and its concavity permits of the concentration of the rays of light coming from the lamp upon the object, the operator looking over the upper edge of the mirror through a lens into the speculum (*R T*). The instrument is likewise adapted for lighting up the male and female urethræ, the ear, nose, œsophagus, and vagina, special tubes or specula being supplied for each organ.

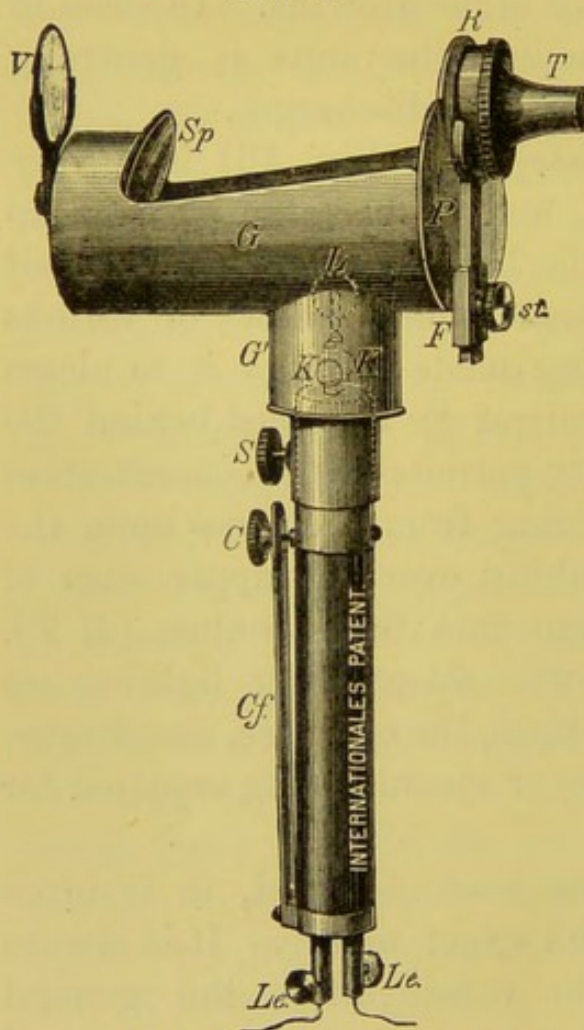
When ulceration has been detected, it is often difficult to determine its exact nature. It is always necessary to take into consideration the general condition of the patient, and to look for signs of constitutional disease in other organs. If there be evidences of tuberculosis in the lungs or joints, the

* This instrument is procurable from Mr. K. Schall, 55, Wigmore Street. In the woodcut the speculum *T* is not sufficiently large in circumference to fit into the rectal tube (Fig. 47). It is the size used for the urethroscopy.

nature of the process in the bowel will in all probability be of a similar character. A history or signs of syphilis will in like manner afford a clue to the nature of the local disorder. In syphilitic ulceration, evidences of the constitutional disease will rarely be absent. The genital organs, the glands in the groin, and the throat should be carefully examined.

Treatment.—In the treatment of ulceration of the

FIG. 46.



LEITER'S PANELECTROSCOPE.

FIG. 47.



RECTAL SPECULUM.

rectum, rest in the recumbent position is of primary importance; the healing process will not advance if the patient be allowed to follow his ordinary avocations. The medicinal treatment must be adapted to the circumstances of the case and the nature of the

lesion. In cases of *simple ulceration*, care should be taken to ensure a daily action of the bowels, by the use of mild laxatives when necessary. For local treatment, injections of black wash will be found useful, and when a more astringent action is desirable a solution of nitrate of silver (gr. ij. to ℥j.) may be tried. If there be much irritation, an ointment containing subnitrate of bismuth, calomel, and morphine may prove more efficacious. It can be easily applied by the aid of Allingham's little instrument (Fig. 12). Severe pain can generally be allayed by the application of cocaine ointment (gr. xx. to ℥j.). For rectal ulceration occurring in *scrofulous* and *tuberculous* subjects, cod-liver oil is of course indicated; it may be combined with iodide of iron and other tonics. By way of local treatment, the best plan is to scrape the ulcers with a sharp spoon, after forcible dilatation of the anus. Powdered iodoform should then be applied with the aid of an insufflator. For *dysenteric* ulceration, bismuth, opium, and ipecacuanha should be given internally, and solutions of nitrate of silver, hazeline, or decoction of oak-bark form suitable injections. Dr. Stephen Mackenzie* recommends Dr. Horatio Wood's plan of copious injections of weak solutions of nitrate of silver (℥ss.—℥j. to Oijj.). The rectal tube employed for the purpose should have a closed end, and an opening at the side; it should be passed into the bowel until eight to twelve inches are introduced, when the fluid, at about the temperature of the body, should be slowly pumped in. The tube may be connected with an ordinary enema syringe or with a funnel, which can be raised to a suitable height. Eight or ten injections may be required, but sometimes one or

* "Lancet," 1882, vol. i. pp. 640, 681.

two will suffice. In all these cases the abdomen should be carefully protected from cold, and the diet requires very minute regulation. Eggs, milk, bread, and meat are suitable; vegetables should be forbidden, or allowed only in very small quantities. A little wine—port, claret, or burgundy—may be given in debilitated cases.

CHAPTER XII.

STRICTURE OF THE RECTUM.

Stricture of the Rectum is a condition in which the calibre of the bowel is diminished by changes in its walls. The rectum is, of course, liable to be encroached upon by enlargements and tumours of neighbouring organs, *e.g.*, the prostate, bladder, or uterus; by abscesses in the ischio-rectal fossæ; by a hydatid cyst in the pelvis between the rectum and bladder;* and likewise by tumours formed within the bowel itself. In another class of cases the bowel is compressed by exudations and bands of fibrous tissue, the result of pelvic cellulitis. Such forms of obstruction are, however, to be distinguished from the condition to which the term "stricture" is properly applied.

Causes.—The *causes* of stricture of the rectum are of two principal kinds, *viz.*, inflammatory deposit and cicatricial contraction after ulceration; and these two processes are frequently associated, the latter being consequent upon the former. A third variety is said to be due to permanent atrophic shortening of the fibrous element of the levator ani muscles (Cripps). Spasm of the circular muscles of the bowel often aggravates an organic stricture, but it cannot, *per se*, give rise to permanent diminution of calibre. Chronic catarrh of the bowel is the ordinary cause of inflammatory stricture. The mucous membrane, submucous tissue, and the muscular coat are progressively infil-

* See a collection of 52 cases by E. Hurry Fenwick in the "Path. Soc. Trans.," vol. xlii.

trated, and the fibrous degeneration of the deposit is attended by diminution of the calibre of the bowel. Ulceration plays, however, a much more prominent and obvious part in the production of stricture ; and owing, as already stated, to the function of the part, this process is very apt to occur, and, once set up, to spread deeply as well as superficially. Cicatrisation is accompanied by contraction, which not only persists, but becomes greater as time goes on.

The causes and symptoms of ulceration of the rectum have been already described. **Syphilis, dysentery,** and **struma** (or **tuberculosis**) are the most important factors. Strumous ulceration is very common. **Syphilitic** ulceration is most often due to the disintegration of gummatous growths, and is therefore connected with the tertiary stage of the disorder. The opposite opinion of Gosselin must be regarded as quite untenable. He considered that "rectal stricture, described as syphilitic, is not of constitutional origin, but a lesion developed above a chancre of the anus, that is to say, inflammation is developed around the chancre and spreads to a certain height above it ; and this suppurative inflammation, close to the sphincter, leads to hypertrophy where this muscle touches the ampullary portion of the bowel, and to ulceration in this latter part."

This view has been adopted by several French surgeons, but it is irreconcilable with plain facts. A soft sore in the neighbourhood of the anus may spread into the rectum, and give rise to ulceration and subsequent contraction, but the latter process involves especially the anus, at all events it is more marked at the orifice. Moreover, strictures of the rectum, undoubtedly syphilitic in origin, are usually developed after an interval of several years has elapsed since infection, and at a time when no ex-

ternal lesion is manifest. Such cases must be regarded as of constitutional origin; their etiology will be described in the chapter on syphilitic affections of the rectum. A history of syphilis is obtainable in 25 or 30 per cent. of all cases of stricture of the rectum.

The ano-rectal syphiloma, described by Fournier, does not necessarily lead to ulceration. It consists of a kind of diffuse gummatous infiltration, which tends to take on a fibroid character and progressively to contract. The submucous tissue and the muscular coat are the chief seats of this deposit, and strictures of this character are very rigid and indurated.

Ulceration due to dysentery is another cause of stricture of the rectum, though opinions differ as to the frequency of such a complication. On the one hand, Dr. Woodward, the Surgeon-General of the United States Army, reported that no case of intestinal stenosis, resulting from the contraction of dysenteric ulcers, could be found in the departmental records of the War of the Rebellion, and that the Army Medical Museum contained no specimen of the kind. On the other hand, Dr. Joseph Ewart, formerly Professor of Medicine at the Calcutta Medical College, states* that if the ulceration involve "a large portion of, or the whole circumference of, the mucous membrane, the subsequent contraction may produce dangerous narrowing of the calibre of the gut or stricture of the sigmoid or rectum. When the seat of stricture can be reached, as in the lower part of the rectum, much relief can be afforded by simple incision, and subsequent dilatation by means of bougies." In fatal cases of tropical dysentery the morbid changes are sometimes found to extend from the cæcum to the anus, and to be most

* Article on Dysentery, Quain's "Dictionary of Medicine," p. 410.

severe in the sigmoid flexure and rectum. In cases which terminate in recovery, the symptoms not infrequently indicate that these parts of the bowel are especially affected. But unless the submucous connective tissue be involved, the cicatrisation of the ulcers is not likely to result in serious contraction.

Tuberculous ulceration frequently occurs in the rectum, but whether it often leads to the development of a stricture may well be doubted, inasmuch as it rarely if ever heals. We have, however, met with several cases in which stricture of the rectum undoubtedly resulted from tuberculosis.

Other causes of rectal stricture are injuries of various kinds, *e.g.*, such as result from the introduction of foreign bodies; from surgical operations; and, in women, from the pressure of the child's head during parturition. In all these cases the stricture results from the contraction which occurs during cicatrisation. The greater the loss of substance, and the more prolonged the suppuration, the greater will be the risk of subsequent contraction. The application of nitric acid to internal hæmorrhoids, and the too free use of the actual cautery in cases of prolapsus, are occasional causes of stricture. In excising external piles, it is necessary to avoid the removal of too much integument, otherwise contraction of the anal orifice is likely to result. Stricture of the rectum is in some cases congenital. The subjects of the acquired form are generally middle-aged.

Anatomical Appearances.—These differ according to the stage and cause of the lesion. In the majority of cases the stricture is within three inches of the anus, and, when the ulceration has been very severe, the calibre of the bowel may be reduced to that of a quill, or even altogether obliterated. In such cases the walls of the strictured portion are com-

posed of fibrous cicatricial tissue, much indurated and firmly resisting attempts at dilatation, and creaking on section. Small collections of purulent matter are sometimes to be found in the walls, and these may give rise to fistulæ, which are not infrequent as a complication. Above the stricture the bowel is considerably dilated in consequence of the accumulation of fæces; the muscular coat is hypertrophied; the mucous membrane is ulcerated for a variable distance, and often presents fungoid granulations, especially in the neighbourhood of the constricted portion; ulceration often exists below the stricture. The strictured portion varies in length: in extreme cases the bowel for four or five inches may be converted into a firm unyielding tube; in an opposite class of cases the lesion may be represented by a linear contraction. Severe strictures are for the most part tubular, and involve the whole circumference of the bowel. Sometimes the contraction is crescentic, and sometimes annular or in the form of a ring round the bowel. The cause of the stricture cannot be inferred from its position, inasmuch as lesions due to syphilis and those resulting from dysentery are both found to occupy the same portion of the bowel.

The most reliable statistics which appear to have been published with regard to the position of rectal strictures are those of Perret, who reports fifty-eight cases. In four of these the stricture began at the anus; in thirty-two the strictured portion was less than six centimetres distant; in three, at six centimetres; in seven, between six and nine; in five, above nine; and in a similar number at the junction of the rectum with the colon. As stated above, the majority of strictures are within three inches of the anus. In cases in which the stricture has resulted

from chronic catarrh, without ulceration, the sub-mucous tissue is considerably hypertrophied and indurated, but there are no cicatrices or other evidence of loss of substance (Bushe). The stricture thus formed is sometimes complicated by enormous hypertrophy of the glands above and below it, to such an extent as to form a broad ring of greyish-white colour and soft consistence, resembling a medullary cancer in appearance. The tissue is, however, of a glandular nature, and it may form the starting-point of cylindrical epithelioma (Esmarch).

Lesions of adjacent parts not infrequently accompany stricture of the rectum. Sometimes openings form into the vagina and bladder; in other cases openings take place into the ischio-rectal fossæ, into which fæcal matter finds its way, with abscesses and fistulæ as results. Redundant skin, eczematous eruptions, and excoriations are often met with about the anus, and the tissues in the ischio-rectal fossæ are liable to become infiltrated and indurated as a result of chronic inflammation.

Symptoms.—When ulceration has preceded the stricture, the symptoms of the former condition will have existed for a shorter or longer period. Some time, however, may elapse before those of stricture become superadded. In cases not due to ulceration the symptoms are generally of a very insidious character. In syphilitic cases, in which the stricture is preceded by gummatous deposits and ulceration, defæcation will be attended with severe pain and the discharge of more or less ichorous pus, which irritates the skin of the anus and produces painful excoriations. This discharge has a peculiarly offensive odour.

The patient at this stage often complains of pains in neighbouring parts, *e.g.*, the lower part of the

abdomen, the loins, scrotum, and penis; and uterine catarrh is common in females. Cramps in the lower extremities and coldness of the feet are also common, and the appetite and digestion are more or less impaired. There is, however, nothing characteristic about these symptoms.

When the calibre of the bowel has become reduced, there will be more or less difficulty of defæcation and obstinate constipation. The patient finds that aperient medicines are required in increasing quantities, and even after their use he is often conscious of a sensation as if the bowel had not been properly emptied. Ordinary injections are of little service, for they return unchanged. From time to time attacks of diarrhœa occur. In some cases the symptoms of intestinal obstruction come on very rapidly; but, more often, as contraction slowly advances the constipation becomes more obstinate; accumulation, sometimes to an enormous amount, takes place above the stricture; the evacuations consist of fæces in small fragments, often mixed with mucus and abundant puriform secretion stained with blood. When the stricture is situated close to the anus, the evacuations are generally of a more solid character, consisting of long thin pieces. If, on the other hand, the stricture be high up in the rectum, the fæces may appear almost normal in shape, as they have room to collect between the strictured portion and the anus. As the constriction becomes more severe, attacks of diarrhœa are increasingly frequent, the matters passed containing little fæces, but much mucus and pus. The abdomen becomes enormously distended with gas; on percussion the colon is found to contain much solid fæcal matter, and the patient's sufferings are much increased; the stomach becomes irritable, and eructations are frequent. The general symptoms already

mentioned become aggravated; the whole system appears to suffer, and symptoms of profound hypochondriasis are generally prominent. Some patients become very anæmic and cachectic.

Stricture of the rectum seldom exists for any length of time without giving rise to some of the complications already mentioned, such as suppuration and its consequences, prolapsus, and hæmorrhoids. Severe febrile symptoms, profuse diarrhœa, irritation of the bladder, and neuralgic pains in the legs are seldom absent in severe cases. The symptoms are, for the most part, proportionate to the degree of constriction and the extent of ulceration. In fatal cases death occurs from exhaustion, from intestinal obstruction, from perforation of the bowel above the stricture, or from peritonitis. It is worthy of note that in some cases of stricture of the rectum the symptoms are very mild and indefinite. In others they are almost or quite absent, and the lesion is discovered only after death.

Diagnosis.—Examination by the finger affords the most reliable evidence of stricture of the lower part of the rectum. By this means it is possible to explore an extent of the healthy bowel varying from four to five inches; and the majority of strictures occur within these limits. In such cases, as the finger is passed upwards, a more or less hard and firmly resistant ring will be felt; great pain is caused when attempts are made at dilatation; and little, if any, change is produced. When an obstacle is felt to the passage of the finger, attempts should be made to follow the canal of the bowel. If the opening of the constricted part be in the centre, it will be felt by the tip of the finger. The opening may, however, be near to the wall of the bowel, and a fold of mucous membrane may still further impede the passage of the finger. The track may

also be sinuous and obstructed by fungous granulations. When, however, the finger can be introduced into the stricture, information is gained as to its condition with regard to narrowness, length, induration or resiliency and other particulars. In women, vaginal examination will aid the diagnosis. When the stricture is in the lower part of the bowel, the finger in the vagina will discover its extent and amount of induration, and likewise any swelling formed by the accumulation of fæces above the obstacle. In all cases the speculum and rectoscope (see Fig. 46) may be used to aid the diagnosis, but the information obtained by the finger is the most valuable, and is generally sufficient.

When the stricture is too high up to be thus reached, it is necessary to have recourse to bougies of various kinds. Great gentleness is necessary, and if, after trying this method for a few days, no progress is obtained, an effort should be made to introduce an olive-headed sound or bougie. If this can be passed through the stricture, until the extremity is free beyond it, and then withdrawn, the length of the constriction can be accurately measured. There are several sources of error in examining for a supposed stricture out of reach of the finger. The bougie may impinge against the promontory of the sacrum and be there stopped, and a fold of mucous membrane may produce the same result. It is well to use a hollow bougie through which a stream of water may be injected when an

FIG. 48.



C. WRIGHT & CO. LONDON

BOUGIE FOR THE
DIAGNOSIS OF
STRICTURE OF
THE RECTUM.

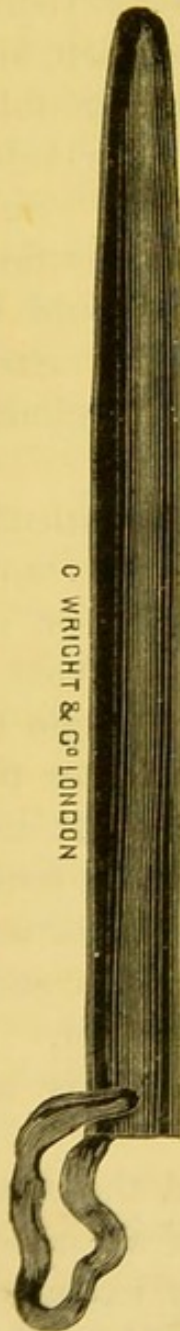
obstacle is met with. A flexible bougie is liable to bend upon itself when it meets with an obstacle. We can, however, be sure that we have a stricture to deal with when the olive-headed sound after overcoming an obstacle is felt to be free, and when on withdrawal a similar difficulty is experienced. If in a patient presenting the symptoms already described, this result is obtained on repeated examination, the obstacle being always experienced in the same situation, there is strong evidence of the existence of a stricture. It must, of course, be remembered that various other conditions, such as diseases and displacements of neighbouring organs, may so affect the rectum as to give rise to many of the symptoms of stricture. Among these the principal are enlargements of the prostate, tumours of the bladder and large calculi, tumours and displacements of the uterus and ovaries, effusions between the bladder and rectum, bony and other growths from the pelvic bones, and tumours in the rectum itself. The absence of all these conditions should be decided upon, before arriving at a positive diagnosis.

Treatment.—As in the analogous condition of the urethra, stricture of the rectum may be dealt with either by dilatation or incision, and the operative measures are of several kinds, the object of course being the restoration as far as possible of the normal calibre of the bowel. As might be expected, favourable conditions for treatment are more likely to be present (1) in recent cases; (2) when the stricture is low down and of slight or moderate extent; (3) when adjacent parts are not involved; (4) when the patient's constitution is not much impaired. Before beginning any operative procedures, the history of the case should be carefully considered. In cases presumably due to syphilis, constitutional

treatment is insufficient; local measures are always required.

In all cases of stricture of the rectum, mechanical dilatation by means of bougies is the first method to

FIG. 49.



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CONICAL RECTAL BOUGIE.

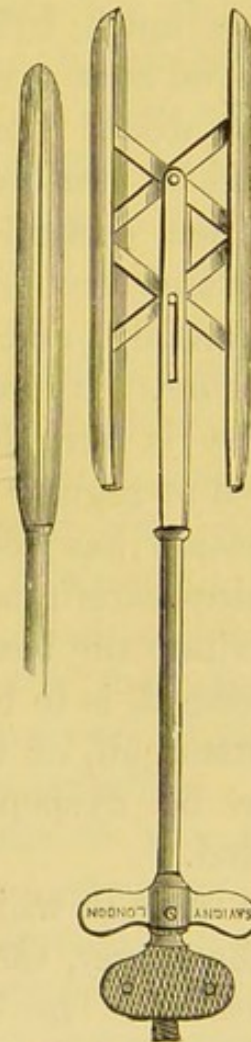
be thought of. Such treatment must be conducted with great care on the part of the surgeon, and it is necessarily a tedious process, generally requiring several months for its accomplishment. No

force should be used in introducing the bougie; neglect of this precaution has been followed by fatal results, due to rupture of the peritoneal coat. These instruments are of various sizes, and the conical form is the most suitable (see Figs. 49 and 50).

Supposing that the stricture is within three inches of the anus and will admit only the smallest bougie, the instrument, previously warmed and well oiled, should be passed as far as it

will go. The patient should be kept in bed, and the introduction of the bougie should be repeated on each succeeding day until the stricture is per-

FIG. 50.



TODD'S DILATOR.

meable to its full extent; a bougie of the next larger size should then be used, and so on until the requisite amount of dilatation is effected. In the case of annular strictures, near the anus, this dilatation may be facilitated by making a few incisions through the indurated tissues, and by using Todd's dilator. These incisions should not be too deep, and three or four are usually sufficient. Should troublesome hæmorrhage occur, a hollow vulcanite tube, open at both ends, should be introduced. Subsequently the bougie is passed and kept in position, unless much irritation is the result. It should be removed once a day for the bowels to act, and afterwards dilute Condy's fluid or solution of sublimate should be used as an injection.

When dilatation is accomplished, the patient's symptoms are much relieved, the bowels act more comfortably and regularly, and with little or no straining. It must, however, be remembered that a relapse is very liable to occur, unless the bougie be passed at regular intervals for some months after the dilatation has been effected. The patient's diet also requires careful attention, and everything which tends to irritate the bowels must be avoided. Constipation, if present, is to be dealt with by mild laxatives, such as castor oil, or the compound liquorice powder. If there be dyspepsia and flatulence, bismuth is indicated.

In cases in which the stricture is beyond the reach of the finger, the difficulties of treatment are much increased. The bowel should be carefully examined by means of the olive-headed probe, or sound consisting of a vulcanite ball mounted on a pewter stem having a flattened handle (Fig. 48). The position, length, and other characters of the stricture having been ascertained, attempts should be made to dilate it, and a

wax bougie is the best and safest instrument for this purpose. It should be passed in the direction of the bowel, viz., backwards and towards the left side, and when an obstacle is met with, only the least degree of force should be used. When the point of the instrument has entered the stricture, it will be more or less closely gripped thereby, as will be felt on attempting to withdraw it. Very little force should be used; there are several cases on record in which the bougie was driven through the bowel, with fatal peritonitis as a result. Peritonitis, indeed, may be set up in the absence of perforation. When the stricture has been reached, the bougie should be allowed to remain *in situ* for a few minutes or even longer, provided that no great amount of irritation be set up. The patient is of course to be kept in bed and at rest, and all due precautions must be adopted with regard to diet.

Other methods are required for treating cases in which no improvement can be effected by the use of the bougie, either because the induration and contraction are too great to be thus dealt with, or the cicatricial tissue resists the efforts at dilatation. The question as to the employment of caustics may be dismissed in a few words. The effect of these agents is only to make matters worse; destruction of tissue is followed by fresh cicatrices and contraction. The use of the galvanic cautery is open to the same objections. Forcible dilatation is dangerous and indeed criminal; it is impossible to determine how far the lacerations may extend. The various methods by incision remain for consideration, but before discussing these, reference must be made to a recent plan of treatment, viz., that by **electrolysis**.

Mr. Edwards having for some years past employed electrolysis in the treatment of non-traumatic stric-

thus performed:—The patient being placed in the lithotomy position, the operator passes his left forefinger as far as possible into the rectum, through the stricture if this be permeable, and if not, as far as its commencement. A curved sharp-pointed bistoury is introduced along the finger, and the edge is then turned towards the sacrum. The point is made to transfix the bowel above the stricture and is brought out at the coccyx, all the intervening tissues being thus divided. This operation is termed *linear proctotomy*; it has now been performed upon a large number of cases, with a considerable amount of success. There need be no fear of severe hæmorrhage, provided that the incision be made in the median line. If, however, any bleeding should occur which cannot be arrested in the ordinary way, the tube and cotton-wool should be inserted as before described.

In order to achieve the desired result, Professor Van Buren advocates a *lateral* section, and the use of the knife of Paquelin's thermo-cautery, at a cherry-red heat, for the division of the parts. He begins the operation from below, dividing the external sphincter and extending the incision gradually upwards by repeated strokes of the cautery knife, using boxwood spatulæ to keep the parts asunder, so that the interior of the bowel and the stricture can be fairly brought into view. After the use of the cautery knife, the divided surfaces are retracted and covered with an eschar, which prevents fæcal infiltration. The after-treatment consists in keeping the wound clean by syringing with a weak solution of permanganate of potassium. It is well to be provided with a second thermo-cautery knife ready for use, as the blade is apt to get covered with carbonaceous incrustation from the charred tissues, and its cleansing

(which is to be effected by raising the heat and scraping) causes a little delay. Dr. Van Buren thinks (and we fully agree with his opinion) that in cases of stricture complicated with fistula, it is not always necessary to lay open fistulous tracks after complete longitudinal division, as they will sometimes get well spontaneously.

The results of this operation are often very remarkable. Patients regain, at all events for a time, the control over the bowel, which they had previously lost, though in tubular strictures, contraction is prone to recur after the lapse of a year or two, and is again accompanied by incontinence. In such cases we have to fall back upon colotomy, which will be described in a subsequent chapter.

CHAPTER XIII.

MALIGNANT DISEASE OF THE RECTUM AND ANUS.

Malignant disease affecting the intestines is most commonly situated in the **rectum**. The statistics of 4,567 cases of cancer treated in the Vienna General Hospital,* show that the rectum was involved in 143 instances, and other parts of the bowels in thirty-seven. Rectal cancers, therefore, constituted 3 per cent. of the whole, as contrasted with .76 per cent. in the case of other parts; while the former were 80 per cent., and the latter 20 per cent., of all cases of cancer of the intestines. The statistics of the Brompton Cancer Hospital show that out of a total of 1,908 cases of cancer admitted, fifty-eight (slightly more than 3 per cent.) were suffering from cancer of the rectum. The proportion, therefore, agrees with that yielded by the Vienna statistics.

Cancer of the rectum very rarely occurs before the *age* of forty; but several cases of patients under twenty have been placed on record. At St. Mark's Hospital, out of forty-seven operations for rectal carcinoma, during the past seven years, only two of the patients were under thirty years of age. With regard to *sex*, our statistics at St. Mark's show (see page 3) that males are more prone to suffer than females. The collective statistics of Bryant, Heuck,

* Ziemssen's "Cyclopædia," vol. vii. p. 636.

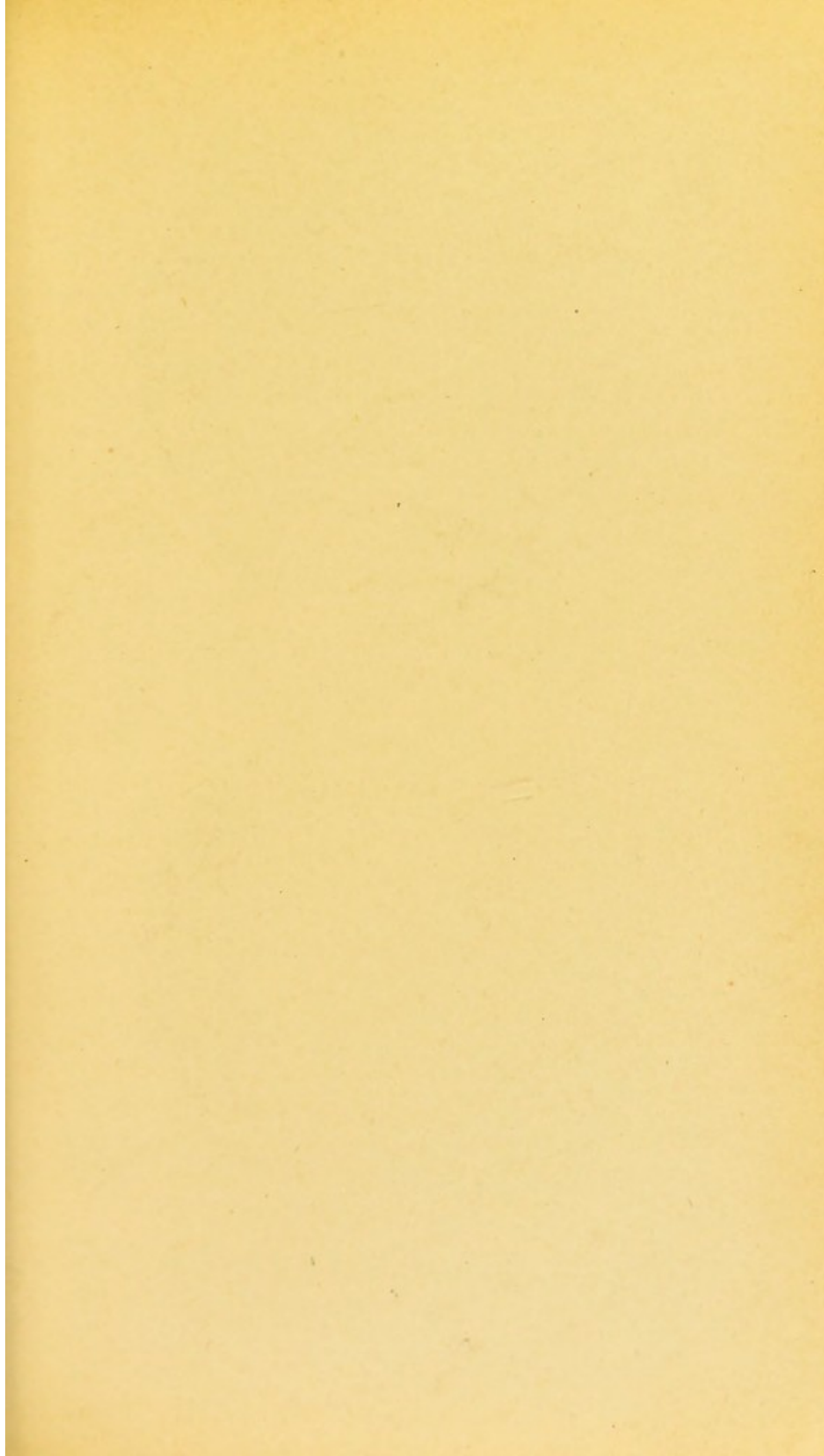


PLATE V.

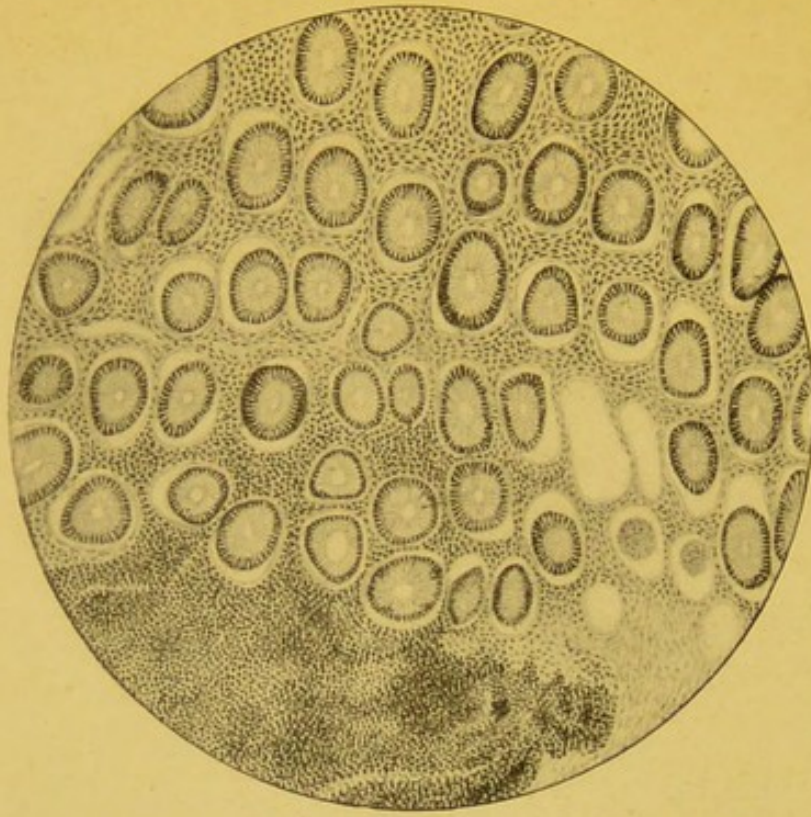


FIG. 1. MALIGNANT ADENOMA OF RECTUM. X 110.

