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ON DISEASES

OF THE

RECTUM AND ANUS

ON DISEASES

OF THE

RECTUM AND ANUS

INCLUDING THE SIXTH EDITION OF THE

JACKSONIAN PRIZE ESSAY ON CANCER

15455

FOURTH EDITION

Reprinted to include the Opening Address on the Surgical Treatment of Rectal Cancer, delivered at the Annual Meeting of the British Medical Association, Liverpool, 1912

BY

HARRISON CRIPPS, F.R.C.S.

Consulting Surgeon, St. Bartholomew's Hospital; Member of the Council, Royal College of Surgeons; Late Vice-President of the Royal Medical and Chirurgical Society

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PREFACE TO FIRST EDITION

Whilst writing for the Jacksonian Prize Essay, in 1875, on Cancer of the Rectum, I was impressed with the difficulty of studying an isolated disease, apart from the other disorders incidental to the same locality. I have, therefore, been in the habit of taking notes in all cases of rectal disorder coming under my observation, and these are embodied in the present volume.

Much has been said as to the value of special Hospitals for the investigation of particular diseases, but I would venture to suggest that, at such a Hospital as St. Bartholomew's, with 150,000 patients passing yearly under observation, opportunities are afforded for research unrivalled by any special institution.

It will be found that the clinical cases recorded in this volume are largely drawn from notes made by me in the Hospital Registers, and that the pathological observations have for the most part been verified by post-mortem or microscopic investigation.

I am greatly indebted to my Hospital colleagues for

the facilities they have afforded me for examining cases under their care, while I have to thank Sir James Paget, Mr. Doran, and other friends, for many opportunities for observing cases of rectal cancer.

HARRISON CRIPPS.

2 Stratford Place,
Oxford Street, W.

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PREFACE TO THIRD EDITION

This edition has been revised up to date. The chapters on Rectal Cancer have been rewritten. I have added a table of 380 consecutive cases occurring in my private practice, with an analysis of the results obtained both from excision and colotomy. I wish to acknowledge the valuable assistance received from Mr. T. Jefferson Faulder in correcting the proofs for the press.

HARRISON CRIPPS.

2 Stratford Place,
London, W., 1907.

DESCRIPTION OF PLATE I.

FIG. 1.—A vertical section of the rectal wall of a rabbit.

FIG. 2.—A section of a healthy human rectal wall.

FIG. 3.—Adenoid growth (*b*) extending between the muscular (*c*) and mucous coats (*a*).

FIG. 4.—A vertical section of the muscular coat of the rectum. The morbid adenoid growth (*bb*) is seen taking the place of the muscular fibres (*a*, *a*), while the inter-muscular fibrous bands are greatly thickened.

DRAWN BY HARRISON CRIPPS.

PLATE I.

Fig. 1.



Fig. 2.



Fig. 3.

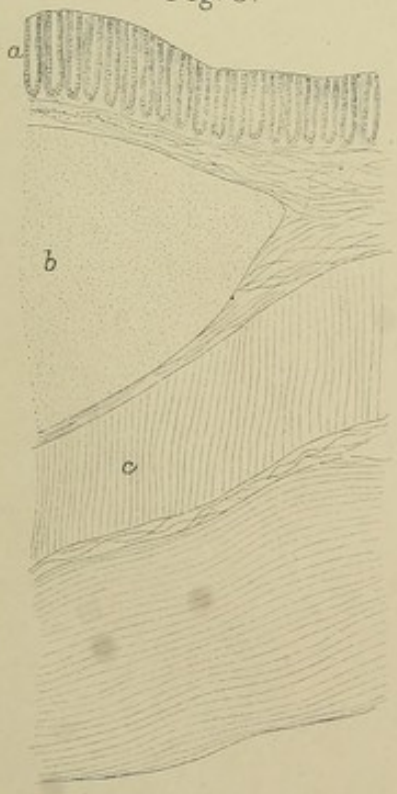
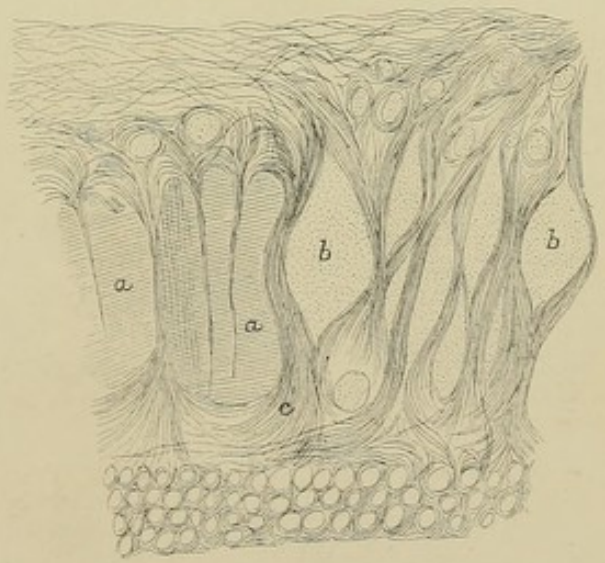


Fig. 4



W. H. Cripps del.

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DESCRIPTION OF PLATE II.

FIGS. 1 to 8 represent cells from the surface of adenoid tumours.

FIGS. 9 to 19 represent cells from the deeper portions of the growth.

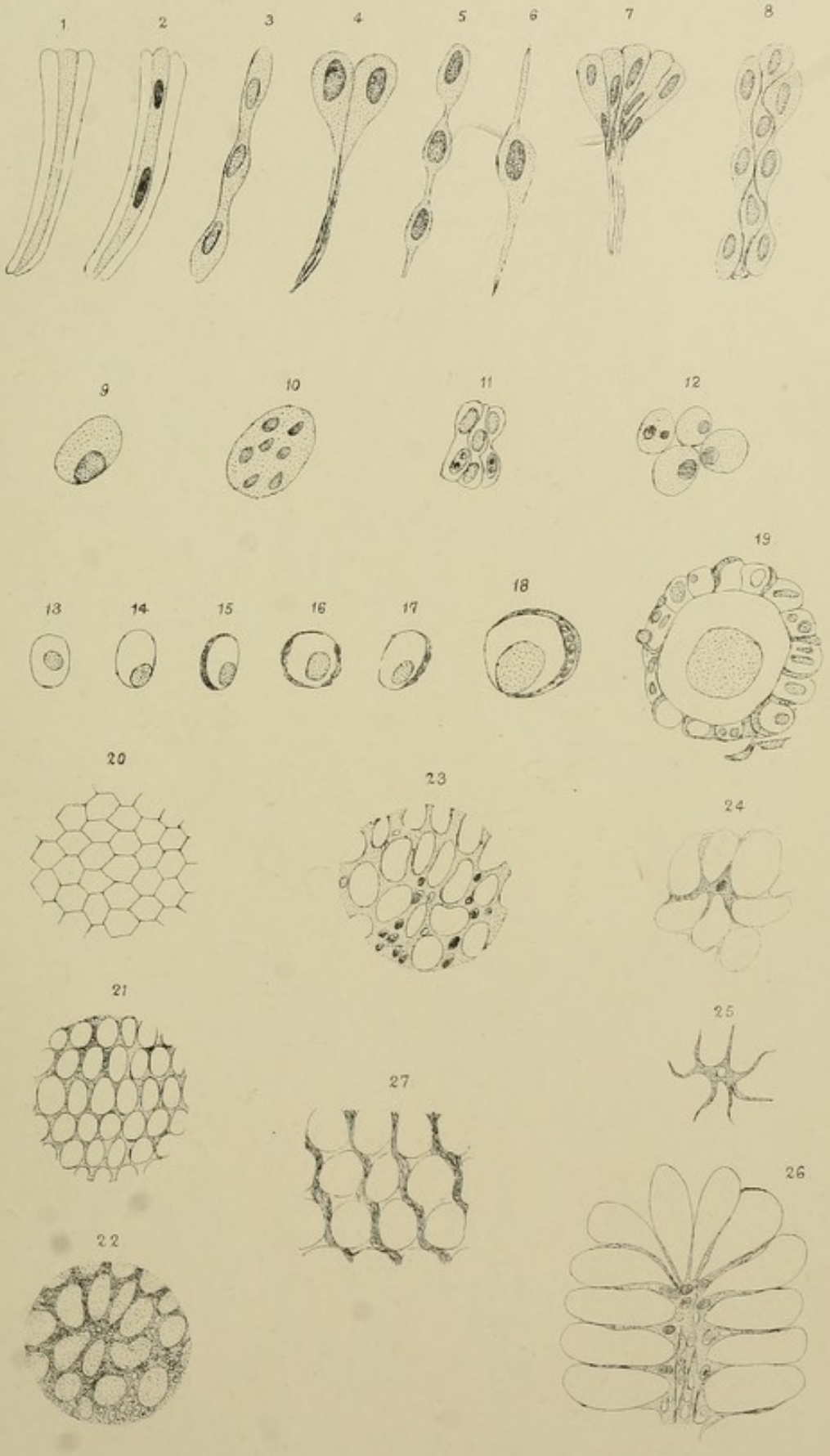
FIGS. 20 to 22 represent horizontal sections of epithelial cells.

FIGS. 24 and 25 illustrate the delusive appearance of so-called stellate cells.

FIGS. 26 and 27 illustrate the formation of fibrous tissue from cell walls.

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PLATE II.



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DESCRIPTION OF PLATE III.

Fig. 1 represents retiform tissue converging into fibrous band.

Fig. 2 is a similar section, the cellular contents having been washed out.

Fig. 3 represents a section of cells in their long diameter, showing their connection with the intercellular tissue.

Fig. 4, a similar specimen, the fluid contents having fallen out.

Drawn by Harrison Cripps.

PLATE III.

Fig. 1.



Fig. 2.

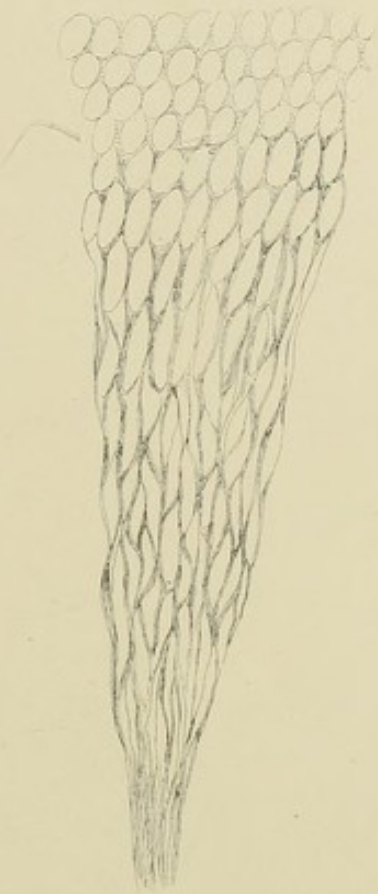


Fig. 3.

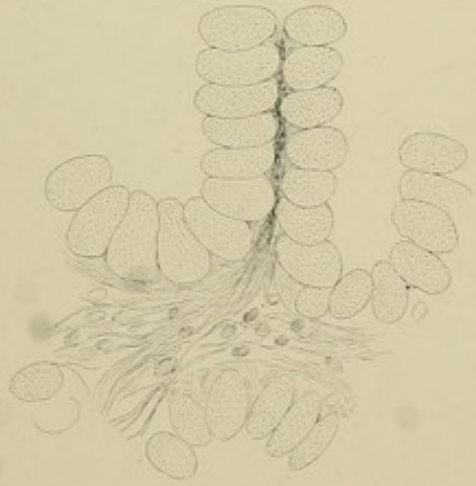


Fig. 4.



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DESCRIPTION OF PLATE IV.

Section of adenoid growth, extending along the submucous tissue, between the mucous membrane and the muscular coat. The section is cut at right angles to the surface of the bowel.

a. Gelatinous material of doubtful nature (mucus ?) covering the free surface of the bowel.

b. Greatly hypertrophied Liberkühn's follicles.

c. Upper part of submucous coat, crowded with leucocytes.

d. New growth of morbid adenoid tissue. (Hartnack, obj. 4.)

Drawn by B. Harrison Cripps.

PLATE IV.



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DESCRIPTION OF PLATE V.

FIG. 1.—Section from surface of innocent adenoid growth (polypus).

FIG. 2.—Section from surface of a growth in a case of multiple polypi.

In these sections a single layer of columnar epithelium forms the free surface. The fibrous tissue forms a central stalk from which fibres radiate, and expanding into a delicate retiform tissue form the framework for supporting the epithelium.

DRAWN BY B. HARRISON CRIPPS.

PLATE V.

Fig. 1.

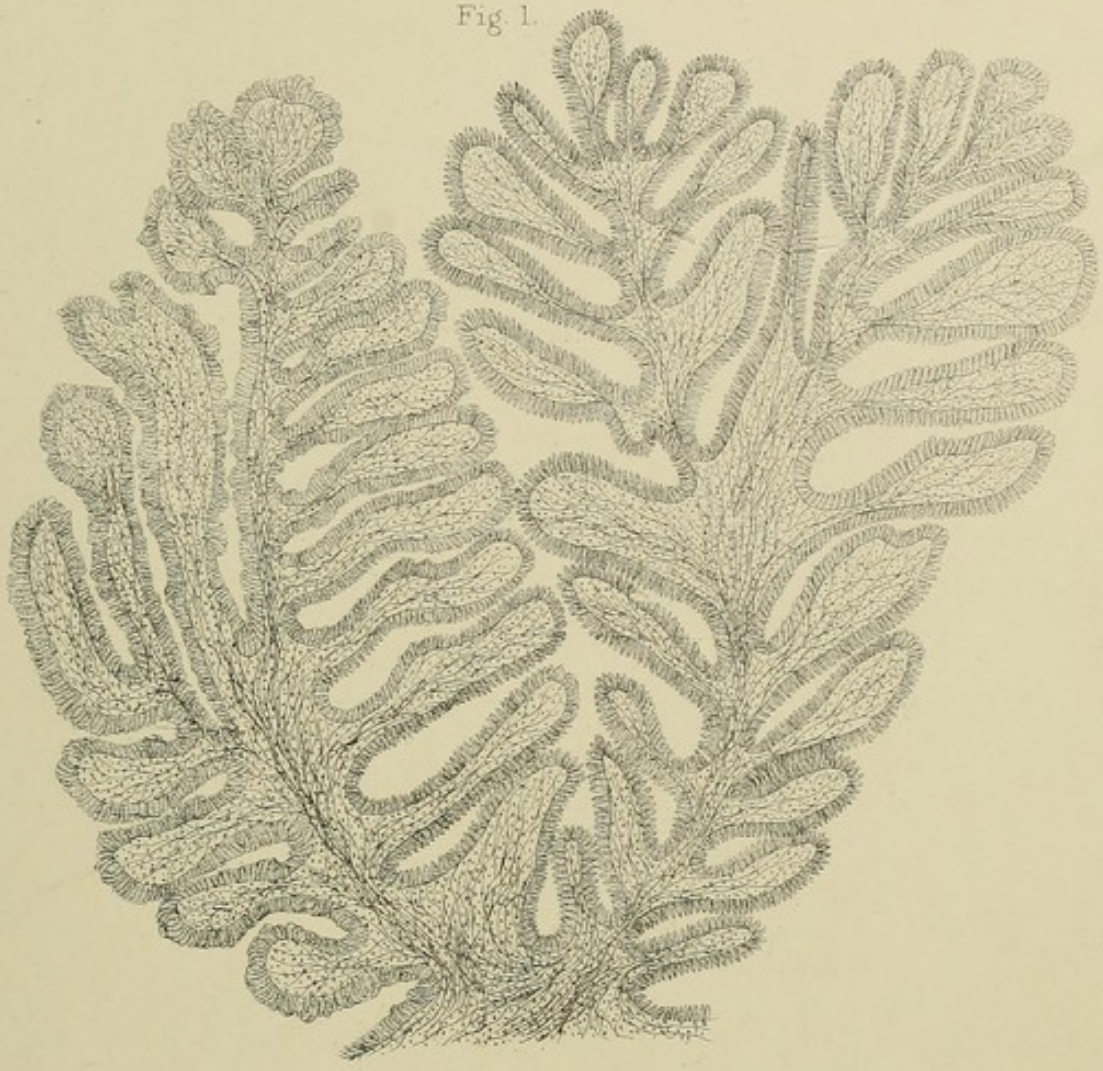
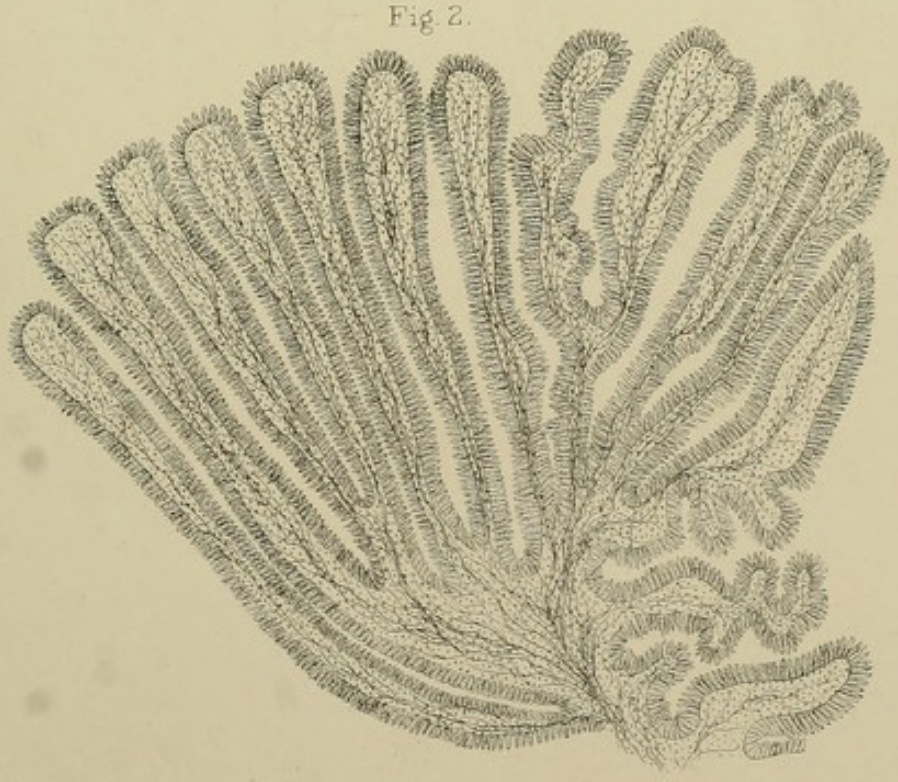


Fig. 2.