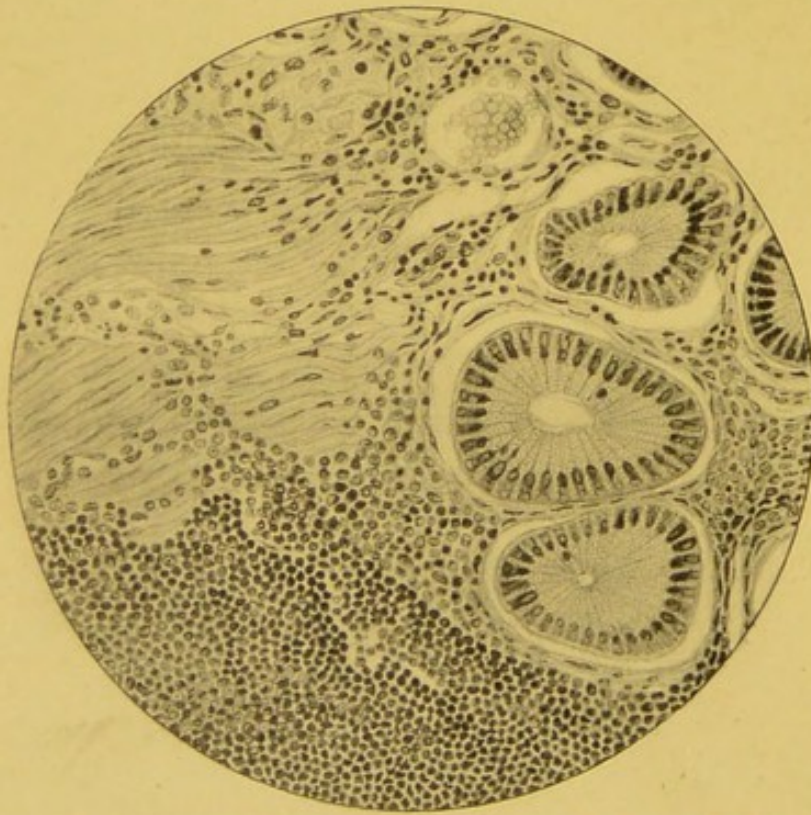


FIG. 2. MALIGNANT ADENOMA OF RECTUM. X 230

Hildebrand, and Stierlin,* embracing over 400 cases of rectal cancer, would show that the disease is twice as frequent among males as compared with females. On the other hand, of 257 cases, collected by Mr. W. R. Williams,† 130 were males and 127 females. As to the causation of cancer of the rectum, nothing can be definitely stated. Heredity is sometimes traceable, though by no means so often as is generally supposed. Volkmann‡ states that hæmorrhoids and chronic catarrh of the rectum predispose to the development of cancer, and that the latter sometimes follows dysenteric and syphilitic ulceration.

Malignant growths occurring in the rectum have been variously classified, and descriptions have been given of five kinds, viz., *scirrhus*, *medullary*, *colloid*, *cylindrical epithelioma*, and *alveolar sarcoma*. Recent investigations have, however, shown that the large majority of these growths may be included under the heading of *adeno-carcinoma*, or destructive adenoma.§ When much fibrous tissue is mixed with the newly-formed glandular structures, the growth is hard and resistant; when the neoplastic tubules are in excess, and the fibrous tissue delicate and scanty, the tumour is soft and fungous, and corresponds with the description of medullary cancer. A gelatinous condition, due to mucoid or colloid change affecting the cells, has given rise to the designation "colloid" as applied to the growths. The three terms, *scirrhus*, *medullary*, and *colloid*, therefore signify varying conditions of a growth or parts of a growth composed essentially of glandular tubules and epithelial cells.

* "Annals of Surgery," vol. xi. p. 207.

† "Lancet," May 24, 1884.

‡ "Sammlung Klinischer Vorträge," No. 131.

§ Cripps, *loc. cit.* 338.

Adeno-carcinoma takes the form either of a level and extensive thickening of the mucous membrane, or of papillary or fungous outgrowths. The first step in its production is the formation of neoplastic tubules in the mucous membrane, the normal constituents of the membrane simultaneously disappearing. Starting thence, the neoplasm invades the *submucosa*. It intrudes itself along the intermuscular septa between the bundles of the *muscularis*, and finally extends along the serous layer. The formation of the neoplastic tubules is accompanied by small-celled infiltration throughout the fibrous tissue, showing that proliferation is going on in this latter also. The invasion of the neighbouring tissues is the first step towards the formation of metastases. The lymph-spaces of the tissue are certain to be encountered by the advancing growth, and when this happens, the path of infective transport stands open (Ziegler).

Epithelioma Ani.—When the skin surrounding the anus is primarily affected, the disease appears in the form of a warty or nodular growth or a diffuse thickening. As in **epithelioma** elsewhere, ulceration is prone to occur; the disease is also liable to extend into the bowel. The growths contain large epithelial nests, made up of large multiform squamous cells. In some cases, a malignant growth, commencing in the interior of the rectum, and of the type of adeno-carcinoma, extends downwards and invades the anus, where it presents the characters of epithelioma. This difference in structure is somewhat peculiar, for when adeno-carcinoma spreads by metastasis, the new growths are found to contain the same follicular structures as are met with in the original formation.

Adeno-carcinoma occurs in the rectum in three forms, which may be severally distinguished as the *laminar*, the *tuberous*, and the *annular*.

PLATE VI.

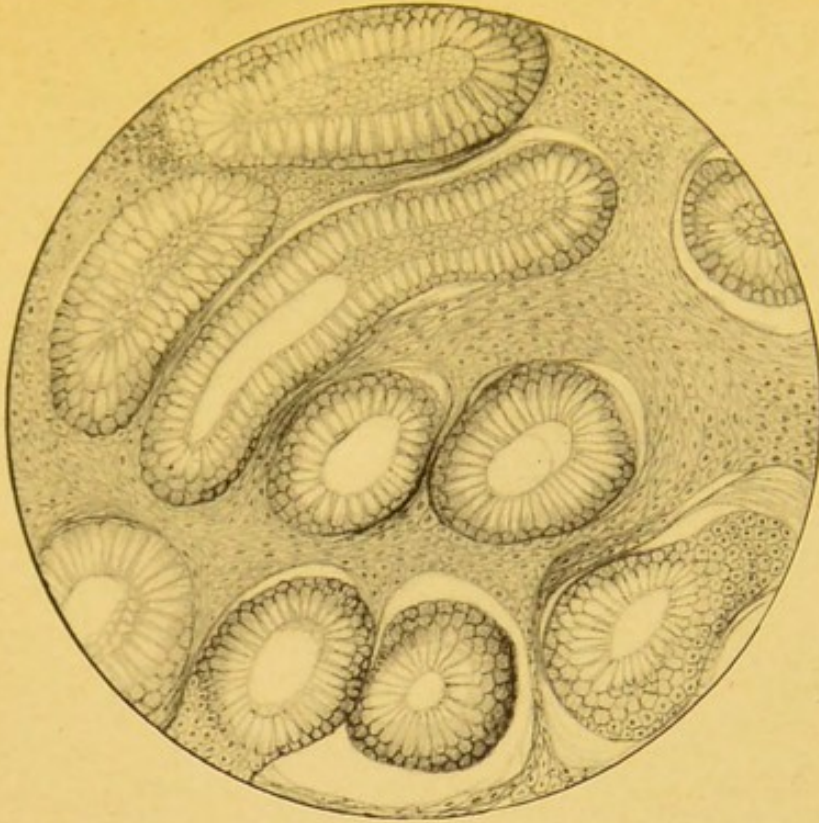


FIG. 1. POLYPUS OF RECTUM. (SIMPLE ADENOMA.) X 110.

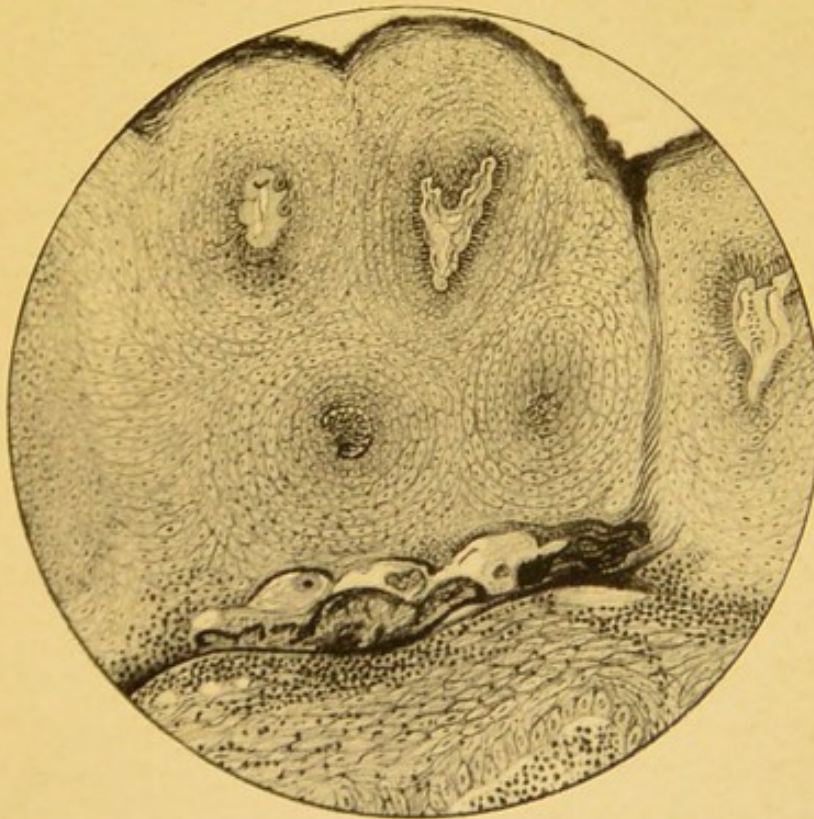
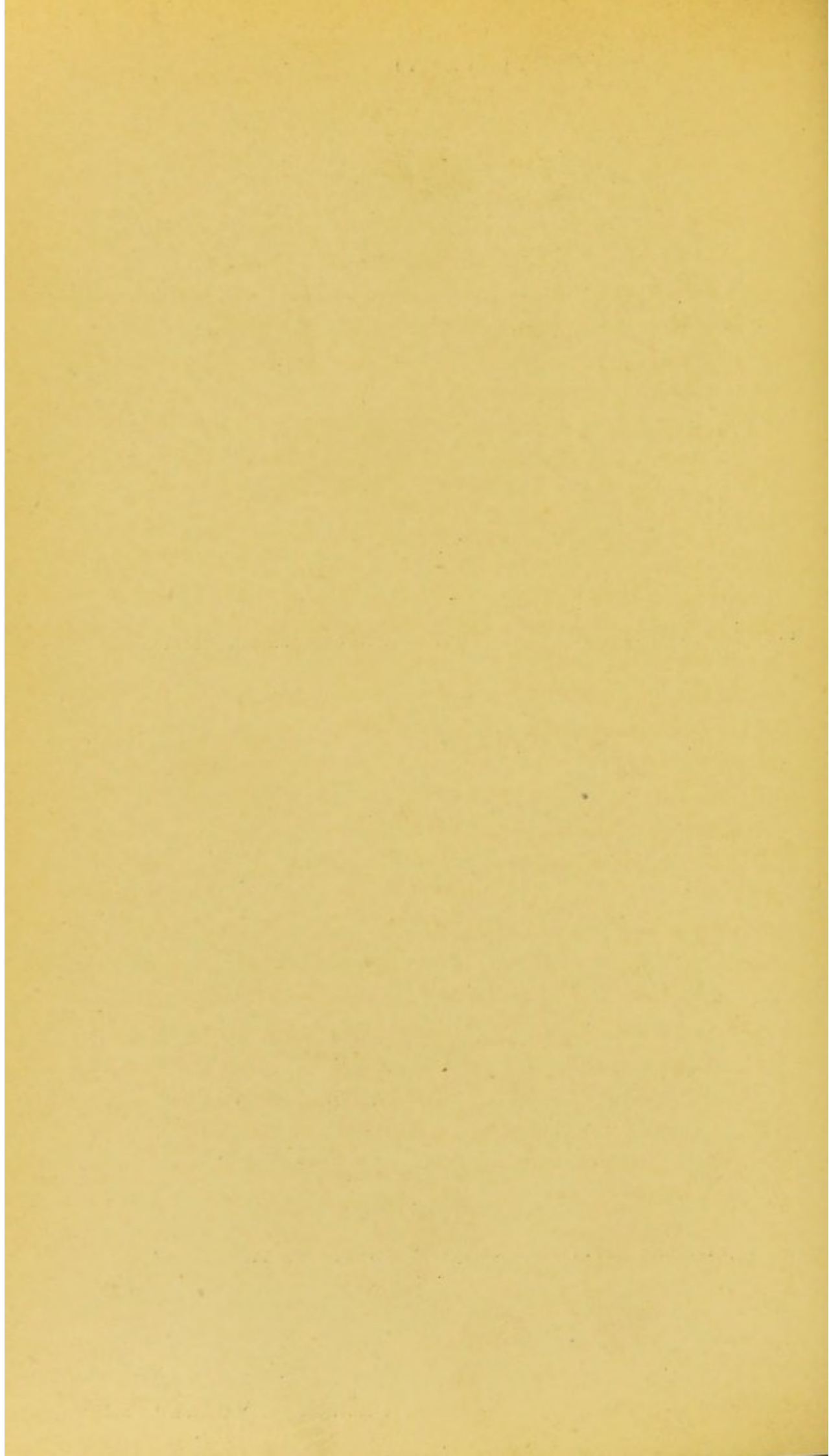


FIG. 2. EPITHELIOMA OF ANUS. X 110.



In the *laminar* form, which is the most common, a portion of the intestinal wall is infiltrated or thickened, the affected area varying in size according to the stage of the disease. The thickening appears to exist between the muscular and mucous coats, and it tends to spread laterally rather than either upwards or downwards. Its centre is slightly raised, while the edges are bevelled off. The growth is connected with and binds together all the tissues of the bowel, but at first is freely movable as a whole. After a while, the surface of the neoplasm gives way, leaving a ragged ulcer with characteristically infiltrated borders. The destruction generally begins near the centre and extends towards the circumference; but sometimes ulcers form at several points on the surface. As the process advances, the infiltration is gradually eaten away; its remains may be recognised as nodules or papillary excrescences rising from the base or border of the ulcer. In later stages, the base may be smooth, clean, and hard, being formed by cicatricial tissue and the remains of the muscular coat; while the edges are hard and raised, and either tolerably uniform or beset with nodular or papillary growths. Much connective tissue is developed beneath the base of the ulcer, and becomes constricted and puckered, as these changes are in progress. The course of the growth is sometimes different, inasmuch as the deposit is only partially destroyed by the ulceration, and its remains sprout up and form tumours projecting into the cavity of the bowel. The ulceration sometimes has another result, viz., destruction of the coats of the bowel and perforation of adjoining viscera. This occurred in a case under Mr. Edwards' care; the finger could be passed through the ulcer into the bladder, and the patient passed most of his urine through the rectum.

In the *tuberous* form the growth projects into the bowel. Its consistence varies, being sometimes hard and firm, and in other cases, soft and fungoid. One such mass may be present; or there may be several growths of the same character, but varying in size. At first the mucous membrane, though firmly adherent to the tumour, remains intact, but is soon destroyed by ulceration, and a portion of the growth is then apt to project through the opening thus made. Sometimes the membrane gives way at several spots, at which nodules or larger portions protrude. Such outgrowths are soft and friable. Sometimes the destructive process is too rapid for the development of fungoid growths; when the surface gives way, the ulceration continues to extend deeply and superficially until the muscular coat is laid bare. The cancerous process invades the neighbouring tissues and structures, *e.g.*, the bladder, urethra, or vagina, and openings are made into these parts. The process again may extend towards the sacrum and involve the nerves and the bones of the pelvis. Occlusion of the bowel by a fungoid mass is a less frequent result.

In the *annular* form the growth begins as a deposit between the mucous and muscular coats, and extends laterally so as to involve the whole circumference of the bowel, but does not spread upwards to any great extent. The subsequent contraction diminishes the calibre of the bowel, and causes a marked degree of stricture.

Rectal cancer, whatever form it may assume, is very prone to originate *metastases*, or *secondary growths*, which are most often developed in the liver. The germs which give rise to these metastases are the cancerous epithelial cells, which are conveyed to the liver by the blood-vessels. The places where the cells lodge and develop are the smaller branches of the interlobular veins, or the capillaries of the lobules.

The first stage in the development is the multiplication of the imported cells within the capillary where they have lodged. The vessel becomes distended, and the surrounding hepatic tissue is compressed or thrust aside. As the nodule grows, a newly-formed fibrous stroma grows up among and between the cancer-cells, and separates them off into large and small clusters or nests, whose general grouping recalls the type of the parent tumour. The liver-cells either dwindle and atrophy, or are interpenetrated by strings of cancer-cells starting from the nodule. Such secondary growths may pervade the entire liver; and when they are both large and numerous, the size of the organ is much increased and its surface is uneven and tuberos. On section, the tumours appear white or yellowish white, with, perhaps, a tinge of red (Ziegler). Mr. Cripps* states that "the secondary deposits in the liver, when following rectal disease, cannot merely be identified as consisting of the columnar cells of the rectum, but that they actually in the liver grow into a gland-tissue identical with Lieberkühn's follicles of the rectum." He believes that the nuclei of the epithelial cells of the mucous membrane of the intestines find their way into the subjacent retiform tissue, pass thence through the lymphatics into the blood-stream, where they become identical with the leucocytes. Such cells in a diseased condition accumulate in the liver or lymphatics, and produce tumours containing tissue similar to that of the parent cells.

Symptoms.—The early symptoms of cancer of the rectum are, for the most part, of an indefinite character, and some time may unfortunately elapse before they become so urgent as to induce the patient to seek medical advice. The change first noticed is

* *Loc. cit.* p. 330.

generally a feeling of uneasiness in the bowel and lower part of the back, and after exercise this may amount to actual pain, of a dull, heavy character. Sooner or later there is likely to be a little diarrhœa, without obvious cause, and generally most troublesome soon after rising in the morning. On close observation, the fœces may be noticed to be streaked with blood, and a little thin sanious discharge appears somewhat often. As time goes on, the stools are found to contain more blood and slimy offensive matters, either mixed with the fœces or passed separately. This bleeding is very often ascribed (either by the patient or his medical attendant) to piles, and thus valuable time is allowed to pass until, in too many cases, removal is found to be impracticable owing to the advanced stage of the disease. The rule should, therefore, be adopted of making an early examination in all cases of piles.

Alternating with these symptoms, difficulties of defæcation, amounting perhaps to complete obstruction, are liable to occur from time to time. After such a condition has existed for some days, during which perhaps only a little glairy fluid has escaped, a large quantity of fœcal matter mixed with blood, sanious pus and *débris*, is discharged after great straining. The patient is more or less relieved, though the feeling that something more has to come away is wont to recur. The obstruction to the passage of fœces is due to the growth of the cancer, portions of which block up the bowel, and detachment of fragments is the cause of the relief. Sometimes small polypoid growths project from the diseased surface, and, during straining efforts at evacuation, descend to the anus and come in contact with the sphincter, producing spasmodic contractions. Intussusception of the rectum is another condition, which sometimes

results from cancerous deposit, and causes severe obstruction.

With the progress of the disease, the *pain* usually increases in severity, but this symptom varies very much in different cases. In some, the prevailing feeling is rather that of uneasiness or fulness in the bowel; in others, the pain is intense and distressing to a degree, particularly after the passage of a motion. When present, it is felt in the rectum and perinæum generally, whence it radiates to the adjoining parts and to the thighs, legs, and loins. When the anus and sphincter are involved, the local pain is generally very great. The patient can seldom sit on a chair, but has to keep in the recumbent position. Pain is often very severe over the sacrum, especially when the disease is situated high up, and at the posterior part of the bowel, so as to encroach upon the nerves of the sacral plexus. It may, however, be almost entirely wanting, even during defæcation, while other symptoms, such as diarrhœa, discharge of blood and *débris*, emaciation, etc., are very prominent. Pain is sometimes more marked in certain parts at a distance from the seat of the lesion, *e.g.*, the feet and legs, than in or near the rectum itself. Obstruction of the bowel and straining efforts at defæcation will tend to aggravate the pain, and a like result will follow extension of the disease to the bladder and the setting up of inflammation in the neighbourhood of the growth.

The *discharge from the bowel* likewise varies in quantity and quality in different cases. Blood is always present at some period, and the hæmorrhage is sometimes very copious. In the early stages, the blood is derived from the congested vessels in the neighbourhood of the growth; but later on, the hæmorrhage is due to ulceration and erosion, as

well as to congestion. The hæmorrhage has been known to be so severe as to cause death. Profuse and frequently recurring hæmorrhage from the bowels, in the absence of hæmorrhoids, is always suggestive of malignant disease, but it must be remembered that blood passed *per anum* may possibly be discharged from a lesion much higher up in the bowel, and even from one in the stomach. In a case admitted into St. Mark's Hospital, fatal hæmorrhage from the rectum was caused by a small deep ulcer of the stomach, which had opened into the gastric artery (see page 11). Absence of vomiting of blood was a remarkable feature in the case.

Muco-purulent and sanious discharges are very frequently noticed. In the early stage, the discharge consists of whitish mucus; as time goes on, the colour becomes dark and often resembles that of coffee-grounds. An offensive odour is always noticeable in connection with the discharge; but is not specially characteristic of cancer. The quantity varies from time to time; accumulation frequently occurs and is relieved by the escape of a large quantity. Fragments of diseased tissue are often mixed with the muco-purulent matter, and in some cases, when examined under the microscope, are found to contain cancerous elements.

Akin to the muco-purulent discharges is the *diarrhœa* which always attends some portion of the course of the disease. It is often noticed in the morning, being apparently provoked by the movements necessary for dressing. Ordinary exercise and the drinking of hot or cold fluids are liable to produce a similar effect. The quantity passed may be very small, and may consist chiefly of mucus; the patient experiences but little relief, and probably returns several times to the closet, still feeling that the bowel contains matters

which ought to come away. Constipation of various degrees often alternates with the diarrhœa; but in some patients the constipation comes on suddenly, being due to obstruction, and is one of the first symptoms of the disease. The shape of the fæces varies with the size and position of the growth and the state of the parts. Sometimes only small fragments come away with much straining; when the calibre of the bowel is much reduced, the fæces may consist of long slender pieces, either rounded or flattened. Excoriation is often set up in the skin of the anus, and greatly increases the patient's sufferings. If the disease extend downwards, the anal orifice is likely to become patulous, in which case, thin fæces and discharge from the growth will escape involuntarily.

Invasion of neighbouring organs sooner or later takes place during the course of cancer. As above stated, the bladder is occasionally involved, an opening being established between the cavities. Sometimes urine passes into the rectum; in other cases, fæces find their way into the bladder and are discharged by the urethra. The peritoneum is also liable to become involved, and in women, the recto-vaginal septum is occasionally perforated, with escape of fæces into the vagina as a result. The uterus is seldom invaded by the disease. In both sexes abscesses sometimes form and open either externally or into adjacent organs. In a case recorded by Mr. Wagstaffe,* ulceration of the bowel above the growth led to perforation and the formation of an abscess which again opened into the rectum below the cancer, thus making a new passage for the fæces. Hæmorrhoids are a somewhat frequent complication, and one which ought to be remembered. We have known two or three cases

* "Path. Soc. Trans.," vol. xx. p. 176.

operated upon for piles, while the probable cause of the latter, viz., a carcinoma, high up in the rectum, was not discovered, and therefore not treated.

Constitutional symptoms rarely fail to make their appearance. There is loss of flesh and strength, and a pale waxy condition of the face, while the conjunctivæ have a yellowish tinge. Œdema of the lower limbs is sometimes present, and is due to involvement of, or pressure upon, the iliac veins. The degree of cancerous cachexia varies in different cases; its progress is apt to be very rapid whenever hæmorrhage is copious and frequent. Enlargement of the liver may often be detected at this period, and as the emaciation progresses, irregular elevations can sometimes be felt on the surface of the organ. The pelvic and lumbar lymphatic glands also become enlarged, and the former can sometimes be felt through the bowel.

With the further progress of the disease, the canal of the rectum may be completely blocked by cancerous deposit, when the symptoms of obstruction will ensue. The abdomen becomes much distended; hiccough and vomiting set in, and death follows unless relief be obtained by giving way of the obstruction or surgical interference. In other cases death occurs from exhaustion, due to pain and hæmorrhage, or from acute peritonitis.

The *duration* of the symptoms varies in different cases, and depends to some extent upon the age of the patient and the character of the growth. In young subjects the disease generally runs a rapid course; and when the growth is soft, its effects are more quickly produced than when the cancer is small and hard or takes the form of a superficial ulcer. The average duration of life, in cases of rectal cancer, from the time when the disease was

first detected, may be said to be about two years. The extremes vary from six months to four or even five years.

The symptoms, as above detailed, are those of malignant disease involving the rectum. As already stated, the anus is sometimes the seat of epithelioma, which precisely resembles epithelial cancer of the lower lip. Its progress at first is slow, but from its position, the patient's attention is soon attracted to it. The base of the ulcer is hard, and the process spreads, until it involves more or less of the circumference of the anus. The sphincter becomes indurated and loses its elasticity, so that defæcation is very painful, and provokes lacerations of the opening, which greatly aggravate the patient's distress.

Rodent Ulcer.—Mention must here be made of rodent ulcer, a form of malignant disease, which very seldom attacks the rectum; we have seen only three or four cases. The disease begins at the verge of the anus; but it is very rarely seen by the surgeon in this stage. A little ulcer is soon formed and enlarges more or less rapidly, spreading over the perinæum as well as extending into the rectum. The ulceration is superficial rather than deep, but it may extend in the latter direction. The margin is abrupt and irregular and neither hard nor raised; the surrounding mucous membrane appears quite healthy. The base is very red and smooth and inclined to be dry and glossy; the discharge when present is thin and scanty. A few granulations sometimes appear, and some amount of cicatrisation may even take place, but the cicatrices soon break down, and the ulcer spreads as before. There is not the solid deposit characteristic of epithelioma, but we believe this to be a slow-growing variety of the disease, and one which does not affect the lymphatic glands

or cause deposits in remote parts to the same extent as ordinary epithelioma.

According to some Continental authorities, rodent ulcer is identical with flat-celled epithelioma; but, according to Mr. A. T. Norton,* the two conditions are distinct. He states that in rodent ulcer, the columns are not so much aggregated together, and do not bud to such an extent as in epithelioma. They are often widely separated by inflammatory tissue, which, when formed around isolated columns, causes them to shrink up and even to be destroyed and cast off as small sloughs. This process is followed by contraction of the ulcer at various points, and by apparent cicatrisation and even real healing. These stages account for the slow progress of the growth and its prolonged continuance. Sections under the microscope exhibit much inflammatory tissue, some formed fibrous tissue, and scattered nests of cylindrical epithelioma.

Severe pain is a prominent symptom of rodent ulcer of the rectum. It is described as of a gnawing, burning character, and seldom abates. It is aggravated by moving about and by the action of the bowels; blood is constantly present in the stools. In women, the ulcer may burrow into the vagina and extend in that canal. The ulceration is not attended with any constriction of the bowel; on the other hand, the opening may be more patulous than usual. The course of the disease is always from bad to worse; the ulceration continues to extend and death results from exhaustion, the progress of which is sometimes accelerated by attacks of diarrhoea.

Diagnosis of Rectal Cancer.—The relative prominence of the symptoms varies greatly in different

* "Rodent Ulcer of the Rectum," "Medical Press and Circular," 1887, vol. ii. p. 561.

patients, and for the determination of their import, a digital examination is always required. For this purpose, the bowel should be quite empty, and hence the previous use of an enema is advisable. The patient is placed in the position described in Chapter II. The anus should be carefully examined; it may be red and œdematous from the irritation of discharges, or there may be a protruding fungous mass. In the early stages the anus is likely to appear normal. When the finger has been passed as far as it will go, and nothing abnormal has been detected, the patient should be requested to strain down so as to bring another inch or more of the rectum within reach.

When induration or a tumour can be detected by the finger, its position and extent should be very carefully investigated. The surgeon will bear in mind the various forms under which malignant disease presents itself (see page 190), and also the fact that the part most often affected is about two inches from the anus, a healthy portion of bowel being interposed between the latter and the growth. This portion, however, is apt to become involved in advanced stages. It sometimes happens that a fragment can be detached by the finger, and a microscopical examination will then aid in determining the nature of the case. The height to which the growth extends, and the involvement or otherwise of adjacent parts, have an important bearing upon the question of treatment. If the growth be movable and the finger can be passed above it, the ordinary operation of excision will suffice; but under different circumstances, either a modification of the operation or colotomy will be required.

With regard to the **differential diagnosis**, cancer may be mistaken for *chronic inflammatory thickening and*

stricture, for *syphilitic disease*, for *villous tumour*, *disseminated polypi*, and for other *innocent growths*. The symptoms of **Simple Stricture** most closely resemble those of cancer, and in a few cases, a diagnosis can be made only after careful examinations and observation of the patient for some little time. The duration of the symptoms is an important point. Cancer runs its course somewhat rapidly; during the second year, if not before, its symptoms almost always become serious and prominent. Its progress is, moreover, attended by a varying amount of cachexia; but, on the other hand, fibrous stricture generally causes deterioration of the general health. There is less pain connected with simple stricture, and the discharge is of a different character, being slight in quantity, thin, and for the most part muco-purulent. In the advanced stages, however, the discharge may be dark and copious, owing to the spread of ulceration. Hæmorrhage very rarely occurs, except in connection with the latter process. Fibrous stricture, moreover, is apt to extend lower down the bowel, so as to leave no healthy portion between its border and the anus. The mucous membrane above the orifice loses its velvety surface, and does not move freely over the subjacent tissues, but is felt to be rigid and adherent. The strictured portion is less rigid than in malignant disease, and generally appears to be funnel-shaped from below, whereas in the latter the margin is abrupt and raised above the mucous membrane. Sometimes a hard nodular ring of cancerous deposit can be clearly felt, more marked at one portion of the circumference. In other cases masses of new growth can be felt, either as distinct tumours and protruding into the bowel, or as flat plates or patches beneath the mucous membrane. Enlargement of the sacral lymphatic glands can

sometimes be detected through the wall of the rectum, and the inguinal glands are apt to become infiltrated when the cancer has approached the anus.

Syphilitic Stricture is more common among women than among men, and is connected with the later stages of the disease. Ulceration, due to the breaking down of gummatous deposits, is followed by cicatrisation and contraction. Syphilitic ulceration may extend three or four inches up the bowel, being separated by a distinct line from the healthy mucous membrane. The ulcerated surface is remarkably uneven and irregular, and is generally interspersed with patches of undermined epithelial tissue. The inflammation attacks chiefly the submucosa, and destroys it more rapidly than the overlying strata. In advanced cases, the whole of the mucous membrane may be destroyed, while the other coats are infiltrated and matted together and much contracted. Ulceration about the anus, due to chancres, may likewise cause a stricture of the orifice. In both conditions, the history of the case and the previous symptoms will make the diagnosis clear.

Villous Tumour of the rectum is very rare, and is for the most part easily distinguishable from malignant disease. It is soft to the touch, non-friable, but resistant, and thus differs essentially from an indurated malignant tumour. When a fungoid mass is present, there might be some chance of a mistake; but a cancerous growth of this character is friable, and portions are easily detached with the finger nail, with free hæmorrhage as a result. The discharge from a cancer is generally dark and mixed with *débris*; that from a villous growth is viscid and mucous in character and only occasionally stained with blood, except when protrusion takes place at every evacuation, and is attended with considerable

hæmorrhage. The surface near the attachment of the growth is normal and not adherent to the subjacent parts; there is no feeling of induration. The duration and accompanying general symptoms vary considerably in the two diseases. In cancer, and especially when there is a fungoid tumour, the progress is rapid and always accompanied by evidences of ill health. Villous growths may exist for indefinite periods, and without affecting the general health, unless there be much hæmorrhage.