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DESCRIPTION OF PLATE VI.

FIG. 1 represents a section of adenoid growth cut at right angles to the surface, and shows how the epithelium lining the cavities in the deeper part of the tumour is in reality but an invagination of that from the surface.

FIG. 2.—Portion of surface of a malignant adenoid growth.

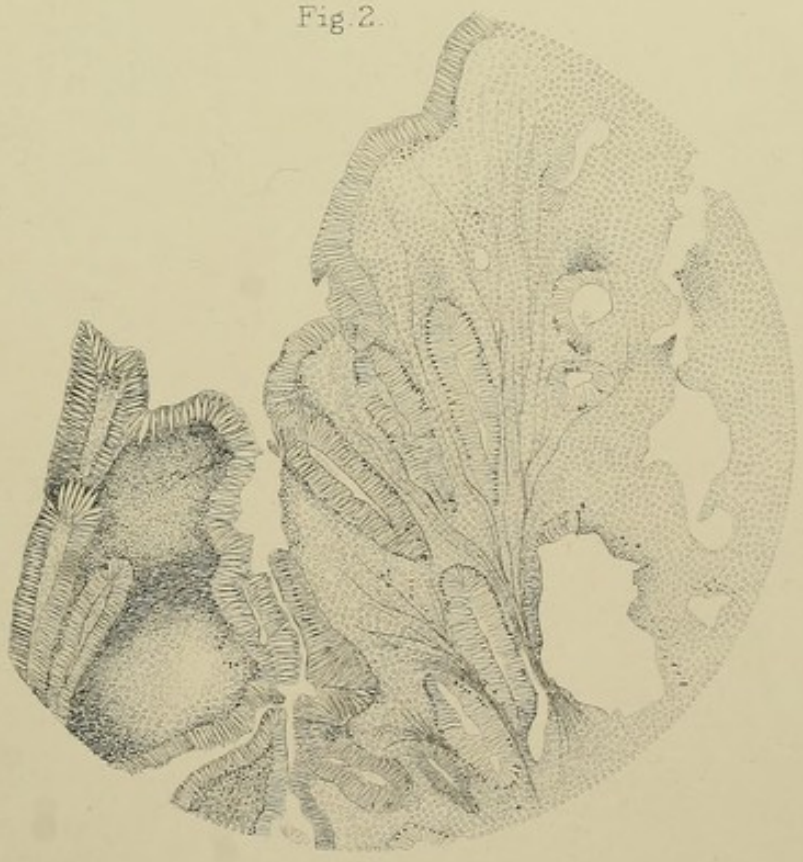
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PLATE VI.

Fig. 1.



Fig. 2.



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DESCRIPTION OF PLATE VII.

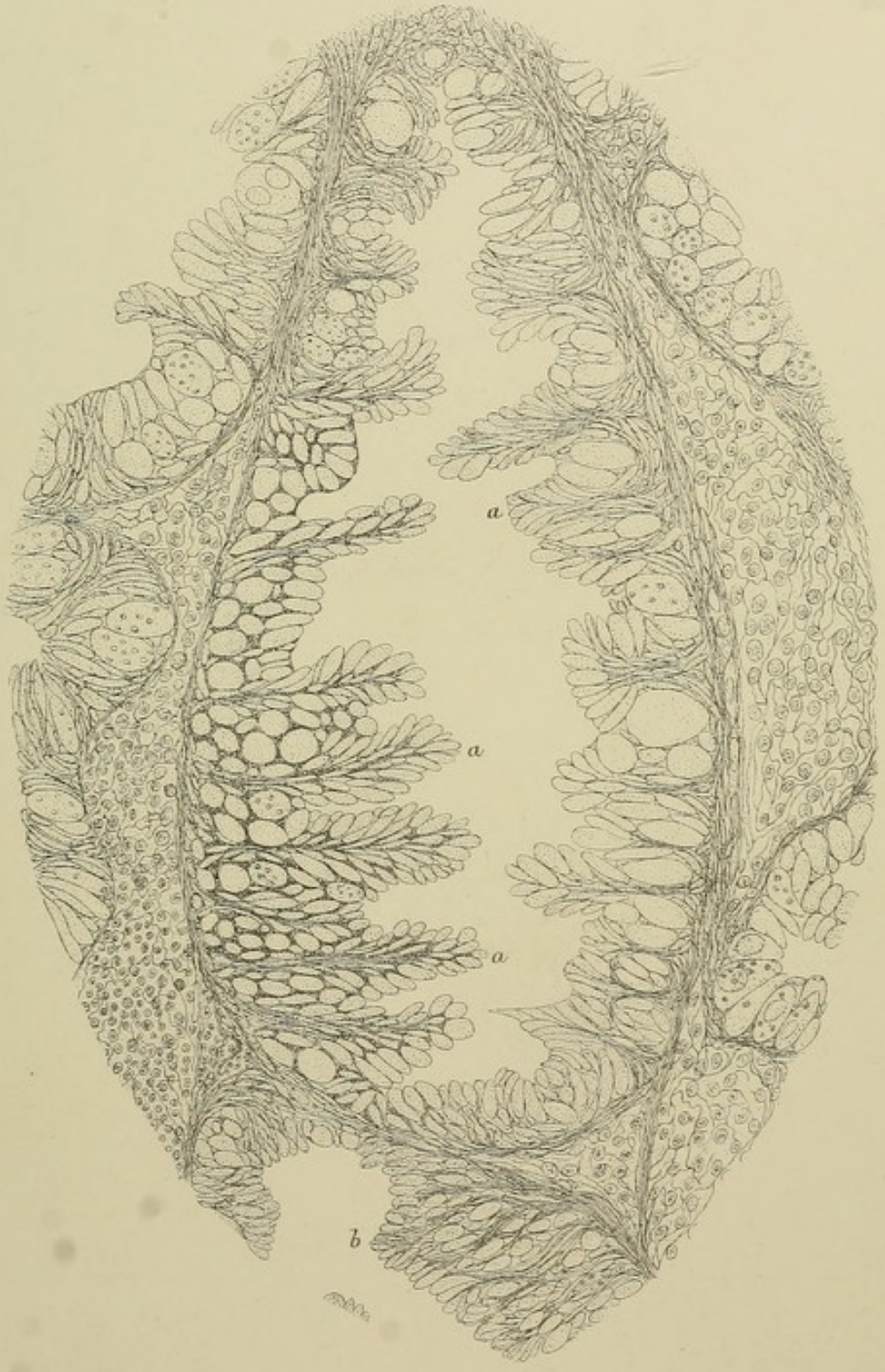
Section of a follicle in an adenoid growth. The cavity is becoming filled by secondary growths (*a*, *a*, *a*) from the lining walls.

As the young cells are formed at the summit of a bud, they gradually elongate, and bend over at right angles to its axis.

In the lower portion of the section at *b* the formation of fibrous tissue from the epithelial cells can be traced. (Hartnack, obj. 7.)

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PLATE VII.



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DESCRIPTION OF PLATE VIII.

FIG. 1.—Section of slow-growing adenoid rectal tumour (malignant) extending into the muscular coat.

FIG. 2.—From a very slow-growing adenoid tumour (innocent). The epithelial cells are very regular, and the intervening retiform tissue clearly marked. (Hartnack, obj. 4.)

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PLATE VIII.

Fig. 1.



Fig. 2.



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DESCRIPTION OF PLATE IX.

FIG. 1.—From rapidly growing recurrent fungous mass forming a large tumour in a few weeks. It is clearly seen to be of an adenoid nature, and is formed on the same plan as the growth in Plate VIII. The cavities, however, are very irregular. The epithelial lining and the intervening retiform tissue are embryonic and ill-defined. (Hartnack, obj. 4.)

FIG. 2.—Portion of the same under a higher power. The epithelial lining is scarcely recognisable as consisting of individual cells, for it rather resembles a mass of nuclei with their long axes pointing towards the cavities. The intervening retiform structure is so ill developed as to represent little more than a spindle-celled tissue.

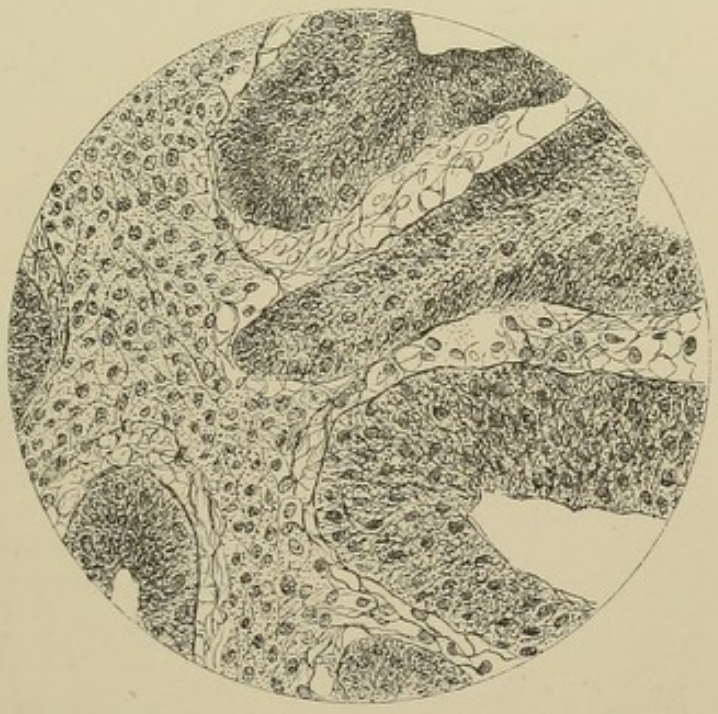
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PLATE IX.

Fig. 1.



Fig. 2.



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DESCRIPTION OF PLATE X.

FIG. 1.—Section near margin of growth, showing the supposed identity of the nuclei of the epithelium with the leucocytes of the retiform tissue.

Both the nuclei and leucocytes are darkly stained.

FIG. 2.—A section of the epithelial margin of a growing tumour showing the absence of basement membrane, and the intimate connection between the growing epithelial cells and the supporting retiform tissue. (Hartnack, obj. 7.)

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PLATE X.

Fig. 1.

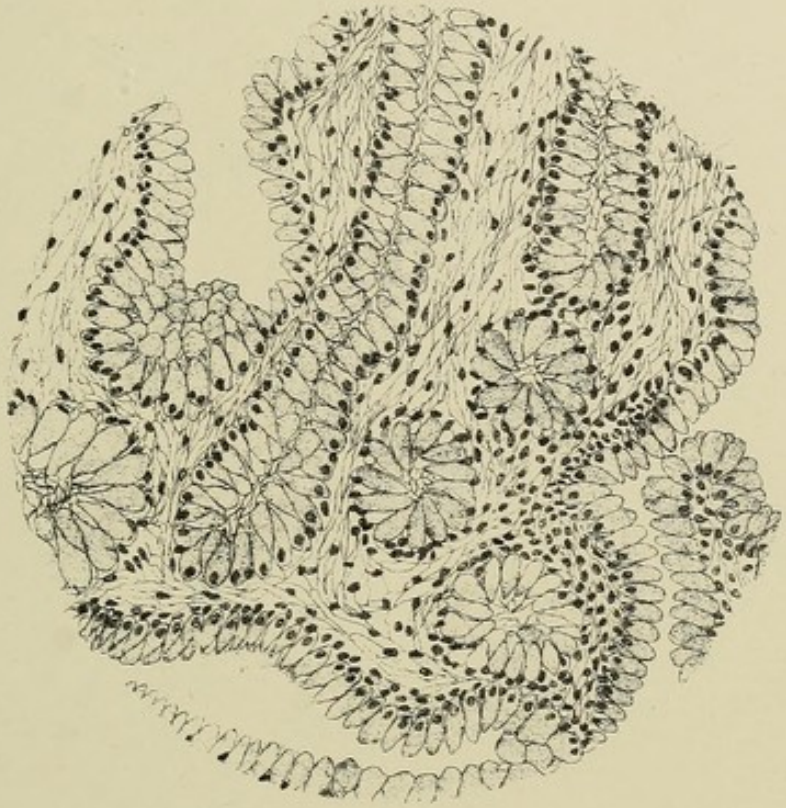
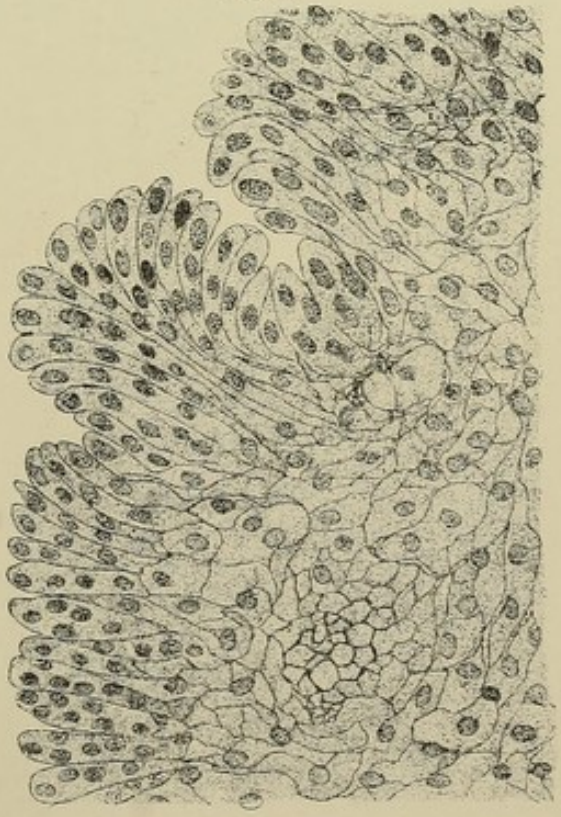


Fig. 2.



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DESCRIPTION OF PLATE XI.

FIG. 1.—Section through fat, showing the infiltration of the growth between the fat-cells.

FIG. 2.—Surface of an adenoid tumour seen through a one-inch power with a direct light.

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PLATE XI.

Fig. 1.

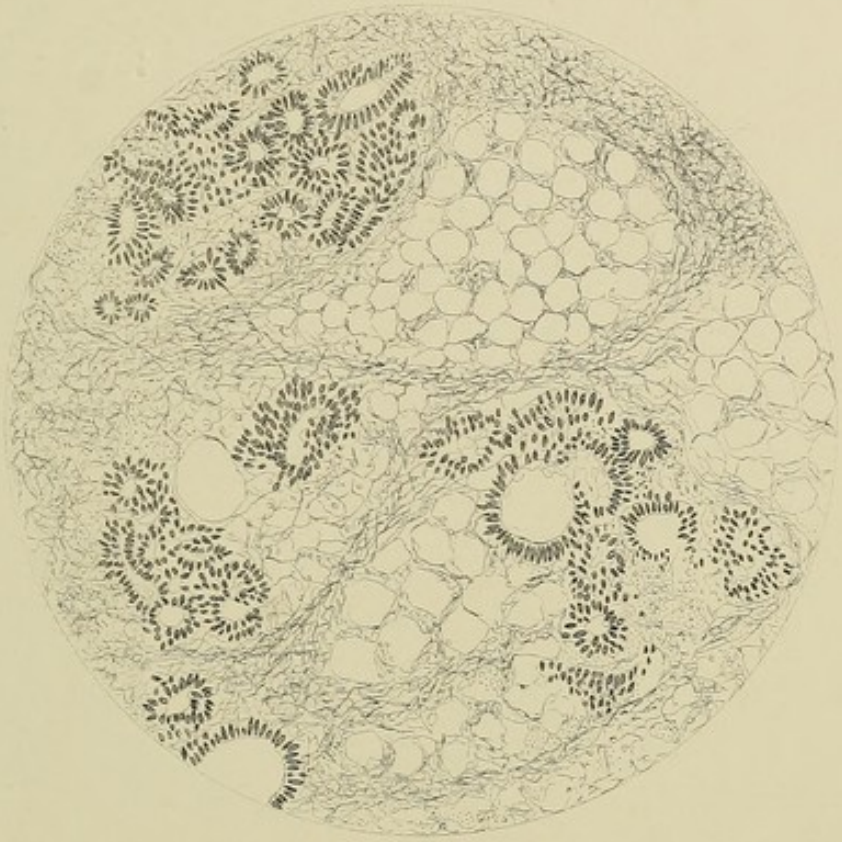
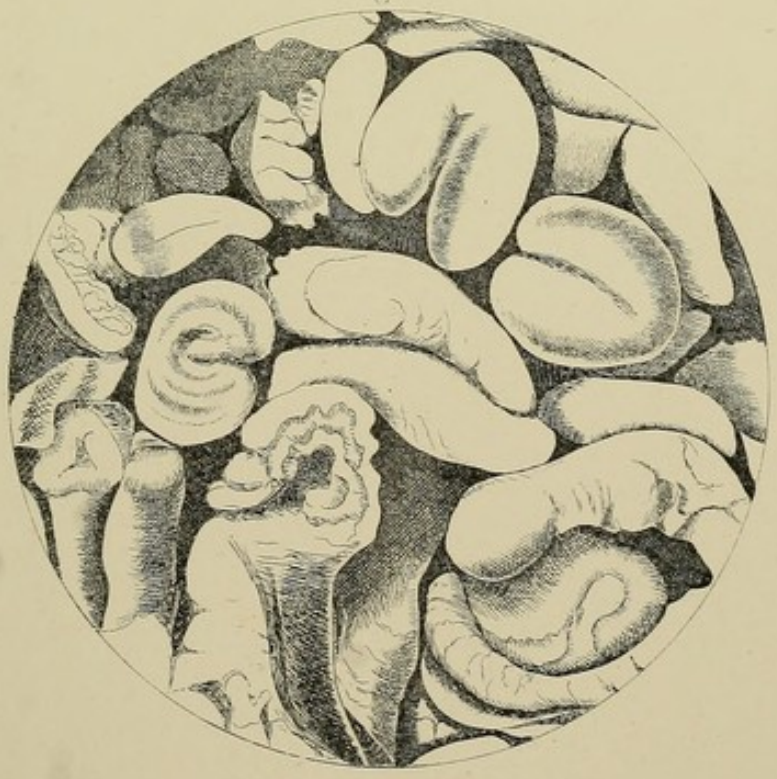


Fig. 2.