The symptoms caused by **Multiple Polypi** in some cases more or less resemble those of malignant disease; but a careful examination and the history of the case will serve to distinguish between them. Polypi give rise to hæmorrhage and to discharge of mucus, but the blood is generally bright red in colour and unmixed with *débris*. Examined by the finger the growths are felt to be isolated and movable, and the coats of the bowel are free from induration. It must, however, be remembered that malignant adenoma sometimes exhibits a tendency to become pedunculated or constricted at its base, but this phase is only temporary, for the growths always spread from their points of attachment. There is another fact of great importance, viz., that in the adult, polypoid growths recurring after removal, sometimes take the form of malignant disease. Van Buren* mentions such cases, and a remarkable instance is recorded by Mr. Thomas Smith.† The patient, a man aged twenty-five, had been operated upon for rectal polypi on several occasions since his twelfth year. The growths frequently recurred, and he died in 1887 with symptoms of peritonitis. On post-mortem examination, the lower part of the

* *Loc. cit.* p. 329.

† "St. Bart. Hosp. Reports," vol. xxiii.

sigmoid flexure was found to be the seat of adenoid cancer which caused an almost impervious stricture of the bowel. Below this, there were many polypoid growths similar to those which had been removed during life. These polypi were of the adenoid variety, most of them having slender stalks, but a few were sessile.

A very rare, if not a solitary case of *cancer of the rectum*, in which many *spicules of bone* were mingled with the growth, has been recorded by Mr. Wagstaffe.* The patient was a lady, aged fifty-four, who had suffered for twenty years from abdominal pain, irregularity of the bowels, and discharge of blood and mucus. At no time could any tumour be detected either in the rectum or in the abdomen. Death was preceded by symptoms of obstruction, and on post-mortem examination, a cancerous mass was found in the rectum at a distance of four or five inches from the anus. The principal tumour, about the size of a walnut, occupied nearly the entire calibre of the rectum; above it, the greater portion of the circumference of the bowel was involved. When first laid open, the surface of the cancer generally presented a nodulated red appearance, but the larger mass was roughened in its lower half by many sharp spicules of bone. The portion which occupied the cavity of the rectum was softer than the remainder of the growth, and its lower part contained many spicules of true bone, some of which also projected from its surface.

There was no evidence of malignant deposit elsewhere than in the obstructed portion of the rectum. The juice which exuded from the cut surface showed under the microscope an immense number of free nuclei and cells of all shapes and sizes, though most

* "Path. Soc. Trans." 1869, vol. xx. p. 176.

of them were elongated or oval, and about half the size of the columnar epithelium of the neighbourhood. The solid portion of the growth was composed of cellular and nuclear structures, embedded in a granular matrix. The bony spicules contained numerous lacunæ, whose size was about that of the ordinary nuclei of the growth. The interest of the case was due mainly to the discovery of the bony growths in the tumour, and that these were the result of ossification of its tissues seemed evident from the manner in which the process could be traced under the microscope.

Sarcoma.—Doubts have been expressed as to whether growths of the *sarcomatous type* occur in the rectum. They are certainly rare in this portion of the bowel, but several well-authenticated instances have been met with. The following case of sarcoma of the anus was under Mr. Edwards' care:—

CASE 15.—J. G., aged sixty-four, came to St. Mark's Hospital complaining of a swelling about the anus.* He stated that with the exception of occasional bleeding at stool, he had been quite well until six years previously, when he noticed a small swelling at the margin of the anus. This gradually became larger, but four months ago the increase began to be much more rapid, the growth enlarging one-fourth during that time. There was no pain or difficulty in defæcation, but considerable pain and discharge were occasioned by sitting. The inguinal glands were slightly enlarged, and during the last few months the patient had been getting much thinner. The growth was sessile, and completely obscured all view of the anus (see Fig. 51). It measured five inches antero-posteriorly and three and a-half inches transversely across, and had a lobulated secreting surface; there was no induration of the surrounding skin, and the rectum was not involved. From the centre of the growth there was a fistulous track opening into the rectum dorsally about one inch above the sphincter. Microscopical examination of a small portion removed from the tumour showed it

* The patient was shown to the members of the West London Medico-Chirurgical Society at a meeting held April 5, 1889.

to be a mixed-cell sarcoma. Mr. Edwards removed the growth in May, 1889. The patient was last seen on 3rd of July of that year, and was then quite well.

A case of sarcoma of the rectum occurred a few years ago in the Pennsylvania Hospital, under the care of Dr. R. J. Lewis.* The patient was a man, aged forty-three, who had suffered from troubles in defæcation for about three years. On examination, a tumour was discovered in the rectum, as large as "a foetal head;" it protruded from the anus when the

FIG. 51.



SARCOMATOUS GROWTH.

patient strained down. It was found to lie beneath the mucous membrane, in the submucous structures or in the connective tissues. The growth was drawn down with the aid of hooks, and removed by enucleation. It was found to weigh twenty-four ounces, and to measure three inches in diameter. It was dense and elastic in structure, and its microscopical characters were those of spindle-celled sarcoma.

Mr. Ball† refers to two specimens of sarcoma of

* "Boston Medical and Surgical Journal," December, 1883, p. 620.

† *Loc. cit.* p. 319.

the rectum, contained in the Museum of the Royal College of Surgeons of Ireland. In one of these cases, an enormous mass, 5×4 inches, projected from the anus, and the disease extended up into the rectum for about two inches, but did not cause any obstruction. Sections of the tumour were found to consist "of small spindle cells, with but little fully developed connective tissue." In the second case, the microscopical appearances were of a similar character; but the neoplasm had led to the formation of a long tubular stricture, which began about one inch inside the anus, and extended upwards for a distance of five inches, evenly surrounding the intestine, and measuring one inch in thickness at the middle portion.

Esmarch* reports a case of *alveolar sarcoma* of the rectum. The patient was a man, aged fifty-six, who for three years had complained of difficulty and pain in defæcation and occasional loss of blood from the bowel. A tumour gradually prolapsed from the anus when the bowels were moved, and became so large that it could not be replaced. On examination, it was found to occupy the left side of the aperture, and to extend upwards for more than two inches into the rectum. The patient's general health was tolerably good, and no enlarged glands could be detected. The growth was removed without much difficulty, and found on examination to be a small-celled sarcoma, with a well-marked alveolar structure.

A case of *lympho-sarcoma* of the rectum is recorded by Mr. Ball.† The growth, which formed a tumour in the hollow of the sacrum, appeared to have originated in the muscular coat of the bowel; the mucous membrane was entirely unaffected, and freely movable over it. Linear proctotomy was performed for its removal, but the growth was found to be very soft,

* *Loc. cit.* p. 183.

† *Loc. cit.* p. 322.

and broke down under the finger. Microscopical examination showed that the structure coincided with the descriptions given of lympho-sarcoma.

In connection with these examples of sarcoma of the rectum, the following case, apparently of cystic sarcoma involving the sacrum, possesses some interest:—

CASE 16.—J. S., aged seventy-one, admitted into St. Mark's Hospital under Mr. Cooper's care in March, 1890. He stated that he had suffered from piles for forty-five years, and latterly had had great difficulty in keeping them up. Complained also of a swelling on the left side of the sacrum; this was found to be tender to the touch, irregular and hard, except at one point where fluctuation could be felt; the skin was freely movable over it. Auscultation revealed a præ systolic and systolic murmur: urine normal. March 11: The patient being under ether, Mr. Cooper applied ligatures to several piles. On introducing a finger into the rectum, fluctuation could be felt in the tumour, which Mr. Cooper incised (through the bowel), thinking that it was an abscess. A large quantity of blood escaped, and on examination of the cavity, the sacrum was found to be eroded. The case was thought to be one of cystic sarcoma of the sacrum, and no attempt was made at removal. To restrain hæmorrhage, the cyst was washed out with tinct. ferri perchlorid. and plugged with cotton-wool; on the following day the patient was comfortable, and there had been no return of the bleeding. On the evening of the 13th the patient complained of pain, which was relieved by opium. In the night he suddenly became blanched and pulseless; there was no hæmorrhage from the bowel. Crepitation could be felt over the buttocks and back. Ether was injected subcutaneously, but the patient never rallied; death was presumably due to recurrent hæmorrhage. The patient's friends would not allow an autopsy to be made.

Melanosis.—Melanotic growths constitute another class of neoplasms which are sometimes found in the rectum. One such case was reported by Mr. Moore* as a "fungating growth of melanosis." It occupied a portion of the verge of the anus, but did not extend far up into the bowel. The growth was excised,

* "Medical Times and Gazette," 1857, vol. i. p. 261.

together with a large portion of the external sphincter; about sixteen months afterwards, there were indications that the upper part of the rectum was affected, but there were no external signs of disease.

The records of ten cases of melanosis of the rectum (including Mr. Moore's) have been collected by M. Nepveu* in a paper presented to the "Société de Chirurgie de Paris." The age of the patients ranged between forty-five and sixty-four years. In five cases the microscopical examination showed that the growths were of a sarcomatous character. The seat of the disease was—once in the sigmoid flexure; twice in the rectum above the sphincter, and four times at the anus. Secondary deposits are wont to occur in the adjacent glands, and the original growths tend to spread and to become ulcerated. The course of the disease is more or less rapid; in four cases in which the growth was removed signs of recurrence soon appeared.

Subsequently to the publication of M. Nepveu's essay, Mr. Ball met with a case of melanotic sarcoma of the rectum, an account of which is to be found at page 323 of his work.†

* "Bulletins et Mémoires de la Société de Chirurgie de Paris," 1880, p. 82.

† See also "Lancet," 1885, vol. i. p. 65.

CHAPTER XIV.

THE TREATMENT OF MALIGNANT DISEASE OF THE RECTUM.

IN dealing with a case of cancer of the rectum, several courses are open to the surgeon; the choice of these will depend upon certain conditions. The methods generally available may be classified as follows:—(1) Removal of the diseased portion of the bowel, and, as a substitute in certain cases, removal of the growth or of portions thereof by the aid of a sharp scoop or spoon. (2) Operative treatment of a palliative character, the object sought to attain being the formation of an artificial anus in the groin or in the lumbar region. (3) Palliative treatment by means of drugs, etc., the objects aimed at being the comfort of the patient and the diminution of suffering. The second plan, *i.e.*, colotomy, inguinal and lumbar, will form the subject of the next chapter.

Excision of the Rectum was first performed by Lisfranc in 1822; but the recent revival and extension of the operation are due to German surgeons. Such names as Volkmann, Czerny, Billroth, Esmarch and Kraske are intimately associated with proctectomy, whilst Messrs. Cripps, Allingham (senior and junior), Reeves, Jessett and Jessop have done good work in this line in our own country.

Extirpation of the diseased portion is attended with very good results in properly selected cases. To be successful, it should be as complete and early as possible. It is especially suitable for cases in which the lower part of the rectum alone is affected, and the finger can be passed above the diseased portion. If there be a healthy strip of mucous membrane between the anus and the disease, the upper limits of which are within reach of the finger, the case is still more suitable for operation, inasmuch as the sphincter can be preserved intact. As in other operations for cancer, a sufficient margin of healthy tissue should be removed with the disease. Subject to the conditions above mentioned, the operation is advisable even when the disease has existed for some time, for as a general rule, in cancer of the rectum, the lymphatic glands remain unaffected until a comparatively late period. The cases which afford the best prognosis are those of epithelioma of the anus. When only a portion of the circumference of the rectum is implicated, *e.g.*, where there are one or more circumscribed and movable nodules, these should be freely excised, after forcible dilatation of the anus.

The dangers of so serious an operation as removal of several inches of the rectum are as follows: *hæmorrhage*, which is often free, but can generally be controlled without much difficulty; *purulent inflammation* and infiltration of the connective tissue of the pelvis, causing septicæmia, etc.; *injury to the peritoneum*, followed by peritonitis. Purulent inflammation can generally be prevented by the free use of antiseptics during the operation, and in the subsequent treatment, and by taking care that all discharges from the wound are allowed to escape freely. Even if the peritoneum be opened, fatal inflammation will not necessarily occur, provided that antiseptic

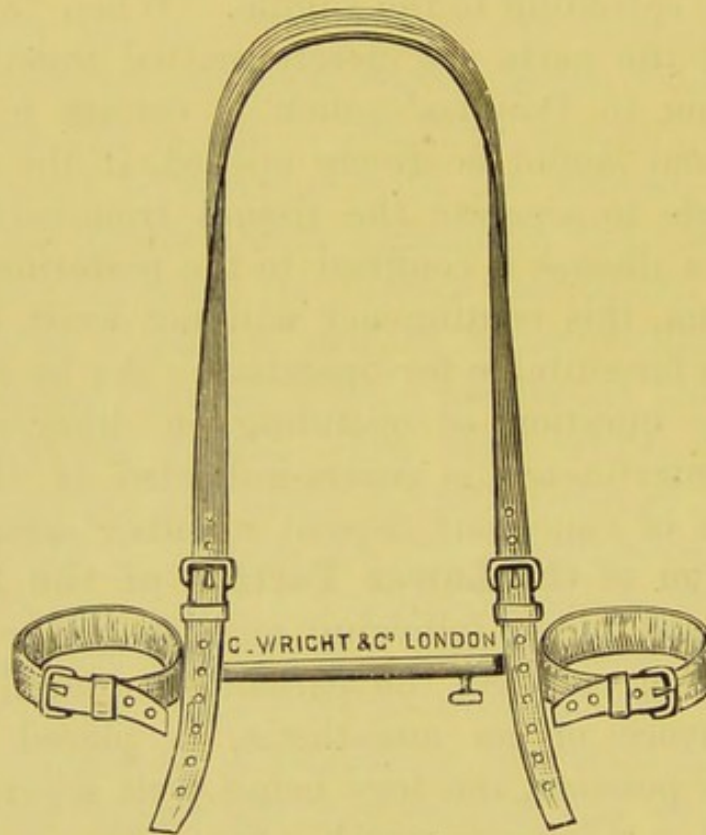
precautions be adopted. The opening into the peritoneum, if large, may be closed by suture, or, if small, a sponge sprinkled with pulv. iodoform. should be kept in apposition with it for twenty-four hours.

The operation, as a whole, is contra-indicated if the disease extend beyond the reach of the finger, and likewise if the adjacent structures be much implicated. Such extension to neighbouring parts is more common in female patients, the disease generally spreading to the vagina. When this is the case, and the parts are closely matted together, the peritoneum in Douglas' pouch is certain to be involved, and would be freely opened, if the attempt were made to separate the tissues from each other. When the disease is confined to the posterior part of the rectum, this contingency will not exist, and the case is so far suitable for operation. As in deciding upon the question of operating in other cases of cancer, interference is contra-indicated if there be evidences of cancerous deposit in other organs.

Excision of the Lower Portion of the Rectum is performed in the following manner:—The bowels having been emptied, the patient, thoroughly under the influence of an anæsthetic, is placed in the lithotomy position, the legs being well separated by means of a Clover's crutch (Fig. 52). A strong, sharp-pointed, curved bistoury is passed through the anus, and its point made to perforate the bowel in the central line behind, as high up as convenient, and brought out at the tip of the coccyx. The operation so far is thus what is termed "linear proctotomy." An incision in the form of a horse-shoe, beginning and terminating at the anterior extremity of the first incision, is next made through the skin around the anus, or, if the disease does not extend to that part, through the mucous membrane

just above the external sphincter. The next step is to separate the bowel from its attachments, and for this purpose it is convenient to transfix it with several loops of strong whipcord, by means of a curved needle, inserted outside the bowel, and passing out from the anus. The ends of these ligatures are knotted and tied together, and by making traction with the left hand, the separation of the bowel from

FIG. 52.



CLOVER'S CRUTCH.

the adjacent parts is much facilitated. An assistant also draws aside the outer margin of the wound with a retractor; the fibres of the levatores ani are cut through all round, and the surgeon uses his finger or the handle of the scalpel to effect the necessary separation of the bowel from the adjacent parts. Anteriorly the adhesions may render this part of the operation very difficult. In the male it is advisable to have a bougie or catheter passed into the bladder,

to serve as a guide to the membranous urethra, which is liable to be opened in this part of the operation; in the female, assistance will be obtainable by passing a finger into the vagina. Posteriorly, the parts can be separated without difficulty. The necessary manipulations are continued until the upper border of the diseased portion has been passed; if hæmorrhage occur, the vessel should be sought for, and the clamp-forceps applied. The large arteries are between the bowel and the sacrum. When the gut has been separated to a sufficient length, it should be drawn down by means of the ligatures, and divided transversely above the diseased portion by the aid of a wire *écraseur* or curved scissors.

After removal of the gut, ligatures are to be applied to any bleeding vessel, and the wound should be syringed with a solution of carbolic or boric acid, or of perchloride of mercury (1 to 2000). If there be much oozing, a sponge covered with powdered iodoform may be pressed into the bottom of the cavity, and dry cotton-wool and a T-bandage are then to be applied. Condyl's fluid diluted is used as a wash to keep the parts clean. Small doses of morphia are given to relieve pain, and food of a nourishing and easily digestible character, such as milk, eggs, and beef-tea, should be administered. The bowels must be kept from acting for a few days by means of opium or catechu. The wound must be kept as clean as possible until cicatrisation has taken place. It has been recommended to draw down the bowel and stitch it to the skin, but experience shows that this is not only unnecessary but ineffectual, as the sutures generally give way.

When the case progresses favourably, the large gap resulting from the operation is gradually filled up by granulations, and in about six weeks cica-

trisation is complete. The relief to the patient is enormous, and some amount of control over solid motions is generally acquired as time goes on. The distance between mucous membrane and skin gradually diminishes, and in some cases (even where four inches of bowel have been removed) a prolapse of mucous membrane has been known to occur. The patient is for the time being, and possibly for months or even years afterwards, rid of his complaint and able to follow his employment; and the normal position of the anus is retained. Recurrence may of course take place, but the early and free removal of the disease renders the prognosis decidedly hopeful in this respect. One point requires especial attention in the after-treatment, and that is the prevention of contraction as a sequela of the operation. For this purpose, if healthy granulations have sprung up, the rectum-tube, of as large a size as possible, should be introduced on the seventh or eighth day, and retained for a short time, and this should be repeated daily until the parts have pretty well healed. If stricture should unfortunately become developed, in spite of all precautions, it must be dealt with by division, electrolysis or colotomy, according to the condition of the parts.

Modifications of the Operation.—Of late years the operation of excision of the rectum has attracted much attention among American and Continental surgeons, and its limits have been considerably extended, so that malignant growths comparatively high up in the rectum are now brought within its scope. This end has been reached by the removal of the coccyx, either alone or with portions of the sacrum, so as to obtain increased room. This modification was first adopted by Kraske, after whom the operation is now named. It is performed as follows: *—An incision

* "Annals of Surgery," 1885, vol. ii. p. 415.

is made through the soft parts in the middle line from the second sacral vertebra to the anus; the muscular attachments to the sacrum are divided up to the edge of the bone on the left side; the coccyx is then excised, the two sacro-sciatic ligaments are cut through close to the sacrum, and the left edge of the wound is drawn aside. By chiselling away a portion of the lower part of the left side of the sacrum, the upper portion of the rectum is rendered more accessible. The additional room is obtained by dividing the bone in a line commencing on the left edge at the level of the third posterior sacral foramen, and running in a curve concave to the left through its lower border. The chisel is then directed through the fourth foramen to the lower corner of the sacrum on the left side; the nerves are avoided and the sacral canal is not opened. The rectum is thus brought into view, and can be amputated up to where it passes into the sigmoid flexure. The method also permits of removal of the upper part of the rectum with preservation of the lower end.

This method of excising cancer situated high up in the rectum has been modified by Dr. Rehn,* of Frankfort, who suggests osteo-plastic resection as a preliminary step. An incision is made on the left side of the sacrum; the bone is then divided transversely between the third and fourth foramina; the flap of bone and the soft parts are turned over to the right. This parasacral incision affords plenty of room, and enables the operator to remove the growth from above and behind. The gut thus exposed is loosened from its connections, and brought up to the level of the skin by passing underneath it strips of iodoform gauze. Hæmorrhage is first carefully arrested and the wound-cavity is loosely plugged. Opium is administered for four days, and afterwards laxatives

* "Annals of Surgery," 1890, vol. ii. p. 375.

and injections. If it now appear that insufficient evacuation of fæces is caused by the growth, the intestine may be incised without danger above the stricture. This should be done ten days after the first operation. The gut is pulled down and united to the lower portion; and after a drainage-tube is put in, the wound is closed. If the bowel should tear during the first step, the growth should be at once removed, and the central piece of the gut should be attached to the skin in the lower angle of the wound. The circular suture of the gut will follow in a second operation.

Another German surgeon, Bardenheuer, divides the sacrum transversely below the third sacral foramina. Schede adopts the same plan, and has even divided the bone higher up. Other surgeons have suggested a temporary resection of the sacrum, the flaps being so devised that the sacrum would remain adherent to them while they had a pedicle sufficient for their nutrition. There is no doubt that by means of some form of posterior proctectomy, much more room can be obtained, and that excision of the entire rectum may be effected. Such operations must, however, be attended with considerable risk, and in cases involving opening the peritoneum, the mortality will, we believe, not be under 30 per cent.

At the International Medical Congress, held in Berlin in 1890, Dr. Axel Iversen, of Copenhagen, formulated the following conclusions from 247 cases of excision of the rectum in Denmark, Sweden, and Norway.*

1. The older as well as the more recent operations (amputation and resection) are only palliative procedures; they are more dangerous than colotomy, but in successful cases result in a longer tenure of life.
2. Extirpation of the entire rectum, together with

* "Lancet," 1891, January 24.

diseased glands, is the most reasonable method, and in favourable cases the result is a radical cure. The operation is very dangerous when the disease is far advanced. Of nineteen cases of Kraske's operation, eight died. 3. The greater number of cases must still, as formerly, be treated palliatively, *i.e.*, by colotomy: most patients present themselves too late for a radical operation. König, of Göttingen, recommended Kraske's method; in his hands the recent mortality of cases thus treated has been 12 per cent.; he has given up uniting the gut section to the skin. Czerny, of Heidelberg, reported eighteen rectal extirpations, with four deaths; in all the fatal cases the peritoneum was opened. He advises that the peritoneal wound should be immediately sutured. He thinks that the prognosis is better when cancer affects the upper part of the rectum. In one of his cases, where the growth was nearly five inches from the anus, the patient lived twelve years after the operation. The best prognosis is in carcinoma of the mucous membrane, which infects the glands late, and in scirrhus strictures with pain as an early symptom.

In a case of malignant disease involving a large portion of the rectum, Mr. Edwards adopted a modification of Kraske's operation after a preliminary colotomy, and with an excellent result. The following is a brief account of the case:—

CASE 17.—J. H., a man, aged sixty-one, came to St. Mark's Hospital, February 14, 1891, complaining of frequent action of the bowels, much straining and some pain in defæcation, passage of blood and slimy discharge; all these symptoms had been more or less marked for about twelve months. On examination, the entire lumen of the rectum was found to be involved by cancer, which extended up for four inches. The finger could not reach healthy mucous membrane above the growth. On February 24th the patient being under ether, Mr. Edwards, assisted by Mr. Cooper,

performed inguinal colotomy on the left side. The incision, two inches in length, was made two fingers' breadth within the anterior superior iliac spine, the central point. The patient was very fat, and the abdominal muscles somewhat thick. The parietal peritoneum was attached to the skin by half a dozen silk sutures, a flat sponge being used to keep the intestines back. The bowel was then easily found, but, owing to the shortness of the mesentery, could not be brought out sufficiently to insert the deep suture. It was therefore fastened to the skin by half a dozen silk sutures. The patient went on well after the operation. On the 27th Mr. Edwards opened the gut and removed the redundant portion. During the next few days the bowels acted freely through the inguinal opening: the rectum was ordered to be washed out with dilute Condy's fluid. On March 9th the patient being under ether, and lying on his left side, with the legs drawn up towards the abdomen, Mr. Edwards made an incision in the middle line, over the lower part of the sacrum and the coccyx, to the posterior margin of, but not through the anus. The coccyx was then dissected out and excised. The bowel was next detached from its connections posteriorly and on either side, but Mr. Edwards could not reach round it anteriorly so as to cut through it above the growth and dissect it out from above downwards. The bowel was then incised dorsally, the anus being cut through; but this did not facilitate the further progress of the operation, the hæmorrhage being very free. The patient was then placed in the lithotomy position, and the gut excised in the usual way by incision through the muco-cutaneous junction at the anus and dissection with scissors. Mr. Edwards was able to remove all the growth, the bowel being cut through well above; there was very free hæmorrhage and some clamps were left on. The portion of bowel removed measured nearly five inches; the time occupied in the operation was one hour and fifteen minutes. The subsequent condition of the patient was very satisfactory, though his cough was rather troublesome after the ether. His temperature never rose above 100°. Sixteen days after the operation the report was as follows:—"Discharge from wound less; all sloughs away; no pain; wound dressed with carbolised oil lint, and syringed out night and morning with sublimate solution (1 to 4000). Iodoform dusted in; patient much stronger. Measured for truss." On April 15 he was discharged from the hospital. "Bowels acting well through inguinal opening; no prolapse; no recurrence to be felt; wound cicatrising rapidly."

For *severe cases of cancer* of the rectum, in which it seems advisable to attempt excision, our opinion

is strongly in favour of a *preliminary colotomy*. The latter operation enables the wound to be kept clean and comparatively aseptic, and facilitates matters in every way. It not infrequently happens that colotomy is a necessary sequel to a severe excision, and it is well to reverse this order, and allow an interval of two or three weeks to elapse between the operations.

The limits of the various methods of excision of the rectum may be thus briefly defined:—If the diseased portion extend to a height of less than $3\frac{1}{2}$ inches from the anus, the ordinary operation will suffice. When it extends to that distance or somewhat above it, recourse may be had to posterior proctectomy, with removal of the coccyx. Kraske's operation, involving partial removal of the sacrum, is to be reserved for still more severe cases.

As a substitute for colotomy and only as a palliative step, it has been proposed to take away portions of the growth with the aid of a sharp scoop or spoon. This procedure is adapted only for dealing with such cancerous masses as are easily removable. In suitable cases its performance is followed by diminution of pain, tenesmus, hæmorrhage and discharge, and some amount of healthy granulation may spring up, but reappearance of the cancerous growth will sooner or later take place. Its results are not to be compared with those of complete extirpation. In isolated cases, however, it is possible to scrape away the greater part or even the whole of the growth, with corresponding benefit to the patient.

The last class includes those cases in which operative interference is inadmissible, for reasons already given, and those in which it is declined by the patients. Various measures may be adopted to lessen suffering.

If the pain be great, opium by the mouth or in

the form of a suppository must generally be relied on, but many drawbacks are connected with its use. Increasing doses are always required, and it frequently causes sickness, loss of appetite, constipation and distressing mental conditions. Belladonna and conium may be tried as substitutes. The bowels should be kept open either by means of enemata of warm water, to which a little oil and Condy's fluid may be added, or by mild purgatives, such as confection of senna or compound liquorice powder. A large gum-elastic catheter should be used for the injections; it can be passed above the diseased part without causing much irritation. If diarrhœa occur, it must be checked by means of chalk-mixture, kino, catechu, etc. The parts should be kept as clean as possible; any discharges should be received on carbolised cotton-wool or tow, frequently renewed. The boric acid ointment applied to the external parts will relieve irritation. The food should be nourishing and easily digestible; milk is generally suitable. Cod-liver oil may be given if it agree with the stomach. The patient should not remain in bed unless absolutely necessary. When not prevented by pain, he should take a moderate amount of exercise in the open air, whenever possible.

Removal of the diseased part with the knife is the only method likely to prove efficacious in dealing with *rodent ulcer of the rectum*. Caustics of many kinds have been tried; but their effects are found to be only transient. The knife should be carried for fully half an inch wide of the diseased part, the whole of which should be removed, with as much as possible of the subjacent tissue. If removal be impossible, owing to the extent of the ulceration, the administration of opium in some form constitutes the chief means at our disposal for the relief of the pain.

CHAPTER XV.

INGUINAL AND LUMBAR COLOTOMY.

The Establishment of an Artificial Anus by the operation of colotomy has long been known and practised. The colon may be opened in the right or left lumbar region; the sigmoid colon, in the left inguinal; and the cæcum, in the right inguinal region.

Up to within the last seven years, the left lumbar region was the site usually selected for the artificial anus in cases of rectal obstruction. The operation is known as Callisen's, modified by Amusat. That in the left groin was named after Littré, and is, with many notable modifications, the most favoured operation at the present day. It is known by the name of left inguinal colotomy or sigmoidostomy.

Inguinal Colotomy.—Colotomy in the left inguinal region is the operation we now recommend for all cases in which the disease is in the rectum and does not extend into the sigmoid colon. It is applicable to advanced malignant growths and to cases in which the disease, though more limited, is too high up to admit of excision; to severe rectal strictures, accompanied or not by ulceration and fistulæ; to rectovesical fistula; to certain cases of imperforate rectum, and to non-malignant growths, obstructing the rectum,

and incapable of removal. It is to be preferred to the lumbar operation on the following grounds:—

1. The ease and quickness with which it can be performed.

2. The certainty of finding and opening the part of the gut intended.

3. The more convenient site of the artificial anus so far as the patient is concerned.

4. Judging from recent statistics, it is a less dangerous operation.

5. It affords greater facility for providing a good spur, and so preventing the passage of fæcal matters into the rectum.

6. Exploration of the abdomen, if necessary, can be carried out through the same wound.

7. The position, during the operation, is better for safe anæsthesia.

The lumbar incision was supposed to have much to recommend it in cases of obstruction requiring immediate evacuation of the contents of the bowel; the operation being extra-peritoneal, the gut was usually opened at once. But in many cases the peritoneum was opened, either accidentally or necessarily, by reason of an unusually well-developed mesentery.

Inguinal colotomy is usually performed *à deux temps*; but there is no reason why, in urgent cases, the bowel should not be opened at once, as it is quite possible, with a little extra care, to close the peritoneal cavity either completely or to such an extent that with our improved *technique* all soiling of the membrane can be avoided.

Preparation of the Patient.—If time allow, it is well to prepare the patient in the following way. During the week prior to the operation the rectum should be well washed out by enemata, and a diet of rice-milk, and light farinaceous food should be

enjoined, as this tends to stop diarrhœa and peristalsis. It further prevents the great irritability of the bowels, usually present in these cases, and thus provides rest for the part, rendering union more rapid and often obviating the necessity of immediate opening of the gut. From twelve to twenty-four hours before the operation the skin should be prepared in the way now adopted as a preliminary to abdominal incisions, and an antiseptic dressing applied. No food should be given for at least four hours before etherisation, in order to prevent, if possible, all sickness at and after the operation. Vomiting during the performance of an operation on the abdomen greatly hinders the surgeon, and so prolongs the manipulations.

Details of the Operation.—Until recently, an incision, three inches in length, was made about one inch above and parallel to the outer half of Poupart's ligament, *i.e.*, just external to the deep epigastric artery. We now find that it is better to make the incision two inches long and rather more externally, *i.e.*, the middle of the incision should be about one inch above and internal to the anterior superior spinous process of the iliac crest, this being the point where the colon can with most ease be brought well through the wound. The incision should be carried through the abdominal parietes down to the peritoneum, and all bleeding stopped with compression forceps; ligatures are not often required. The next step is to slit up the peritoneum, taking care to prevent escape of omentum. A piece of thin flat sponge, with a surface of about three by four inches, is inserted into the wound. This sponge, through which should be passed a stout ligature for anchorage, prevents any bleeding into the peritoneal cavity, and all escape of viscera from it. After this precaution has been taken, the peritoneum is fastened

to the skin by some half dozen sutures of thin carbolised silk. The sponge is then removed, and an attempt is made to bring up a coil of sigmoid flexure. This usually presents at once, and can easily be recognised by the longitudinal bands and appendices epiploicæ. It is also much thicker than the small intestine, and generally of a paler hue, and masses of fæces can often be felt in its interior. If there be any difficulty in finding the bowel, it should be searched for systematically by passing the hand along the inner surface from the lower margin of the wound to the iliac fossa, and then over this towards the spine; the first knuckle of intestine found attached to this posterior peritoneal layer will be the part required.