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DESCRIPTION OF PLATE XII.

FIG. 1.—Section of fat-cells near the margin of the tumour. Between the fat-cells can be seen an infiltration of small lymphoid cells.

FIG. 2.—A section from the same specimen as Fig. 1, but cut from nearer the morbid growth. The lymphoid cells have acquired a distinctly epithelial character. In places the cavities of the original fat cells remain, in others they have become obliterated. (Hartnack, obj. 9.)

DRAWN BY B. HARRISON CRIPPS.

PLATE XII.

Fig. 1.

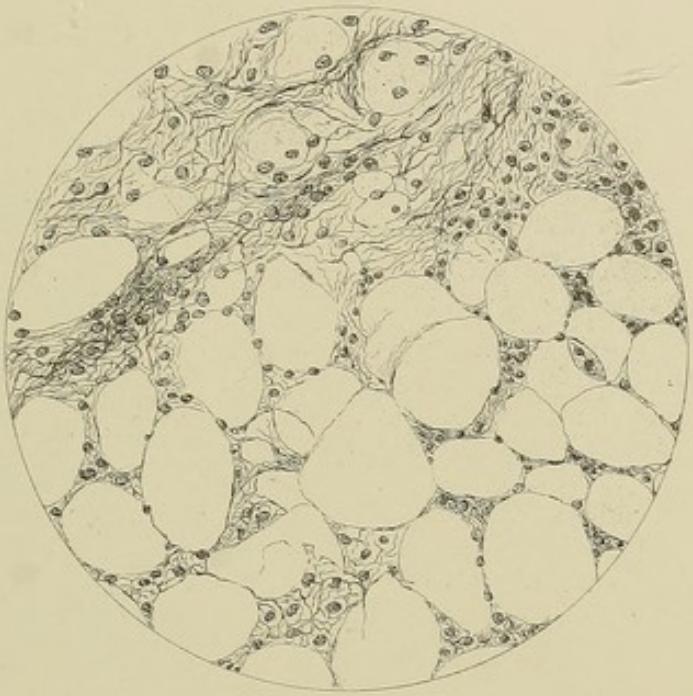
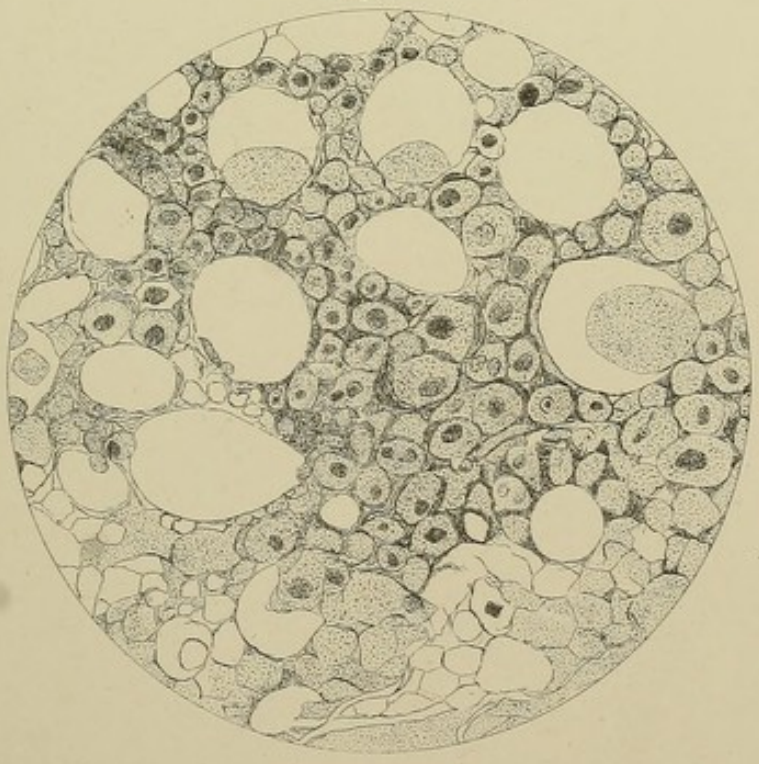


Fig. 2.



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DESCRIPTION OF PLATE XIII.

FIG. 1.—Section of epithelioma. Slight bands of fibrous tissue appear to be forming from the walls of the epithelial cells.

FIG. 2.—Border of epithelioma advancing into subcutaneous tissue.

DRAWN AND LITHOGRAPHED BY B. HARRISON CRIPPS.

PLATE XIII.

Fig. 1

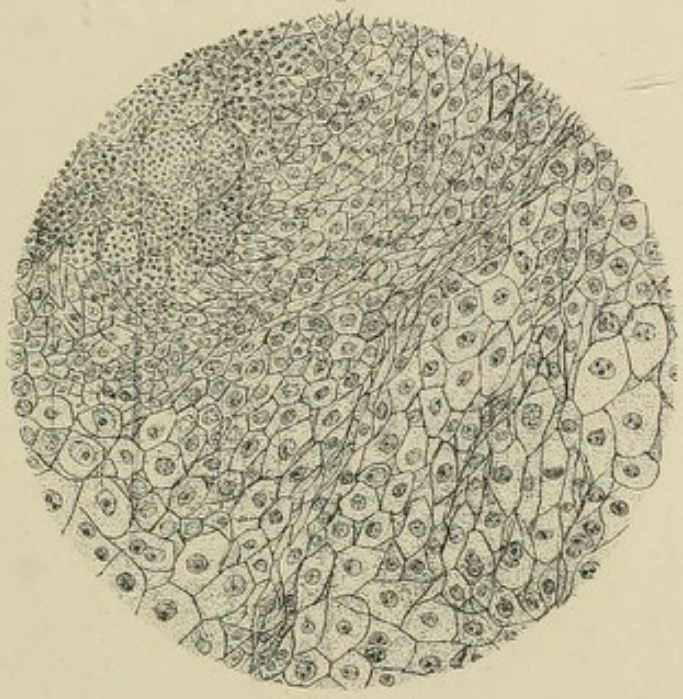
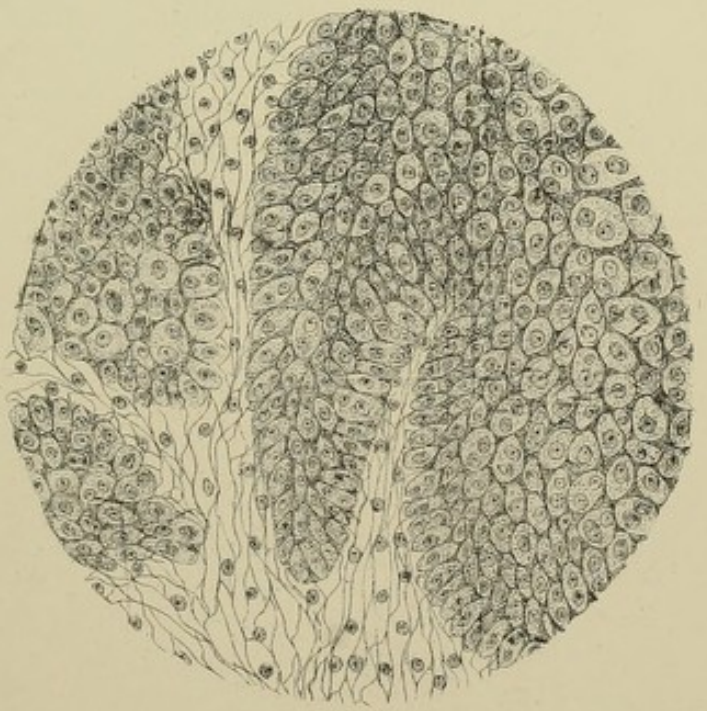


Fig. 2.



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DESCRIPTION OF PLATE XIV.

FIG. 1 shows malignant adenoid growth extending into circular muscular coat. (A) Mucous membrane ; (B) submucous coat ; (C) circular muscular coat ; (D) longitudinal muscular coat.

FIG. 2 (diagrammatic). (A) Innocent polypus growing free into lumen of bowel ; (B) malignant growth growing downwards into the coats of the bowel.

PLATE XIV.

Fig. 1.

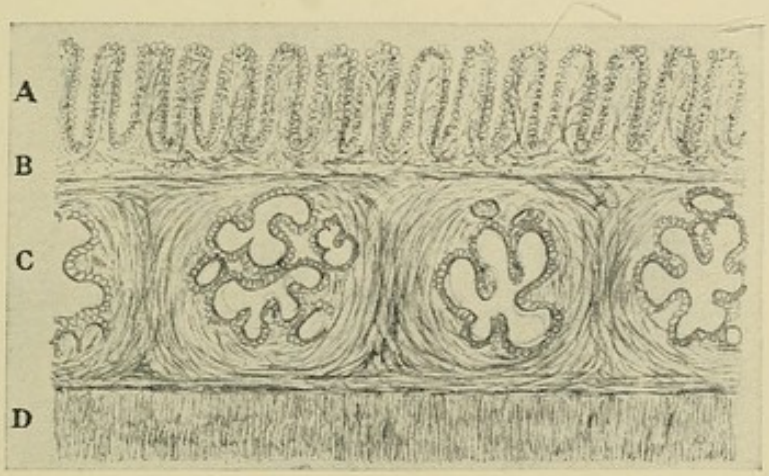
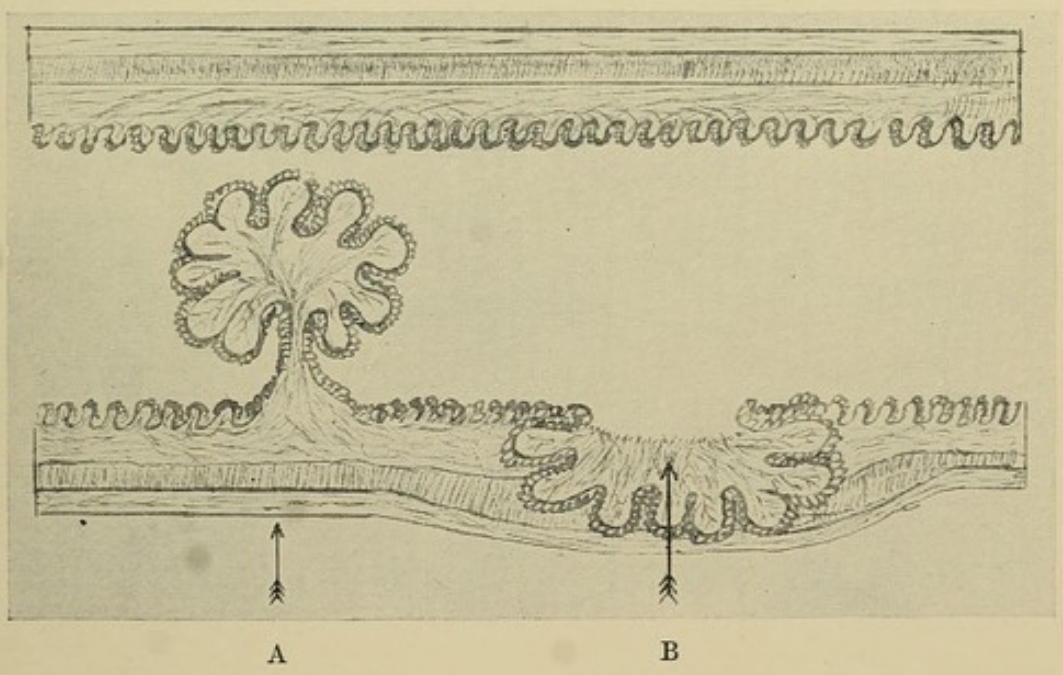


Fig. 2.



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DISEASES OF THE RECTUM AND ANUS

CHAPTER I

THE ANATOMY OF THE RECTUM AND THE FUNCTION OF ITS MUCOUS MEMBRANE

The rectum varies in length from six to eight inches, the latter measurement being more common in advanced life, for, as age increases, the tortuosity of the bowel is more marked. The rectum extends from the left sacro-iliac symphysis to the anal orifice, the course at first being obliquely downwards for three or four inches slightly to the right of the middle line. It then regains the middle line and follows almost precisely the curve of the sacrum and coccyx as far as the prostate, making another bend slightly backwards to the anal orifice. The rectum is smooth and not sacculated, the separate longitudinal bands found on the rest of the large intestine being absent. Immediately above the anus is a dilatation, often of considerable size.

The rectum may be conveniently divided into two equal portions. Of these portions, the upper will be found in relation behind with the sacrum, separated from it by the pyriformis muscle, by branches of the internal iliac artery, and sacral plexus. In front, it is in contact with the posterior surface of the bladder (in males) when distended, and when the bladder is empty, with the coils of the small intestine. At its commencement the rectum

is generally surrounded by the peritoneum, which binds it to the sacrum, but lower down the peritoneum covers its front surface only, and is then reflected on to the bladder, forming the recto-vesical pouch. In the female the vagina and uterus are interposed between it and the bladder. A knowledge of the exact distance to which the peritoneal pouch descends is of much importance. Anatomists vary considerably in their estimates of the distance from the anus at which the peritoneum is met with, but the want of uniformity in their results probably depends more on the manner employed in obtaining measurements than in any material deviation in the subjects experimented upon.

Dupuytren * gives the distance as about seventy millimètres, and further states that, if the bladder and rectum be completely empty, this distance is reduced, the peritoneum falling to the prostate.

Lisfranc † gives the distance as six inches in the female, four in the male, but does not state whether the bladder was distended or empty in his experiments.

Sappey, Velpeau, and Legendre nearly agree in giving the distance as about five and a half centimètres when empty, and eight centimètres when the bladder is distended. The English anatomists, Gray and Quain, make the distance four inches, but do not mention the state of the bladder or make a difference between the male and female. After careful measurement in a large number of bodies, I believe that two and a half inches when the bladder and rectum are both empty, and an additional inch when distended, will be about the average distance; the raising of the pouch by the distended bladder can be shown by injecting water through the ureter when the abdominal cavity is exposed. One of the means I employed in obtaining the measurements was by injecting the peritoneal cavity with plaster of Paris, and then thrust-

* "La Médecine Opératoire de Lagutiere et Dupuytren," tom. iv. p. 218.
† "Cancer du Rectum," Vidal, 1842.

ing a needle through the skin of the perinæum until its point impinged upon the plaster. My measurements correspond pretty closely with those of J. B. Roberts, who made a very complete and careful set of experiments in determining this question, his results being published in an interesting paper * read before the Philadelphia Medical Society.

The peritoneal pouch is pretty firmly fixed in its position, and in a healthy body can scarcely, if at all, be dragged down by pulling on the lower part of the rectum. In disease, however, especially if accompanied by a stricture, the constant straining of the patient during many months seems to render both the pelvic fascia and the peritoneal pouch much more mobile, and under such circumstances it is more readily drawn down.

The lower half of the rectum, extending from the third piece of the sacrum to the margin of the anus, is in relation behind with the sacrum, coccyx, and fibres of the levator ani. Anteriorly it is in relation with the vesiculæ seminales, the base of the bladder, and the under surface of the prostate in the male, while in the female it is in connection with the posterior surface of the vagina. At its termination it is surrounded by the sphincter muscles, while it is also partly supported by the levatores ani. In the male the distance from the anterior margin of the anus to the bulb of the urethra is usually a good inch. Dr. Symington, in an able and interesting paper,† calls special attention to the relations of the opposed walls of the empty bowel to each other. By making frozen sections of the parts he demonstrates that in the last inch of the bowel (anus) the mucous membrane is seen thrown into numerous longitudinal folds—the columns of Morgagni—but the canal is essentially a longitudinal slit—with its lateral walls approximated. On the other hand, the rectum immediately above the anal canal presents the form of a

* "Medical and Surgical Report," Philadelphia, June 9, 1877.

† *Journal of Anatomy and Physiology*, vol. xxiii.

distinct transverse slit, its antero-posterior walls being in contact. Dr. Symington thus agrees with Dr. Hart.*

The **Arteries** of the rectum are derived from the superior, middle, and inferior hæmorrhoidal, and sometimes a branch or two from the vesical. Of these, the superior hæmorrhoidal is the most important; it is the direct continuation of the inferior mesenteric, and runs down behind the rectum, slightly to the left of the middle line, between it and the sacrum, from about four to four and a half inches from the anus. It then divides into two branches, which almost immediately break up into three or four smaller branches, and run down parallel to one another close to the anal margin. These branches become looped, and anastomose freely with the middle and inferior hæmorrhoidal vessels. The main branches of the superior hæmorrhoidal running parallel with the bowel account for the smallness of the hæmorrhage from incisions made in its long axis and the profuseness of the bleeding from cuts made at right angles to its length. The fact of the lower part of the rectum being chiefly supplied by these branches, which run down in its coats, explains the comparative freedom from bleeding when isolating the lower end of the bowel from its lateral connections.

The **Veins** returning the blood from the anal margin are the middle and inferior hæmorrhoidal, the blood from which eventually finds its way into the internal iliac, but the rectum proper returns its blood by the superior hæmorrhoidal, from whence the blood passes by the inferior mesenteric to join the portal circulation. The superior hæmorrhoidal veins commence close to the anal verge, rather beneath the muco-cutaneous surface than the mucous membrane proper.

Some ten or a dozen minute primitive branches starting from little pouch-like dilatations pass up the bowel for an inch or more, gradually converging into five or six larger

* "On some points in the Physics of the Bladder and Rectum," *Edin. Med. Journ.*, 1882.

veins, which, uniting, eventually form the inferior mesenteric. For the first three inches the rectal veins run beneath the mucous membrane between it and the muscular coats. They then perforate the muscular coats running the rest of their course external to the bowel. Much attention has been called to the fact that the veins pass through the muscular walls, especially by Verneuil, who believed that the contraction of the muscular fibres of the rectum was one of the active causes of internal hæmorrhoids, by obstructing the flow of blood to the portal circulation, a view which I consider there is little evidence to support. Most standard works on anatomy * state that the hæmorrhoidal branches of the inferior mesenteric vein inosculate freely with those of the internal iliac, thus establishing a communication between the portal and systemic veins. Such a communication may exist at the anal margin of the rectum, but I believe it is extremely slight, and moreover, if it does exist, the flow of blood can only be in one direction—viz., towards the iliacs.