It must be remembered that should the intestine have a long mesentery, it may be found far away from the left iliac fossa. We have found it twice in the umbilical region and once in the right groin. Having found the sigmoid, it is now necessary to fix it; for this purpose it should be drawn well out of the wound. The next step is to pass an ordinary straight needle, carrying a somewhat thicker piece of silk than that used for suturing skin and peritoneum, through the middle of the lower lip of the wound, and about half an inch from the margin, including skin and peritoneum and possibly some muscular fibres. The needle is then passed through the mesentery half an inch below the gut; the upper lip is then transfixed, the needle passing through peritoneum and skin, and then back through skin, peritoneum, mesentery, and lower lip of wound. The ends of the silk are then tied together, and the bowel, now supported by a double ligature, cannot possibly slip back into the abdomen. Moreover, the margins of the incision, having the mesentery between them,

are held firmly together, and the size of the wound is reduced by one-half, thus greatly diminishing risk of subsequent prolapse of omentum or bowel. Indeed, if this plan be adopted, it is often unnecessary to attach the bowel by suture to the margin of the wound, though our usual practice is to apply one suture at each end of the bowel by means of a small curved needle armed with thin silk. This is passed through the edge of the wound, including skin and serous membrane, and then through the peritoneal and muscular coats of the bowel, usually at the site of one of the longitudinal bands, as this gives a better hold.

It occasionally happens that the whole circumference of the bowel cannot be brought out of the wound on account of absence or shortness of the mesentery. In such cases the mesenteric suture must be omitted, and greater care will be needed in fastening the gut to the parietal peritoneum and skin; at least six separate sutures will be required for this purpose.

Such a condition of the mesentery is an unfortunate circumstance for the patient, as no spur can be formed, and thus fæces may find their way into the rectum, a drawback very desirable to avoid. When this happens, it will be necessary to wash out the rectum from the anus to the inguinal wound in order to remove what would otherwise be a source of irritation.

After all suturing is completed, a little iodoform should be insufflated around the bowel, and the part covered with some green protective. Over this is placed gauze and absorbent wool (carbolic acid, sublimate, or sal alembroth), and a broad flannel many-tailed bandage completes the dressing.

It is here necessary to mention the fact that gauze, lint, and cotton-wool are unsuitable as applications

next to the bowel. In Mr. Edwards' first case, he covered the bowel with iodoform gauze, and the dressings were not removed for five days. On attempting to remove the gauze, before opening the bowel, it was found that the granulations from the serous coat had penetrated through several layers, and no justifiable efforts at removal were of any avail. The gauze had become quite incorporated with the bowel, and had therefore to be incised with the latter.

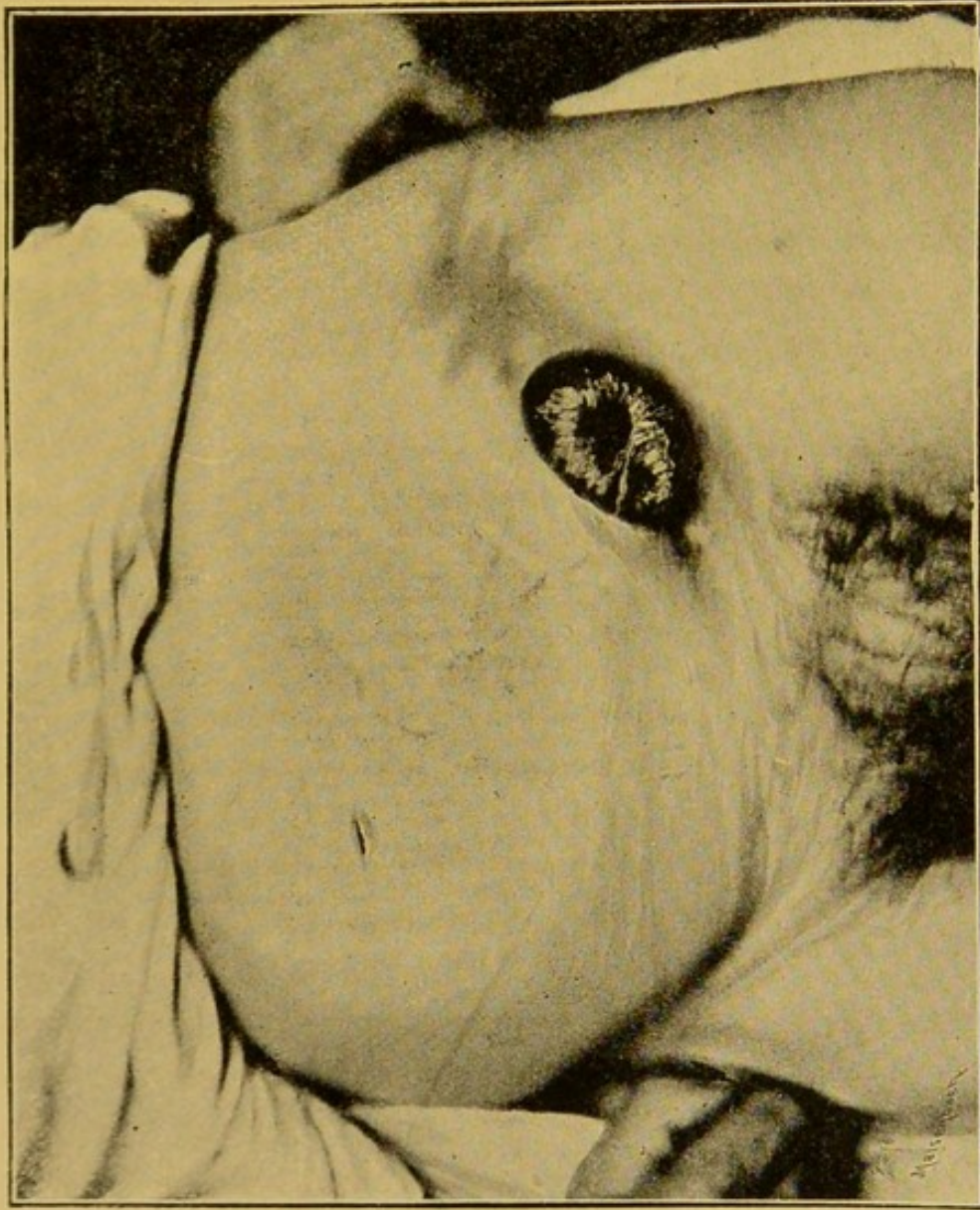
We can scarcely lay too much stress upon strict antisepticism or surgical cleanliness, without which no abdominal section should be undertaken.

Opening of the Bowel.—As a general rule, an opiate is administered after the operation; and if all goes on well, the bowel is not opened until the fourth day. Except for nervous patients, no anæsthetic is then required, as the operation is almost painless. Bleeding, however, is often free; it is well, therefore, to have at least half a dozen pressure forceps at hand. The gut should be cut off almost or quite on a level with the skin, and if a good spur has been formed, the bowel will present two openings, of the same size, side by side, one being rather lower than the other. (*See Photoprint.*)

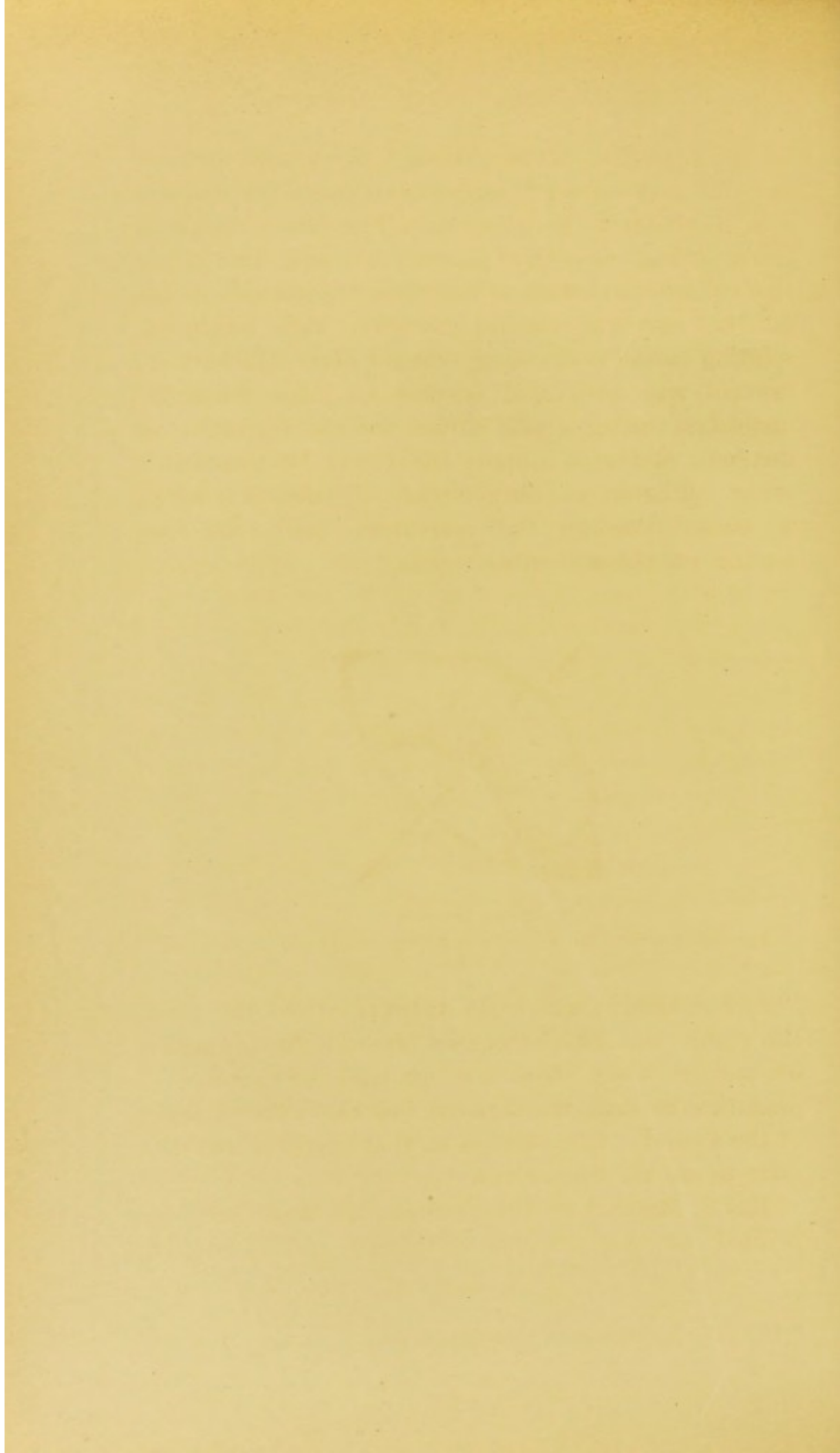
In two of our cases, fæces passed through the lower and inner opening—a proof that the bowel was twisted, and of the advisability of forming the spur exactly in the middle of the wound. Should there be much flatulent distension, the bowel may be incised, without any risk, on the following day, and its removal may be postponed for a few days.

In cases of obstruction, where it is necessary to open the bowel at the time of the operation and evacuate its contents, Mayo Robson's cannula* might

* "Brit. Med. Journ.," January 9, 1892.

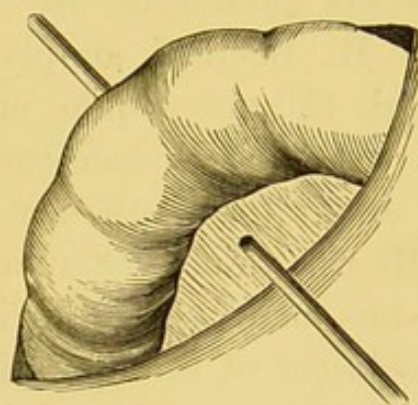


This photo-print shows the appearance of the wound a fortnight after operation, with the double opening into the bowel. This was one of Mr. Edwards' first inguinal colotomies, when the artificial anus was placed just above and to the outside of the middle of Poupart's ligament. As stated in the text, we now make the opening rather higher up and more externally (see page 225).



be used with advantage, though we think that the opening may be safely undertaken after the insufflation of iodoform around the bowel, a strip of iodoform gauze being carefully packed in, and the whole covered with a coating of collodion. After evacuation of the contents, careful ablution with sublimate solution and re-dressing should be sufficient to prevent any peritoneal contagion. Some surgeons, instead of using a silk suture for the formation of the spur, prefer to support the bowel by means of a probe, catheter, or bougie made of vulcanite, which is passed through the mesentery, with its ends resting on the abdominal walls.*

FIG. 53.



INGUINAL COLOTOMY.

Appearance of the colon when drawn into the wound and supported on a rod.

In one case in which Mr. Edwards tried this plan, the result was satisfactory as regards the formation of a spur; but there was prolapse of a piece of omentum between the sigmoid and the upper margin of the wound. Our opinion is, that on the whole it is safer to use the deep suture.

Mr. F. Marsh,† of Birmingham, has quite recently pointed out that the plan of using a rod to support

* See a paper by Mr. H. A. Reeves, "Brit. Med. Journ.," January 9, 1892.

† "Brit. Med. Journ.," February 6, 1892, p. 269.

the bowel was first suggested by M. Maydl,* of Vienna, and simplified by M. Reclus, of Paris. The following are the principal points in Maydl's method :—After drawing out the sigmoid flexure and exposing the mesentery, a rigid rod is pushed through the latter and made to rest on the abdominal walls ; the sides of the bowel are then sutured to each other below the rod. If it be necessary to complete the operation at once, the bowel is attached to the edges of the wound and a transverse opening is made ; but if not, the bowel is left for from four to six days, and then opened with the thermo-cautery. On the fourteenth day, all the superfluous bowel above the rod is removed with the thermo-cautery, and the edges of the mucous membrane are attached to the skin by sutures. M. Reclus† simply passes a rigid aseptic rod through the meso-colon, omits all sutures, opens the bowel with the thermo-cautery about the fourth day, and about the tenth day removes superfluous bowel with the same instrument.

Mr. F. Marsh has made the following slight modifications in the *technique* of the operation.

1. The incision through the abdominal wall is about two inches in length, and the peritoneal opening should correspond with it, so that the bowel may have as wide a surface as possible for attachment ; no sutures should be used.

2. The loop of the sigmoid colon should be passed through the fingers, until the upper end is taut enough to allow the loop to rest easily in the wound ; the rod should be so passed through the meso-colon that it lies across the wound much nearer to the

* Prof. Albert's "Lehrbuch der Chirurgie," vol. iii. p. 415, and "Centralblatt für Chirurgie," 1888, No. 24, p. 433.

† "Bulletins et Mémoires de la Société de Chirurgie de Paris," February, 1890.

lower than to the upper angle, in order that the upper opening may be larger than the lower. The rod used is made of glass, four inches long, round, but with the ends made square to prevent rotation and slipping.

3. In urgent cases the bowel may be opened in a few hours; where practically no obstruction exists it may be left for three or four days. Mr. Marsh generally makes a transverse opening about the third day, and four days later removes superfluous bowel with the thermo-cautery, and burns through the remaining circumference of the bowel over the glass rod, so that it may be lifted out. A double-barrel opening is thus left, the openings diverging rather than converging, so that no fæces can pass onwards.

Statistics.—At St. Mark's Hospital, since the year 1885, inguinal colotomy has been performed fifty-seven times, with six deaths, this latter number including all cases fatal from any cause within a month of the operation. Of these six deaths, it would appear that only three could be attributed directly to the operation, and in two of them death supervened as the result of a prolapse of small intestine through the wound. Of the fifty-seven cases, twenty-eight were under our care; these were equally divided between us, and we have each lost one case.

A short account of these two cases will illustrate the dangers attendant upon (*a*) prolapse of the small intestine through the wound, and (*b*) of peritonitis without any such complication:—

CASE 18.—S. B., aged fifty-three, admitted into St. Mark's Hospital, under care of Mr. Cooper, February 21, 1891, with symptoms of malignant stricture of the rectum. Had suffered for sixteen years from piles and constipation, necessitating frequent use of purgatives. During the last four months there has been great difficulty in passing stools, only small quantities coming at a time, after much straining and smarting pain. The piles have not

prolapsed of late, and the quantity of blood lost has been only slight. No slimy discharge from the bowel; bladder very irritable at night; has lost about two stone in weight since the symptoms became urgent. Thoracic organs and urine normal. Three days after admission, the patient being under ether, Mr. Cooper, assisted by Mr. Edwards, performed inguinal colotomy on the left side, the incision being two inches in length. The small intestine first presented; the sigmoid was found lying diagonally across the abdomen, just underneath the umbilicus. A loop was drawn out, and a deep suture was passed through the mesentery and lower lip of the wound. Four silk sutures were passed between the bowel and the parietal peritoneum. The operation occupied forty minutes. The patient went on well until the following evening, when a rigor came on. On examining the wound, the bowel was found to have receded considerably. It was therefore decided to place the patient under chloroform. On removal of the dressings, a portion of the small intestine was found prolapsed through the wound, the colon having slipped back and torn through the stitches. The small intestine was cleansed and replaced, and the abdominal cavity was washed out with a warm boracic solution (gr. xx. to $\bar{3}$ j.). The colon was then picked up and refastened to the skin. Sickness came on during the night and another rigor on the following morning, and the patient gradually sank and died in the evening. At the autopsy no signs of peritonitis were discovered; death was presumably due to shock.

CASE 19.—A. B., aged thirty-three, married woman; one child living, four dead, and two miscarriages; admitted into St. Mark's Hospital, February 28, 1891. The symptoms began eight years ago with loss of blood from rectum at stool, the patient being then pregnant for the second time. Two years afterwards defæcation became difficult, and other symptoms of rectal stricture were gradually manifested. For their relief Mr. Edwards performed linear proctotomy, the results of which were for some time satisfactory. An offensive yellow discharge, however, has continued to escape from the rectum, and for the last eighteen months there has been increasing difficulty in defæcation, with occasional loss of blood, vomiting, and loss of flesh. March 3. Mr. Edwards, assisted by Mr. Cooper, performed left inguinal colotomy, making the usual incision, and using a flat sponge to repress the intestine. The parietal peritoneum was attached to the skin with silk sutures, and a loop of bowel was readily hooked up and the deep suture passed as already described. The bowel was then secured to the skin by three or four silk sutures passed through the peritoneal and muscular coats. Sickness was troublesome for two days after the operation,

and on the seventh there was much pain in the abdomen; there had been several motions passed by the rectum. On this day, Mr. Edwards opened the bowel; on the following, he excised the gut. During the next twenty-four hours the bowels acted twice freely through the inguinal opening; pain less; motions very hard—had to be broken up with spoon and fingers. On the eleventh the vomiting recurred, and continued in spite of all measures adopted to check it. Towards evening symptoms of collapse supervened, and death occurred shortly before midnight.

On post-mortem examination, the abdomen was found to be full of turbid yellow fluid; the omentum and coils of intestine were matted together. The colon contained large masses of faecal matter; the gut was firmly adherent all round to the inguinal opening. There was no perforation in any part of the intestine. There was stricture of the rectum, and ulceration extending into the sigmoid flexure for about eight inches. The other organs of the abdomen and those of the thorax were normal. The cause of death was no doubt peritonitis, the sickness and inability to retain food consequent thereon producing exhaustion. It is worthy of note that the evidences of peritonitis were at some distance from the wound, and appeared to be of some standing and quite independent of it; in fact, it is almost certain that this woman was the subject of a localised peritonitis at the time the colotomy was undertaken.

In addition to the fourteen cases referred to above, Mr. Edwards has had seven patients elsewhere upon whom he operated with success. At the West London Hospital he has had one fatal case, that of an infant a few days old, on whom inguinal colotomy was performed for imperforate rectum. In this instance again, death was due to a sudden prolapse of the small intestine through the wound. The bowel was returned, but fatal peritonitis supervened.* The fact that in each case (with the exception of No. 19) the fatal result was due to the same cause demonstrates the supreme importance of providing every possible support for the weak spot in the abdominal wall. If the mesentery is not sufficiently long to admit of the insertion of the deep suture, extra care must be taken both in fastening

* See chapter on Malformations, p. 58.

the bowel to the abdominal opening and in affording support by dressings and bandage. These latter should, when necessary, be reinforced by the application of the nurse's hand.

Mr. Cripps * gives a list of twenty-seven consecutive cases, the operation in every instance being performed for malignant disease. Only one death was immediately connected with the operation; in this case, on the seventh day, the "entire bowel had dropped back into the abdominal cavity." The remaining twenty-six cases could be classified as "recovered."

After-Treatment.—All stitches may be removed after the lapse of a week or ten days, and a truss having an oval india-rubber pad (which is made by most instrument makers) should be carefully adjusted. This can usually be worn after two or three weeks, *i.e.*, when the patient is allowed to get up. If the bowels be carefully regulated, the toilet of the part need take place only night and morning. The truss, if well-fitting, will prevent all escape of motion and flatus. (*See Photoprint.*)

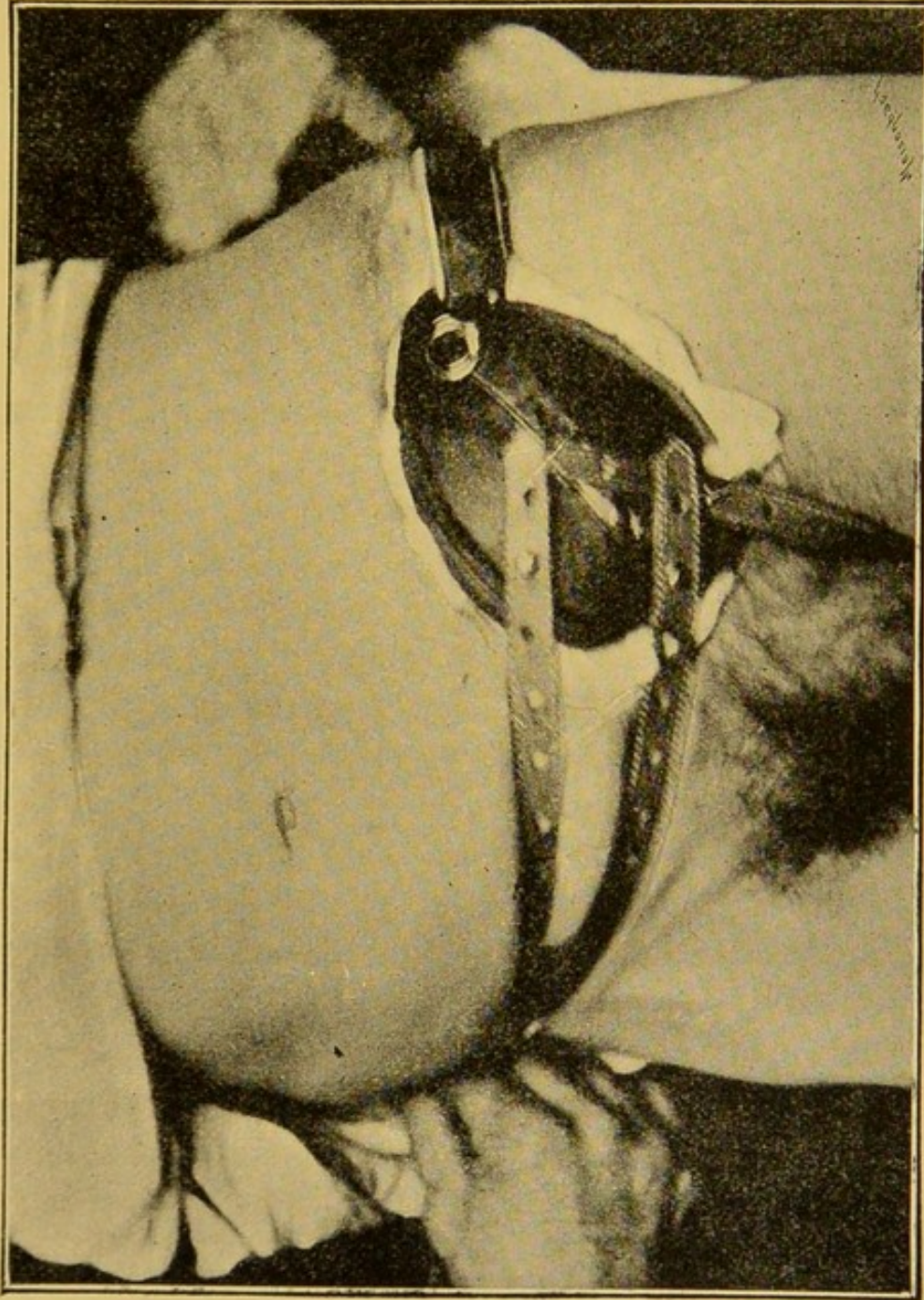
There can be no doubt that in malignant disease, life, in most cases, is prolonged by this operation, and that existence is always rendered more tolerable. It is really remarkable how soon after the bowel has been opened, provided that the artificial anus works well, the great pain previously complained of is either ameliorated or altogether abolished.

The improvement observed in cases of rectal cancer is still more marked in cases of stricture and ulceration, whether accompanied or not by fistula.

With regard to prolapse of the gut through the wound, about which much has lately been said and written, it is certainly not incidental to inguinal colotomy alone, but is liable to occur, even

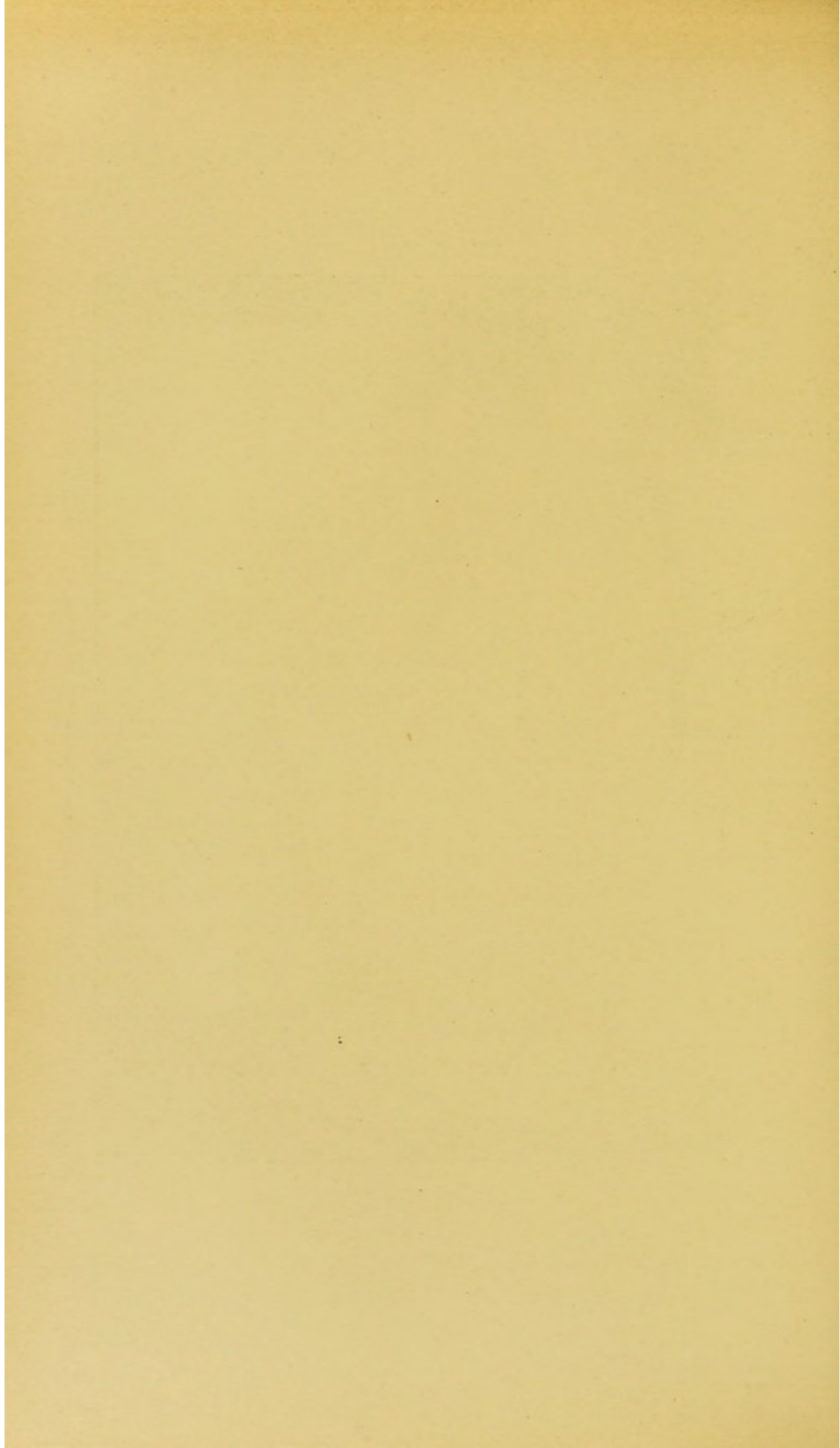
* *Loc. cit.* p. 467.

VIII.



This photo-print represents the colotomy truss *in situ*.

[To face page 234.]



PLATE

PLATE IX.



EXTENSIVE PROLAPSE OF BOTH UPPER AND LOWER PORTIONS OF
BOWEL AFTER A LUMBAR COLOTOMY.

in greater measure, after the lumbar operation, as is seen in the accompanying photograph, which was taken at St. Mark's Hospital. As a general rule, there is not much protrusion when only a two-inch incision has been made; and even should there be some degree of it, it seems to do no harm and can easily be supported by the truss. As to the plan, advocated by our friend and colleague, Mr. Herbert Allingham, of pulling out as much bowel as will come, and removing it some days afterwards with the clamp, we would remark that we have seen it adopted with much success, and think it quite justifiable in cases where the artificial anus may be expected to act for many years. When, however, the colotomy is performed for cancer, we do not think it worth while to run this extra risk, seeing that in these cases the lease of life is at best short—usually not more than two years.

The following cases are examples of colotomy performed for the relief of malignant disease of the rectum :—

CASE 20.—Daniel M., a clerk, aged fifty-five, came to the out-patient department on February 22, 1888, complaining of constant diarrhœa, pain on defæcation, and bloody discharge from the rectum, the symptoms dating from May, 1887, since which time he had lost about one stone in weight. On examination *per rectum*, a hard mass could be felt encircling the bowel, and causing a stricture through which the finger could not be passed; the mucous membrane was ulcerated in places; the lowest part of the growth was about four inches from the anus. Excision being thought impracticable, as it was not easy to determine the height to which the growth extended, colotomy was performed by Mr. Cooper in the left inguinal region on the 29th of February. The incision, three inches in length, ran parallel with Poupart's ligament, having its centre almost opposite the anterior superior spine of the ilium, and being about two inches distant from it. The muscles having been divided, the exposed peritoneum was carefully opened the whole length of the wound, and a flat sponge inserted to keep the intestines out of the way; the peritoneum was attached

to the edges of the wound by means of silk sutures; the sponge was then removed. The colon, which was at once found, was drawn out of the wound and united to its sides by means of silk sutures, passed through the serous and muscular coats; the bowel was left unopened, and no deep suture was inserted to form a spur. The operation was performed with strict antiseptic precautions. In the evening the temperature reached 99·6, on the following day it became normal, and remained so until he left the hospital. The bowel was opened on the fifth day after the operation. The colon was found covered with lymph, to which the inner dressings were adherent; the projecting part of the colon was held with forceps and cut off with scissors; a few bleeding vessels were twisted. The stitches which had been inserted were removed at intervals, and the case progressed without a bad symptom. Although no deep sutures had been passed to bring forward the back part of the colon, it was flush with the abdominal wall. The bowels acted daily through the opening, no fæces passing into the lower part of the colon. The patient left the hospital on March 29, wearing a truss made slightly concave, so as to retain any fæces that might pass. A few weeks afterwards he came up to be examined, and stated that he was very comfortable, and that the opening in the groin caused but little inconvenience.

CASE 21.—William K., a surgical instrument maker, aged thirty, first came to the hospital, November 3, 1887, suffering from malignant disease of the rectum. As the growth did not extend far up, and considering his age, excision was performed, but the growth having returned, he came into hospital again on March 9, 1888, to be relieved by colotomy. The operation was performed by Mr. Cooper on March 13, exactly in the same manner as in the former case, except that two sutures were put through the meso-colon in the following manner:—The colon, which was easily found, was drawn out so that the finger and thumb could reach behind it, the suture was passed through the abdominal wall at the centre of the incision, then through the meso-colon, and out through the skin on the other side; two of these were united and tied rather tightly together on either side. After the operation he complained of pain in and around the wound, and a little opium was administered; temperature 99. During the next three days he complained of pain, which he ascribed to wind. The colon was opened on the fourth day, and fæces passed through it at once, causing the patient to feel much more comfortable. On March 19, six days after the operation, the temperature went up to 103·4, and he complained of severe pain on either side of the wound. As the deep sutures were

dragging very much upon the skin, and causing suppuration around, they were taken out and the wound poulticed; in a few days the temperature became normal, and the case progressed without any further bad symptom, though he still complained of occasional pain and tenderness where the deep suture had been. No fæces could pass into the bowel below the incision, though the spur did not appear more prominent than in the former case, in which no deep suture had been inserted. He left the hospital on April 28, and returned on June 21, to state that he could easily attend to the opening, that no discomfort resulted from it, that he had gained weight, and felt better in every way.