This I have been able to demonstrate by the following experiments: (1) The hæmorrhoidal plexus cannot be injected through the iliac veins, proving that if a communication exists valves must prevent the blood flowing in this backward direction. (2) The hæmorrhoidal plexus can be at once injected through the inferior mesenteric, but the injection will not pass on into the iliac veins, so that if any communication exists it must be very slight.

The foregoing experiments in great measure corroborate the view so ably maintained by John Gay,† in his well-known work on hæmorrhoidal diseases.

The nerves supplying the highly sensitive surface about the anal margin are derived both from the fourth sacral and the pudic, while the external sphincter and

* Morris's "Anatomy," 3rd edition, 1902, p. 659; Gray's "Anatomy," 16th edition, p. 748; also Quain's "Anatomy," 10th edition, vol. ii. pt. ii. p. 541.

† "On Hæmorrhoidal Disorders," 1882, by John Gay.

levator ani also obtain muscular filaments from both these sources. The terminal branches of these nerves communicate freely with the sacral plexus and great sciatic. These communications and the common central origin of the nerves in question explain the phenomenon of transferred pain sometimes experienced in rectal disease.* The rectum receives its nerve-supply from the hypogastric plexus of the sympathetic.

The lymphatics of the anus are generally distinct from those of the rectum, the former running to the inguinal glands, the latter to the sacral and lumbar glands. It is important to remember this, for it will account for the constancy with which the inguinal glands become infiltrated after the anus has for any length of time been cancerous; while cancer of the rectum will often run its course without any symptoms of glandular enlargement.

Yet occasionally, notwithstanding that the cancer is well within the rectum and has not spread to the anus, the inguinal glands become infected, as in two cases mentioned in the chapter on Cancer.

Levatores Ani.—I would wish to call special attention to the anatomy of these muscles, as having an important bearing on the mechanism of rectal stricture. With the valuable assistance of my colleague, Mr. Lockwood, I made a careful examination and dissection of these muscles, and found that the origin and insertion of the fibres do not correspond with the descriptions given in the ordinary text-books of anatomy.

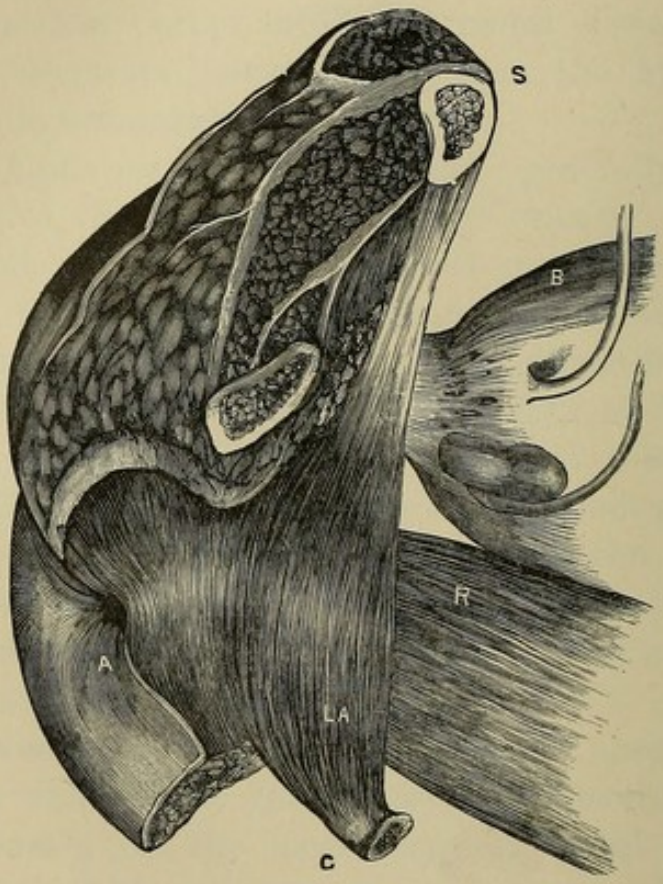
Quain, Gray, and Ellis give almost identical descriptions of these muscles, of which the following, from Quain,† is an example:

"The levator ani arises in front from the posterior surface of the pubes, near the symphysis, and midway between its upper and lower borders; behind, from the

* See case mentioned by Brodie in his Lectures, vol. iii. p. 141. *See also* Hilton, "Rest and Pain," Lecture xii. p. 296.

† Quain's "Anatomy," 10th edition, vol. ii. pt. ii. p. 551.

FIG. 1.



SIDE VIEW OF THE LEVATOR ANI.

A, anus; B, bladder; C, coccyx; LA, levator ani muscle; S, pubic bone sawn through external to symphysis. The fibres of the levator ani are seen arising by a tendinous attachment from the pubic bone; the posterior fibres then cross the rectum at nearly right angles, two inches from the anus, to be inserted into the coccyx.—Drawn from a dissection by William Pearson at the Royal College of Surgeons.

To face page 7.

spine of the ischium, and between those points from the pelvic fascia along the line of attachment of the obturator fascia. Some of its fibres are also traceable upwards in the substance of the pelvic fascia above the level of the obturator. From this extensive origin the fibres of the levator 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 forward 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 passage, and, descending from the side of the prostate unite beneath the neck of the bladder the prostate and the neighbouring part of the urethra, with corresponding fibres from the muscle of the opposite side, and blend also with those of the external sphincter, and deep transverse perineal muscles."

With the greatest respect to the authorities quoted, I venture to assert that the description is inaccurate, and the following account I believe will be found to correspond to what may be seen in the dissected body.

In proof of the accuracy of my observations, I would refer my readers to two of Mr. Pearson's beautiful specimens at the College of Surgeons. One of these is a side view of the parts, and is used as one of the dissections at the primary anatomical examinations. The other is in the museum, and shows both the levatores ani in position as dissected from behind.

If a side view of the pelvis be made, and the part dissected in such a way as to expose the whole of the outer surface of the levator ani, it will be seen that a large portion of the fibres arising from the inner surface of the

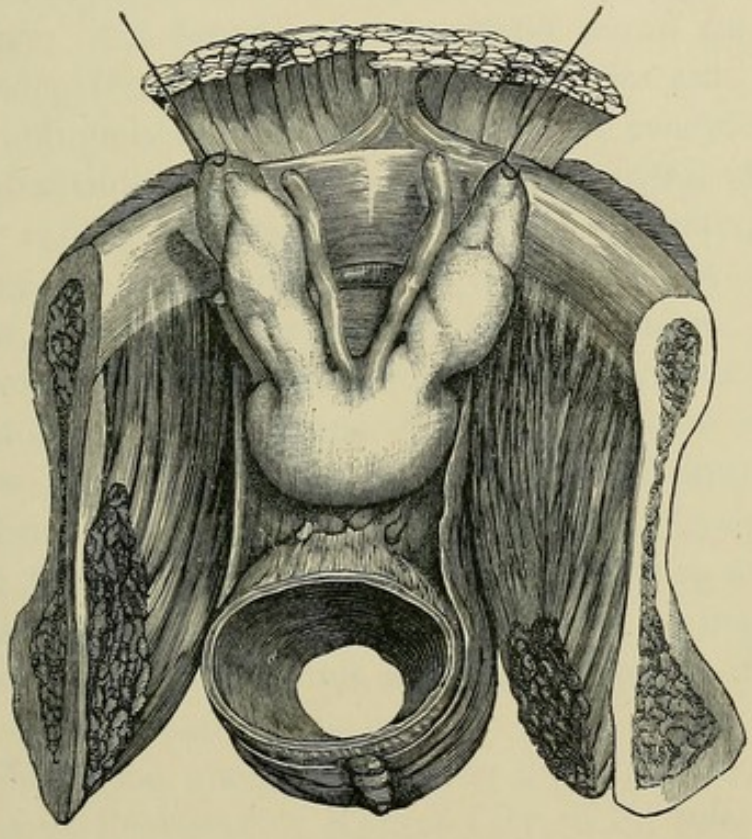
symphysis and from half an inch of the anterior portion of the white line pass obliquely downwards and backwards, to be inserted on the sides of the coccyx. The upper half of the muscle is tendinous, while the lower half, or that attached to the coccyx, is muscular. The posterior edge of the muscle is 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. In the specimen referred to in the College of Surgeons there is a particularly thick band of fibres thus passing from the inner surface of the symphysis to the sides of the coccyx (*see* Fig. 1).

Again, by referring to the drawing (Fig. 2), in which both muscles are seen *in situ* from behind, it will become obvious what must be the action of the levatores ani when they both 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.

On passing the finger into the bowel of a dissected specimen, and then drawing on the origin of the muscles, the sensation is communicated to the finger as if a cord or narrow piece of tape were encircling the bowel on its outer surface.

Now, if the finger be passed into a healthy bowel, a momentary grip will be felt as it passes through the lower portion. This, no doubt, is due to the reflex contraction of the internal sphincter muscle. The contracting portion of the bowel is generally the last inch, but sometimes, however, the contraction extends further up, a discrepancy due to the varying width of the internal sphincter fibres.

FIG. 2.



LEVATORES ANI SEEN FROM BEHIND.

The prostate and vesiculæ seminales have been drawn upwards by hooks. The free posterior borders of the levatores ani are seen passing downwards from near the symphysis to the coccyx, partially encircling the rectum in their course.—From a dissection by William Pearson at the Royal College of Surgeons.

To face page 8.

If the patient be now told to draw up the bowel as much as possible by voluntary movement, the finger will be found again to be grasped by the lower portion of the bowel. The amount of bowel thus voluntarily contracted varies greatly in different individuals. In some the contracted portion ends at least an inch and a half from the anus, corresponding to the tip or sides of the coccyx. The upper margin of the contracted portion ends abruptly, and gives a sensation of a broad muscular band round the bowel, not crossing it exactly at right angles to its axis, but set slightly obliquely as if sloping towards the coccyx. Since this contraction is brought about and maintained voluntarily it cannot be due to the internal sphincter, an involuntary muscle, neither is it owing to the external sphincter, which merely surrounds the anal outlet. But by remembering the dissection I have already described of the levator ani, it will at once be seen that these contracting fibres really belong to that muscle, and especially to those fibres which pass from near the symphysis to the sides of the coccyx. In women these fibres are more highly developed than in men, no doubt owing to the muscular floor of the pelvis having to support more important organs than in the male.

It affords me much pleasure to find that Dr. Gant,* the eminent Professor of Kansas City, U.S., refers to my views of the function of the levatores ani, and by independent dissections confirms them.

Some of the fibres of the levator ani, or, at any rate, some of the fascia to which they are attached, pass over the rectum blending with the fibres of the opposite side, which helps to explain the sphincter-like action that can be exerted by these muscles on contracting, and throws much light, as will be subsequently explained, on the pathology of rectal stricture.

The **Rectal Walls** consist of four coats—mucous, submucous, internal muscular, and external muscular.

* "Diseases of the Rectum," by P. G. Gant, Kansas, U.S., p. 9.

These coats can be readily separated the one from the other by dissection. From the mucous and submucous tissue many fibrous bands run down perpendicularly between the bundles of muscle, and these fibres becoming slightly thicker form a septum between the muscular bands (Figs. 1 and 2, Plate I.). Upon reaching the plane between the external and internal muscular coats a large number of the fibres assume a horizontal direction, while others pass vertically into the external coat, where they again form the septa between the bundles of muscle. Some fibres pass quite through the external coat and blend with the fibrous stroma of the surrounding fatty tissue. From the perpendicular septa dividing the larger muscular bundles numerous fine processes pass off between the muscular fibres; these again subdividing form the ultimate sheaths of the individual fibres of muscle. It will be thus seen that the connection between the various coats is formed by portions of fibrous tissue being directly continuous from one to the other, and also by the continuity of the blood and lymph-vessels. The total thickness of these coats collectively varies greatly in different subjects. The variation is found chiefly in the muscular coats, the other two coats remaining pretty constantly of the same thickness.

At three to four inches from the anus in a healthy rectum the thickness of the mucous membrane, that is, from base to apex of a follicle, is millimètre 0·4.

Mucous Membrane.—This consists of Lieberkühn's follicles and the intervening tissue. The follicles are tubular depressions arranged with great regularity; they are set so close together that the width of the intervening tissue is, on the average, about one-sixth the diameter of the follicle (*see* Fig. 2, Plate I.). The length of the tubes is about four to five times their diameter, the respective measurements being—length, millimètre 0·35; diameter, millimètre 0·08. These tubular depressions are lined with epithelial cells arranged with their long axes at right

angles to the cavity. The apices of these cells look into the cavity of the follicle, while their bases rest upon the adjacent retiform tissue. On cross section it is seen that from fifteen to twenty cells are required to complete the circular lining. While from above downwards their number amounts to forty or fifty. Taking the higher figures in each case, 20 × 50 = 1000 will represent the number of individual cells in each tubular depression. In each square inch of the large intestine there are about 57,000 follicles—the number of cells 57,000 × 1000 = 57,000,000—in each square inch. These cells are directly continuous with those lining the surface of the mucous membrane, and are, therefore, continuous from one follicle to another.

The length of the individual cells varies greatly, but have an average length of about $\frac{1}{600}$th of an inch, with diameter of $\frac{1}{2000}$th. The lumen of the follicle occupies one-third of its diameter.

The appearance of the cells is analogous to the bee's honeycomb—that is to say, that the intervening wall is common to two cells, or has become common by fusion with its neighbour. This appearance is seen in Fig. 20, Plate II., the pressure of cells one upon another causing them to take a well-marked hexagonal form. The cell boundary is a structureless material formed by a condensation of the peripheral portion of the cell substance. The interior of the cell contains a semi-transparent material more or less granular. One or more nuclei are contained within the cell, situated nearer the base than the free end.

The intertubular tissue consists of a fine trabecular network, the meshes of which are very long in the vertical direction, looking, as is probably the case, like narrow lymph-paths running in a direction parallel to the follicles. These meshes are filled with small cells (leucocytes). Perhaps, however, it is hardly right in health to describe the interfollicular tissue as a network, since it is often not more than a single channel. Lymphoid tissue also forms

the bed upon which the tubular glands rest. This tissue is well supplied with blood-vessels.

The submucous coat is chiefly composed of a network of retiform tissue, in which blood-vessels ramify freely. The whole of this network of spaces gradually converges towards the thin straight lymph-paths which run horizontally both in the submucous tissue and between the layers of muscular fibre.

Since, however, the whole of my sections showing the commencement of the lymph-spaces have been taken from morbid specimens, a detailed description of these spaces will be found further on.

The principal office of the mucous membrane of the rectum is absorption, although, at the same time, its surface supplies the lubricating mucus for the fæces. Proof of its absorbing function is supplied by positive evidence. A few ounces of beef-tea injected up the rectum rapidly disappear. Narcotics, especially opium and its preparations, are absorbed as quickly by the rectum as by the stomach. Sometimes the absorption by the rectum is more rapid than by the stomach. The injection of strychnia may be taken as an example.

Without such positive proof the identity of structure between the rectum and the small intestines would afford strong presumptive evidence that they had similarity of function. A careful examination proves the analogy between the villi and follicles, for it can be demonstrated that the follicles are nothing more than what may be described as inverted villi. A glance at the drawing (Fig. 2, Plate I.) will show the alternating arrangement of the follicles and villi. It would appear as if every endeavour had been made to make available the largest possible surface upon which to spread out epithelium.

Supposing for a moment that it was possible to stretch and spread out a portion of the intestinal mucous membrane in such a way that both the follicles and villi became flat, that is, on the same level, a surface would be formed

of columnar epithelium resting on a bed of lymphoid tissue, in which lymph-ducts would be ramifying together with the small blood-vessels, and the surface corresponding to the villi or follicles would lie on the same level and be identical in structure. The surface occupied by the spread-out membrane would cover many times the area of the same membrane when corrugated into the projections of villi or the depressions of follicles.

Another proof that the villi are nothing more than the growing up of the interfollicular retiform tissue is to be found in the morbid growth of the rectum, known as villous tumour, in which form of growth it can be clearly seen that the villi are produced in this manner. Again, it would be mechanically impossible to have a villous arrangement of the mucous membrane without corresponding follicular depressions.

Seeing the structure is identical and the position merely altered by necessity, it is difficult to conceive that the two have distinct functions. In the large intestine it is possible that the absence of villi is on account of the increasing firmness of the fæces and the diminution of the amount of digested material requiring absorption, the surface lining the depressions being sufficient for purposes of absorption, without the villous projections, which would be liable to injury from the hardened fæces.*

The whole surface of mucous membrane being lined by epithelium, it is clear that absorption must take place through the epithelium, or through the substance between the individual cells.

It appears, however, highly probable that this so-called intercellular substance (or spaces) is nothing more than the blended outline of two adjacent cells, on the grounds given on a subsequent page, in which case absorption

* As an instance of this, a specimen of the College of Surgeons (No. 1, 288). in which colotomy had been performed twenty years before death, may be taken as an example. The whole mucous membrane below the opening in the colon is thickly covered with villi.

would really take place through the epithelial cells themselves.

Possibly the nuclei of the columnar epithelium may be the means of taking nourishment into the body by escaping into the retiform tissue between the glands, and thus becoming lymphoid cells. According to this view, the columnar epithelial cells lining the rectal follicles have a far higher function than that generally assigned to them by physiologists, and, instead of being employed in a simple secretion of mucus, they are in reality the parents of the leucocytes of the body. They might thus be regarded as representing so many points of individual life, absorbing their nourishment from the intestinal contents, and multiplying by the division of their nuclei, which are passed into the subjacent retiform tissue. The network of retiform tissue underlying the epithelium must be regarded as the dilated commencement of the intestinal lymph system, spread out so as to receive the nuclei from the superjacent epithelium, and to convey them along the lymph-channels to the circulation. It is perhaps dangerous to argue from morbid specimens that a similar process takes place in health. Nevertheless, microscopic evidence afforded by some of my specimens is very suggestive of the theory propounded. One of my specimens, shown at the Pathological Society in 1881, presents an appearance so clear and remarkable that it may be well to give the history of the specimen.

Although I have some thousands of sections cut from many different specimens, the specimen exhibited, together with two or three imperfect slices from the same growth, are the only ones in my possession which show, with anything like similar distinctness, the appearances about to be described.

The section in question was taken from a recurrent nodule, or more probably from a portion of growth which had escaped removal at the first operation. A portion of growth, about the size of a small hazel-nut, was, at the

instant of removal, placed in weak chromic acid solution, being subsequently transferred to spirit and dyed with logwood in the usual manner. It would seem, therefore, that the exceptional clearness of the specimen was possibly due to its rapid transfer to the hardening fluid.