CASE 22.—Adolphus T., clerk, aged fifty-eight, whose rectum had been excised by Mr. Cooper eighteen months previously, applied on March 15, 1888, to have colotomy performed, as the growth had returned and he was suffering severe pain in the rectum, especially at night. The operation was performed by Mr. Cooper on March 20, in the same manner as in the first case; the colon was found at once and brought to the front, no deep suture being inserted. Temperature that evening 99; no pain. The colon was opened on the fourth day. As in the previous cases, the dressings were found to be adherent to the bowel; a small piece of oil-silk, thoroughly carbolicised, had been laid over the colon, and this much facilitated the subsequent opening, as the parts could be more easily made out. Fæces passed at once through the wound; as there was a slight return of the old pain in the rectum, morphine was injected at night. He went on quite well till March 29, when the temperature rose to 101·4, without any obvious cause, except that the bowels had not acted on that day; it fell to normal on the following day, and remained so till he left the hospital on April 6, wearing a truss. Since the operation he had never complained of any pain in the wound.

The following case is an example of this operation performed for stricture and ulceration of the rectum :—

CASE 23.—E. P., a married woman, aged forty-six, admitted into St. Mark's Hospital, October 4, 1890. Fourteen years ago was operated on (linear proctotomy) by Mr. Allingham, and a second operation, of a similar character, was performed four years later. The symptoms recurred about a year afterwards, in spite of the use of bougies. She now complains of yellow discharge, diarrhœa alternating with constipation, and pain and straining when the bowels are moved. The motions vary in size and shape, being

sometimes well formed, and sometimes flattened or in small lumps. Appetite bad; has lost flesh. Organs of chest normal; urine alkaline, sp. gr. 1010, with a trace of albumen. October 7, 1890, the patient being under ether, Mr. Edwards performed inguinal colotomy on the left side. The peritoneum was stitched to the skin, and a deep suture was passed; four stitches were then inserted into the gut; there was some amount of fluid in the peritoneum. On the 9th there was much flatulent distension; the bowel was therefore opened, and a few clips applied. In the evening of that day patient more comfortable, flatus had passed freely through opening; clips removed. On the following day, there was slight discharge of mucus and hard fæces. On the 11th Mr. Edwards excised a portion of the anterior wall of the gut; some fæces escaped; clips applied. 12th. Clips removed, patient very comfortable. 13th. Liquid fæces passed, one stitch removed. 14th. Bowels opened five times, solid motions. 15th. Bowels acted freely, six stitches removed. On the 28th a truss was applied, and the patient was allowed to get up. November 1. Discharged to a convalescent home.

Inguinal colotomy may be performed on the *right side*, the caput coli or cæcum being the part of the bowel opened. This operation is justifiable only in cases where the disease is presumed to be situated high up in the colon, *i.e.*, above the left inguinal region, for the lower down the intestinal canal the artificial anus is situated, the more surface is there for absorption, and the better nourished the patient will be.

The drawbacks to this operation are the risk of malnutrition, and the inability to draw out the bowel to form a spur, in the absence of a proper mesentery. Mr. Edwards had recourse to the operation in the following case:—

CASE 24.—The patient, a well-nourished man of about sixty, was suffering great pain on micturition, and it was found that considerable quantities of fæcal material were passed *per urethram*. Nothing could be discovered on examining the rectum. For some time before this symptom came on, he had occasionally suffered much pain in the left lumbar region, accompanied by febrile disturbance, and these symptoms were thought to be due to a renal calculus. As it

seemed probable that a communication existed between the descending or sigmoid colon and some portion of the urinary tract (probably the left ureter), right inguinal colotomy was proposed and accepted. In the presence of his medical advisers, Drs. Wright and Hamilton, the operation was performed in the same way as on the left side, except that it was found impossible to pass the mesenteric suture. The cæcum was opened a week afterwards; the urine then became quite clear, and all ardor urinæ ceased. The patient left for home at the end of three weeks, and subsequently died of some abdominal mischief, the exact nature of which was not determined.

When the disease extends into the sigmoid colon, colotomy in the left inguinal region is not a satisfactory operation, inasmuch as the opening would be too near to the seat of obstruction. The alternative operation of lumbar colotomy is suitable for such cases.

Lumbar Colotomy.—This operation is performed in the following manner:—Anæsthesia having been induced, the patient is placed on the operating table in a nearly prone position, with a small hard pillow beneath the right side of the abdomen, so as to make the left loin prominent. The free edge of the quadratus lumborum muscle on the left side indicates the position of the descending colon, and a good guide may be obtained by finding a spot on the crest of the ilium, rather more than half an inch posterior to a point midway between the two superior spinous processes (Allingham). It is well, before beginning the operation, to mark this spot on the crest of the ilium with ink. The incision may be made obliquely from the last rib towards the anterior superior spinous process of the ilium; it should be about four inches in length, and its middle point should be in a line with the mark already indicated. We prefer to make a horizontal incision, parallel to the last rib, and midway between it and the iliac crest. The skin and subcutaneous tissue are cut through, and then some

fibres of the external oblique and latissimus dorsi muscles are divided on a director, and in the next steps the aponeurosis of the internal oblique and transversalis and the subjacent fascia are similarly dealt with, and the edge of the quadratus lumborum muscle exposed. This is to be divided with a blunt-pointed bistoury, and the colon will then be found in a line with the point on the crest of the ilium, and lying immediately below the kidney. The bowel is often covered by fat. All the incisions must be kept of the same length as the first, otherwise there will be a difficulty when the colon is reached, owing to the limited space the surgeon has to work in.

When the intestine has been found, it should be cleared from fat and connective tissue for about an inch of its length. If there be difficulty in finding the bowel, it is well to endeavour to distend the colon with air, by means of a Higginson's syringe, plugged tight into the anus, while the air is injected rapidly for a minute or more, if required. A needle armed with silk is then passed through the skin and bowel, then again through the latter and out through the skin in the other lip of the wound. Another suture is then passed in a similar way near the other end of the incision, and the colon is opened longitudinally for an inch with a pair of scissors. The loops of the sutures are then drawn out from the bowel and cut, so that four threads remain, which, by tying their ends, unite the intestine with the integument. Care must be taken not to wound the peritoneum. If this accident should perchance happen, the surgeon must be prepared to act accordingly, and he has the choice of two plans. He may at once sew up the opening in the serous membrane with catgut, and continue the operation as above, or he may enlarge it and hook up the bowel, and then com-

plete the operation in the following manner. He must first, however, make sure that he is dealing with the colon. This portion of the intestine can be recognised by its somewhat sacculated appearance and the longitudinal bundles of fibres, and also by its greater thickness and the appendices epiploicæ. The margins of the skin and peritoneum should be carefully fastened to the muscular and serous coats of the bowel, with from six to twelve fine silk sutures. From three to four days should be suffered to elapse in order that adhesive inflammation may take place, and the bowel may then be opened.

When the bowel is opened faecal matter usually escapes; but it is sometimes necessary to remove scybalous masses with a scoop. The opening should be kept as clean as possible by means of dilute Condyl's fluid; the faeces pass at irregular intervals for some time, but by degrees periodicity becomes established. If all goes on well, in about a month the parts will be fit for the application of an india-rubber pad, fitted to a mechanical contrivance for keeping it over the aperture. As a matter of course, the opening must be kept perfectly clean and be well sponged after each discharge of faeces.

CHAPTER XVI.

NON-MALIGNANT GROWTHS OF THE RECTUM AND ANUS.

Non-malignant formations of various kinds are more often found in the rectum than in any other portion of the intestines. The rectum was the seat of disease in seventy-five out of 128 cases of intestinal neoplasms, collected by Dr. Leichtenstern.* He includes them all under the general title of "intestinal polypi." They may, however, be classified as follows:—(1) Adenoma; (2) Fibroma; (3) Papilloma; and (4) Lipoma. Examples of teratoma, cystoma, enchondroma, and cavernous angioma have also been placed on record.

1. **Adenomata or Soft Polypi of the Rectum** are not uncommonly met with. They are most often seen in young subjects between the ages of three and twelve; males and females are equally liable to them. They form small tumours, varying from the size of a pea to that of a plum, and in rare cases measuring nearly three inches in diameter; they are spongy, bright red in colour, and either smooth or more or less nodulated on the surface. On examination with a lens of low power, the surface is seen to be dotted over with small punctiform openings of Lieberkühn's follicles. The majority of them are true adenomata, consisting of

* Ziemssen's "Cyclopædia," vol. vii. p. 634.

hypertrophied and newly-formed glands of the mucous membrane. They sometimes contain cysts, due to the dilatation of the glandular follicles. The tumours are generally single, but sometimes multiple, and in very rare cases disseminated over the bowel; they finally retain their connection with the point from which they originally sprang by means of a long narrow pedicle, which is usually attached to the posterior wall of the rectum, not far from the anus. The pedicle results from the dragging down of the tumour; it may contain vessels of sufficient calibre to give rise to considerable bleeding should spontaneous detachment take place.

These rectal adenomata closely imitate the normal mucous membrane in structure, though their glands are larger, more abundant, more branched and convoluted, and less regularly disposed. Their tissue likewise resembles that of the adeno-carcinomata, but they have no tendency to invade neighbouring tissues, to implicate lymphatic glands, or to break down and become ulcerated. Their greater frequency in the rectum than elsewhere is probably due to the greater liability to irritation of this part of the intestine. Small polypoid growths of this kind are not infrequently found in the neighbourhood of a cancerous ulcer of the rectum. Van Buren states that pedunculation in a rectal tumour has been assumed to be a diagnostic mark of adenoma, as distinctive from cancer; but that he has seen "in several instances polypoid growths in the adult, which returned after removal as undoubted epitheliomata, and which in fact had shown, in the first instance, under the microscope, the characteristic features of the latter disease."

Symptoms.—These are not characteristic; the first and, as a rule, the only symptom of such growths is

hæmorrhage from the bowel, rarely spontaneous and almost always occurring during or immediately after defæcation. The blood comes from the anus in drops, or in larger quantities, so that the child's clothes are found to be stained by it. The blood is never thoroughly mixed with the fæces, but covers their surface. Although the amount lost daily may be but small, the frequent repetition of the hæmorrhage makes the child weak and anæmic. Hæmorrhage from the rectum in a young child is almost always due to polypus. It is well to bear in mind that in the case of little girls, it is sometimes mistaken for premature menstruation and entirely disregarded. The surgeon, however, is not infrequently told that something comes down whenever the child's bowels are moved; and if the child be old enough to strain down when requested, the growth will sometimes protrude. A discharge of glairy mucus is an occasional symptom; and the child, if old enough, may complain of discomfort about the anus, and a frequent desire to defæcate. Rectal polypi, with long thin pedicles, may be torn off during the passage of hard fæcal matters, so that a spontaneous cure results.

Diagnosis.—Polypus may be mistaken for internal hæmorrhoids and prolapsus of the bowel. It may, however, be associated with the latter condition, which may be the result of the straining caused by the growth. An enema should be administered, and the rectum examined as the fluid is escaping. Either the polypus itself or its pedicle will be felt by the finger. It is well to pass the finger as far as possible into the bowel and then to withdraw it gradually, examining the entire rectal surface from above downwards. If the opposite plan be adopted, the polypus may be pushed upwards and remain

undetected. Sometimes, when the child strains, the polypus will protrude from the anus in the form of a rounded, vascular, bright-red body more or less resembling a raspberry.

Treatment.—This consists in the removal of the growth. All that is necessary is to apply a ligature and then snip off the polypus. The bowels should be kept at rest for a few days by means of a little catechu, and the patient should not move about as usual until after the separation of the ligature. This process takes place in three or four days. Another plan is to twist the pedicle by means of a torsion-forceps until it breaks.

Fibroma.—Growths belonging to this class are far more common in the rectum than those just described, *i.e.*, if we include the small polypoid growths so frequently seen in connection with piles and fissure, and which are due to hypertrophy of the upper extremities of the columns of Morgagni. Their consistence varies according to the texture of the component parts; sometimes they are firm and tough and reddish on section, in other instances they are soft, flabby and reddish-grey in colour. They originate in the connective tissue of the submucosa, and are covered with thin mucous membrane. Like similar growths elsewhere, they are composed of fibrous bundles crossing each other in various directions, and interspersed more or less thickly with cells. Unstriped muscular fibres are sometimes found intermixed with the fibrous tissue, and may indeed form the greater portion of the growth. The tumours vary in size, and may be as large as a walnut or even much larger; the pedicle may be from one to two inches in length or even longer; it tends to increase as time goes on. It may contain vessels of some size; pulsation can sometimes be felt.

These polypi are usually single, but occasionally multiple, and, in rare cases, disseminated over the bowel. They sometimes complicate other affections of the rectum, *e.g.*, hæmorrhoids, prolapsus, fistula, and fissure. The straining provoked by the presence of a polypus is one of the causes of fissure. Spontaneous detachment of the growth has been noticed in a few cases, and the growth of a second polypus has also been subsequently observed.

A case in which a very large connective tissue tumour was removed from the rectum has been reported by Mr. Bowlby.* The patient, a woman aged twenty-four, had presented herself with a red mass as large as a foetal head, projecting from the anus. She stated there had been no previous symptoms, but that when straining at stool something came down which could not be returned. The growth was found to be attached to the anterior wall of the rectum about four inches up; after transfixion and ligature of its neck, it was removed with the scissors. It weighed nearly two pounds, and was found to be composed of loose connective tissue, inclosing much fluid. It was covered with normal mucous membrane, and its base of attachment measured an inch and a-half in diameter.

In another case, recorded by Dr. Barnes,† a tumour, the size of an ordinary orange, protruded from the rectum during labour. It took the form of a dense growth, and seemed to be attached to the margin of the anus, the rest of the circumference being occupied by piles more or less indurated. It was removed on the following day by the galvanic cautery, and found to be composed of loose fibro-cellular tissue, covered by a tough and altered

* "Path. Soc. Trans.," 1883, p. 107.

† "Brit. Med. Journ.," April 12, 1879.

mucous membrane; the deep parts were cavernous in structure. It appeared to have originated in chronic overgrowth of connective tissue round a pile.

The *symptoms* caused by these polypi are of an indefinite character. A sensation of weight or pressure in the rectum, shooting pains, tenesmus, occasional diarrhœa with discharge of blood and mucus are more or less commonly present. The character and intensity of the symptoms are influenced by the size of the growth, but especially by the length of its pedicle. When the latter is short, the polypus may attain a considerable size without causing much inconvenience. When, however, the pedicle, by reason of its length, allows the polypus to reach the anal orifice and to protrude therefrom, the symptoms are certain to become prominent. The escape of blood during defæcation, and protrusion of the polypus are the symptoms which generally cause the patient to seek advice. As a matter of course he attributes his symptoms to piles. A digital examination will, if polypus be present, detect a firm roundish growth, more or less freely movable, and attached by a pedicle to the wall of the rectum, the posterior aspect of the bowel being the usual seat whence it springs. If the pedicle be long, the tumour may escape the finger, being pushed up into the rectum in the attempts to discover it. Under these circumstances, it is well to give an enema, and then examine the bowel before the fluid has escaped.

Treatment.—This is the same as that of the adenomata. All that is necessary is to apply a ligature to the pedicle, and then cut off the growth with a pair of scissors.

Papillomata or Villous Growths are rarely met with in the rectum. To show how rarely, we may mention that during the past fifteen years only eight

cases have been admitted into St. Mark's, seven being males, whilst only one female was so affected. They are soft and spongy in character, and their surface is studded over with little tufts, each containing loops of blood-vessels. The pedicle is short and thick, and sometimes the growths appear to be sessile upon the mucous membrane. They resemble in structure the villous growths of the bladder. They are not malignant; they do not invade other organs, and are not liable to ulceration. They consist of a loose shaggy mass of tissue, containing but little solid material. As in the case of the bladder, the mucous membrane of the rectum is sometimes dotted over with patches of villous growths. (See Mr. Edwards' case recorded below.) These tumours also resemble those found in the bladder in being sometimes detached spontaneously. They have been known to recur after removal, and, in a few cases, have been followed by epithelioma. In two cases recorded by Dr. Tuckwell ("Medical Times and Gazette," 1868, vol. ii. p. 195) with a fatal termination, the bowel became perforated at the base of the tumour. In one case the peritoneum was opened, with inflammation as a result; in the other, the opening was into the connective tissue between the bowel and the sacrum, and it was followed by abscess, pyæmia, and secondary abscesses in the lungs.

The *symptoms* of villous growth of the rectum are hæmorrhage, protrusion of a soft tumour on defæcation and sometimes after exertion, and the discharge from time to time of a thin glairy fluid, resembling thin mucilage or starch. This last symptom is characteristic. It is worthy of notice that a peculiar symptom, known as "fibrinuria," is sometimes associated with the presence of villous growths in the bladder, the fibrinous effusion being caused by pressure upon the vascular loops of the villous tissue. In

like manner, the mucous discharge in villous disease of the rectum is probably due to congestion. With a higher degree of tension, the walls of the vessels give way, and more or less hæmorrhage results. In a case recorded by Mr. Goodsall ("Lancet," 1881, vol. i. p. 828) the tumour was the size of an orange, and rough and tuberculated on the surface. The most striking symptom was the thin, watery discharge. Never more than half an ounce of blood escaped at one time. These growths have hitherto been found mainly in adults and in advanced life. Their rate of progress is slow, and they may attain a considerable size, *e.g.*, that of one or two fists.

Treatment. — Removal by the aid of a ligature affords the best means of dealing with these growths. As the pedicle is generally short and flattened, it should be transfixed with a needle threaded with a double ligature, after the tumour has been drawn down as far as possible. The ligature having been divided near the eye of the needle, both halves of the pedicle are tied and the tumour is cut off, if the pedicle be long enough.

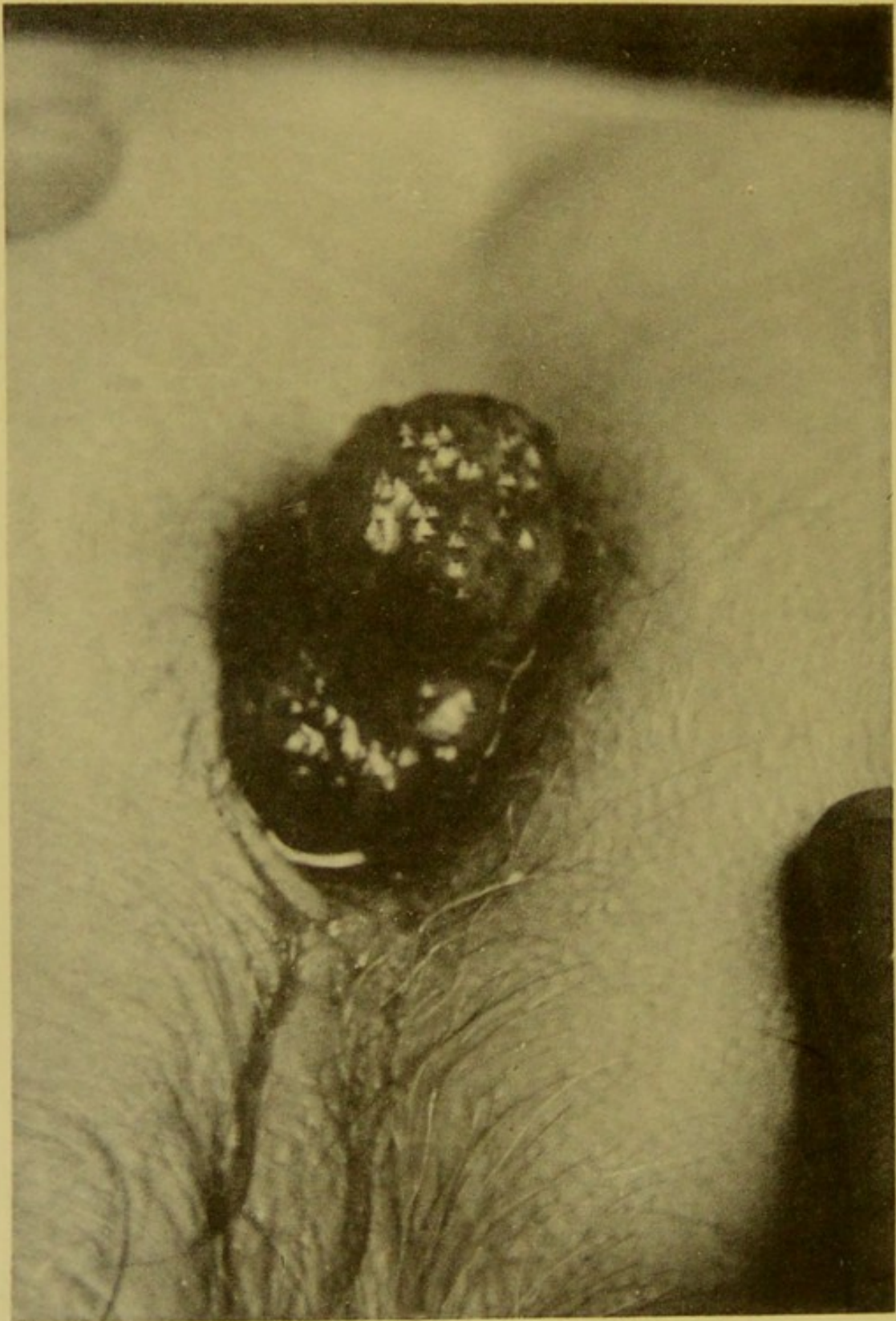
The following cases under Mr. Edwards' care may be of interest:—

CASE 25.—W. R., aged thirty-four, was admitted into St. Mark's Hospital, under Mr. Edwards' care, in February, 1891. He stated that about a year previously he had had a very severe attack of diarrhœa, during which a tumour, as large as a small orange, protruded from the anus, and resisted his efforts to replace it. A week afterwards the tumour spontaneously returned within the bowel. Moving about and the passage of stools produced considerable pain. During the next few months there were several similar attacks, attended with vomiting and return of the protrusion, the discharges ultimately becoming clear, fluid or jelly-like. In October, 1890, during one of these attacks, blood was noticed in the stools, but no protrusion took place. Since that time hæmorrhage has accompanied almost every action of the bowels, the blood being sometimes fluid and bright and sometimes clotted, and the stools

being very frequent. Loss of weight has been a prominent symptom. On examination, the rectum was found to be studded over with soft sessile growths, and the upper part was invaginated into the lower. Mr. Edwards forcibly dilated the sphincter, and applied the cauterly to about four inches of the surface. *Mist. catechu comp.* was subsequently given to restrain diarrhœa. He was discharged thirty days afterwards, passing solid stools three times a day, and having regained strength. On May 6th he applied at the hospital stating that the old symptoms had returned; blood and mucus were passed ten or twelve times daily from the rectum, and the bowel had prolapsed more than before. He was readmitted and examined (under ether) by Messrs. Edwards, Goodsall, and Allingham. As far as could be reached by the finger the bowel was found to be healthy; no growths could be felt. Left inguinal colotomy was suggested as a means of ascertaining the condition of the colon; but the patient declined to submit to it. A mixture containing bismuth, morphia, and hydrocyanic acid was ordered to be taken three times a day, with a diet consisting mainly of rice, milk, arrowroot, and cocoa. The patient left the hospital June 20, the bowels acting three or four times a day, and mucus and blood being still discharged from the rectum. Abdominal pains and occasional prolapse were also complained of.

CASE 26.—J. B., aged eighty, builder's clerk, admitted into St. Mark's Hospital, September 26, 1891. Until his present ailment there had been nothing special in previous history, with the exception of chronic constipation and right inguinal hernia, which appeared eight years ago. In 1889, while the patient was at stool, a protrusion about the size of a marble could be felt at the anus; about half a tablespoonful of blood was discharged from it. The swelling caused no pain, and was easily replaced; it has always returned when the bowels were moved, and blood has often appeared. It has also gradually become larger and more difficult to replace. At first there was very little mucous discharge—barely enough to attract attention or cause discomfort, but during the last fortnight there has been a copious discharge of a watery fluid, continuously oozing away and saturating the clothing, etc. Since this increase the patient has noticed that the protrusion occurs more frequently, has become very painful, and much more difficult to reduce. Defæcation is sometimes, but not always, attended with pain. The bowels are now usually moved once daily, the motions being black and flattened from before backwards. The patient states that the watery discharge is sometimes replaced by blood, but never entirely ceases; the growth does not affect his health in

PLATE X.



VILLOUS TUMOUR PROTRUDING THROUGH ANUS.

any way; he is not losing flesh, and his appetite is very good. Heart, lungs, and urine normal.

September 29, 1891.—The patient being under chloroform, Mr. Edwards (assisted by his colleague, Mr. Herbert Allingham) dilated the sphincter, and removed two villous tumours: one, situated just inside the anus on the anterior wall of the rectum, was about the size of a hen's egg and pedunculated (see photograph); a ligature was passed around it before excision. The other, which was somewhat smaller, was situated high up in the rectum on the right side, and, being sessile, was transfixed by a perineal needle and ligatured on each side. The patient unfortunately died the following evening, the temperature three hours before death being 101·4. No autopsy was obtainable. There had been slight abdominal pain, and presumably the shock proved too much for this octogenarian. Mr. Edwards regretted afterwards that he had been tempted to remove the upper growth.

Anal Papillomata.—The skin around the anus is often the seat of inflammatory growths or warts (*condyloma acuminatum*). The special irritation to which they are due may be contained in urethral discharges, pus from a soft sore, leucorrhœa, purulent discharges from the rectum, etc. They are not contagious and have no relation with syphilis. The irritation causes the papillæ and the upper strata of the rete Malpighii to become hypertrophied; the papillæ become elongated and branched, and their blood-vessels are enlarged. The fibrous tissue on which they stand often becomes tumid at the same time, while the epidermal layers become thickened and hypertrophied, and thus tend to cover over some of the irregularities caused by the branching of the papillæ. But many of these remain and are markedly exaggerated, so that the entire growth takes on a typically papillomatous appearance (Ziegler).

These papillomata first appear as small warts, often very numerous and crowded together on one spot. Under the influence of the exciting cause they grow rapidly, and show a decided tendency to branching

and bifurcation, and, in a further stage, their extremities often tend to become fused together. They are dry when isolated, but when crowded together the secretions cause them to become moist and inflamed. Growth then takes place more rapidly, and the vegetations assume various shapes, often resembling the heads of cauliflowers.

Symptoms.—These vary according to the number, size, and position of the growths. The patient is annoyed by the feeling of a foreign body, and by the more or less profuse discharge. When close to the verge of the anus, there will probably be much pain during and after defæcation, similar to that caused by a fissure. The existence of a patch on one side of the intergluteal fold often causes a similar growth to appear on the opposite side. Sometimes they spring from the mucous membrane, just within the anus, and cause severe tenesmus, and profuse serous discharge.

The *diagnosis* is for the most part easily made; the warts are most likely to be mistaken for syphilitic condylomata, from which they differ in being pointed and branching. The two growths may, however, exist together, the warty excrescences being due to the irritation of the secretions of the flat condylomata. According to Zeissl, the epidermis takes no part in the formation of the latter; it may undergo retrogressive changes. The pointed growths are mainly due to proliferation of the epidermal strata of individual papillæ and simultaneous growth of their connective tissue. Growths due to syphilis will be described in a subsequent chapter.

Treatment.—When large, warty growths about the anus may be cut off with scissors. When small, the application of strong liquor plumbi subacetat. will cause them to disappear. Great cleanliness must, of

course, be observed, and the parts should be kept perfectly dry. The following powder is a useful application:—℞ Hydrarg. subchlor., zinci oxidi, pulv. amyli, partes æquales.

Myxomata.—Akin to the *fibromata* are the morbid growths known as *myxomata*. Ziegler states that this latter name should be reserved for tumours in which there is not only a swollen and semi-liquid condition of the interfibrillar substance, but also an actual solution of the fibrillæ, and their replacement by dense saline juice. An instance of a rectal tumour of this nature has been recorded by Dr. Jones, of Pennsylvania ("Lancet," November 12, 1887). The patient was a woman, aged sixty-three, who had suffered for two years from symptoms of chronic dysentery. On examination *per vaginam* a tumour could be felt high up in the rectum. Under ether the sphincters were dilated and the hand introduced, and the growth was then drawn down. A ligature was placed round the pedicle, which was very broad and thick, and the latter was then divided. There proved to be three separate tumours, the largest the size of a pullet's egg. The microscopic appearances were those of a myxoma.

Lipoma.—Growths belonging to the lipomatous class are of rare occurrence in the rectum, and only a few cases have been placed on record. In one reported by Voss,* the patient, a woman aged forty-seven, complained that a hard lump protruded from the anus when the bowels were moved. On examination, a roundish tumour, as large as a goose's egg, was easily discovered, though its point of attachment could not be reached. Some time afterwards, when the growth had become still more movable, the pedicle was divided after a ligature had been placed round it.

* "London Medical Record," 1881, p. 200.

It appeared that the tumour had been adherent to the wall of the sigmoid flexure, and had caused invagination of that part into the rectum. Mollière* records two cases of rectal lipoma. In one, which occurred in a man aged forty-three, the patient suffered for some time from constipation, dyspepsia, nausea, and pains in the loins and abdomen. After all the symptoms had become somewhat serious, the patient one day, without much difficulty, passed an ovoid mass, measuring about $5 \times 2\frac{1}{2}$ inches. This was found to be a lobulated growth, firm and reddish-brown in colour, and having a thin pedicle, about an inch long, at one end. Microscopical examination showed that the growth was composed mainly of adipose tissue. In another case, the patient was a woman aged eighty-three, who had suffered for many years from constipation and a feeling of weight in the anus. All the symptoms were relieved by the sudden passage of an ovoid growth, somewhat larger than a pigeon's egg, weighing about three-quarters of an ounce, and composed entirely of fat.

In connection with these lipomata, it is important to observe that the peritoneum is sometimes prolonged for some distance into the pedicle. Hence it is desirable to place a ligature round the latter before cutting through it. It has been suggested that the growths might originate in the appendices epiploicæ which had become inverted; but the fact that the small intestines sometimes contain similar tumours contradicts this theory.

Fatty growths are occasionally found in the parts around the anus and rectum. Sir Spencer Wells† removed from the recto-vaginal septum of a young lady a large lobulated tumour, weighing two pounds,

* *Op. cit.* p. 526, *et seq.*

† "Medical Times and Gazette," 1865, vol. i. p. 453.

and completely closing the vagina. In another case, cited by Kelsey, the tumour sprang from the ischio-rectal fossa, and was at first mistaken for a perinaeal hernia. It occurred in a riding-master, forty-five years of age, and measured four inches by three. The operator at first cut down upon the tumour layer by layer as in the case of a hernia, but as soon as its true nature appeared, the growth was followed into the ischio-rectal fossa and thence extirpated. The patient was well in a fortnight.

Teratomata or Dermoid Cysts are very seldom found in the rectum. One remarkable case was recorded* a few years ago by Dr. Port. The patient was a girl, aged sixteen, who had suffered for some months from symptoms of intestinal obstruction, and stated that something protruded from the anus on straining and afterwards went back into the bowel. On one occasion it could not be replaced; its pedicles, two in number, were then tied and the tumour removed. It was found to be covered with an abundant growth of long hair, and to consist of fibrous tissue, with fat cells, inclosed in an integument like ordinary skin, in which many involuntary muscular fibres could be detected. It contained also two masses of bony substance, and growing from it, near the pedicles, was a long, canine-like tooth. The tumour measured $2\frac{1}{2} \times 2 \times 1\frac{1}{2}$ inches; it was attached to the posterior wall of the intestine three inches above the orifice. In another case recorded by Danzel,† the patient was a woman, aged twenty-five, in whom a lock of brown hair occasionally protruded from the anus during defæcation. The hair was found to be attached to a growth, the size of an apple, which was situated in the front of the rectum,

* "Path. Soc. Trans.," vol. xxxi. p. 307.

† Langenbeck, "Archiv. f. Klin. Chir." 1874, p. 442.

about two and a-half inches from the anus. The tumour contained a tooth and brain-substance inclosed in a bony capsule. Some of the hairs, growing from the surface, were more than six inches in length. Growths of a similar character are sometimes found between the anus and the coccyx.

Cystoma.—A few cases of cystic tumours of the rectum, other than dermoid, are recorded in various journals: some of them were probably examples of cystadenoma. In a case recorded by Dr. Prideaux,* parturition was complicated by a so-called cystic polypus of the rectum. The labour had been very difficult, and the perinæum had been ruptured, and on the following day the abdomen became enormously distended. The rectum on examination was found to contain a tumour as large as a foetal head. The wound was reopened and enlarged, and the tumour dragged down and found to be a cyst with a long, narrow pedicle reaching far up into the bowel; six inches at least could be made out, and it was then tied in two places and divided between them. When opened the tumour was found to contain about half-a-pint of a thick albuminous fluid; its wall was from one-eighth to one-quarter inch in thickness. Its removal was followed by subsidence of the abdominal symptoms. The history of the case showed that the tumour had probably existed during a previous pregnancy, two years before; that it had been formed in the colon, and had been pushed down in the second delivery by the descending child and had completely blocked up the bowel. In another case, recorded by Drs. Adams and Hobson,† a thin, pedunculated, pyriform, semi-transparent cyst was found hanging from the rectum of a woman after her fourth con-

* "Lancet," 1883, vol. ii. p. 633.

† "Lancet," 1883, vol. ii. p. 881.

finement. It was flaccid, and only about half full; its point of attachment could not be reached, and the growth itself could not be reduced. Eight ounces of an albuminous fluid were removed by tapping the cyst, which was then returned. After a subsequent confinement, five years later, the woman died from peritonitis, due apparently to an ovarian tumour.

Enchondromata or Cartilaginous Growths are stated to have been found in the rectum, but they must be extremely rare in this situation. One case has been recorded by M. Dolbeau.* The patient was a man, aged twenty-seven, and the tumour was as large as a hazel-nut, hard and movable, and attached near the orifice of the anus, causing no pain except when touched. The adjacent mucous membrane was somewhat eroded. On microscopical examination, the tumour was found to consist of cartilaginous elements with a large proportion of glandular structures. The origin of the tumour was extremely doubtful; but M. Dolbeau believed that it was not developed from the glands of the rectum. A case in which a pelvic tumour, presumably cartilaginous, interfered with the functions of the rectum is mentioned by Van Buren.

Angioma or Cavernous Nævus.—These growths are likewise of very rare occurrence in the rectum. One remarkable instance, in which death took place from hæmorrhage, has been recorded by Mr. A. E. Barker.† The patient was a man, aged forty-five, apparently in rude health. Eight months before presenting himself he had suffered from diarrhœa, attended by copious loss of blood, and he still complained of occasional discharge of blood and mucus. An examination of the rectum showed three shallow

* "Bull. de la Soc. Anatom.," vol. v. p. 6, second series.

† "Med.-Chir. Trans.," vol. lxvi. p. 229.

ulcers on the mucous membrane, occupying some smooth longitudinal folds in the wall of the bowel, and exuding continuously a considerable quantity of blood. The bases of the ulcers presented a peculiar purplish mottling which extended to the folds; these latter were yellowish in their deeper parts, as though they contained fat. The diagnosis was that of nævoid lipoma. Various remedies were tried, but without effect; eventually blood flowed continuously from the anus, and death ensued. On post-mortem examination, the wall of the rectum in its lower four and a-half inches was found much thickened by a nævoid growth, which gave a purple colour to the mucous membrane. There were several prominent longitudinal folds, each three-quarters of an inch or more in width. The tumour everywhere presented the characters of cavernous nævoid tissue. Two ulcers, one about the size of a threepenny piece and the other larger, were found about two inches from the anus.

CHAPTER XVII.

PROLAPSUS ANI AND PROCIDENTIA RECTI.

PROLAPSUS ANI is a somewhat general term, used to express a morbid condition of the lowest portion of the bowels, of varying degrees of importance and severity. It signifies a protrusion, through the anus, of parts which in the normal state are within and above that aperture, the protrusion consisting of mucous membrane, either alone or combined with some one or more of the other coats of the bowel. In exceptional cases, the protruded part contains within its folds a loop of the small intestine. In the mildest form of prolapsus, only a ring of mucous membrane just above the anus is protruded, and to this condition the term *prolapsus ani* or partial prolapsus is properly applied; in the worst cases, the entire rectum projects through the anus, thus constituting what may be termed *prolapsus recti*, complete prolapsus or procidentia. Between these extremes there are many intermediate stages, and there is yet another condition, viz., that in which the upper part of the rectum is prolapsed and invaginated into the lower portion: this being intussusception.

I. **Prolapsus Ani, or Partial Prolapse.**—During the normal act of defæcation a narrow ring of mucous membrane is protruded from the anus; it returns to its ordinary position when the act has been accom-

plished. A similar, but more extensive, protrusion takes place in some animals (*e.g.*, in the horse) during defæcation. When a larger portion of mucous membrane habitually descends, and is not spontaneously replaced, the morbid condition known as *prolapsus ani* has become developed.

Causes.—Partial prolapse is much more common at the extremes of life than in middle age, and children under five years of age form the majority of the patients. Straining at stool is the most potent of the exciting causes, and hence the complaint is very liable to become developed more or less rapidly in such children as are subject to diarrhœa, and especially in those of a strumous habit. In these subjects intestinal catarrhs are of frequent occurrence, and protrusion is favoured by the relaxed state of the sphincter and the swelling of the mucous membrane. Moreover, in children, owing to the absence of the sacral curve less support is given by this bone to the rectum than is the case in adults. The bowel also, in infants, is nearly vertical, and the meso-colon is comparatively extensive. Children are apt to strain very violently during defæcation, and they often continue such efforts when the bowel is really empty. Prolapsus ani is also liable to occur in children who are the subjects of vesical calculus, and is caused by straining efforts at micturition. Prolapsus is sometimes traceable to ascarides, and to rectal polypus, and phimosis sometimes leads to a similar result. Violent and long-continued attacks of coughing may also induce prolapsus, and hence this condition is sometimes seen in children during an attack of whooping-cough. Prolonged and violent screaming has been followed by a similar result. It is probable that atony of the sphincter is a predisposing cause of prolapsus, for in most of these cases the

finger can be readily passed into the rectum, and does not meet with the resistance which is generally experienced. The more often the bowel comes down, the more is the sphincter stretched and relaxed, and the increasing atony favours the repetition of the prolapse. General debility from any cause is thus a common antecedent of prolapsus.

In adult life, prolapsus ani is far less common, but it occurs sometimes in women who have borne many children, and in men as a result of mechanical obstruction to micturition, caused by stricture, prostatic enlargement, calculus, etc. The condition is sometimes due to severe tropical dysentery. Rectal polypus and internal hæmorrhoids are other causes of prolapsus. In these cases the mucous membrane is dragged down by the neoplasm; the prolapse due to polypus may be extensive and form a complete procidentia recti. In prolapse caused by piles, the amount of mucous membrane protruded is seldom great, the membrane having become thickened and more or less adherent to the subjacent parts. In advanced life, any urinary troubles which previously existed are wont to become more marked, and the contractile power of the muscles around the anal orifice becomes diminished; hence prolapsus is of more frequent occurrence, and its development is for the most part a gradual process.

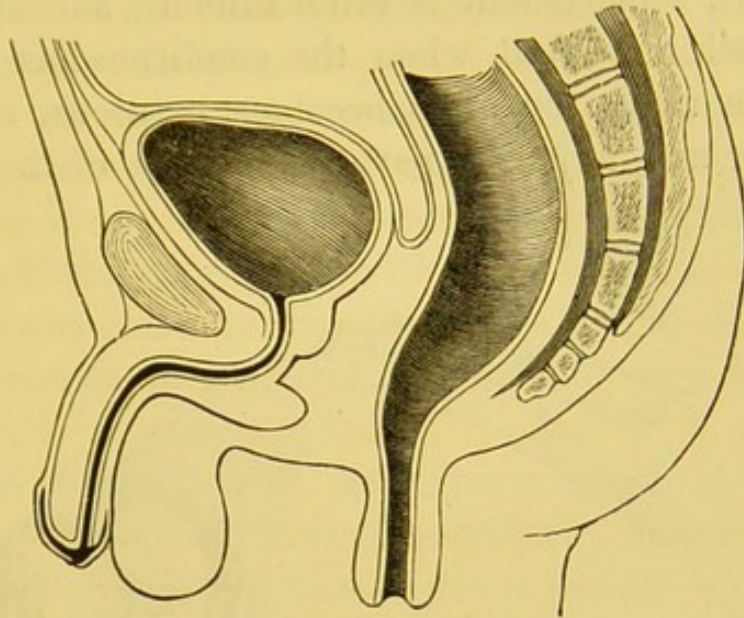
Symptoms.—In the early stage and in slight cases, the protruded portion consists of a ring of mucous membrane, not more than an inch in length, which comes down when the bowels are moved, and is replaced either spontaneously, or by the efforts of the patient. The protruded portion is of a deep-red colour, and overlaps the anus; it may be marked with concentric folds, and its surface is covered

with mucus, often stained with blood. Thread-worms are sometimes visible. There is at first no sulcus at the base of the protrusion; the mucous membrane is seen to be continuous with the skin of the anus. When some time has elapsed since the protrusion first occurred, replacement may be exceedingly difficult, not on account of the contraction of the sphincter, which in such cases is likely to be very weak, but because the child at once strains down and the protrusion reappears. In chronic cases, the mucous membrane becomes thickened and infiltrated, and there is some amount of muco-purulent discharge. Inflammation of the protruded part is of very rare occurrence.

II. Complete Prolapse.—This is generally the result of a partial protrusion, which gradually increases in size, but, in some instances, an extensive prolapse takes place suddenly, as a result of violent straining. In either case, the protrusion forms a tumour of variable size, more or less pyriform in shape, and projecting from the anal orifice (Fig. 54). At the free end is the opening, generally narrow and slit-like, into the canal of the bowel, and this is surrounded by circular or transverse folds consisting of mucous membrane and portions of the muscular coat. When invagination occurs, a sulcus or *cul-de-sac* of varying depth exists at the circumference of the protrusion, so that the mucous membrane cannot be traced directly into the skin of the anal margin. In another variety, there is no invagination; the rectum protrudes through the anus, with which the outer layer is directly continuous. In these two classes of cases, the rectum alone may be involved, but portions of the colon are sometimes prolapsed, and drag down with them more or less of the rectum. When a sulcus or furrow exists at

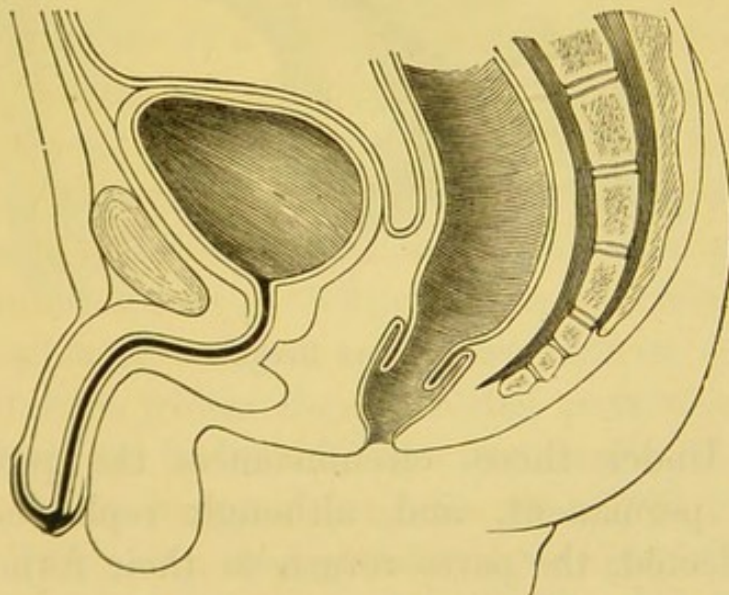
the base of a prolapsus, its outer wall is formed by a small portion of the rectum which has remained in its natural position. Through this, as through a

FIG. 54.



PROLAPSUS OF THE RECTUM.

FIG. 55.

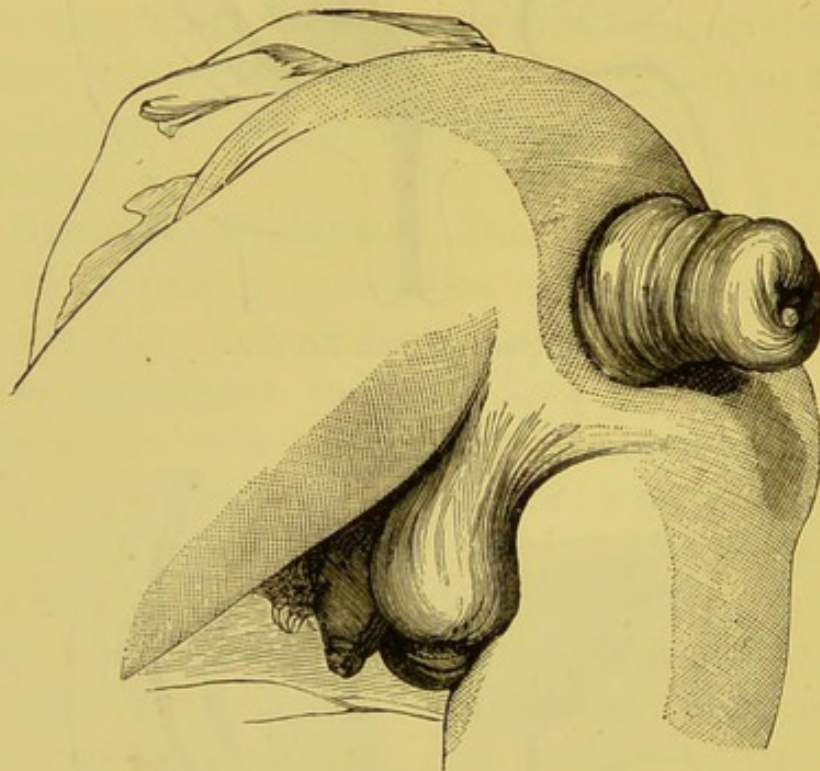


INTUSSUSCEPTION OF RECTUM.

ring, the upper portion protrudes or is invaginated, and the length of such protrusion (when the rectum alone is involved) varies from one to five inches, or even more.

When the protrusion is small and of recent formation, it can generally be replaced without much pain or difficulty, though it is likely to reappear when the bowels are moved. In the case of large protrusions (Fig. 56), replacement is often difficult and attended with much pain, but when the condition has existed for some time, the anus becomes patulous, and the sphincter and adjacent parts lose much of their elas-

FIG. 56.



PROCIDENTIA RECTI.

ticity. Under these circumstances the protrusion becomes permanent, and although replacement is easily effected, the parts return to their former condition whenever the bowels are moved, or even when the patient makes the slightest exertion.

The appearance of the protruded part becomes altered when the condition has existed for some time. Chronic congestion of the mucous membrane gives rise to a livid appearance and to œdema and thicken-

ing in the sub-mucous tissue; there is more or less profuse secretion, and bleeding is apt to occur from superficial ulceration—the result of friction against the patient's thighs and clothes. In other cases, the surface loses its velvety condition and becomes dry, hard, and insensitive.

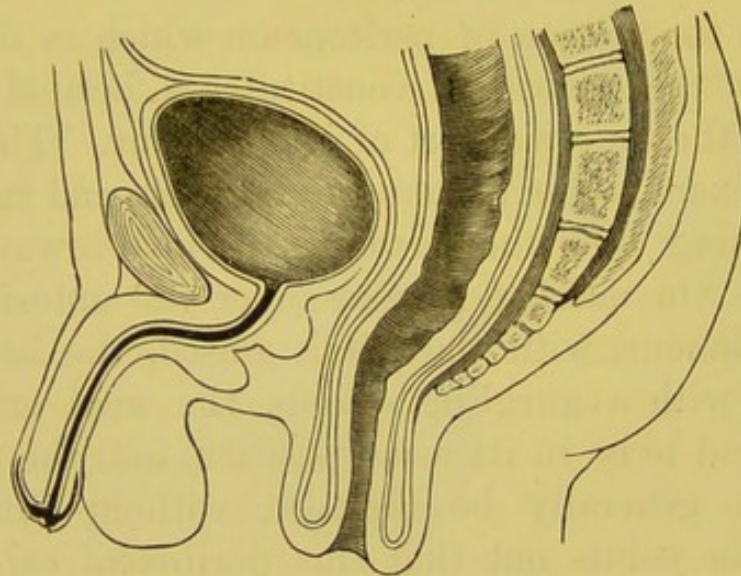
Other changes sometimes occur in the protruded part in cases of prolapse of the rectum. Congestion is followed by inflammation, with sloughing as a result. If the patient survive, portions of the intestine become detached, and healing may result, but death from pyæmia or peritonitis is the more probable ending.

When the portion of peritoneum which is dragged down by the protrusion constitutes a hernial sac, it occupies the anterior part of the tumour. This portion on examination is found to be tense and full, and the opening into the bowel is turned towards the sacrum. On making pressure over the anterior part of the tumour, with the pelvis raised, the hernia is reduced with a gurgling sound; the anal orifice is then found to be in its usual position, and the protrusion can generally be replaced without difficulty. Mr. Quain points out that this peritoneal *cul-de-sac*, at the anterior part of the prolapsus, “exists not only in examples of extensive displacement of the intestine, but even where the protruded part measures no more than an inch.” When the prolapsus is more extensive, the tumour may be surrounded by peritoneum (Fig. 57), except where the meso-rectum is attached.

When the upper part of the rectum descends through the lower part, but does not appear outside the anus, there is, of course, no external sign of the lesion (Fig. 55). The patient usually complains of a constant desire to go to stool, and of various uncomfortable

sensations in the bowel. Defæcation is accomplished with much straining, and discharges of mucus, perhaps tinged with blood, occur from time to time. When the surgeon's finger is passed into the bowel, and kept against the anterior or posterior wall, it meets with an obstruction formed by a *cul-de-sac*. Some little manipulation is required to find the orifice of the bowel, in or near the centre of the protuded portion; its detection may be facilitated by directing the patient to strain down. In cases of this kind which have come under our notice, the most marked

FIG. 57.



PROLAPSE OF THE RECTUM, SURROUNDED BY PERITONEUM.

and sometimes the only symptom has been a very copious discharge of mucus and flakes of mucous membrane, resembling to some extent the profuse watery discharge characteristic of villous disease. In the latter, however, the fluid is much thinner, clearer, and more like water, and contains no shreds nor casts of mucous membrane.

It remains to notice certain *complications* which may attend prolapsus of the rectum. The formation of a hernial sac, containing a portion of small intestine,

has been already mentioned. The hernia may become irreducible, owing to the formation of adhesions between the sac and its contents. In rare cases, the ovaries and a part of the bladder have been found in an anterior peritoneal pouch.

Another complication, seldom met with, and of a very dangerous character, is rupture of the coats of the rectum, with protrusion of a loop of small intestine through the rent thus made. Such an accident has been known to follow attempts at reduction; in other cases, the exciting causes of the rupture were vomiting, lifting a heavy weight, and straining efforts at defæcation. Excepting for rectal prolapse, the patients were well prior to the rupture, which in each case took place suddenly, at the moment of effort. In one case, cited by Kelsey,* the prolapsus occurred in a woman, aged forty-six, and had appeared after a difficult labour twelve years previously. It had become strangulated, and during an attempt to reduce it, the surgeon felt the tumour distend under his fingers, and heard a noise similar to that made by tearing parchment. At the same time, the tumour suddenly disappeared of itself, and nausea, syncope, and a marked change in the expression of the face supervened. The finger, passed into the rectum, detected at a considerable height an irregular longitudinal rent, the extent of which could not be determined. The loop of small intestine was easily replaced, and a suitable compress and bandages were applied. The patient, however, soon became restless, left her bed and removed the bandages, etc. When next seen, a long loop of intestine, cold, and in several places livid, protruded from the anus; replacement was effected, but death took place in a few hours.

* Dr. Roché: "Révue Méd.-Chir.," 1853. Kelsey: "Diseases of the Rectum and Anus," p. 120.

In another case, recorded by Mr. Henry Smith,* rupture of the coats of the rectum took place during an operation for the relief of a very large prolapsus. Just as the operation (application of the clamp) was being concluded, severe vomiting took place as the result of the anæsthetic; the prolapsus was forced still further down, and before the parts could be returned, "the violent action of the abdominal muscles was such that the weakened coat of the bowel gave way, and a knuckle of small intestine actually protruded through the rent thus made." This was returned as soon as the vomiting ceased; the patient's bowels were subsequently kept locked up by opium, and he recovered without any bad symptom. Some time afterwards, the operation was completed by the removal of three longitudinal folds of skin from the anus so as to tighten the parts.

To illustrate the pathogeny of this accident, experiments have been made by Dr. Quenu,† to ascertain the resistance which the rectum offers to a bursting force. Having stitched up the anus, he pumped air into the rectum, measuring the pressure. He found that the bowel would bear, without giving way, a pressure equal to that of a column of mercury sixty centimetres high (about twenty-three inches). When this pressure was slightly exceeded, the peritoneal coat began to give way and the other coats followed. He also tried, by forcing injections into the veins, to rupture the rectum; but the anastomosis was so free that this result did not happen, and, moreover, at a pressure of forty to fifty centimetres, the veins burst in the meso-rectum. The probable explanation is that rupture in cases such as those referred to takes

* "Lancet," March 15, 1880.

† "Révue de Chirurgie," 1882.

place in a bowel the veins of which are varicose, its walls congested by prolapse, and softened by infiltration of leucocytes and inflammatory effusion. In the analogous case of spontaneous rupture of the œsophagus, one instance occurred in an immoderate drinker, and in two others, vomiting of blood preceded the rupture; hence it may be inferred that the condition of the œsophagus resembled that of the rectum in the cases under consideration.

The *diagnosis* of prolapse of the anus or rectum is for the most part easily made; hæmorrhoids and polypus are the only affections with which it is likely to be confounded. Protrusion of a tumour from the bowel is a symptom common to all these, but the appearances differ considerably in the three cases. In prolapse the folds of the mucous membrane, with the anal orifice in the middle, are always recognisable; there are no separate tumours, as in hæmorrhoids; and nothing in the form of a pedicle, as in polypus, which, moreover, is sometimes firm and lobulated. It must, of course, be remembered that a certain amount of prolapsus often occurs with internal hæmorrhoids, and that the former condition is sometimes due to the presence of a polypus. Invagination or intussusception of the colon, which sometimes occurs in children, requires to be distinguished from prolapse of the rectum. Such invagination may result from straining efforts at stool during catarrhal diarrhœa, or from the presence of a polypus in the colon or upper part of the rectum. In such cases the protruded part may measure twelve or fourteen inches; it is cylindrical in form, and at its lowest portion is a small opening which leads into the canal of the bowel. A sound can be introduced for a long distance between the tumour and the wall of the rectum, without reaching the base of a sulcus. In-

vagination of this kind may be sudden in its origin, but it is more likely to occur gradually. The protruded part has been known to slough off and recovery to take place.

Treatment.—In all cases of prolapsus, either partial or complete, a careful examination should be made to ascertain whether any obvious cause be present, such as a polypus in the rectum, ascarides, hæmorrhoids, phimosis, calculus in the bladder, etc. As a matter of course, no measures dealing with the prolapsus alone are likely to be successful if any of these causes remain in operation. In children, prolapsus often depends upon a catarrhal condition of the bowels, and when this exists, various combinations of hydrarg. cum cretâ, sodii bicarb., pulv. rhei, and pulv. ipecac. comp., are indicated, and catechu or kino if obstinate diarrhœa be present. When the state of the bowels has been improved, cod-liver oil and some preparation of iron may be given, due attention being, of course, paid to the diet and other hygienic matters.

When protrusion has occurred, it is sometimes necessary to have recourse to various manipulations, in order to replace the portion of bowel. In the case of *children*, replacement is for the most part easily effected. The child should be laid on its chest across its nurse's knees, with its head lowered; a little oil or vaseline is then applied to the protruded part, and pressure is made with the fingers, so as to replace it within the sphincter. The central part, as being the portion that last came down, must be first replaced. One good plan is to insert the index finger, covered with oiled lint, into the central opening, and then to press gently inwards. After a few manipulations, the part generally slips back, but sometimes continuous pressure is requisite, and a soft sponge should

be employed for this purpose. When replacement cannot be effected, by reason of the struggles of the child, a little chloroform should be administered. After replacement the child should be kept at rest for some time, and, in order to prevent immediate recurrence of the prolapse, it is well to apply a thick compress or sponge to the anal orifice, and to draw the nates firmly together by means of a bandage or strips of plaster. Afterwards the child should not be allowed to strain at stool; indeed, it is better that its motions should be passed while it is lying on its side, and the skin near the anus should at the same time be drawn to one side with the hand. In mild cases these measures may suffice, though protrusion is apt to recur, and especially if the above-mentioned precautions be neglected. Both constipation and diarrhœa must of course be prevented. It is sometimes useful to apply astringents to the prolapsed part before returning it, and decoction of oak-bark, sulphate of iron lotion (gr. j. to ℥j.), or alum lotion (gr. iv. to ℥j.) may be employed for this purpose. Hensch* recommends the subcutaneous injection of ergotin into the perinæum and immediate neighbourhood of the anus. For children, from one and a-half to three years, he uses gr. $\frac{1}{3}$ to $1\frac{1}{2}$, and finds that as a general rule a distinct improvement takes place within the next eight days. When the exposed surface is ulcerated, a solution of nitrate of silver (gr. xv. to ℥j.) should be applied. Every endeavour should be made to prevent a recurrence of the prolapsus, for the longer the part remains in its normal position the greater the probability of a cure. For this purpose the application of a perinæal bandage and pad is useful as an auxiliary measure.

* "Lectures on Children's Diseases," New Syd. Soc. Transl., vol. ii. p. 77.

When, however, the protrusion recurs in spite of the treatment above described, the best plan is to apply strong nitric acid to the protruded mucous membrane by means of a camel-hair brush. The setting-up of inflammation between the mucous and muscular coats is the object sought to be attained. An anæsthetic is of course required, and the acid must not be allowed to touch the skin at the verge of the orifice. The protrusion should be smeared over with vaseline and replaced, and a pad and bandage applied. The bowels should be kept confined for a few days by means of a little opium and catechu. The application of the actual cautery, as about to be described, will also effect a cure of severe prolapsus in children.

In dealing with prolapsus of the rectum in *adult subjects*, palliative measures may first be tried. Any possible cause should be dealt with, and any predisposing constitutional condition improved as far as possible. If hæmorrhoids coexist, they should be treated as described in a previous chapter.

The bowels should be kept regularly open; straining must be avoided, and, when possible, it is well that the patient should use a bed-pan and acquire the habit of having the bowels moved at bedtime, so that he may lie down soon afterwards. An enema of cold water should be used after the bowels have acted. Mr. Ball* recommends the employment of a special form of pessary, devised by a patient for his own use, and consisting of an oval knob of vulcanite, with a very slender curved shank, to which a piece of twine is attached. It is used in the following way:—"The prolapse having been sponged and replaced, the knob is introduced into the rectum, the slender curved shank lying between the nates, and the mechanical support afforded by the foreign body tends to brace

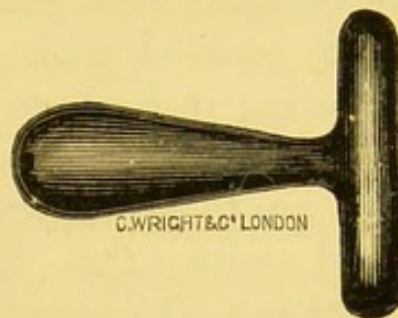
* *Loc. cit.* p. 202.

up the rectum and anus, and to keep the prolapse from protruding ; the very slender shank allows the sphincter to contract nearly to its full extent, and also affords a healthy stimulus to this muscle." Mr. Ball states that in several cases, even in adults, he has obtained a complete cure by means of this simple pessary.

These rectal plugs (Fig. 58) made in various sizes we have long used, not only for the relief of this condition, but in certain cases of hæmorrhoids, pruritus ani, and of incontinence.

When the prolapse recurs in spite of palliative treatment and the removal of any probable cause, an

FIG. 58.



RECTAL PLUG.

operation may be recommended with every prospect of success. The cure of the prolapsus involves the attainment of several objects :—(1) the production of adhesions between the coats of the bowel, so as to prevent them from separating from each other and passing through the anus ; (2) the removal or destruction of redundant mucous membrane ; (3) diminution of the size of the anal orifice which has become unduly relaxed and patulous. Strong nitric acid, which answers very well in the child, is not so applicable to the adult, for in order to attain the desired end, the acid must be freely used, when it is almost impossible to limit its action to the degree required ; large sloughs may form, with severe hæmorrhage

when these separate, and with stricture of the rectum as a further consequence after the wounds have healed.

The employment of the actual cautery yields far better results in these cases, and Paquelin's instrument will be found very convenient for the purpose. The following is the method of using the cautery:—The patient being fully under the influence of an anæsthetic, is placed upon his back, with the hips raised, on a table of suitable height and in a good light. The protrusion is to be replaced and a fenestrated speculum introduced into the rectum. Davy's wire speculum is the best for this purpose (see page 21). The cautery at a dull red-heat is then to be drawn along the mucous membrane, in a line three or four inches long, parallel with the axis of the bowel, and terminating just above the junction of the mucous membrane with the integument. Three or four similar lines are to be drawn on the mucous membrane, parallel with the first and equidistant from each other. The result will be a series of parallel vertical stripes of cauterised tissue, the lower ends of which will appear as rays diverging from the anus. "The lines of eschar may be made more numerous, deeper and broader, according to the volume and duration of the prolapse." In a child, or when the protrusion is not very large or of long duration, a cautery as thick as an ordinary probe will suffice; a larger size is required for a more voluminous tumour. If the Paquelin cautery be not at hand, the ordinary cautery iron may be used. It should be bent nearly to a right angle at a short distance from its extremity, so that it may reach all points of the concavity of the rectal surface. Large vessels should be avoided, and the eschars should not be made too deep above, because of the risk of injuring the peri-

toneum. Near the anus the cautery iron may be pressed somewhat firmly against the mucous membrane, but the skin should not be touched unless the sphincter has lost its tone; in this latter case it is desirable to apply the cautery to the muscle on each side, in such a way as to divide some of the marginal fibres. After the operation the patient must remain in the recumbent position, until the wounds have thoroughly healed, and a bed-pan must be used when the bowels are moved. It is very important, however, that the bowels should be kept locked up as long as possible—from ten days even to three weeks. All straining efforts must be avoided; castor oil or an enema may be administered when necessary.

The results of this operation, the main features of which have been suggested by Dr. Van Buren, are very satisfactory. The cicatrices contract both longitudinally and transversely, and thus diminish the calibre of the bowel. Moreover, the inflammation set up between the muscular and mucous coats causes adhesions which aid in preventing prolapsus. There is little or no danger of subsequent stricture, provided that the cautery is not too freely applied. In very severe cases, some amount of contraction of the orifice of the anus sometimes results, but this is to be aimed at rather than otherwise, especially in those cases in which the anus has become unduly patulous.

A second application of the cautery is sometimes necessary in order to complete the cure; it should then be applied to the mucous membrane in the intervals between the cicatrices resulting from the first operation. The cauterised lines should always be vertical and never circular in their direction. In addition to linear eschars, Dr. Van Buren recommends the application of the slender probe-pointed cautery to scattered points; the effect of the latter,

in a case he records, when applied over the sphincter, was remarkable in arousing its contractility.

The satisfactory treatment of the condition known as intussusception of the upper part of the rectum within the lower is very difficult. Mr. Edwards had a case in which he tried linear cauterisation through a Davy's speculum, and with good results at first, though later on the old symptoms returned. Benefit might perhaps be obtained from some operation (as suggested by Mr. H. Allingham for procidentia) of attaching the rectum by sutures to the inguinal region, thereby pulling out the invaginated portion and fixing it in an extended position.

Several other operations have been devised and performed for the relief or cure of severe prolapsus ; but in our hands none have proved so effectual and safe as that above described. Mention, however, must be made of such plans as have been adopted by various surgeons in recent years.

(a) *Excision of the Prolapsed Portion.*—Mr. Treves* claims that excision is the best, simplest, and most efficient plan of dealing with severe forms of prolapsus, which resist mild treatment and cause much distress. His method of operating is as follows :—The patient is placed in the lithotomy position, with the buttocks well raised ; the relaxed mucous membrane is drawn down with tongue forceps, which are allowed to remain attached. A circular cut is then made round the base of the prolapse, where the skin and mucous membrane join. The latter alone is incised, and then dissected off and turned down like a cuff. In the next step the inner layer is divided with scissors at the level of the anus, pressure forceps being left attached to the cut membrane. Bleeding vessels are tied, and the mucous membrane is fastened to the skin

* "Lancet," 1890, vol. i. pp. 396, 454.

at the margin of the anus by sutures of silkworm gut. Iodoform on wool and boracic lotions are subsequently applied. In one case thus treated, the base of the prolapsed portion measured $10\frac{1}{2}$ inches in circumference; the internal sphincter formed the apex of the protrusion, the muscular coat had descended bodily and carried the mucous membrane before it. There were evidences of protrusion of the peritoneum at the anterior part, and when the prolapse was divided at the base of the cone, the peritoneum was opened and afterwards closed by sutures of chromicised catgut.