In this specimen the nucleus-like bodies towards the base of the cylindrical epithelial cells forming the surface of the hypertrophied mucous membrane are remarkably clearly defined owing to the intensity with which they have taken the staining. In the sub-epithelial retiform tissue a considerable number of lymphoid cells are similarly darkly stained. In form, size, and the extent to which they have taken the dye, there is no perceptible difference between the bodies (nuclei ?) within the epithelial cells and the bodies (leucocytes ?) within the retiform tissue.

It is scarcely possible not to believe but that they are identical the one with the other. The difference of situation alone remains, and even this in portions is no longer noticeable, for here and there the bodies can be seen so close upon the boundary line between the epithelial and the retiform tissue that it would not be possible positively to state whether the body should still be regarded as a nucleus within the epithelium or as a lymphoid cell in the retiform tissue.

In other specimens suggestive appearances may be seen as to the identity of leucocytes and epithelial cells; if, for instance, the apex of a growing epithelial bud, such as can be seen in Plate VII., be examined, the young cells which first appear have no visible features by which they can be distinguished from the leucocytes or granulating tissue. This gradual conversion of the lymphoid into the epithelial type can also be well studied when these morbid growths are extending into adipose tissue. Plate XI. is a section of some fatty tissue lying external to the rectal wall, into which the new growth is gradually penetrating. In some portions of the specimen the fat cells are normal; in others they are completely replaced by the growth.

The first appearance of morbid infection consists in the infiltration of a single layer of leucocytes between the walls of the individual fat cells in such a way that they (the fat cells) become completely surrounded by a one-celled layer of leucocytes. It can next be observed that these leucocytes, surrounding themselves with protoplasm, gradually increase in size, and, in so doing, compress the fat cells between whose walls they lie, so that after a time the outline of the original fat cell is represented by a ring of new growth, a small cavity only remaining to mark the spot of its existence. This, too, in its turn, often becomes completely obliterated by its walls being compressed into apposition, so that all that remains of what once was the cavity of a fat cell is a double line of fine fibrous tissue, the compressed walls of the original cell.

In the meanwhile the invading growth, which was primarily represented by a layer of leucocytes, is now represented by epithelial cells into which the leucocytes have changed, arranged in a circular manner (Plate XII.). It is upon this evidence and that of the growing epithelial buds that the possibility of the development of the lymphoid into epithelial cells is based.

If we now refer to the specimen described on p. 15, and figured in Plate X., and consider what evidence can be adduced to establish that the lymphoid bodies are rather travelling from than towards the epithelium, it must be remembered that the argument is that a lymphoid cell can develop into an epithelial cell, and that an epithelial cell can produce a lymphoid cell.

If the bodies were travelling into the epithelium they must be disposed of in one of the following ways :—They must either accumulate within the epithelial cells, or pass out of the free extremity, or be dissolved, and disappear within the original protoplasm of the epithelium ; or develop into an epithelial cell, so that they can be no longer separately recognised. That they neither accumulate nor pass out of the free extremities can be proved,

nor does it appear that they are supplying the place of epithelium that has been shed, for the line remains unbroken. It is not, of course, possible to prove that they do not disappear by absorption. On the other hand, there is some strong indirect evidence that these lymphoid bodies have been derived from the epithelium, for it is in their collection immediately beneath the hypertrophied epithelium that the first evidence of the tumour formation is evinced, and, as will be subsequently shown, they invariably form the advance guard of extending adenoid tissue. At first sight it must be admitted that this accumulation of leucocytes on the outskirts of the growing tumour would as easily admit of the interpretation that they had come from distant parts, as that they had been developed from the local cells. Moxon, and other observers of high repute, state that not infrequently they have noticed in nodules in the liver secondary to rectal cancer, not merely columnar epithelial cells, but a structure actually identical with Lieberkühn's follicles. The deduction to be drawn from these secondary deposits is that they grow from cells originally derived from the rectum. Now, it is scarcely possible to conceive that the large columnar-shaped epithelial cell of the rectum can be transmitted, in the bulk of its complete form, through the intricate lymph-paths between the rectum and the liver; but no such mechanical difficulty lies in the path of the smaller lymphoid cell, which, when arrested in the liver, grows to the likeness of its epithelial parent.

I claim on the foregoing evidence that there is some support to the theory I have advanced as to the formation of leucocytes by the epithelium. Although, of course, it falls short of actual demonstration, I believe it to be worthy of some further attention.

CHAPTER II

EXAMINATION AND DIAGNOSIS IN RECTAL DISEASE

With the exception of fistula, which patients seem instinctively to recognise, almost any form of rectal disease will be described by the sufferer as "the piles." The surgeon must, therefore, pay but little attention to the assertion without an examination. Indeed, it is absolutely impossible to give a trustworthy opinion on any rectal disease without a careful and thorough examination. Such a statement might seem superfluous were it not that I have been frequently consulted by patients with so grave a disease as cancer when invaluable time has been lost in a course of treatment for "the piles," when an examination of the part would at once have revealed the true nature of the disease.* Doubtless, some blame must be attached to the patient who has refused an examination from false modesty, but the practitioner is not without fault who prescribes for rectal disease without confirming the diagnosis by careful physical examination.

Before doing so, however, much valuable information may be obtained by questioning the patient. I find it best to allow patients to describe their symptoms, without putting leading questions. I then proceed with the following catechism.

(1) How long have you had the trouble?

(2) How often do you want to go to the closet?

(3) Does any part of the body protrude at stool?

* *Vide* "Kocher's Operative Surgery," 1903, p. 281.

(4) Do you lose any blood ?

(5) Does the blood simply drip into the pan, or have you ever noticed that the pan has been splashed as if by a fine jet of blood ?

(6) Do you have any discharge of matter ? If so, does it come from within the bowel whilst straining to pass a motion, or do you notice it on your linen ?

(7) Do you have pain on passing a motion ?

Let us now consider a little more in detail the importance of these signs.

Duration.—The length of time that the symptoms have existed may be of material help in forming a correct diagnosis. If the trouble is one of only a few days or weeks, it is probably due to a traumatism or abscess, or to an inflamed condition of some pre-existing malady such as a fistula or hæmorrhoids. Again, the duration is very valuable where there is doubt between a fibrous and a malignant stricture. This point is again referred to on p. 369, where it will be seen how rapid is the progress of a malignant stricture compared with that of a fibrous stricture.

Frequency of motion.—If this trouble is only of a week or two's duration, it is of no special significance. It may, in that case, be due to some error in diet or some slight dysenteric attack ; but if it has been persistent for some months, it is a sign of the greatest importance. If this symptom has lasted any length of time, it is more than probable that one of the following disorders is present : (1) Extensive internal ulceration. (2) Fibrous stricture. (3) Cancer. The trouble varies in degree, and from time to time. Sometimes it will only amount to two or three broken motions in the morning. At other times for a great part of the day the patient will be bothered by a constant desire to go to the closet, resulting perhaps in only a little blood-stained mucus or small watery motion passed without a sense of relief. In such a case the surgeon will as likely as not find that the patient has

extensive ulceration or malignant disease. Indeed, it is extremely rare for a patient to have either of these troubles low down, and to pass only a normal motion once of twice a day.

Does any part come down?—If the reply is, "Yes, something protrudes at stool," this is one of three things—simple prolapse, hæmorrhoids, or polypus. The next question will help towards a differential diagnosis between these.

Loss of blood.—It must be borne in mind that bleeding is a common feature in many forms of rectal disease, and it is rather to its character than to its mere occurrence that importance is to be attributed. If it is passed frequently in small quantities, and mixed with mucus, or darkly stained discharge, it arouses the suspicion of cancer. On the other hand if passed, even in large quantities, only during or after the passage of a normal motion, it is probably from some hæmorrhoids, for simple prolapse seldom bleeds. If bleeding is present, it should be asked whether the blood simply drips down into the water, or whether it splashes the back of the pan, and whether it passes in a fine jet. This is of great importance, for if it comes in a jet, it is almost certainly diagnostic of hæmorrhoids. Of course, in the great majority of cases of hæmorrhoids, the blood merely smears the motions, or drips into the pan, but, so far as I have seen, when the blood comes as a jet, it is invariably from a minute opening in a hæmorrhoidal vein. Hence its significance.

Discharge of matter.—If this is complained of, it must be ascertained whether the matter only passes from the anus when straining, or whether it comes from the outside, staining the linen. If the former, it may be due to many causes, such as stricture, internal ulceration, or cancer. If it does not come from within, only being noticed on the linen, its source will often be found in a fistula.

Pain on passing a motion.—Pain is a symptom common

to most forms of rectal trouble, and the nearer the disease is to the anus the greater the pain. The skin round the anus and the muco-cutaneous surface are very sensitive, while the mucous membrane of the bowel is much more tolerant. Indeed, I have seen high up the rectum considerable masses of cancer which must have existed for months, but, never having caused the slightest pain, had aroused no suspicion of anything wrong. There is one form of pain which is very suggestive—indeed almost diagnostic. This is a sharp burning pain that comes on whilst passing, or immediately after passing, a motion. It will last any time from a few seconds to an hour or more, then going away almost entirely, to be repeated with the next motion. If this symptom is persistent, it will almost certainly be found that the patient has a small ulcer or fissure. These may be so small as to be easily overlooked, and the pain is in no proportion to their size. I have known an ulcer less than one eighth of an inch in diameter cause agonies, and quite incapacitate a patient for hours after a motion. And whenever this characteristic pain is complained of, if nothing can be seen at an ordinary examination, the surgeon should not be satisfied without a more thorough search under an anæsthetic.

It is always well, before examining the rectum, to make a careful palpation of the abdomen, and especially in the case of suspected cancer. If at this examination secondary nodules can be felt in lymphatic glands, liver, or omentum, there will be no necessity to press the entire examination to a further extent than feeling the local disease. For if those organs are implicated by secondary infection, the question whether the local growth can be removed is superfluous.

Specula.—When I first began the study of rectal surgery, I believed that the speculum was the best means of diagnosing rectal diseases. There lie in a long-forgotten drawer various ingenious specula—single, bi-valve, wire,

self-retained, and many others—a monument to the disappointment of youthful hopes. With the exception of a simple duck-bill, used when operating, all have been discarded as useless. I say that a speculum can never be usefully employed except when a patient is under an anæsthetic. The idea of using one on the consulting-room couch should be abandoned. It will generally end in a fluid motion on your couch, and the rapid vanishing of the patient who is seldom reclaimed. Troubles at the anus can be seen without a speculum, while those within the sphincter can be *felt*. And I am confident that all who have had much experience in this branch of surgery, will agree with me that the educated finger is far the most reliable and satisfactory instrument for diagnosis. It is not from the appearance of a disease in the rectum that its real nature can be ascertained; it is by the feel, which is all-sufficient. A vascular ulcerated surface when looked at on the rectal mucous membrane may be anything from a superficial excoriation to a malignant growth, but when touched by a finger in a rectum unstretched by a speculum its degree of hardness and the condition of its edges bring to the mind a knowledge far more reliable than that of sight. Then again, take such a trouble as internal piles. The inexperienced might suppose that, as these present good-sized tumours when protruded outside, they could be readily seen inside with the help of a speculum. But unless greatly thickened by interstitial fibrous tissue, they cannot be seen at all when a speculum is used. They merely consist of dilated venous plexuses on the summit of the folds of the rectal mucous membrane, and directly these are put on the stretch by the introduction of the speculum, the blood is squeezed out, and they entirely disappear. The recto-scope again is quite useless for the same reason. When a patient is under an anæsthetic I have sometimes found a simple, good-sized duck-billed speculum useful in finding the site of a fistulous opening, or exposing a bleeding

point in recurrent hæmorrhage; but with this exception, it will be found that the more experience a surgeon has in rectal work, the less he will use the rectoscope and speculum.

In any case, before examining a rectum, it is a good thing to have had the bowel cleared out by a mild purge, after which the examination becomes easy. In exceptional cases in which it has not been possible to make a satisfactory diagnosis an anæsthetic is invaluable. I have had cases in which all the symptoms pointed to an anal ulcer, but yet a careful examination had failed to detect the trouble. Nevertheless the small lesion, perhaps hidden by a fold, was easily found at a second examination under an anæsthetic.

Amongst the many anxious questions a surgeon has to decide, perhaps few impose more responsibility than deciding whether cancer of the rectum, in a particular case, can be removed—the patient's life often depending on the verdict. In these cases an anæsthetic may be indispensable. Many a case which appears hopeless on the first examination has proved to be quite practicable for operation when subsequently examined under an anæsthetic.

Position for examination without anæsthesia.—The patient should lie on the side on a couch three feet high in a good side light, the knees being drawn well up on to the abdomen. The anus should be inspected for anything that can be seen outside. The finger should then be gently pressed over all the external parts to see if any tenderness or hardness can be felt. The patient should now be directed to "strain down," while at the same time the muco-cutaneous folds should be separated, and as much of the mucous membrane as possible everted by gentle manipulation. The mere separation of the skin folds will readily detect the site of any fissure or ulcer or any internal piles that may be projecting, while the drawing down of the folds when the patient is

straining, will often bring into view bunches of hæmorrhoids which could not previously be seen.

All the information possible having been obtained by an external examination, the next procedure will be to examine the inside of the bowel with the finger. The sense of touch varies very much with different individuals, but can be greatly increased by practice. The first few times a student introduces his finger into the rectum, he will have no standard of comparison. It is like putting the head out of window on a dark night—at first all is confusion. So with the rectum, but the finger will soon learn some of the important points in diagnosis, and with constant practice will become absolutely reliable in the great majority of cases.

Method of passing the finger.—This might seem a simple matter, but here, as in most other affairs, there is a right and a wrong way. If the finger is so passed as to cause pain, a satisfactory examination is impossible; indeed, it often ends in the patient straightening out his legs, jumping off the couch, and leaving so hurriedly that even the fee is forgotten. With care, in the great majority of cases, the finger can be passed painlessly. The whole of the right hand should be softened by a good wash with soap and hot water, while at the same time a lather should be made round the anus with a soft flannel and soap and water. By doing this the sensitive skin at the anal margin which may be harsh and dry is at once softened and the well-soaped finger passes in without friction. If the finger is roughly pressed into the rectum, the sphincter muscles and levatores ani immediately start into action, endeavouring to protect the part from intrusion, and the forcing of the finger through the muscular contracted orifice causes great pain. The well-soaped finger should be introduced very slowly with the utmost gentleness, and the patient told to strain down just as if passing a motion. At the moment of straining down the muscles relax, and the rectum is passed as it were over the finger

rather than the finger into the rectum. In this way a practically painless examination can be made. After an examination the patient should be allowed to lie a few minutes on the couch, for in the recumbent position the disagreeable feeling passes off very quickly, and there is no chance of a faint. Further details in examination of the rectum will be found in subsequent chapters relating to the various forms of rectal disease.

CHAPTER III

MALFORMATIONS OF THE RECTUM AND ANUS

It is difficult to form any accurate estimate of the percentage of infants born with an imperforate bowel. Anger* states that he had met five instances of imperforate anus in 2000 midwifery cases. Dr. Henry Duncalfe† gives, as his experience, five cases in 3000 births. Teinturier,‡ in his paper on this subject, mentions that out of a total of 73,000 confinements, reported by Conture of Havre, Collins of Dublin, Gohre of Vienna, and by Trélat of Paris, there were only seven cases of imperforate anus, or about 1 case in every 10,000 births. These statistics diverge somewhat widely, but, if added together, give 1 case in every 4588 births.

Pathology.—Rectal malformation results from arrested development of the part in early fœtal life, and it may be of interest briefly to recall some of the facts illustrating the development of this portion of the body. At its earliest commencement, the alimentary canal is represented by a simple bag, containing the yelk, and is developed from the innermost layer of the blastoderm. As the fœtus grows, it closes round the yelk-sac, constricting it in the middle so as to enclose a portion within the body, the remainder being outside. At first the sac within the body communicates freely with that without, but the channel of communication between the two

* *Boston Med. Journ.*, vol. xcv. p. 532.
† *British Med. Journ.*, vol. i. 1873, p. 34.
‡ "Bull Soc. Anat.," vol. xvi. p. 305.

gradually contracts, and is eventually completely occluded. The portion of the yelk-sac remaining within the fœtus develops into the intestinal canal. It quickly loses its circular shape and becomes oval, its long diameter being parallel with that of the growing fœtus. By a continuation of the lengthening process, the ovoid sac becomes a long straight canal, still closed at both extremities. As the fœtus increases in size, so does this canal firstly become bent and eventually convoluted. At this period the intestinal canal terminates in a cul-de-sac towards either extremity of the fœtus. The external membranes of the body at the mouth and anus become depressed in such a way as to form short channels leading into the body, terminating in cul-de-sacs. The cul-de-sac of the anus comes in contact with the blind termination of the rectum, and it is by the absorption of the two intervening layers that the communication between the rectum and anus is established. The greater portion of malformations of the anus and rectum are due to the later stages in the process just described being incomplete. The termination of the rectum in the genito-urinary tract is due, in addition to the arrest of development just mentioned, to a failure in the complete formation of the septum, separating the rectum from the genito-urinary tract, which, in early embryo life, have but one common orifice.

The explanation of this arrested development is unknown. By some authorities* it is attributed to a malformation of the hæmorrhoidal vessels, the blood-supply necessary for the development of the part being absent. Other authors attribute such imperfections to an impaired nerve-supply. These explanations are not satisfactory, since they merely remove the difficulty a stage further back, the cause of the deficient blood- or nerve-supply being still unknown. Though it is not possible at present to explain the primary cause of these malformations, such a deficiency of knowledge is little to be regretted,

* MM. Serrés.

except from a scientific standpoint; for, occurring as it must in early embryo life, it does not admit of prevention.

Without classifying a few rare and exceptional varieties it will be found that the chief malformations come under one or other of the following clinical divisions:

(1) The anus, more or less clearly defined, terminating in a cul-de-sac a certain distance from the orifice.

(2) Complete absence of anus, the fold of scrotum extending back in an unbroken line to the coccyx.

(3) The anus and rectum may be well formed, and of normal calibre, but the latter may be obstructed by a delicate fold of membrane stretching across its interior.

(4) The anus and bowel may be perfectly formed, but the outlet obstructed by a tail-like fold of skin extending from the scrotum to the tip of the coccyx. A small opening may exist on one or both sides of this fold.

(5) The bowel may open in some portion of the genito-urinary tract. In the female this is almost invariably by a communication through the posterior wall of the vagina, while in the male a communication exists between the base of the bladder and the bowel, or, more commonly, between the bowel and the prostatic portion of the urethra.

In the first and second series, the rectum terminates at an uncertain distance from the site of the anus, or bottom of the anal cul-de-sac. In the majority of cases it will be found terminating in a blind pouch within an inch or an inch and a half of the normal outlet. If the anus is clearly marked, terminating in a deep cul-de-sac, the prognosis is less favourable than when the anus be completely absent, for in this latter case it commonly happens that the blind pouch of the rectum is close beneath the skin, the deformity being merely due to the skin of the anus failing to become invaginated.

In the 18th volume of St. Bartholomew's Hospital Reports I published a Table of one hundred cases of operation for imperforate anus and rectum, collected from the

records of the hospital and other sources. Amongst these cases were thirty-five instances in which a well-marked anus was present. Of these, twenty-three died after operation; while, in the twenty-three cases in which no anus was present, the skin being unbroken from the perinæum to the coccyx, only nine died.

The third division of malformations is comparatively rare. In the College of Surgeons there is a specimen of this obstruction, a fold of mucous membrane in the form of a complete diaphragm occluding the otherwise normal bowel, at a distance of three inches from the anus.

The fourth division is also uncommon. Mr. Morgan, at the Children's Hospital, Great Ormond Street, has recorded two exceedingly interesting cases.* coming under his observation. I also have had an opportunity of examining two cases of this deformity, the one under the care of Mr. Willett in Sitwell Ward, the other admitted under me into Lucas Ward, St. Bartholomew's Hospital. Both had the appearance of small tail-like prolongations of skin, extending in the form of a thick ridge from the tip of the coccyx to the perinæum. Sometimes this fold may completely occlude the anal outlet, or it may form a bridge-like obstruction, leaving a small fissure on each side.†

The fifth division includes all the cases in which the rectum terminates in some portion of the genito-urinary tract. In my Table there were twenty-five such cases, thirteen in the male, twelve in the female. In the males the anus was completely absent in the great majority of cases, a smooth line extending from the scrotum to the coccyx; and ten out of the thirteen infants died. In all these cases a post-mortem examination disclosed the nature of the deformity, and the situation of the communication with the urinary passage. In six cases a fistulous communication was found between the prostate

* *Lancet*, Oct. 22, 1881.

† *Cf.* case quoted in *Lancet*, vol. ii., 1904, p. 1283.

and the rectum. In the remaining cases the communication was directly with the bladder. In one case the rectum terminated at the fundus of the bladder; and in another the communication was by a minute opening, at the base of the bladder. In a third it terminated close to the urethral opening; whilst in the last case the bowel ended at the sigmoid flexure, which communicated with the upper part of the bladder.

The extremely unsatisfactory results of operative interference in this class of cases in boys shows it to be one of the gravest forms of malformation, and but little amenable to surgical treatment, for of the thirteen cases just mentioned only three survived.

The malformation in the female in which the rectum terminates in the vagina is fortunately far less grave. In all the twelve instances recorded the opening was in the posterior wall of the vagina, just behind the hymen. In some, the communication was sufficiently patent to allow of the free escape of fæcal material; in others the communication was so small as only to admit of a fine probe. Eleven of the twelve cases did well after operation.

The symptoms of congenital obstruction of the bowel are, as a rule, too clear to admit of any doubt in the diagnosis. The failure in the infant to pass anything by the anus quickly attracts attention. By the third or fourth day vomiting is established, while at the same time the abdomen becomes distended. In the majority of cases an examination of the anus demonstrates the nature of the deformity. Occasionally difficulties or mistakes may arise in the diagnosis. I have made a post-mortem* on an infant in whom Littré's operation had been performed for a supposed imperforate rectum by one of the most careful and experienced of London surgeons. In this case on opening the abdominal cavity at the post-mortem, it was discovered that the symptoms

* "Path. Soc. Trans.," vol. xxxi. p. 111.

were not due to imperforate bowel, but to a volvulus low down in the small intestine. The whole length of the large intestine was empty, and contracted into a cord-like structure, which appeared never to have been distended with meconium. The contracted bowel gave to the finger when introduced by the anus the exact sensation of an occluded rectum; the bowel, however, was readily expanded by inflation. Chairon,* Tuck,† and Duncalfe‡ each record a similar error in diagnosis.

If the obstruction be beyond reach of the finger, or if there be any doubt as to its completeness, a careful examination with a probe, or an injection of water by a small syringe, will establish the diagnosis.

Prognosis.—The difficulty of dealing with cases of imperforate anus has been long felt by surgeons. A doubt seems to have risen in the minds of many as to whether any attempt should be made to deal surgically with such a condition, and it has been argued that unless the obstruction be in the immediate neighbourhood of the anus, the only effect of successful surgical interference is to condemn the infant to a life of suffering from a contracted anus or an artificial opening in the groin.

Even if these premisses were correct, it appears to me to be part only of the question, which is frequently arising in operative surgery, as to whether it is justifiable to prolong a life which will probably be one of discomfort and suffering. So long as the views of life with regard to its present and future admit of infinite variation, and the capacity for pleasure or pain appertains at least as much to the mind as the body, it would appear to be scarcely within the province of a surgeon to constitute himself the arbitrator between life and death. In these cases of imperforation, the infant, if unrelieved, will

* "Bull. Soc. Chir. Paris," s. 2, vol. iii. p. 165.

† *Boston Med. and Surg. Journ.*, vol. xcv. p. 534.

‡ *Brit. Med. Journ.*, vol. i. 1873, p. 34.

almost certainly die from intestinal obstruction, one of the most distressing forms of death.

Mercier records an instance of a well-nourished girl of thirteen, born with imperforate rectum, who, on every fourth or fifth day, evacuated fæcal matter by vomiting. This, so far as I know, is the only case on record in which an infant has survived beyond a few months at the outside, and even in this case some of the details recorded throw doubts upon its authenticity. It is not uncommon for a child to survive some weeks, and quite recently an infant was brought to St. Bartholomew's Hospital on the second day after its birth with an imperforate rectum. The parents were advised to have an operation performed, on the ground that the infant could only live a few days. This they refused, throwing doubts on the prognosis, and a month later brought the baby to confirm their own views. The child certainly appeared well nourished. It had fæcal vomiting about three times a day, and the belly was much distended.

By an operation, relief to the immediate symptoms can be obtained, and it is even possible that a complete and permanent cure may be effected. In these circumstances, therefore, the surgeon is certainly justified in strongly urging an operation.

In undertaking any operation for the relief of congenital obstructions, success, I am sure, will, in no small measure, depend on the confidence the operator feels in his ability to give relief, and perseverance in the subsequent treatment will be greatly stimulated by the knowledge that a permanent cure is possible. With this view the following cases are of interest, as showing what may be accomplished by skill and perseverance.

Owing to the extreme kindness of Dr. Berrut, of Rue de Belle-chasse, Paris; Mr. Gravely, of Newick; Mr. Rowan, of Melbourne; Mons. Verneuil, of Boulevard de Paris; Mr. Taylor, of Ticehurst; Dr. F. Goëde, of Bourbon-Lany; Dr. Mourlon, of Paris; Dr. Thorn, of

Toledo, U.S.; Dr. McCoy, of Jeffersonville, Indiana, U.S.; and Mons. Delans, I am enabled to give an account of a few cases, extending to a much later period than the records published by the operators.

Case 1.—Female child,* born with imperforate anus, and with a small fistulous opening into the vagina just behind the hymen. The anus was established without difficulty, in the normal position. A few months later the recto-vaginal fistula closed. Before long, however, the newly established anus had contracted to a mere fistulous passage. This was gradually dilated by bougies introduced two or three times a day. In a short while the contraction disappeared.

Dr. Berrut, in answer to my inquiry as to the latest progress of the case, kindly sent me the following reply:

"The patient about whom you ask was operated upon by me at Marseilles, whence I have just returned. I heard of the patient from the family doctor on the 20th of last month. The little girl upon whom I operated on May 14, 1860, is now 'une grande demoiselle' twenty years old, very intelligent, and enjoying excellent health. She was much troubled with diarrhœa until she was seven years old. Her monthly periods commenced at the age of fourteen, and since then the rectal functions have been normal. The bowels are opened naturally once a day, the stools being soft and perfectly healthy."

Case 2.—Male child.† The anus terminated in a cul-de-sac about one inch from the surface. Between this and the termination of the rectum was half an inch of dense fibrous tissue which was perforated with a trocar. During the next three months bougies were frequently passed to prevent contraction.

I wrote to Mr. Gravely, asking for information as to the result of the operation, and his reply was to the following effect:

* Berrut, "Bulletin de la Société de Chirurgie," vol. iii. ser. ii. p. 167.

† Gravely, *Brit. Med. Journ.*, 1860.

"The boy lived to be fourteen or fifteen years of age, and then died of scarlet fever; up to that time he was perfectly healthy, never having, that I can remember, a day's illness; certainly never any trouble with regard to the rectum."

Case 3.—Male child,* born April 1876. No opening or depression of any kind to mark the presence of the anus. An operation by incision was performed on the third day, and the rectum found and opened at the depth of 2½ inches. For several weeks a large bougie was passed every second day to keep the canal patent. The case was then lost sight of till February 1877. For some months the child had had no bougie passed. The orifice was so contracted that it would not admit a probe. For five months all the motions had come through the penis. The child was again operated upon, and the rectum opened so as to admit the finger; five weeks later the child was well, and passing fæces by the new opening, none having passed by the penis since the second operation.

Mr. Rowan writes to me, from Melbourne, concerning this case, saying:

"I regret to say that my little patient is not alive, having died some time since of measles, complicated with pneumonia. The last time I saw him the bowel was perfect, and could not have militated against him in his last illness."

Case 4.—Male child,† two days old, with a well-formed anus terminating at 18 millimètres in a cul-de sac. An incision and prolonged research failed to find the bowel. The coccyx was then resected, and the bowel found without much difficulty. The end was then drawn down and opened, but, being too short to come in contact with the anal cul-de-sac, was stitched to the inverted skin in the site of the resected coccyx. For the first few months there was a tendency in the opening to

* Rowan, *Australian Med. Journ.*, vol. xxii. p. 67.

† Verneuil, "Bull. Soc. Chir. Paris," 1873.

contract, but this was overcome by introducing a finger three times a day, and after a while the tendency to contract ceased. Nine years later the boy was in excellent health, and had no contraction or incontinence, nor any trouble with the anus.

Case 5.—A well-formed male child.* No trace of an anus, but in its place a slight projection. A dissection carried deeply into the middle line after an incision extending to the coccyx failed to find the bowel. The coccyx was then resected, the termination of the intestine found, and opened from behind.

Dr. Verneuil communicated to me the results of the operation in these two cases many years subsequently.

"I give you all the information I can regarding my two patients. The first one is now a fine fellow of seventeen years, bearing no trace of the operation, nor has he ever experienced the slightest functional trouble; so the family doctor has just assured me. The second patient was brought to see me two years after the operation. The anus had a certain tendency to contract, whilst the mucous membrane formed a small swelling, in the shape of a prolapse of about half a centimètre. I advised digital dilatation, and the administration every morning of a douche of cold water on the anal region. These means were completely successful, and when I saw the mother of the child eight years after the operation, she told me that the cure was as perfect as possible."

Case 6.—Female,† no anus, rectum opened into posterior wall of vagina. A director passed by the vagina made the anus project; the point of the director was then cut down upon. The rectal mucous membrane was partly dissected from the vagina, and also from its posterior attachments, drawn down, and stitched to the skin of the perinæum. A silver wire was then passed

* Verneuil, "Bull. Soc. Chir. Paris," 1873.

† Taylor, *Brit. Med. Journ.*, vol. ii. 1879.

deeply between the anus and vagina. The wound healed, and no fæces passed through the vagina.

Mr. Taylor has kindly written to me as follows:

"Having to pass the house to-day, where the patient resides, I called and saw the child on whom I operated. She is a very strong, healthy-looking girl; there is a stout septum between the rectum and vagina, but little or no perinæum. The child, a year and a half old, seems to have some power over the anus, but to what extent is difficult to ascertain in one so young."

Case 7.—Female child,* born June 1872, very feeble, having no trace whatever of an auus. Goëde performed Littré's operation on the right side. The small intestine at first presented itself; this was pushed back, and the large intestine then found, stitched to the skin, and opened. Large quantities of meconium immediately escaped. About the ninth day, the child being well, and the opening in the groin well established, a sound was passed into the artificial anus, and discovered a cul-de-sac a short distance from the wound. The sound was pressed downwards, and could be felt projecting beneath the skin just below the coccyx. The skin in this region was then incised, and the parts beneath separated with the finger-nail till the metallic sound could be seen, covered only by the cul-de-sac of the rectal walls. This was opened, drawn down, and stitched to the skin. Fæces did not pass by the anus thus established, and on the third day the child had an attack of erysipelas. The parts were then left quiet for a fortnight, during which time fæcal material passed by the groin. A fortnight later, the wound in perinæum having cicatrised and the anus closed, an operation was again repeated on the anus, the parts being clean cut, instead of being dissected with the finger. After this date fæces passed regularly, and with ease, from the rectal anus.

* Goëde, *Jour. de Méd. et de Chir.*, s. 3, tom, xlix. p. 456.

Dr. Goëde has kindly communicated to me the result of the last operation. In his letter, he says:

"The child was operated on for the last time in July 1872, at $2\frac{1}{2}$ months old. I saw her for the last time in August 1873, at $14\frac{1}{2}$ months. It was at the time of the departure of her parents, and I did not see her again. Still, I was able to obtain information regarding this interesting case until her death, which took place in the winter of 1876 from pneumonia. Her parents died in 1877 and 1878.

"There are two facts worthy of record in this case—

"*Firstly.* What I myself saw and have stated.

"*Secondly.* What witnesses worthy of credit have told me.

"(1) In November 1873, the child, aged about seventeen months, was enjoying good health and growing. The opening made in the right iliac fossa had perfectly healed. The perinæal opening was the only one in use, and the fæces had not passed continuously since she was weaned and partook of more solid food. A close examination showed that this opening was narrow, though very dilatable, the finger passing easily, and meeting with no resistance comparable to that of a sphincter. Nevertheless, since weaning, the fæces passed in an intermittent way, and met with an obstacle to their free passage, though the anal orifice was very dilatable.

"(2) The child died at four years and four months. Her growth had continued, and she was of the same size as children of her own age, and had never been ill. She retained her fæces perfectly, and it was no longer necessary to take any particular care for cleanliness, excepting when she had diarrhœa. They assured me that this child did not soil her linen more than other children of her age. It is probable that at this period the lower portion at least of the anal sphincter had developed and become strong, and I have no doubt that time would have still further ameliorated this very satisfactory state of affairs."

Case 8.—A child* born without an anus, but with a fistula communicating between the back wall of the vagina and rectum. The anus was restored, and after two operations the fistula closed. The child made a good recovery, and was doing well two months after the operation.

The subsequent history of this case is given in a letter addressed to me by Dr. Mourlon:

"My little patient of La Colle died at the age of a year and a few days old of capillary bronchitis. Defæcation was absolutely normal, as the rectal swelling was very near the skin. All the functions were natural, and the child was strong and well formed, and nothing would have led one to suppose that she had been born with imperforate anus."

Case 9.—A male child,† having a mere dimple in the site of the anus. Urine stained with meconium. Dr. Thorn, in January 1869, after carrying a dissection in the middle line to the height of two and a half inches, found and opened the bowel, which was not drawn down or stitched to the skin. During the first few months the opening was kept patent by passing a conical bougie.

November 12, 1872.—Patient thriving, and in all respects equal to children of his age; has no trouble either in retaining or passing fæces from rectum, the sphincters being in full force and action.

Case 10.—Male.‡ Raphé well defined; no anus; the bowel was reached at a depth of one inch. Six weeks later the child was doing well, and passing fæces without trouble.

Dr. Thorn has forwarded to me the results of his experience, as follows:

"I send you by this mail a copy of the *Toledo Medical and Surgical Journal*. In it I report six cases operated upon, five of which were by me, with practically four

* Mourlon, "Bull. Soc. Chir. Paris," 1873.

† Thorn, *Toledo Med. and Surg. Journ.*, vol. iv. p. 449. ‡ *Ibid.*

successes. I desire especially to call your attention to part underscored on p. 454.* So far as I know, all who survived the operation still live, and are doing well, the parts performing the functions allotted to them, the control of fæces and flatus being perfect."

Case 11.—A female child.† No trace whatever of anus, the fæces passing through the vagina. This condition had existed some time, and the child did not suffer from obstruction. On examination an opening was found between the posterior wall of the rectum and the vagina. An operation was performed by passing a curved sound through the fistula into the rectal cul-de-sac. An incision was then made in the middle line in the normal site of the anus. The rectal pouch was drawn down, opened, and stitched to the skin. For a time a portion of the fæces passed by this opening, but the quantity, always small, gradually diminished, and at the end of two months the opening had almost closed. A second operation was then performed, and it was found that a fold in the posterior wall of the rectum, occupying three-fourths of the calibre of the bowel, acted like a valve, directing the fæces through the fistula, and not through the new opening. By steady pressure backwards this obstruction gave way, and a tube, two and a half inches long, with a diameter of five-eighths of an inch, affording a complete passage for the fæces, was retained for eight weeks. During this time the recto-vaginal fistula had completely closed by granulation.

Dr. McCoy writes thus to me from Jeffersonville:

"Since replying to your first note of inquiry relating to my operation for imperforate anus, I have since learnt the locality, and made inquiry after the condition of the patient. The fæces are still discharged through the artificial opening, which, after the lapse of six years, has normal power of retention."

* Condemning the practice of drawing down the bowel and stitching it to the skin.

† McCoy, *Amer. Journ. Med. Science*, vol. lxxiv. p. 287.

In 1886, I operated on a case in Lucas Ward, St. Bartholomew's Hospital, and found the bowel three-fourths of an inch from the anus. Opening it freely gave immediate relief to a large amount of meconium. On leaving the hospital, the mother was supplied with a little vulcanite plug, shaped like the nipple of a feeding-bottle with a broad shield. She was directed to keep this in the orifice for four or five hours a day to prevent contraction.