Commenting on three cases thus treated, Mr. Treves asserts that this method presents the following advantages:—It gives a clean surface; the operation area is reduced to a minimum; no damaged bowel is left in the pelvis; there is no risk of hæmorrhage or stricture; the method is simple, final, does not necessitate prolonged after-treatment, and causes but little pain.

A method of excising the prolapsed portion, and of utilising the elastic ligature in the operation, has been devised by Dr. Kleberg.* Its principal details are as follows:—An elastic ligature is placed round the prolapsus, as near as possible to the sphincter. Below this an incision, two inches in length, is made into the sac formed by the drawing down of the peritoneum. Any protruding loop of intestine is pushed back above the ligature, and below it a trocar is passed through the prolapsus. The cannula serves as a channel for the introduction of two elastic drainage-tubes, and after its withdrawal these are tied as tightly as possible, one on each side. The elastic ligature is then removed, and the prolapsus cut off with scissors one inch in front of the permanent ligatures.

* "Archiv. für Klin. Chirurg.," Bd. xxiv. s. 840. For a full account of this operation, see "Kelsey," *loc. cit.* p. 122.

(b) *Reduction of the Calibre of the Rectum, and the Production of a Narrowed Muscular Ring.*—Dr. F. Lange,* of New York, has devised an operation for the fulfilment of these objects. He assumes that the levator ani plays an important part in the closure of the rectum, and that it not only lifts but draws the orifice forwards against the perinæum. He carries out his plan in the following way—the patient being placed in the genu-pectoral position, which he regards as the best in operations upon the rectum. An incision is made from the lower part of the sacrum down to the anus, until the posterior wall of the rectum is reached; the coccyx is then removed. The object aimed at is to narrow the gut as high up as possible and to lessen the impediments to the action of the levator ani. The calibre of the rectum is lessened by introducing “buried étage sutures of iodoform catgut,” not perforating the entire thickness of the gut. The first row are inserted near the middle line, and form a fold in the posterior wall, which protrudes into the bowel. In this way, the more lateral portions of the gut are brought into apposition without causing too much tension. Similar sutures are employed to unite the cut surfaces of the levator ani and sphincter externus, which had been dissected back in order to lay bare the posterior wall of the rectum. The cavity is filled up with iodoform gauze and the flaps of integument united with sutures. In a case thus operated upon with a good result, the prolapsus, which was six inches in length, had existed for twenty years, and had been treated on five different occasions by cauterisations and excision of the mucous membrane.

(c) An operation resembling in some respects that performed by Dr. Lange has been devised by Dr.

* “Annals of Surgery,” vol. v. p. 497.

Verneuil, of Paris.* The object sought to be attained is to *raise the bowel and attach it to the region of the coccyx*. The operation is performed as follows:—The prolapsus being replaced and the patient being in the lithotomy position, two incisions, from one and a-half to two inches in length, are made at right angles to the long axis of the anus, from the orifice of the latter in an outward direction. From their terminations on each side incisions are carried to the apex of the coccyx, and the triangular flap thus made is loosened from behind forwards, and left attached to the tissues surrounding the anus. This flap is drawn up with blunt retractors, and the posterior wall of the rectum is detached for a breadth of about two and a-quarter inches, and above to a height corresponding to the distance from the anus to the apex of the coccyx. Four threads are now passed transversely through the posterior rectal wall, parallel with each other and not including the mucous membrane. The highest of these sutures is in close relation to the apex of the coccyx, while the lower one is about 15 mm. from the anus. By means of a needle with an eye near the point, which is passed through the skin from without, the threads are drawn through the points of emergence of their respective ends, at about one and a-half inch on either side of the median line. The upper suture should be on a level with the articulation between the first bone of the coccyx and the sacrum, and the lowest at about the apex of the former bone; the intervening sutures are placed about equidistant between. The first and second and the third and fourth sutures respectively are tied together, rolls of iodoform gauze being placed between the loops to prevent the latter from being buried in the skin. Strong traction upon these secures the rectum

* "Annals of Surgery," March 1891, p. 218.

in its new position, and the other ends of the threads are similarly secured. The triangular-shaped flap is now removed, the muco-cutaneous anal margin being preserved, and after the insertion of a drainage-tube the wound is closed by sutures.

(d) *Attachment of the Upper Part of the Rectum to the Wall of the Abdomen.*—Dr. Macleod,* Professor of Surgery in the Calcutta Medical College, describes a method of this kind for dealing with severe cases, in which ordinary measures prove insufficient. He proceeds as follows:—The bowels having been previously well cleared out, carbolic lotion (1 to 40) is applied to the protrusion, which is then reduced. The left hand is passed into the bowel, and the fingers are made prominent above Poupart's ligament. A long steel acupuncture needle is passed through the abdominal parietes into the cavity of the gut, guided across its interior by the fingers, and passed outwards till it emerges about three inches from the point of entrance. The needle should be parallel to, and one inch above, Poupart's ligament. Another needle is passed in the same way three inches above the first, and external to it, so as to secure the intestine in an oblique position from below upwards. The upper end of the rectum (or, it may be, the lower end of the sigmoid flexure) is thus temporarily fixed in the desired position; the hand is then withdrawn. The next step is to make an incision, three inches long, between the needles and at right angles to them, in the longitudinal axis of the intestine, as near as possible to the middle of the attached portion. The layers are to be divided separately, until the peritoneum is reached; the membrane will usually bulge out. The left hand is now re-introduced into the bowel, and, guided by the fingers, two series of loops

* "Lancet," July 19, 1890.

of silk thread are inserted, four on each side, at a distance of about an inch apart, so as to attach the serous and muscular coats of the intestine to the abdominal wall. A series of these loops, also penetrating the two outer walls of the intestine, are placed between successive pairs of these rows, in order to bring the lips of the wound together; and between them smaller horsehair stitches of adaptation are inserted. Antiseptic precautions and dressings are employed, and after the operation a morphine suppository is introduced into the bowel, and opium is given every three hours.

In a case treated as above described, the steel pins were removed in twenty-four hours, and the horsehair stitches on the tenth day; there were no bad symptoms, but fæces had to be removed occasionally from the bowel. Three weeks after the operation the rectum was found to be in its normal position; and three weeks later the patient was discharged from the hospital. He returned thither some weeks afterwards,* stating that he had had an attack of dysentery, and that something still protruded on defæcation. On examination a fold of loose mucous membrane was discovered on the right side. This was drawn down, and, together with a portion of the verge of the anus, secured with a Smith's clamp, cut off, and carefully cauterised. Commenting on this case, Dr. Macleod states that the plan suggested by Mr. H. Allingham† is an old one, and has been tried by himself and others. Dr. Macleod, however, aims at effecting reduction by *reposition*, and not by *traction*; and his method of fixing the reduced gut to the abdominal wall is very different from Mr. Allingham's.

(e) *Removal of Portions of the Sphincter and of the*

* "Lancet," Oct. 11, 1890.

† *Loc. cit.* p. 187.

Wall of the Rectum.—This method was devised by Dr. J. B. Roberts, of Philadelphia, and is said to yield satisfactory results in cases apparently irremediable by other operative procedures.* The operation is performed as follows:—The patient being prepared in the usual way, two incisions are made so as to include a V-shaped piece, with its apex at the point of the coccyx and its base consisting of the posterior part of the sphincter, and measuring one and a-half to two inches in length. A similarly-shaped piece is then removed from the posterior part of the rectum, so as to include its entire thickness, and having for its base the same portion of the sphincter, and its apex about four inches up the bowel. The wound in the rectum is closed by interrupted sutures of fine silk; thicker sutures are employed to bring together the ends of the sphincter, and to close the wound between it and the coccyx. A drainage-tube is inserted at the apex of the latter bone, and passed up behind the line of suture in the rectum.

* A case thus treated by Dr. James Bell of Montreal is recorded in the "Annals of Surgery" for May, 1891.

CHAPTER XVIII.

PRURITUS ANI.

THE term "pruritus" is still used in a somewhat general manner to designate several cutaneous affections associated with itching, with or without visible pathological changes. It is, however, better to restrict the use of the term to a cutaneous affection which consists solely in the abnormal sensation of itching, without any constant pathological appearances, such as vesicles, papules, etc. Slight discomfort of this kind is perhaps one of the commonest of complaints, most persons having had, at one time or other, some personal experience of anal irritation.

Pruritus sometimes affects the skin all over the body, but it more often attacks isolated portions, and the neighbourhood of the anus is one of its most common seats. It also affects the adjacent mucous membrane of the rectum, and may spread to the scrotum in the male and the vulva in the female. The itching is very troublesome and is often the source of the greatest distress to the patient, who generally endeavours to obtain temporary relief by rubbing and scratching the part. These manipulations, however, only aggravate the condition. Pruritus ani is generally aggravated by heat, and is therefore worse when the patient is in bed; it sometimes comes on in paroxysms before and after defæcation.

Causes.—These are those of pruritus in general, besides certain local conditions or peculiarities. Anal pruritus is most common in middle-aged and elderly patients of the male sex. It is sometimes associated with oxyurides in the rectum, but it more frequently depends upon a varicose condition of the veins of this part, just as occurs in a similar condition of the veins of the leg. It is much aggravated by excesses in eating and drinking, probably because any existing hæmorrhoidal congestion is thereby increased. It is not uncommon in gouty subjects, and sometimes alternates with acute attacks of gout in the toe-joint. The complaint is, however, sometimes seen in persons of abstemious habits, and in such cases is probably of neurotic origin. Not infrequently it is found associated with more or less severe eczema of the skin of the perinæum. In other cases there is constipation, uterine disorder, or some form of obstinate and severe dyspepsia to which the itching is attributable. Certain articles of food, such as shell-fish of various kinds, sometimes provoke attacks in those who are predisposed to pruritus; while champagne, beer, and excessive smoking produce similar effects in other cases. The affection thus resembles in many respects the cutaneous symptoms of the uric acid diathesis. In another class of cases the patients are of the nervous, irritable type, and the pruritic attack is induced by any special strain upon the nervous system.

In some cases, pruritus ani is due to uncleanness and insufficient ablution of the part; in others, its real cause is diminished power of the sphincter, whether resulting from a previous operation, or otherwise. The mucus from the bowel escapes involuntarily and dries upon the skin, and thus sets up irritation. We have frequently met with this condition in patients who, after operations for the cure of severe

fistulæ, have lost to some extent the power of the sphincter. As a matter of course, in such cases, the parts should be kept very clean, and every endeavour should be made to restore the lost control. In cases of fistula, troublesome itching is sometimes caused by the discharge.

Symptoms.—As stated above, the prominent and indeed the only essential symptom is the severe itching, but signs of cutaneous inflammation are often present. In some cases there is chronic eczema, with moist exudation, and excoriations due to scratching. Sometimes the anal folds are raw and cracked, and sometimes there are signs of *eczema marginatum*, which is due to the presence of a parasite. This latter gives rise to scurfy patches, with raised and defined edges. If these be first moistened with glycerine, and then scraped off and placed under the microscope, minute clusters of spores will be visible. In the majority of cases there is no abnormal appearance, but when the condition has become chronic, the part is apt to look peculiarly white, like sodden parchment, owing to disappearance of pigment. A catarrhal condition of the rectum and internal hæmorrhoids are sometimes found co-existing with pruritus ani.

Treatment.—To be successful this must be both local and general in character. If thread-worms be present they must be dealt with in the usual way, viz., by injections of lime-water, or salt and water, and by santonin and other anthelmintics internally. Hæmorrhoids must likewise be attended to. Eczema marginatum is best dealt with by applying sulphurous acid diluted with an equal part of water; and a solution of perchloride of mercury (gr. iv to ℥j) applied after well washing the part with soap and water, will not fail to destroy the parasite. The acid nitrate of mercury is also a good caustic for this purpose.

The itching is often so severe in cases unattended by local changes that palliative remedies are urgently demanded. One of the best of these is chloroform ointment, made by rubbing lard with as much chloroform as it will take up. Tincture of iodine, either of full strength or diluted in various degrees, is also serviceable for a like purpose, and for many cases nothing acts better than a strong solution of nitrate of silver in spirit of nitrous ether (gr. x to ʒj) painted over the part with a camel-hair brush. The ointments of boric acid, carbolic acid, salicylic acid, and white precipitate are sometimes efficacious, and a saturated solution of bicarbonate of sodium will sometimes relieve the itching in a very satisfactory manner. *Liquor carbonis detergens*, either as an ointment (1 to 7), or as a lotion (ʒj to ʒj), is also recommended. As a matter of course the patient should be advised to refrain from scratching the part.

At St. Mark's Hospital we find that the application of lead and milk is most generally useful. The formula employed is:

℞ *Liq. Plumbi Subacetat.* (Fort.) ʒj.
Lactis ʒviij. *Misce.*

This preparation is made fresh daily and applied by means of cotton-wool. Should this fail, it is well to try the *Unguent. picis* liquid, well rubbed in, and a small dossil of picked oakum should be kept in apposition with the part. A 5 per cent. solution of cocaine well painted on after the parts have been thoroughly bathed and dried, generally relieves the itching for a time. *Lanolia* is a preparation which Mr. Edwards has found of much service. A solution of nitrate of aluminium (ʒj to Oj) has been recommended, but we have not as yet had occasion to try it. Menthol has been found to relieve *pruritus vulvæ*,

and it might be expected to do good in pruritus ani. The solid menthol should be well rubbed over the surface, avoiding cracks and very tender spots.

In long-standing cases, Mr. Edwards has seen very good results from forcible dilatation of the anus, either alone or combined with cauterisation of the skin in the anal region.

The following cases are examples of this method of treatment:—

CASE 27.—Mr. E. S. had suffered from pruritus ani for twenty years. Mr. Edwards forcibly dilated the sphincter, the patient being under the influence of ether administered by Mr. Mills. Two small external tabs were removed at the same time; no cauterisation was employed. The patient was completely relieved of his trouble.

CASE 28.—Mr. D. B. had suffered from pruritus ani and fissure for more than a year, and had tried various remedies. Ether having been administered by his friend Mr. Rickard Lloyd, Mr. Edwards forcibly dilated the anus and incised the fissure. The pruritus was due to an eczematous eruption, which was freely rubbed over with nitrate of silver. A week afterwards the patient called to say that he felt quite well, and that there had been no itching since the operation. He was advised to come again if his trouble returned; as he has not done so, it may be concluded that he has been free from it. In St. Mark's Hospital, Mr. Edwards has had several cases, which have apparently been cured by this simple method.

One other plan deserves to be mentioned, viz., the introduction of a rectal plug, which will often prove serviceable in allaying anal irritation. These plugs are made in various shapes and of different materials. Boxwood, vulcanite, pewter, and earthenware are all used. Two forms (one of which is shown in Fig. 58) are often employed, not only in this affection, but also in cases of prolapsus, incontinence of fæces, and in some neuralgias.

As adjuncts to local treatment, *constitutional remedies* are generally required. If the patient be of full

habit, and given to excess in eating and drinking, or smoking, moderation must be enjoined. Alcohol must be forbidden, and animal food allowed only once a day. The bowels should be kept open by means of such purgatives as reduce congestion of the liver. The various purgative mineral waters are useful for this purpose; Carlsbad salts form a good combination, being alkaline as well as purgative, and if they prove insufficient, a little colocynth and blue pill should be taken occasionally at bed-time. The patient should take enough exercise to keep the skin in action, should use daily a tepid bath made alkaline with a little potash, and should wash the perinæum every night with warm water. When the pruritus occurs in thin delicate persons, lowering measures are inadmissible; on the other hand, tonics are indicated, and quinine and arsenic form a good combination. If there be a gouty history, colchicum and alkalies, with attention to the state of the liver and bowels, and suitable regimen, will relieve or cure the pruritus. The bromides are sometimes useful when the patients are of the nervous irritable habit and the itching prevents sleep. In the same class of cases, suppositories containing opii (gr. $\frac{1}{4}$ to $\frac{1}{2}$), extract. belladonnæ (gr. $\frac{1}{2}$), olei theobrom. (gr. xv), will often afford great relief. In women any co-existing uterine derangement will require careful attention.

CHAPTER XIX.

SYPHILITIC AFFECTIONS OF THE ANUS AND RECTUM.

VARIOUS forms of **syphilitic disease** occur in the neighbourhood of the anus and in the rectum. Thus *hard chancres*, *cracks*, and *ulcers* connected with condylomata about the anus, *syphilitic papules* in the rectum, and *ulceration* due to the breaking-down of gummatous growths have all been recognized. Syphilitic ulceration is one of the causes of stricture. Fournier also describes a condition of the rectum, due to infiltration of the ano-rectal walls with a new formation which undergoes fibroid changes, and thus induces contraction of the calibre of the bowel, but is not generally attended by ulceration. In addition to these lesions of true syphilis, *soft chancres* are found near the anal orifice, and sometimes in the rectum itself, where the ulceration may give rise to stricture.

By some French writers, and notably Gosselin, these soft chancres, which are much more common in females than in males, are alleged to be the only cause of so-called "syphilitic stricture of the rectum." Our own opinion, which, we believe, coincides with that of most English surgeons, is that the condition in question is very rarely the effect of either soft or hard sores, though the possibility of such a causation

cannot be denied (see page 172). The ulceration may extend from soft chancres near the anus, or the secretion may be brought into contact with the mucous membrane of the bowel in another way. According to Kelsey, the ulcers show a decided tendency not to pass above the upper border of the internal sphincter. They may be single or multiple, may completely surround the anus, or may be situated at any point of its circumference. These ulcers, if neglected, not infrequently become phagedænic.

Ulcers due to soft sores are liable to bleed freely during and after defæcation, and to become very painful, especially if they extend for a short distance up the anus. They are sometimes attended by more or less œdema. Under proper treatment, of which great cleanliness is an all-important part, these ulcers usually heal if only the integument be involved. If, however, they extend to the mucous membrane, the cicatrisation is a more tedious process, and is much impeded by the action of the muscles and the passage of the stools. As a further result contraction takes place, the muscular coat becomes hypertrophied, and above the constricted portion, the mucous membrane is denuded of its epithelial and glandular layer. Such a condition may last for some time, and finally lead to stricture of the anus.

The *treatment* of soft sores of these parts consists in the application of iodoform, reduced to a very fine powder, and the observance of thorough cleanliness, for which purpose a carbolic acid lotion (1 to 40) may be used three times a day. The patient should be kept quiet, and purgatives are generally useful. If the ulcer seem inclined to spread, the application of a solution of tartarated iron (gr. 10 to 60 to ℥j.) will be serviceable; and if this fail to check the ulceration nitric acid should be applied, and the patient should

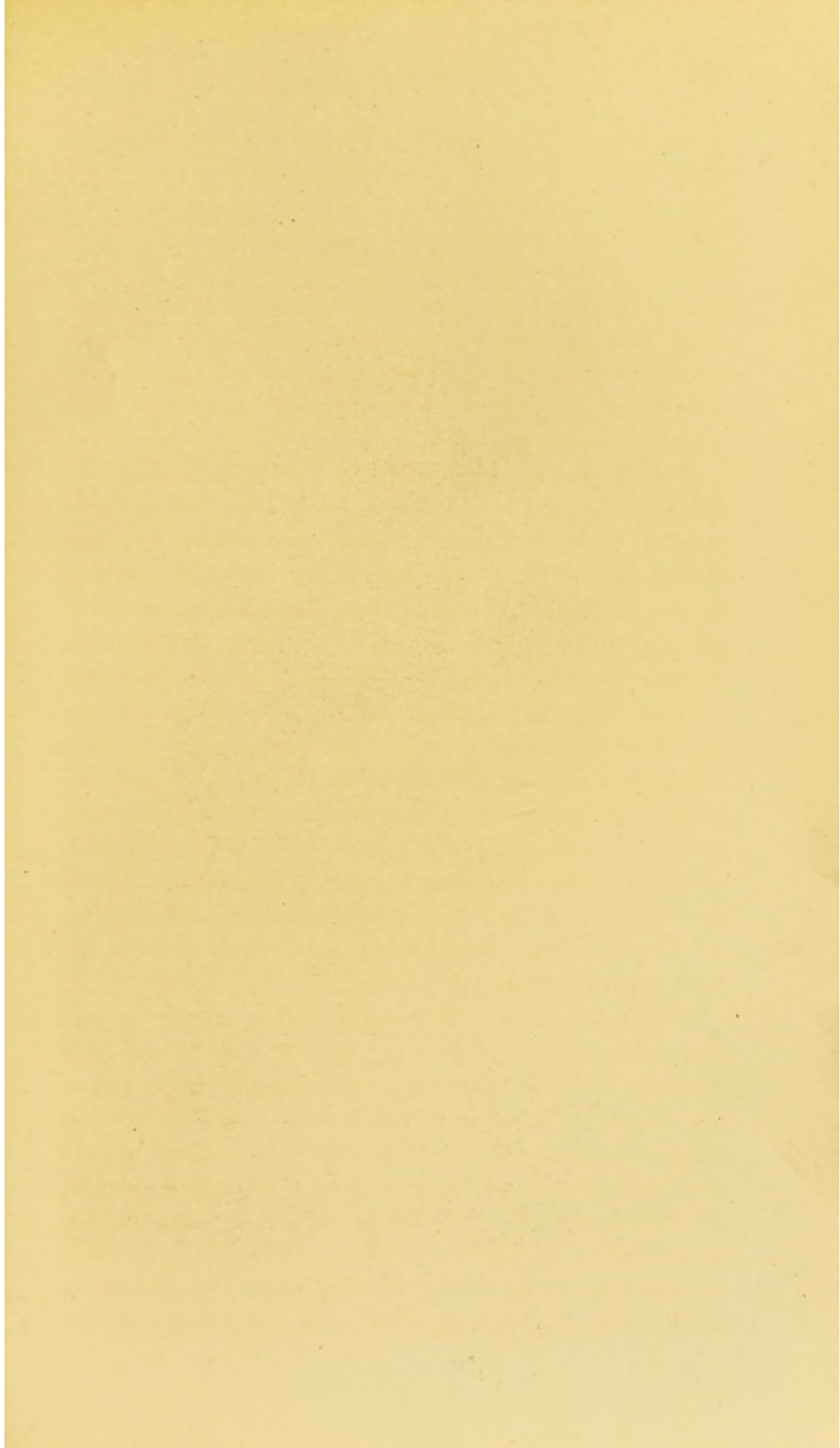
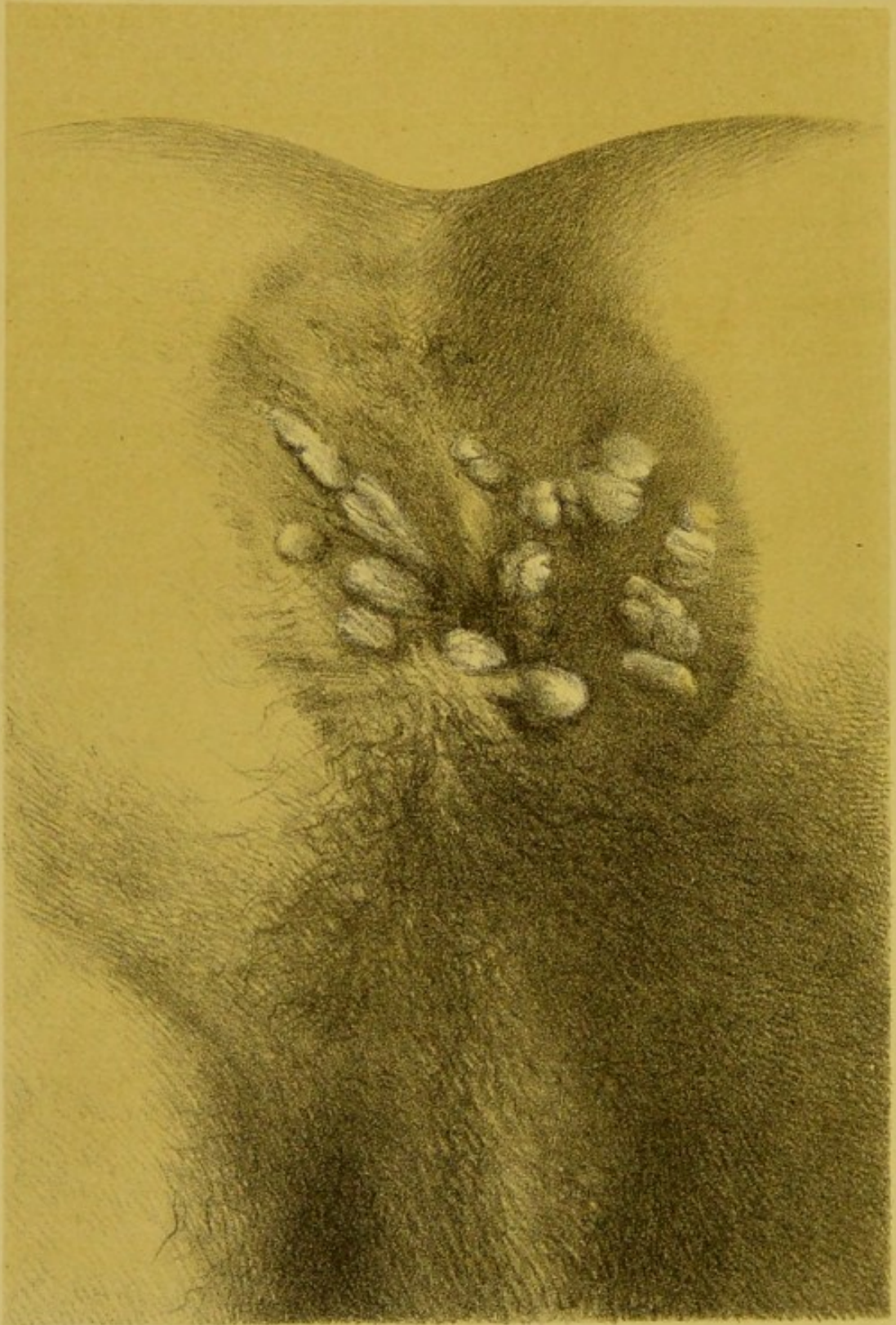


PLATE VIII.



CONDYLOMATA OF ANUS.

be kept in a warm bath (95° to 97°) for an hour or two three times a day. Other treatment applicable to phagedæna elsewhere should also be put in force. If the ulcer become chronic and resemble a fissure, incision or dilatation of the sphincter will probably be required.

Indurated chancres are occasionally found in the neighbourhood of the anus. According to Péan and Malassez, the proportion in this as compared with other parts of the body is as 1 to 68; in women the proportion is 1 in 13 and in men 1 in 177. Such inoculation may, in the former, be accidental; in the latter, it is due to unnatural intercourse. The sore gives rise to very little pain or local disturbance; it has hard raised edges and an indurated base, and the diagnosis can seldom be difficult. The *treatment* is, of course, that of syphilis: black wash should be applied locally, and small doses of blue pill given night and morning. A hard chancre within the rectum must be very rare indeed; examples of it have been noticed by Ricord, Fournier, and others. Mollière admits its occurrence, but denies that it ever causes stricture.

Condylomata (mucous patches, moist papules) are by far the most frequent manifestation of syphilis found in the neighbourhood of the anus. They are developed from ordinary syphilitic papules under the influence of warmth and moisture, and usually appear within six months after the initial lesion or chancre. They vary in size; are raised above the surface of the skin, and of a yellowish or grey colour. The surface may be smooth or nodulated, and is usually covered with an offensive discharge. Continuous irritation leads to the enlargement of the papules, and their confluence results in the production of large patches. Neighbouring portions of the integument,

e.g., of the thigh, in contact with such papules, are very liable to become the seat of similar growths. Ulceration often takes place on the surface, as the result of friction, and elongated warty excrescences sometimes become developed. These are distinguished from the pointed growths of a non-syphilitic character by the fact that they grow from an infiltrated, reddened base; whereas the pointed excrescences are seated upon normal skin. Ulcers in the anal folds, due to condylomata, are always multiple and have raised edges, which may remain in the form of elevated folds after the sores have healed. The condylomata are positive signs of constitutional syphilis, and yield a highly contagious discharge. Their course is chronic; under proper treatment they diminish in size, become dry, and finally disappear, leaving traces behind them in the form of brown discolourations. In infants, the subjects of hereditary syphilis, condylomata about the anus are the most frequent of all the cutaneous manifestations.

Treatment.—Condylomata require the internal administration of mercury, and locally the application of calomel powder, or of oxide of zinc and calomel in equal parts.

Mucous papules sometimes occur *in the rectum*, perhaps more frequently than has hitherto been supposed. In cases of condylomata about the anus, the growths are often noticed to extend into the aperture, while fissures of the anal folds and ulcers, studded over with papules, are frequently continued upwards so as to reach the mucous membrane. According to Professor Lang,* v. Barenprung noticed syphilitic papules on the mucous membrane of the rectum itself; Desault and Vidal have recorded

* "Vorlesungen über Pathologie und Therapie der Syphilis," S. 241.

similar appearances, and state that such growths may become so large as to obstruct the bowel, but that they dwindle away under anti-syphilitic treatment. A. Muron* asserts that the conversion of papules into cicatricial tissue is a common cause of stricture of the rectum; but this we very much doubt.

In order to determine the frequency with which such papules occur in the rectum, Professor Lang, of Innsbruck, examined the bowel in 110 cases of patients in the eruptive stage of syphilis. Of these forty-five were men and sixty-five women; mucous papules were found on the rectal mucous membrane in three of the former and thirteen of the latter. They were, for the most part, seen on the posterior wall, but sometimes on either side; in three cases the entire circumference was thus involved. Although most of the papules were ulcerated, only three patients complained of pain during defæcation. The stools were in these cases sometimes mixed with blood; in one patient there was marked tenesmus and copious muco-purulent discharge. In a few cases the papules extended for some distance up the rectum, and could always be detected by digital examination alone, although the speculum was invariably used to confirm the diagnosis. The condylomata about the anus were, in most of the cases, not continuous with those in the rectum; in some instances the papules were confined to the latter.

Gummatous deposits and infiltration of the sub-mucous tissue are the most common antecedents of syphilitic ulceration of the rectum. The disintegration of the gummata gives rise to ulceration, and this, in its turn, to contraction of the bowel. This form of ulceration belongs to the tertiary period of the dis-

* "De la nature des rétrécissements du rectum," "Gaz. Méd." 1873.

order, and is wont to spread higher up in the bowel than that due to chancroids; the ulcers are deep, exposing the muscular coat, which becomes much thickened. In fatal cases the ulceration has been found to extend into the colon, and to present characteristic appearances in both portions of the bowel. At the upper portion of the affected part the mucous membrane is studded over with dark-coloured roundish nodules, as large as a hempseed or even a pea, and these on section are found to contain a brownish-red gelatinous matter. These growths do not appear to consist of enlarged follicles, but are due to nodular deposits. The follicles, however, may show signs of hæmorrhagic exudation. Lower down in the bowel some of the nodules are seen to be ulcerated, and the gummatous contents can be squeezed out when an opening is made. Advancing disintegration increases the size of the ulcers, which are at first round, with sharply defined margins. When several ulcers coalesce, the loss of substance is considerable, and the process extends deeply so as to expose the muscular coat. In the lower part of the bowel nearly the whole of the mucous membrane may be thus destroyed. Neighbouring parts are sometimes perforated, *e.g.*, the bladder and vagina, and perinæal fistulæ are common.

The *symptoms* in such cases during life are: frequent watery stools, tinged with blood; tenesmus and more or less pain in the rectum and lower part of the abdomen; occasional involuntary evacuations, alternating, in some cases, with constipation. The general health is liable to be more or less interfered with, and amyloid degeneration has also been observed in other parts of the bowel. If the ulcerative process comes to an end, symptoms of stricture will probably be developed.

Gummatous growths in the rectum may from their size impede defæcation. The following is a rare example of this kind.* A man, aged thirty-six, complained of pain in the ischio-rectal region, colic and tenderness on pressure over the lower part of the abdomen. A stricture was discovered near the anus, and was operated on by Récamier. Relief was obtained, but after a time the patient lost flesh, and suffered from rigors followed by feverishness. On digital examination of the rectum, swollen and elastic folds were detected, and about four inches from the sphincter there was an obstacle which prevented the passage of a sound. Some nineteen years had elapsed since there had been decided symptoms of syphilis: the opinion now formed was that the obstruction in the bowel was either syphilitic or cancerous in character. The question was set at rest by the result of treatment; the symptoms disappeared after a three months' course of iodide of potassium.