I saw the child again when two years old. He was a plump, well-nourished looking little boy. I could pass my little finger with ease into the bowel. The mother had been most persevering with the plug, and still daily introduced it for half an hour. To this careful attention I consider the well-being of the child chiefly due.

Since describing the foregoing series of cases in the second edition of this work, I have had quite a number of operations on imperforate rectum and anus, many of them with permanently good results. The following is a good instance. A woman, admitted into President Ward, St. Bartholomew's Hospital, December 1903, was operated upon by me twenty-two years ago, a few days after her birth. The patient was a healthy-looking woman of twenty-two, with a perfectly good anus; but there had apparently been some rupture of the perinæum. This I restored, and she left the hospital with a good anus and good control.

The foregoing cases are certainly encouraging, and justify the surgeon in holding out a certain amount of hope. Nevertheless, it must be remembered that such excellent results are exceptional, and I select the cases as showing rather what *may* be accomplished than that which commonly happens. In my Table * already referred to, the mortality is terribly high, amounting to 50 per cent.

* It must be remembered that this Table was compiled for the first edition many years ago, and thus, owing to modern methods, the mortality would now be far lower

The following extract from my Table shows the mortality in the different methods of treatment adopted, together with the cause of death as ascertained by post-mortem examination :—

1.	*Colon opened in the groin .	16	died	11
2.	„ „ loin .	2	„	2
3.	Puncture	17	„	14
4.	Coccyx resected . . .	8	„	5
5.	Perinæal incision or dissection .	39	„	14
6.	Communication between rectum and vagina	14	„	1
7.	Miscellaneous . . .	4	„	3
		100		50

Of course it is not right to compare the death-rate following upon Littré's and Amussat's operation with that resulting from operations *in situ ;* for it must be remembered that in the majority of cases in which the colon was opened, the operation was only undertaken as a last resource after failing to find the bowel in the perinæum.

CAUSES OF DEATH.

1	died from	bronchitis.
1	„	convulsions.
3	„	erysipelas.
2	„	stricture of œsophagus.
10	„	unrelief.
14	„	peritonitis.
19	cause of death unrecorded.	

Failure to give relief and peritonitis figure as the cause of death in the great majority of cases.

Of the ten cases that were unrelieved, one was a case of Amussat's operation, in which the surgeon failed to find the bowel, and, in the remaining cases, either an incision or a puncture had been made without success.

* See footnote on previous page.

In three of these, a subsequent post-mortem showed that the bowel could have been easily reached by careful dissection, a puncture only having been tried, and in two other cases, in which incisions were made, a little more dissection would have found the bowel; while in the five remaining cases, from the height at which the bowel was obliterated, it is unlikely that any local operation would have proved serviceable.

Of the cases that died from peritonitis, three were subjected to Littré's operation, one was a case of Amussat's, five were cases of dissection and puncture, in one the bowel was ruptured by the finger, while in the remaining five peritonitis followed a simple puncture.

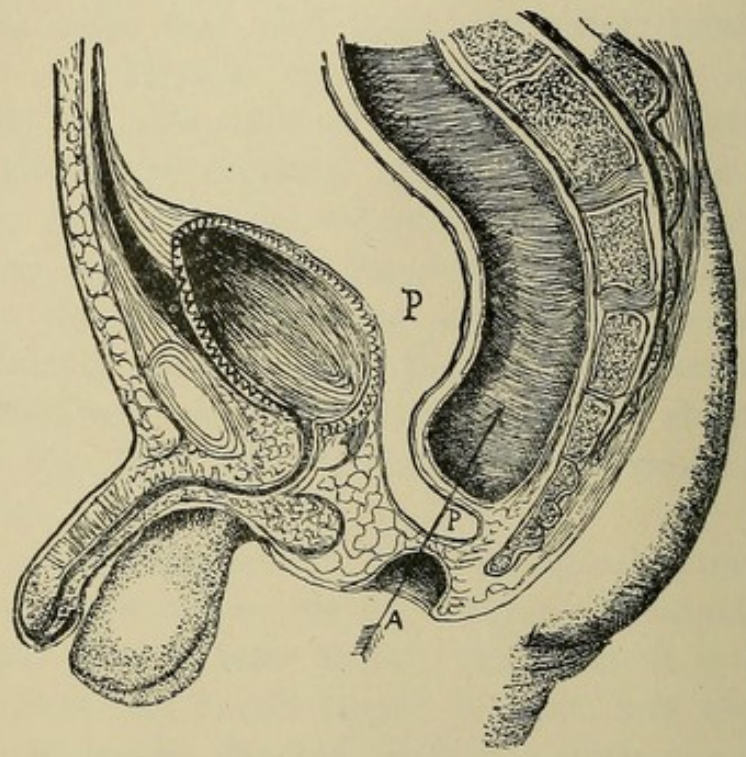
Although, perhaps, it is dangerous, as a rule, to compare the death-rate following any particular method of treatment, apart from the details surrounding each individual case, particular attention should be called to the high rate of mortality following simple punctures.

After condemnation of this unsurgical proceeding by almost every writer on the subject, it might seem unnecessary here to refer to it; but, when it is known that this treatment is still largely adopted, it is necessary to point out in the clearest possible manner the danger of this proceeding, and to explain on anatomical grounds the reason for the high rate of mortality following such a course.

In a certain number of cases the immediate result of the puncture has been successful, the trocar having entered the imperforate rectum and given relief. In a considerable number, however, a mere dry tapping results, while in others, although temporary relief is afforded, acute peritonitis rapidly supervenes.

When we examine specimens of anal malformations preserved in our museums, the mortality that follows upon these blind perforations becomes readily explained. As an example, a case which I dissected and showed

FIG. 3.



Danger of puncturing. The arrow A shows the course taken by a trocar through the peritoneal cavity P.

To face page 43.

at the Pathological Society * in 1879 may be taken. In this specimen the anus ended in a cul-de-sac three-fourths of an inch deep, while the rectum terminated in a blind extremity one inch from the anal outlet. The peritonæum continued over this bulbous extremity so as to cover its anterior two-thirds, and was then reflected over the bladder. If the finger of one hand was put into the anal cul-de-sac, while the finger of the other was placed in the rectal cul-de-sac, the fingers nearly met, being only separated by four layers of tissue—viz., the muscular coats, together with the mucous lining forming the walls of the cul-de-sacs, and a double layer of peritonæum dipping down and reflected between the two. The course taken by a trocar, if used in such a case, would be first through the anal cul-de-sac into the peritoneal cavity, and out of this again into the rectum. It will thus be seen that, if the cannula slipped, or was withdrawn, the course of the meconium would certainly be into the peritoneal cavity.

We have only to refer to our anatomical museums, and plenty of specimens will be found showing the course taken by the trocar in these punctures, and such specimens will also disclose the ease with which a trocar will fail to puncture the bowel and perforate the peritoneal cavity, notwithstanding that the termination of the dilated rectum is within easy reach.

St. Thomas's Hospital.†—Cul-de-sac of rectum about an inch from anus, which is well formed. An attempt appears to have been made to puncture the intestine, the track of the instrument being evident. From being directed too much backwards it injured, and passed between, the muscular and mucous coats.

St. Thomas's Hospital.‡—Imperforate anus in the male. Anus is perfectly formed, a puncture being made into a cul-de-sac of the rectum distant one inch. A

* "Path. Soc. Trans.", vol. xxxi. p. 112.

† Path. Museum, Specimen, No. 95. ‡ *Ibid.*, No. 89.

large mass of extravasated blood had raised the mucous membrane, protruding it into the bowel.

*Guy's Hospital.**—Imperforate anus. It had been punctured, and the trocar passed into the recto-vesical pouch as indicated by a glass rod. The rectum is less than an inch from the anus, but the trocar passed in front of it.

St. Bartholomew's Hospital.†—Well-marked anus; a quarter of an inch between it and a moderately distended rectum. A trocar during life failed to give relief, having passed by the side of the rectum and not entered it.

St. George's Hospital Museum.‡—Two specimens of imperforate rectum within easy reach, which a trocar puncture failed to find. Many similar cases are recorded in my Table.

In rare cases, such as a specimen in the *College of Surgeons*, in which a mere membranous septum occludes a bowel of otherwise normal calibre, it might be quite proper to perforate the obstruction with a narrow knife; but in the majority of cases to thrust a knife or trocar blindly through the anal cul-de-sac is a hazardous proceeding.§

Treatment. — Being convinced of the danger and frequent futility of making mere punctures with a trocar in the hope of finding the meconium, the question arises as to what should first be done. I would recommend that the infant be placed on its back in the lithotomy position, and that a careful examination of the parts should be made. It may at once be apparent that there is no trace of an anus, or, at the most, only a shallow depression. On the other hand, if the anus be perforate, the cul-de-sac may be exposed by an ear speculum. In by far the larger number of cases the cul-de-sac, if present, will terminate at a distance of half an inch to an inch from the surface. The question may here arise, as to

* Specimen, 1883.
† Specimen, No. 21.
‡ Specimen, Nos. 66 and 68, S. 9.
§ *Cf. Brit. Med. Journ.* June 1, 1892.

whether the rectum is more likely to be within reach, if the anus be completely absent, or if its cul-de-sac is well marked. Now, I think we can fairly say, with reference to this question, that the presence or absence of the anus is of no certain assistance in forming a clue as to the probable position of the blind extremity of the rectum. It has, however, already been mentioned that the cases are rather more favourable in which no anal cul-de-sac exists; for, in such circumstances, the bowel may be close beneath the skin. Whether a cul-de-sac be present or not, in the larger number of cases the blind extremity of the rectum is within an inch or an inch and a half of the anus, and is, therefore, within comparatively easy reach, and is to be sought for in the curve of the sacrum lying against that bone.

If the bowel be not immediately beneath the skin of the perinæum, the great difficulty experienced in the search to find it consists in the extreme smallness of the parts concerned, and the consequent difficulty of mechanical manipulation, and, even when found, it is difficult to make the opening sufficiently free to admit of the unrestricted flow of the meconium.

If the bowel terminates immediately beneath the skin, it will suffice to make a longitudinal incision sufficiently free to admit of a moderate-sized little finger. If, on the other hand, there is no indication of the immediate presence of the bowel, the incision may be carried back to the tip of the coccyx, or, when the anal cul-de-sac is present, a probe-pointed knife should be introduced to the bottom, and the intervening tissues between it and the tip of the coccyx divided, care being taken to cut as nearly as possible in the middle line to avoid hæmorrhage.

I have frequently adopted this plan, when operating for rectal cancer in the adult, and it is surprising the extent to which the parts are unfolded, and room gained for manipulation. After this incision, bleeding vessels should be at once tied. The bowel may now be

carefully sought for, by continuing the dissection slowly upwards in the middle line, while I have found the dissection considerably facilitated by holding the sides of the incision apart by artery forceps, the part being frequently examined, both with the eye and finger, for indication of the bulging bowel. It must be remembered that the termination of the gut nearly always lies in the hollow of the sacrum, so that the dissection should be kept close to this bone, which thus serves as a guide. As already stated, there is great hope that, by such a dissection, the bowel will be found within an inch or an inch and a half of the surface.

Opinions are divided whether an attempt should be made to draw the bowel down after its exposure, and, when opened, to stitch its mucous edges to the cutaneous wound, or, whether the surgeon should be content, after freely incising it, and giving exit to the meconium, to leave it *in situ*. Many operators, especially of the French school, believe that the tendency to contraction of the newly formed anus is much lessened by the mucous lining of the new channel being continued to the surface. Doubtless this is true to some extent, but if the bowel be any distance from the outlet, not only is it impracticable to draw it down, but, even if this be accomplished, the sutures uniting it to the skin ulcerate through, and the bowel again retracts. On the other hand, if the bowel can be drawn down without undue tension, it should be fixed to the skin. In this way the extent of raw surface is diminished, and the subsequent cicatrix more easily dilatable.

We will now suppose that the section has been carried to a depth of an inch and a half or two inches without finding the bowel. The question then arises as to whether search should still be continued, and, if not, what should be done. Verneuil* advocates resection of the coccyx as giving increased room for exploration. His two

* "Bull. Soc. Chir. Paris," 1878.

cases were certainly very encouraging, for, after failing by the ordinary incision and dissection, he succeeded by resection in finding the bowel and successfully establishing an outlet.

I, too, have now had an opportunity of practising this manœuvre, and have succeeded in finding the bowel —which would otherwise have been impracticable. The operation is performed by carrying the incision back to the tip of the coccyx, then detaching the soft parts from the bone which is cut across with a pair of curved scissors. By careful dissection *in situ* the operator seldom fails to find the bowel. In fifteen cases I only once failed to do so. Should the bowel not be found *in situ*, an inguinal colotomy should be performed.

Some difference of opinion has arisen among surgeons as to whether the opening should be in the right or left side. Some good authorities have advised the operation on the right side, owing to the frequency with which the sigmoid flexure (the part which it is desired to be opened) is curled over in this direction. Every anatomist is aware that this is frequently the case; nevertheless, I am sure that such a disposition should be regarded as exceptional, and the operator is more likely to open the sigmoid flexure on the left than on the right side.*

It has occasionally happened, after an operation has been successfully performed in the groin, that the idea of establishing an outlet in the normal situation has been entertained. The scheme consists in passing a bougie or catheter by the groin opening into the cul-de sac of the bowel below, and if this can be pressed down in the pelvis, to cut down upon it from the perinæum. If after exploration it can be ascertained that the bowel can be made to descend within a short distance of the perinæum, such an operation may be justifiable. On the other hand, if reference be made to Mr. Owen's paper,†

* Full details of my method of operating will be found in Chapter XXI.

† "Harveian Lectures," 1879.

it will be seen that in two cases in which this attempt was made death resulted. In one of these cases the bowel could be readily pushed down, so that, with one finger in the anal cul-de-sac and another passed into the rectum by the groin, a very thin layer of tissue appeared to intervene. This was perforated and an opening established, but the child died of acute peritonitis. At the post-mortem the upper cul-de-sac was found ensheathed in peritoneum.

In the female, when the bowel communicates with the posterior wall of the vagina, the prognosis is favourable, not only as regards risk to life, but as to the probability of effecting a complete cure. Provided the fistulous communication be of sufficient extent to allow a free passage, there is no necessity for an immediate operation, which may be advantageously deferred for a few months, when the parts will be relatively much larger.

It is not generally desirable to delay operation for a longer period, since the necessary treatment for maintaining the patency of the new anus is more easily carried out in an infant than in an older child. The operation which has given the most satisfactory results is performed as follows:—The infant being placed in the lithotomy position, a strong bent probe is passed through the fistulous opening, and made to project towards the perinæum in the natural site of the anus. Sometimes it is found that the rectum terminates in a cul-de-sac just beneath the skin, but more commonly the fistulous opening in the vagina represents the actual termination of the rectum, fibrous tissue occupying the parts between it and the cutaneous surface. In the former case the operation is easy, but in the latter a careful and prolonged dissection is necessary.

The fistula in the recto-vaginal septum can either be left to itself for a while, to be closed by a subsequent operation, or the whole operation may be completed at once. If the communication be small, and a free

outlet be established in the proper position, the fistula will often close of itself. If, however, it fails to do so, the edges may be pared, and brought together by sutures.

The subsequent treatment of cases of imperforation is of the utmost importance, great care and trouble being required to maintain the opening when made. There can be no doubt that, in a large number of cases, the difficulty results from insufficiency of the original opening, or, if any considerable extent of tissue intervene between the skin and the bowel, the tendency of this portion of the canal to contract may cause an opening which was at one time sufficiently large to become too small for the passage of fæcal material. It is not necessary again to discuss whether the tendency to contract can be prevented by stitching the margin of the bowel to the skin at the time of the operation. No better means is known of overcoming this tendency to contract than by the frequent use of a bougie. This should be made of vulcanite, tapering slightly, and of about the size of a No. 18 English catheter. For the first few months it should be passed daily; its use may be then gradually reduced to once a week, or even less, but this should be continued so long as there is any tendency to contraction. In the event of the bougie having been neglected, or the outlet having become too small for evacuation, the strictured part should be divided by free posterior incision.

The constant attention necessary to maintain the patency of the opening is exceedingly trying to the mother or attendant of the child, but this perseverance may be well repaid, for it would seem that even in bad cases, as the child grows, the tendency of the opening to contract gradually lessens, and may at length entirely disappear.

I have had the following very puzzling case of imperforate anus under my care. An infant, six weeks old, was brought to the hospital for a tumour that had appeared a week previously. On examination, I found

a bright red swelling, the size of a walnut, projecting between the labia. The swelling appeared to contain fluid. On closer examination, the swelling proved to be the bladder turned completely inside out, and the fluid behind collected in a dilated ureter. After a little search, the orifices of the ureters were found. Upon passing a probe into one of these, half an ounce of urine jetted out, and the tumour collapsed into an empty bag. By means of two probes, I pushed the whole of this everted bladder back again through the urinary meatus. It was then discovered that the anus was nearly imperforate, the aperture only admitting a small probe. Small quantities of liquid fæces had come through this, and no doubt the constant straining efforts of the child had been the cause of the extrusion of the bladder. I enlarged the anal outlet, since which time there has been no further prolapse of the bladder.

For further information upon the subject of rectal malformation the reader is referred to the admirable paper of Curling* in the Medical and Chirurgical Society's Transactions, also C. B. Ball† has written clearly on this subject, while in Bodenhamer's‡ classical work he will find the whole subject completely reviewed.

* "Med. Chir. Soc. Trans.," vol. xliii. p. 270.

† C. B. Ball, 2nd ed. p. 20.

‡ "Treatise on the Pathology and Treatment of Congenital Malformations of Rectum and Anus," by W. Bodenhamer, New York, 1860.

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CHAPTER IV

HÆMORRHOIDS

Hæmorrhoids, or Piles, have occupied the attention of authors from the earliest records of surgical history, for, not only is the disease one of the most common afflictions, but it causes pain and annoyance out of all proportion to the apparent magnitude of the disorder. It spares neither age nor sex, and from it no class can be said to be entirely free. It is, however, proportionately more frequent in the upper classes, and it must be regarded as one of the penalties attending too luxurious or sedentary a life. The active do not necessarily escape, for I have frequently seen the disorder in hard-riding hunting men, and in those who take other vigorous forms of exercise. So common, indeed, is some form of hæmorrhoidal disorder, that few altogether escape slight trouble from this cause during some period of their life, but many of these so-called transient attacks of piles are, I suspect, not really hæmorrhoidal at all, but owe their symptoms to the œdema and inflammation attendant on some excoriation or fissure.