In some cases of syphilitic ulceration of the rectum, gummatous nodules have been found between the submucous tissue and the muscular coat, and even upon the latter when laid bare by ulceration. Some of these growths may be so large as almost to resemble polypi, from which, however, they differ altogether in structure. They consist of young granulation tissue, resembling that found in gummatous growths elsewhere. Growths of a similar form and character also occur in the larynx in cases of syphilis.

Gummatous deposits sometimes occur in the tissues surrounding the rectum, and their disintegration gives rise to abscesses which may open in various directions, as into the rectum, vagina, or perinæum, and

* "Vito Zappula," Schmidt's "Jahrb." Bd. cxlviii. p. 167.

thus cause fistulæ. Lecorché* met with a case in which, on post-mortem examination, besides other signs of syphilis, he found two perinæal fistulæ, and four openings of communication between the rectum and vagina; ichorous discharge passed freely through these openings, and there was a stricture higher up in the rectum. Dr. Wilks† has reported three cases of recto-vaginal fistula, due to syphilitic ulceration. In one of these, which had been complicated by dysentery and stricture of the rectum, there was an abscess near the crest of the ilium, and communicating with the bowel; cicatrices also existed in the sigmoid flexure.

There is another form of syphilitic affection of the rectum, viz., that described by Fournier as "ano-rectal syphiloma." In this condition, the ano-rectal wall is the seat of diffuse infiltration, which becomes fibrous, and then progressively contracts and wastes. It converts the rectum into a stiff narrow tube; the ampullary portion is mainly affected, its walls may measure as much as four-tenths of an inch in thickness. The immediate neighbourhood of the sphincter is not generally involved, though sometimes the process extends to the anus. Ulceration is not a necessary stage in the process, and the infiltration causes no symptoms until contraction sets in; the signs of stricture then become manifest.

* "Gaz. Méd. de Paris," 1856.

† "Guy's Hospital Reports," 1863, vol. ix. p. 1.

CHAPTER XX.

WOUNDS AND INJURIES OF THE RECTUM—FOREIGN BODIES IN THE RECTUM—IMPACTION OF FÆCES.

OWING to its sheltered position, the rectum is rarely the seat of accidental injury, though its lower part is not infrequently involved in surgical operations, *e.g.*, those performed for the cure of fistula, fissure, hæmorrhoids, and polypus, and likewise for the removal of malignant disease. This portion of the bowel was incised in the recto-vesical operation for calculus, now no longer practised. It has been sometimes accidentally cut into in the ordinary lateral operation. Since the revival of the supra-pubic operation, several cases of rupture of the rectum, by the bag used to distend the bowel, have been placed on record. The rectum is occasionally injured from the introduction of the pipe of an enema-apparatus, the point of the instrument being thrust for a greater or less distance through the coats of the bowel. Inflammation and diffuse purulent infiltration are the probable results of such an accident. A similar kind of injury may be inflicted by the careless and forcible introduction of a bougie.

The following case is a somewhat remarkable instance of this kind of injury:—

CASE 29.—Some years ago a navvy, aged about thirty-six, was admitted into the West London Hospital under Mr. Edwards' care,

having on the previous day (while suffering from a large irreducible scrotal hernia) had an enema of two pints of soap and water administered to him in the out-patient department. The injection did not completely return at the time, and the patient stated that during the night he had been up frequently at stool, passing small quantities of blood, for which reason he was admitted into the hospital. When Mr. Edwards saw the patient, he found swelling and emphysema around the anus, and a large opening about one inch up the bowel. After freely incising the peri-anal swelling, it was discovered that the rectum was almost entirely separated from the structures around it. In the course of time the lower part of the rectum and adjacent tissues sloughed away, so that the bowel terminated in a cavity, surrounded by granulation tissue, in which large masses of fæces collected. These were removed from time to time with the finger or a lithotomy scoop. The general disturbance, which had been of a marked character, subsided under appropriate treatment. After three months' stay in hospital, the patient was attacked by typhoid fever, which terminated fatally three weeks afterwards. A post-mortem examination revealed many intestinal ulcers, the bases of several of which consisted only of peritoneum. The lower part of the rectum had been converted into a cavity bounded by dense cicatricial tissue. The wall of the heart was extensively calcareous.

It is probable that when the injection was given, the nozzle of the syringe penetrated the wall of the rectum, and that much of the fluid was driven into the surrounding cellular tissue, and gave rise to the subsequent inflammation and sloughing.

Lacerated wounds of the rectum are wont to occur from falls upon sharp and hard objects, *e.g.*, a wooden stake, leg of a chair, a pitchfork, or portion of iron palisade. In children, injury to the rectum sometimes occurs through the breaking of a chamber-pot, and in these cases considerable laceration of the perinæum is generally associated with the injury to the bowel. When a hard pointed object, *e.g.*, a stake, is driven into the rectum, the bladder and other adjacent organs seldom escape injury. It is worthy of note that in some of these cases, the viscera have been seriously injured without any cutaneous wound.

Gunshot wounds of the rectum sometimes occur

without injury of any other pelvic organ. A rifle-ball has been known to strike the lower part of one side of the sacrum, to pass through the rectum, and to make its exit on the opposite side of the bone. In other cases the ball has lodged in the rectum. When the bullet strikes in the opposite direction, the bladder and peritoneum are almost certain to be involved. During the American war, 103 cases of gunshot wounds of the rectum came under treatment; in thirty-four of these the bladder was also wounded.

Other forms of injury to the rectum require only a brief notice. As a result of difficult labour, laceration of the perinæum sometimes extends into the adjoining portion of the bowel. A rare cause of laceration, which may be transverse as well as longitudinal, is the passage of a hard mass of fæces. Injuries from pieces of bone and other hard substances which have passed through the bowels belong to this category. The rectum has sometimes been perforated in attempts to pass a catheter. Injuries due to the voluntary introduction of foreign bodies will be described at the end of this chapter.

The **symptoms** of injuries to the rectum vary according to the position, extent, and cause. Hæmorrhage is almost always present, owing to the vascularity of the injured part. The blood, however, may not escape externally, but may accumulate within the bowel, giving rise, of course, to all the general symptoms connected with loss of blood. As further results of injury to the veins of the rectum, inflammation and thrombosis are liable to occur, with pyæmia as a further consequence. Fæcal infiltration of the cellular tissue almost invariably follows lacerated wounds of the rectum, especially when they are deep and situated above the internal sphincter. In the absence of free drainage externally, the local and

general effects of the infiltration are apt to be very serious. Fæcal matter acting as a powerful irritant soon sets up cellulitis, which speedily becomes diffuse and extends in various directions among the organs of the pelvis, the patient dying with symptoms of septi-cæmia. Injury of the anterior wall of the rectum is apt to cause peritonitis; and emphysema of the cellular tissue is another, though an uncommon result of injury of this division of the bowel.

Injuries and especially lacerated wounds of the rectum, even when not dangerous to life, are sometimes followed by very troublesome consequences. When both sphincters are torn through, or when a similar condition is produced by sloughing, incontinence of fæces is very apt to be produced, especially as regards liquid and gaseous matters.

Some further reference must be made to those cases in which the rectum has been ruptured during the distension of the bag employed in the performance of cystotomy above the pubis. One instance of this kind has lately been recorded by Dr. Fowler,* of Brooklyn. Eight ounces had been injected in order to distend the rectum in a patient aged sixty-three, the subject of stone in the bladder. On opening the abdomen, the bag was discovered to have passed through the anterior wall of the rectum, causing a rent fully four inches long. It was found impossible to close the lower margins of the opening, and an artificial anus was established by bringing the edges of the tear in the rectal wall up to the lower angle of the incision, and there securing them. The patient, however, died a few hours afterwards, and on post-mortem examination, the rectal wall was found to be softened, thinned, and otherwise weakened. These conditions are incident to senility, and in the above

* "Annals of Surgery," 1890, vol. ii. p. 129.

case they were combined with the degenerative changes which the surrounding parts are known to undergo in chronic vesical disease.

Rupture of a prolapsed rectum has been known to occur either spontaneously or during attempts at replacement. Several instances of the latter kind have been mentioned in the chapter on Prolapsus (see page 267). In a case recorded by Dr. Masimoff,* of St. Petersburg, the patient, a woman aged seventy-five, had suffered for nine years from prolapsus of the rectum, hæmorrhage from the bowel, and constipation alternating with diarrhœa. On one occasion, when straining during defæcation, she felt great pain, and a large mass of intestines protruded from the anus. When seen several hours afterwards, several coils of intestines, cold, distended and stained with blood, were found lying between the woman's thighs. The protruded portion, five feet long, consisted mainly of the small intestine and mesentery, but there was also a part of the colon. It was proposed to perform abdominal section, to replace the bowel, and to close the rupture with sutures, but the woman would not consent to any operation. She died on the second day.

Treatment.—Inasmuch as the majority of wounds of the rectum are of the lacerated and contused varieties, healing by first intention is seldom possible. In one class of cases, however, viz., that which includes laceration produced during labour, every attempt should be made to procure as rapid union as possible, and to ensure this end, the parts should be carefully cleansed and brought into close apposition by means of a sufficient number of sutures. Treatment of a like kind is also indicated whenever the nature of the wound will admit of it, but in the

* "Annals of Surgery," 1890, vol. ii. p. 281.

majority of cases the parts cannot be completely brought together, and healing takes place by granulation.

Hæmorrhage will require prompt attention. If the bleeding be arterial and profuse, the vessels must be sought for and ligatures applied. Other measures for controlling hæmorrhage may likewise become necessary; they are the same with those required for dealing with secondary hæmorrhage after operations on piles (see page 86).

Another point to attend to in treating wounds of the rectum is to keep the parts as clean as possible and to prevent fæcal infiltration. When there is no hæmorrhage to forbid such a procedure, the rectum should be well washed out with warm water and some antiseptic, and this should be repeated from time to time during the healing of the wound. Small doses of opium with catechu may be given for a few days, in order to keep the bowels confined. Afterwards, when, owing to inflammatory exudation, the risk of fæcal infiltration is removed, castor oil or other mild purgative may be given to open the bowels. When the wound is deep, a drainage-tube should be introduced, and the part should be frequently syringed with Condy's fluid well diluted.

When the lower part of the rectum is punctured, as by falling on a stake, which has passed for some distance laterally, the best method of treatment is to divide the sphincter and walls of the bowel up to the wound. Thorough drainage is thus provided for, and fæcal infiltration is guarded against as much as possible. The wound must, of course, be kept very clean; it should be carefully syringed out after every action of the bowels.

In all cases, while healing is going on, the patient must be kept in the recumbent position, with the

pelvis somewhat raised, and when hæmorrhage threatens, the prone position may be adopted with advantage, a pillow being placed under the pelvis. In this position, a bladder of iced water can be conveniently applied to the perinæum. The diet must be adapted to the circumstances of the case, and constipation should be prevented by castor oil or the careful administration of enemata.

FOREIGN BODIES IN THE RECTUM—IMPACTION
OF FÆCES.

A large number of **foreign bodies**, of various kinds, have been found impacted in the rectum, either having passed into this portion of the bowel after traversing the intestinal canal or having been introduced through the anus. In a third category must be placed intestinal concretions which are apt to become lodged in the rectum. Besides thread-worms, which are of common occurrence, the larvæ of certain dipterous insects are occasionally found in the rectum.

The substances which, either *accidentally or intentionally swallowed*, have passed along the bowels and *lodged in the rectum*, would require pages for their enumeration. It will suffice to mention a few which have been most frequently met with, and these are as follows: fragments of bone swallowed when eating, the stones of fruits, masses of grains of wheat and even nutshells, coins, fragments of glass, rings, pebbles, artificial teeth, nails and other pieces of metal, knives, etc. In many instances, these and similar substances pass through the bowels and are voided after a shorter or longer interval, and sometimes without causing any very decided symptoms. On the other hand, and especially if sharp and angular, they frequently remain fixed in the rectum. Lodg-

ment occurs more frequently in males than in females (see page 5). The irritation produced by impacted fish-bones is a common cause of fistula.

In a second class of cases, the foreign substances are *introduced* through the anus either *accidentally* or *intentionally*, and the number and variety of such objects are likewise very great. The foreign bodies which may pass into the rectum as the result of accidents have been already described, and portions of these bodies becoming detached, may remain in the bowel. Thus pieces of wood, glass, stone, or metal, forced into the bowel, may become broken off and impacted. Again, substances may be introduced intentionally, *e.g.*, to relieve constipation or some imaginary ailment, and may slip from the grasp of the patient. Bougies, portions of enema-apparatus, pieces of metal, and even glass bottles, have been known to become impacted. In one case, an eau-de-Cologne bottle, eleven inches long, was removed by Velpeau. In another, a jam-pot two and three-quarter inches in diameter, and three inches high, was removed from a man's rectum where it had remained for six days. Mr. Thomas' case, in which he removed a piece of cane, more than nine inches long, from the rectum, has been already mentioned (see page 22). The rectum has also been used as a hiding-place for stolen goods, such as coins, precious stones, etc. Finally, objects of various kinds have been forced into the rectum by persons in order to gratify vicious propensities, etc., and they have likewise been forcibly introduced into the rectum of another person out of spite, or for purposes of revenge. The Göttingen case, in which some students pushed a frozen pig's tail into the rectum of a prostitute, has often been quoted.

Intestinal concretions form a third category of substances which are apt to become lodged in the

rectum. These most often consist of hardened masses of fæces, which accumulate in and distend the colon, and are gradually forced into the rectum. Such a condition is liable to occur in old people and in women after confinements. It is also not uncommon in the subjects of cerebral and spinal paralysis, and in cases of hysteria.

The impacted masses sometimes consist of fæces alone, hardened and dried in consequence of the length of time they have remained in the bowel. Various substances, *e.g.*, plum-stones, coins, and pebbles, which have been swallowed, sometimes form the nuclei of these concretions. In other cases, they are largely composed of masses of magnesia, taken by the patient to relieve constipation. Insane persons have been known to swallow masses of hair, which have formed the basis of enormous concretions. Gall-stones, again, are sometimes found in these masses. These concretions may attain a very large size, especially in women. It often happens that several are present, being closely packed together.

Some reference must be made to the animal parasites more or less often found in the rectum. Thread-worms are very frequently present, both in this part of the bowel and in the sigmoid flexure, but their true *habitat* is higher up, *viz.*, in the cæcum (Cobbold). The larvæ of flies are sometimes discharged from the anus. Surgeon-Major Baker* has reported a case of this kind which came to his notice in Burmah. He stated that the patient was continually breeding the larvæ and periodically discharging them *per anum*.

* "Brit. Med. Journ.," 1891, vol. ii. p. 1170. In a subsequent communication, Mr. Baker stated that his patient had previously eaten large quantities of preserved bael fruit, specimens of which, on examination, were found to contain many small maggots. The source of the larvæ was thus discovered. See also a paper by Dr. Finlayson, "Brit. Med. Journ.," 1889, vol. i. p. 1285.

The larvæ were forwarded to the Natural History Museum, and found to belong to a new species of *Phora*. In another case, twelve larvæ of a dipterous insect (which proved to be *Homalomyia scalaris*) were sent by Mr. Spanton, of Hanley, to the same Museum for determination. The larvæ were voided in large numbers from the rectum of a boy aged seven, who had been suffering from their effects for two or three years. It was stated that all remedies had so far failed. An account of a similar case is given by the Rev. L. Jenyns, in vol. ii. of the "Transactions of the Entomological Society of London." The larvæ were supposed to be those of a closely allied species of fly—*Homalomyia canicularis*. The patient, a clergyman, aged about seventy, suffered from anomalous symptoms of weakness and indigestion.

The **symptoms** caused by the presence of foreign bodies in the rectum, vary according to the nature, shape, and size of the substances. The symptoms of concretions are the most uniform, and will be the first described.

There is always more or less constipation in cases of impaction, though the considerable fluid discharge which not infrequently takes place, sometimes leads to an erroneous diagnosis of diarrhœa. There is often tenesmus, colicky pain, flatulence, distension, and signs of collapse, especially after straining efforts at evacuation. Severe hypochondriacal symptoms, and in some cases symptoms resembling those of phthisis, are sometimes present. On examination, there is dulness and prominence over some part of the colon, and sometimes a large tumour over the cæcum. On passing the finger into the rectum, a solid mass is felt, sometimes fixed, and sometimes movable, with fluid matters, the product of the catarrh which has been set up, passing between it and the bowel. There

is often spasmodic contraction of the sphincters, and sometimes vomiting and other signs of derangement of the stomach; and retention of urine, either partial or complete, is a very common symptom in these cases. Mr. Ball has recorded a case in which impacted fæces caused sloughing of the wall of the rectum, about an inch and a-half from the anus. An abscess formed in the right buttock and opened externally, giving vent to large masses of fæces. The patient, a woman aged sixty-five, made a good recovery, the fistulous track completely healing up.

When foreign bodies of a different nature are contained within the rectum, other symptoms are liable to be present, especially if the objects are hard and angular. According to Mr. Goodsall ("St. Bart. Hosp. Reports," vol. xxiii.) a bone takes from one to nine days to pass from the mouth to the rectum, and injury to the bowel most often occurs within the last inch or three-quarters of an inch. Pain of a stabbing, pricking character is generally present, and there is tenesmus and sometimes hæmorrhage from the bowel. In some cases, if the foreign body be allowed to remain, ulceration and abscesses are set up, or there may be perforation of the walls of the bowel, and of neighbouring organs. Peritonitis is likely to result if the bowel be injured above the point of reflection of the peritoneum. Retention of urine is a common symptom whenever the foreign body is otherwise than small.

Diagnosis.—Cases of foreign bodies in the rectum are sometimes difficult of diagnosis; the patients themselves, from various motives, often give no assistance to the surgeon, but try to lead his judgment astray by false statements. Whenever there are any symptoms referable to the presence of a foreign body in the rectum, a careful examination with the

finger is always necessary. The presence of the object and some at least of its characters can be thus discovered. The sphincters should be well dilated, chloroform being administered to facilitate this procedure, and, if necessary, a speculum may be introduced.

Palpation of the lower part of the abdomen will sometimes assist the rectal examination, as foreign bodies of an elongated form may extend into the lower portion of the colon. Large hard faecal accumulations are usually felt on one or other side of the abdomen as irregular movable masses.

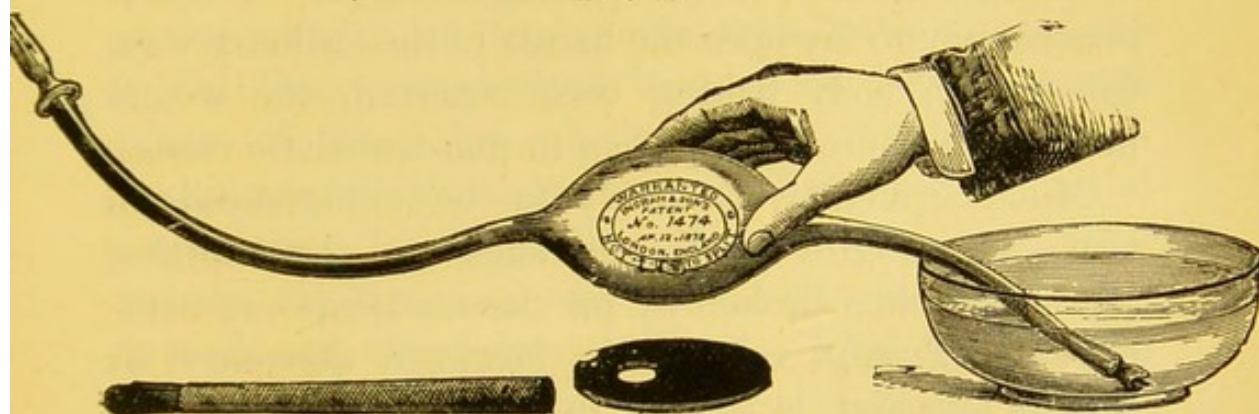
Foreign bodies may remain in the rectum a considerable time, and at last be spontaneously voided. Weigand treated the case of a farmer, aged sixty-eight, who had introduced into his anus a cylindrical piece of wood for the purpose of relieving obstinate constipation. A portion was broken off and remained in the bowel for thirty-one days, in spite of various attempts at its removal. There were symptoms of enteritis from time to time, and these were treated by calomel, enemata, etc. At times a foreign body could be felt in the bowel; but in the absence of proper instruments its removal could not be effected. At last it came away, after the patient had taken three spoonfuls of castor oil.

Treatment.—Having ascertained that a foreign body is situated in the rectum, the steps to be taken for its removal have next to be considered. It will be convenient to describe first the various methods of dealing with impacted faeces. After dilating the sphincters, the fingers should be employed to break up and remove as much as possible of the impacted mass, and the handle of a spoon or a scoop may be used to assist the manipulations. Afterwards warm water injections with a little soap are advisable (Fig. 59), and these should be persevered with until the

rectum and colon are emptied. Kneading the abdomen will aid the action of the injections. A purgative, such as castor oil or decoction of aloes, may then be given by the mouth, and the patient should be warned to prevent the bowels from becoming constipated. Faradisation is often useful in these cases, and the diet requires careful attention. The condition is very apt to recur unless proper care be taken.

For the removal of a foreign body, the bladder should first be emptied, the sphincters should be thoroughly dilated, and an attempt made to remove the object with the fingers or with a pair of suitable forceps. The fingers should first be tried; in dealing

FIG. 59.



ENEMA SYRINGE.

with an elongated object, it is often necessary to change its direction, as it is apt to get fixed transversely across the rectum. If the lower extremity of the object be found to have passed through the coats of the bowel, it must be carefully dislodged and then drawn downwards by the aid of a pair of forceps. When it is found to lie transversely across the bowel, as sometimes occurs when a fish-bone or pin has been swallowed, it is well to divide it with a bone-forceps, and to remove each fragment separately. If, however, the patient is under an anæsthetic, this plan will not be necessary. In dealing with bodies of large size, which have been pushed through the

anus and have become firmly impacted, removal will be aided by injecting some oil and warm water in order to lubricate the surface. After the injection has been retained for as long as possible, a pair of suitable forceps should be introduced, and an endeavour made to seize the object and draw it down, without injuring the mucous membrane. The introduction of the hand into the bowel might be justifiable in these cases.

Abscess may result from puncture of the wall of the rectum by a fragment of bone or other foreign body, and fistula is a not infrequent consequence. By making a free external opening, the latter may be cured unless the internal opening be large. When it is necessary to lay open the fistula in the ordinary way, the foreign body having been removed, the wound heals much more rapidly than in non-traumatic cases.

Much difficulty is likely to be experienced in removing fragile substances, such as glass bottles, especially when broken by previous attempts at withdrawal. Prompt removal is, however, necessary, as serious mischief is certain to ensue if the fragments are allowed to remain. Pieces of broken glass are especially dangerous, as being likely to cause laceration and severe hæmorrhage. Chloroform is of course indispensable in these cases, and the sphincters should be thoroughly dilated. If necessary, these muscles may be divided posteriorly so as to give more space. When the foreign body is composed of earthenware, extraction will probably be facilitated by crushing it with suitable forceps and then removing the fragments with the thumb and fingers. After extraction, the case must be treated according to the state of the bowel. Rest is necessary, and opium is generally required to relieve pain and prevent the bowels from acting.

Some mention must be made of those rare cases in which a foreign body, introduced into the anus, has either passed out of reach or has become so firmly fixed that withdrawal is found to be impossible. Under such circumstances, the abdomen must be carefully examined, in order to discover the position of the foreign body. The question of opening the abdomen will then arise. In one case recorded in the "Surgical History of the War of the Rebellion," a sailor had introduced a stone five and a-quarter inches long by three wide. The colon had been perforated, and the stone was removed from the peritoneal cavity by an incision near the umbilicus. The man recovered. In another case, which occurred at Copenhagen, an empty mushroom bottle was lodged in the bowel, its bottom being near the horizontal ramus of the pubis. Linear rectotomy proved unavailing, and the abdomen was then opened in the median line by an incision four inches long, commencing at the umbilicus. The sigmoid flexure was opened and the bottle removed. This patient also made a good recovery.

CHAPTER XXI.

NEURALGIA OF THE RECTUM—COCYGDYNIA—SINUSES OVER THE SACRUM AND COCCYX.

THE rectum is sometimes the seat of pain, which may be regarded as neuralgic in character, inasmuch as examination fails to detect any lesion that would account for it. Examples are most frequent in anæmic individuals, *e.g.*, women who have suffered from menorrhagia or from post-partum hæmorrhage. Previous disease of a depressing character is the only apparent cause in some cases; in others, the attacks are attributable to exposure of the part to cold, as by sitting on a cold damp seat, or from insufficient clothing at night. Perhaps a more common cause is irritation in some other portion of the alimentary canal or in adjacent organs. Malarial influences have been supposed to account for the attacks in some instances.

Symptoms.—The pain is variously described by different patients as aching, lancinating, burning, throbbing, etc. It may be almost constant, but is more often remittent, and sometimes periodic, recurring at long intervals. Dr. Myrtie* has described a form of rectal neuralgia in which the sufferer is aroused from sleep by a gnawing, grinding pain, increasing in intensity and acquiring its

* "Brit. Med. Journ.," 1883, vol. i. p. 1061.

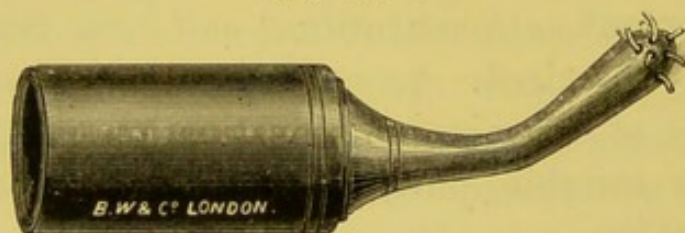
maximum in a few minutes (which seem very long), and then passing off, leaving the patient faint and exhausted. This form is produced by exposure to cold, and may trouble the patient for many years, at irregular intervals. In all cases of the kind the pain is neither induced nor aggravated by defæcation; sometimes it is relieved by action of the bowel. There is no abnormal discharge and no tenderness on pressure. In some cases, there is a history of some previous operation on the part, *e.g.*, for fissure, and it may be supposed that one or more filaments of a nerve are included in the cicatrix of the wound (Allingham). Spasm of the sphincter sometimes coexists with rectal neuralgia, the two conditions being probably due to the same cause.

Treatment.—Constitutional and local remedies are generally required. Iron preparations are indicated for cases of anæmia, and constipation must be dealt with by suitable purgatives and attention to diet. When there is a history of exposure to malaria, quinine is likely to be serviceable. Various remedies may be used locally, and sometimes one succeeds after several others have been tried in vain. Attacks attributable to cold may be relieved by the application of warmth in any convenient manner. Steaming the part with an infusion of narcotic plants (conium or belladonna) will give at least temporary relief. Anodynes may also be used hypodermically or in the form of enemata. Dr. Whitla,* of Belfast, strongly recommends the local application of conium in the treatment of various forms of rectal pain. He states, however, that the extract. conii of the British Pharmacopœia is most unreliable and generally almost inert, and advises that the succus should be used in the following way:—Two ounces are placed in a

* "The Practitioner," vol. xl. p. 250.

small evaporating dish and exposed to a heat of 150° F., until reduced in bulk to a drachm and a-half or two drachms. The syrupy liquid is triturated with an ounce of lanoline, and the result is a perfectly smooth adhesive ointment, of a light brown or dark fawn colour, and quite stable. This should be freely applied within the sphincter, and it can be conveyed some distance up the bowel on the patient's forefinger, or with the aid of an ointment introducer (Figs. 12 and 60). It never causes the skin to become tender, sodden, or raw. Dr. J. V. Shoemaker,* of Philadelphia, recommends *Collinsonia Canadensis* for rectal neuralgia. From forty to ninety grains of the powdered root are to be used in the

FIG. 60.



OINTMENT INTRODUCER.

form of a suppository. He states that this drug has relieved cases in which opium and belladonna had been tried in vain. If the neuralgia be associated with spasmodic contraction of the sphincter, forcible dilatation should be tried. Patients sometimes present themselves suffering from rectal pain which has been attributed to neuralgia, but is really due to a small ulcer situated high up dorsally, over the internal sphincter. Such a lesion, although difficult of detection by the finger, can readily be seen and treated by the aid of the rectoscope with the electric light, and we strongly advise the employment of this method of examination before arriving at the diagnosis of neuralgia.

* "Brit. Med. Journ.," 1887, vol. ii. p. 712.

COCCYGODYNIA.

Coccygodynia, or pain having its seat in the coccyx or sacro-coccygeal articulation, would appear to be almost entirely confined to the female sex. It may supervene after a fall or blow in this region, or may be due to a congenital misplacement. It is sometimes connected with uterine or ovarian disease, and sometimes attributed to a rheumatic condition of the ligaments, though more frequently no apparent cause exists.

Symptoms.—The pain is liable to be provoked by all movements affecting the coccyx, and especially by defæcation, during which the levator ani pulls the bone upwards and forwards. Pain is also likely to be induced when the gluteus is thrown into action, as in walking and rising from the sitting posture.

Diagnosis.—On taking hold of the coccyx between the finger and thumb (the finger being in the rectum), and attempting to move the bone backwards and forwards, more or less pain will be produced. Cases sometimes occur of ankylosis of the joint, accompanied perhaps with considerable incurvation of the bone, so that its extremity presses into the bowel. Mr. Edwards has also met with a case in which sitting was attended with considerable discomfort, owing to the rigidity of the sacro-coccygeal articulation, accompanied by *excurvation* of the bone. In this case complete relief was afforded by excision of the coccyx.

Treatment.—In cases in which coccygodynia is accompanied by ankylosis and misplacement, excision is the remedy; but if nothing abnormal can be discovered, resection of the first piece of the bone might be tried. Mr. Edwards was in this way able to

relieve a young woman, whose only symptom was pain in the articulation. In a subsequent case, however, in which he practised this partial excision, the pain returned about a month afterwards, and necessitated removal of the remainder of the coccyx, an operation which was attended with the happiest results. The explanation of the recurrence of pain and discomfort after the first operation seemed to be that the remains of the coccyx were pulled upwards and inwards, and pressed on the rectum by the uncontrolled action of the levator ani.

Excision of the coccyx is a simple operation, and if all goes on well, the patient should be convalescent in a fortnight. The steps of the operation are as follows:—(1) A longitudinal incision, two inches in length, is made over the dorsum of the coccyx and lower part of the sacrum. (2) The tissues are reflected on either side, and the bone is dissected out, the edge of the scalpel being directed towards it. If only moderate care be taken, there is no danger of injuring the gut. (3) The wound may be closed by sutures over a small drainage tube, which can be removed after twenty-four hours, the usual antiseptic dressings being applied. The wound may also be packed with iodoform gauze and allowed to remain open, being thus left to heal by granulation. This we think the safer plan, even if somewhat more tedious. There is no need to give astringents to lock up the bowels.

SINUSES OVER THE SACRUM AND COCCYX.

Although not common, sinuses or fistulous tracks are occasionally met with in this position. We have had two or three such cases under our care, and six cases have been reported by our colleague, Mr.

Goodsall,* who states that they are more common in women under thirty than in men. Some weeks or months after a blow or fall, an abscess forms and generally opens spontaneously. The first opening is usually a quarter to half an inch on left side of middle line, and from half to one inch on sacral side of sacro-coccygeal articulation. If a second opening forms, it will be one to two inches nearer the anus than the first opening. Burrowing may extend laterally: upwards as far as posterior superior spine of left ilium, and towards the anus as far as to a point mid-way between it and the tip of the coccyx. When laterally, the pus may reach the sacro-sciatic notch, and pass through it into the pelvis, ultimately burrowing downwards, and pointing between the anus and coccyx. As the abscess does not close quickly, it is apt to be erroneously attributed to necrosis of the sacrum or coccyx.

In extending laterally, the pus makes its way among the sacral and coccygeal tendinous points of origin of the gluteus maximus. The probe may catch against these points, and give a kind of grating sound, like that due to bare or dead bone. The sinuses are caused not by necrosis, but by the anatomical structure of the part, which prevents the walls of the sinus, or of any part of the sinus, from uniting till all tension has been removed.

The *treatment* consists in laying open the sinuses from end to end, as well as any pocket of any size in the walls of the sinuses. The granulation-tissue is detached by scraping and sponging, but the fibrous tissue, *i.e.*, the posterior sacral and coccygeal ligaments, should not be interfered with. The wound may be packed with absorbent cotton-wool and allowed to heal by granulation. In one case, in

* "St. Bart. Hosp. Reports," 1888, p. 229.

which the symptoms had lasted for three years, the sinus was situated close to the left side of the sacro-coccygeal articulation, and directly communicated with the left dorsal side of the rectum, about two and a-half inches above its lower end. Fæces passed through this fistula, which, as well as the sinus, was laid open. Loss of control over the sphincter necessitated a subsequent operation.

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