Hæmorrhoids are divided into two classes—

(1) External hæmorrhoids,

(2) Internal hæmorrhoids;

a classification that has stood the test of time, for it is of great practical value. Piles are called external, when they affect the muco-cutaneous surface of the anal margin, and are outside the external sphincter. They are called internal, when the disease commences

in the mucous membrane of the bowel within the sphincter. Certainly it often happens that internal piles of long standing become habitually extruded beyond the sphincter, and can be seen surrounding the anal outlet. Nevertheless, they are still internal piles in the clinical nomenclature, since they originate within the bowel, their protrusion being merely accidental.

Both forms of piles are frequently associated, and it may happen at times that there is a well-marked narrow line or sulcus between the two, but sometimes the line of separation is indefinite, the swelling extending in direct continuity from the one to the other, so that a tumour will be seen, the outer surface of which is covered by skin, the inner by mucous membrane. The difference in colour between the two forms of piles is well marked, the rose-red opaque tint of the external pile contrasting strongly with the shining vascular surface, either red or claret-coloured, of the internal. The external pile, being covered by a true skin, has a somewhat rough, dry feel, while the internal is soft and velvety in texture, similar to the mucous membrane. An exception to this rule must be made in some cases of old prolapsed internal piles, for here their covering becomes dry and thickened, having more the appearance of skin than mucous membrane.

In an earlier part of this work the anatomy of the rectal blood-vessels has been duly considered, but I may here repeat that the arteries in the lower part of the rectum running in a longitudinal direction beneath the mucous membrane terminate in capillaries, from which the veins take their origin. These veins commence in a plexus round the lower half-inch of the rectum, emerging from which plexus, they run upwards by four or five main trunks, eventually merging into the inferior mesenteric, thus forming part of the portal circulation. It is in morbid states of these terminal blood-vessels that the hæmorrhoidal condition originates.

Etiology of Piles.—Some authors regard this disease as often of an hereditary nature. Without for a moment believing that the actual piles are inherited, I think it not unlikely that such predisposing causes as a weak or deficient sphincter muscle, abnormal thinness or delicacy of the skin and mucous membrane, or even deficiency in thickness in the coats of the vessels, may be a transmitted tendency, increasing the liability to piles. The fact that human beings affect a standing or sitting position so constantly is doubtless one of the predisposing causes of dilatation in the rectal veins. These veins were not designed by Nature to stand the pressure of a long column of blood, and were meant to be in the uppermost part of the body. And if we went about like a monkey with this part of the body stuck up in the air as intended by Nature, the rectal veins would be relieved of all pressure.

Regarding as I do this want of proper support to the terminal veins as the chief predisposing cause of their abnormal development, let us consider some of the conditions under which such natural deficiency may become transformed into actual disease.

When subjected to undue pressure from within, veins, if unsupported, will gradually dilate, and this dilatation does not merely affect their calibre, but actually gives them an increased length, causing them to become curled and convoluted. This phenomenon is readily observed in the varicosities of the saphenous vein, for here may sometimes be seen a vein which, from long-continued internal pressure, has become so coiled and convoluted that, if stretched out, it will measure several times its original length.

As with the veins of the leg, so it is with those of the rectum, for they too become lengthened and convoluted under continuous pressure from within. It thus comes to pass that the normal small venous plexus that naturally exists around the anal margin, just within

the bowel, becomes distended and tortuous. Another effect of intra-venous pressure about the rectum is to cause minute vessels, or even capillaries, to develop into thin-walled vessels or cavernous spaces of considerable size.

In piles, it is not the veins alone that undergo this hypertrophy, for it often happens that the arteries also have an abnormally large diameter. The enlargement of the arteries is probably secondary to the venous dilatation. This secondary dilatation of arteries which throw their blood more or less directly into dilated veins has not received much attention at the hands of pathologists. Nevertheless, it is a noticeable fact, and is especially well illustrated in aneurysmal varices about the scalp. In one such instance I have seen the anterior branch of the temporal artery feeding one of these tumours dilated to the size of the radial.

In old-standing cases of piles, both the mucous membrane covering their surface, and the connective tissue in their interior, share in the general hypertrophy, thus producing more or less of a firm and permanent tumour. The abnormal pressure within the hæmorrhoidal veins may be traced to several distinct causes. Obstruction of the circulation, either through the heart, lungs, or liver, will cause such pressure, and, for this reason, piles frequently form a complication both in cirrhosis of the liver and obstructions to the venous system situated in the chest cavity; consequently, at times piles are but a symptom arising in heart disease, or even in diseases of the lungs when the flow of blood through them is obstructed. A constantly overloaded colon, abdominal or pelvic tumours, obstructing the return of blood by pressure on the mesenteric veins, has the same effect. A gravid uterus thus frequently becomes the original cause of hæmorrhoidal distension. But here I must pause for a moment to say that abdominal tumours giving rise to piles do so by compression of the mesenterics,

or some portion of the portal circulation, and that interference in the circulation through the iliac veins plays little part in causing hæmorrhoidal dilatation. The veins in cases of obstruction gradually dilate from what may be called passive pressure; that is, the blood cannot pass away from the veins as rapidly as they are filled from the arteries. If the obstruction be only of a temporary nature, such as that resulting from pregnancy, the veins may recover their normal calibre when the cause is removed.

Displacement of the uterus unconnected with pregnancy is possibly a cause of piles, for such displacements, exercising an undue pressure on the rectal wall, lead in time to dilatation of the venous system below. A rectum kept abnormally and unnecessarily dilated is another source of hæmorrhoidal trouble. Those who do not carefully attend to the calls of Nature should remember how important a part habit plays in physiological action. A few weeks or months of negligence in this respect will lead to such irregularity of defæcation that it may only take place after intervals of several days. Accumulations thus produced in the lower bowel lead to injurious pressure on the venous system.

Duly bearing in mind such passive causes as have already been enumerated, there will still remain many cases of piles which appear to owe their origin to some more active dilatation of the veins.

The rectal and anal plexuses being deficient in valves, any pressure on the blood in the veins of the pelvis and abdomen by the action of the abdominal muscles will be directly transmitted to them, for the pressure of a fluid is equal in all directions. Let us consider how differently this pressure will act as regards the internal abdominal veins and those about the anal outlet. In the one case, the veins of the abdomen and pelvis are subjected to an external pressure from the squeezing of their walls by the abdominal viscera; but, in the

other, the terminal veins of the rectum and anus being outside the abdominal cavity, and therefore removed from the compressing force, are affected in an exactly opposite direction, being dilated by internal blood pressure. This dilatation of the hæmorrhoidal plexus by pressure of the abdominal muscles can be readily demonstrated by telling a patient to strain while the piles are prolapsed, when they can be at once seen to swell up from venous engorgement. In a healthy rectum, undue dilatation is prevented by the action of the sphincter muscles, but if these be weak, or the veins protruded beyond their influence, there is nothing to counteract the dilating force, which, if frequently applied, will ultimately cause the permanent varicosity of the veins.

In the foregoing facts we have a ready explanation as to why piles so frequently complicate enlarged prostate, stricture of the urethra, phimosis, &c., and, above all, we are able to understand how prolonged and violent straining at stool may become a cause of hæmorrhoidal disorder.

Some persons are in the habit of taking purgative medicine for the relief of supposed constipation. It is quite astonishing the amount of pills and nauseous mixtures which are sometimes habitually consumed to relieve a torpid bowel. Such persons, too, concentrate a morbid amount of attention to the action of their bowels, and will often sit with a newspaper in their hands for considerable periods in a closet, with frequent straining to complete a motion. Nothing can be so injurious, or more certainly tend to hæmorrhoidal prolapse, than such a procedure. At these times the sphincter is partly or completely relaxed, while the veins and mucous membrane, engorged with blood from abdominal pressure, are forced downwards in a distended condition. Considerable and permanent prolapse is thus gradually established.

An explanation given by Niemeyer * as to why hæmor-

* "Practical Medicine," vol. i. p. 586 (1871).

rhoids should frequently affect those who habitually exceed in eating and drinking is, that during digestion there is an increased flow of fluids from the intestines into the intestinal veins. It is known that the engorgement of the portal vein from this cause obstructs the escape of blood from the splenic vein, and consequently the spleen enlarges every time that digestion goes on. It will follow from this, that from excess in eating and drinking the fulness of the portal veins is increased and more permanent, and that, consequently, other veins which open into the portal system may dilate, and from repeated engorgement become permanently enlarged.

External Hæmorrhoids.—All swellings about the anal orifice are commonly designated by this term. It is, however, most necessary to recognise the varieties of external piles as having a very important bearing on their treatment. I propose to make the following three divisions :—

(1) Thrombotic pile, dependent on an inflamed or ruptured vein.

(2) Œdematous pile, due to a swollen and inflamed condition of one or more of the normal muco-cutaneous folds.

(3) Cutaneous pile, due to flaps and tags of skin consisting of permanently hypertrophied folds of integument.

In a strict sense, the two latter divisions are not hæmorrhoidal at all. Nevertheless, they form such a common clinical feature, and are so universally spoken of as hæmorrhoids by practitioners, that I prefer to consider them under the old appellation.

Thrombotic Pile.—Simple dilatation of the anal plexus is no abnormal condition, and always takes place to a greater or less extent in every act of defæcation or straining. In any operating theatre it may be constantly observed, in patients in the lithotomy position, that, when straining to vomit, a dark ring of dilated

veins becomes visible around the anus, which quickly disappears upon cessation of the straining effort. Of course, this external plexus may become permanently dilated, but I do not think that it ever does so without the internal plexus being similarly affected, in which case it forms but a complication to internal piles. It sometimes happens that whilst straining at stool the patient will feel a slight sudden pricking sensation, and observe soon afterwards a small lump at the anal margin, which is seldom bigger than a good-sized currant. It is often very hard, indeed almost like a foreign body beneath the muco-cutaneous surface. Sometimes this little tumour will quickly disappear; at others it will remain a long time without giving trouble. Occasionally, however, it will be followed by much swelling and inflammation, or even lead to the formation of a small abscess. If the little tumour be examined, it will be found to be covered by slightly reddened true skin; or, if situated nearer the verge of the mucous membrane, it shows a dark-blue colour through the thin muco-cutaneous integument. Pressure does not cause it to disappear. At first it is not very painful, but it may subsequently become so. It may be observed, upon incising one of these little swellings, that it is a clot of blood chiefly contained within a smooth walled cavity, doubtless a dilated venous pouch. The cause of this coagulation within the vein in those instances in which it occurs suddenly appears to be due to a partial laceration of its coats, and occasionally the rupture is complete, and blood is extravasated to a small extent into the surrounding subcutaneous tissue.

These ruptures are caused by direct straining, or straining combined with the pressure of a hard mass of fæces.

I was once consulted by a young man in whom the symptoms appeared after a jumping contest, and in his case it was the result of a sudden intra-venous pressure

caused by the violent contraction of the abdominal muscles in the act of springing. These little ruptures are liable to recur, and often produce a certain amount of irritation, leading to hypertrophy of the anal fold in which they are situated, thus forming one of the causes of the third variety of external piles, to be presently described.

Apart from the little tumour which occurs suddenly after straining, a thrombus will often form within a dilated venous pouch, and is really secondary to some inflammation spreading from a crack or fissure in the muco-cutaneous surface.

Œdematous Pile. — The second variety forms a considerable proportion of what is commonly called an "attack of the piles." Such attacks vary greatly in degree. In slight cases the patient complains of little more than irritation of the part, while in others, especially if the inflammation extend to the venous plexus, acute pain may be experienced, with considerable constitutional disturbance. I will consider the slighter cases first, for in these will be found the explanation of the severer forms.

A patient will present himself complaining that he "has got the piles." We shall find, upon questioning him, that the trouble commenced a day or two previously with a sense of irritation and heat in the part. The irritation has now passed on to a sensation of actual pain, especially on attempting to pass a motion. He will also be conscious of a swelling or fulness about the rectum, and it will generally be found, upon further inquiry, that he has had such attacks before, but that they have usually passed off in a few days, leaving no permanent trouble.

In the slight case I am now considering there will be no constitutional disturbance. Upon examining the part, a small swelling may be seen, perhaps the size of a filbert at the anal margin, and upon further investigation

it can be clearly observed that the swelling consists of a fold of the muco-cutaneous surface in an inflamed and œdematous condition. Upon touching this fold it is perhaps tender, but does not feel hard, as in cases where a blood-clot has formed.

If we now gently evert this fold, so as to expose its mucous aspect, there will frequently be found just at the junction of the skin and the mucous membrane, a little superficial excoriation or crack.

If, as not infrequently happens, there be two swollen folds at the anal margin, then the fissure or excoriation will generally be found at the bottom of the sulci, between the two. If the broken surface be touched by the finger, it is very painful.

Now, I believe in this crack or excoriation we have the key to the whole class of external piles which I am describing, and that the swelling or swellings at the anal margin are simply secondary to a slight inflammation started at the excoriated surface, the condition being exactly analogous to the swelling and œdema that are so often observed in the loose cellular tissue of the eyelid after slight cuts or injuries in its neighbourhood.

If patients be in good health, the lesion quickly heals, and with it disappears the "external pile." It occasionally happens that the attack is much more severe, not only in its local manifestation, but by causing considerable constitutional disturbance. The general condition of the patient's health doubtless to some extent determines the severity of the inflammation, and here it may be noticed, as in other parts of the body, that a slight injury, that scarcely causes any trouble in the healthy, gives rise to extensive local inflammation in a constitution saturated with alcohol, or in other ways impaired. How often, for example, do we find that a small abrasion of the skin which in the healthy gives no trouble at all, will, in a brewer's drayman, or free liver, be followed by swelling and inflammation of the whole limb!

In such cases the pulse may be increased in frequency, the temperature raised, the mucous membrane of the mouth and tongue dry, while headache and want of sleep often complete the febrile symptoms. If the inflammation be considerable, the pain may be so great as to prevent defæcation, notwithstanding a teasing sensation that the bowels require relief. There is often a desire to strain, which, if indulged in, only aggravates the pain; and it is surprising how so small a localised disorder will sometimes incapacitate a strong man for days.

If the anus be examined during one of these attacks, one or two swellings will be seen, perhaps as large as a walnut, at the anal margin. At other times the whole anus is surrounded by a ring of swollen œdematous tissue, the thickness of the finger, drawn here and there into sulci. The swellings are situated in the loose folds of thin skin at the muco-cutaneous margin. If the swelling be excessive the mucous membrane itself may be involved in the œdema, and will be partly everted from the rectum. The swellings are often red and shining, and the part is so tender that the patient can scarcely allow himself to be touched. The swellings are larger in those who have long been liable to such attacks, for in these cases the anal folds are generally thick and hypertrophied, their swelling therefore when inflamed being proportionately greater.

Of course, when the inflammation is extensive, it is very probable that it will lead to secondary thrombosis in some portion of the superficial plexus, or the case may be complicated by internal piles.

Cutaneous Pile.—The third variety of external pile is a condition in which around the anus are found one or more tags or flaps of skin. Sometimes these appear to be little more than enlargements of the normal anal folds. In other cases they form thin flaps of considerable size, and are often pedunculated. If removed

from the body and examined, they will be found to consist of a thickened muco-cutaneous surface with an interior, consisting of fibrous tissue, and some atrophied blood-vessels. I have no doubt whatever that these hypertrophied tags were originally the result of some chronic œdematous or inflamed condition of the anal folds.

They remain, in fact, as a permanent legacy after frequent attacks of swelling of the folds as already described. These hypertrophied folds are especially common in those who suffer from rectal stricture, ulceration, or other chronic disorders of the part. Such tags and folds look innocent enough when in a quiescent state, but when inflammation affects the part they swell up, quickly assuming an angry and formidable aspect.

From the foregoing remarks it will be seen that external piles are commonly but a symptom of some other disorder, but if we except all cases of internal piles, ulceration, stricture, &c., there will still remain a large number of cases in which the chief trouble arises from the swollen, inflamed condition of the folds, so that they form at least as essential a part of the disease as does the trivial lesion from which their condition originated.

The attacks are very liable to follow some error in diet. "A little dinner" at the club or in the City may often be traced as the starting-point of the trouble. It is very difficult to lay down any absolute rule as to what is meant by excess. The action of alcohol differs much in individuals, and is especially noticeable as regards its effects on the mucous membrane. Some habitually drink one or two bottles of wine daily at dinner without apparent detriment. Such individuals will wake in the morning with a moist, clean tongue, perfectly fresh for their day's work. In others, on the other hand, after only a glass or two, a restless night will ensue, the mucous membrane of the mouth, tongue, and fauces will be dry, as if the normal secretion had been arrested

or diminished. I believe that this condition of the mucous membrane of the mouth is but an indication of what is prevalent to a greater or less extent in other parts of the alimentary tract. At least it would certainly seem so as far as the colon and rectum are concerned, for there is generally constipation, showing a want of moisture about the lower bowel.

In these circumstances, too, the mucoid glands about the anus have a deficient secretion, the parts being thus rendered abnormally dry. In this condition, when a hard and constipated motion is forced through the part, the anal folds are liable to be cracked and excoriated, just as the muco-cutaneous membrane of the lips will readily crack when dry. The irritation of such cracks and excoriations leads to the secondary swelling of the neighbouring folds.

The **treatment of external piles** is generally a very simple matter, seldom demanding operative interference, which should be avoided if possible. Wounds in the muco-cutaneous surface do not heal so readily as on the mucous membrane, and are apt without care to degenerate into an ulcer difficult to heal. If the pile consist of the first variety—that is, a little hard lump of clotted blood forming a tumour in one of the anal folds—it will generally disappear without causing trouble if the bowels be kept gently opened and the parts made supple by the application of a simple ointment (ten grains of calomel to the ounce of vaseline). If, however, the swelling becomes very painful, and the part inflamed, immediate relief can be given by transfixing the little tumour with a sharp knife, and enucleating the contained clot, the part being subsequently treated with a warm compress. The second and most common variety of external pile—that is, where there is a slight inflammatory condition affecting one or two of the anal folds secondary to some superficial crack or excoriation—can be quickly cured by keeping the motion soft for a few days by any of

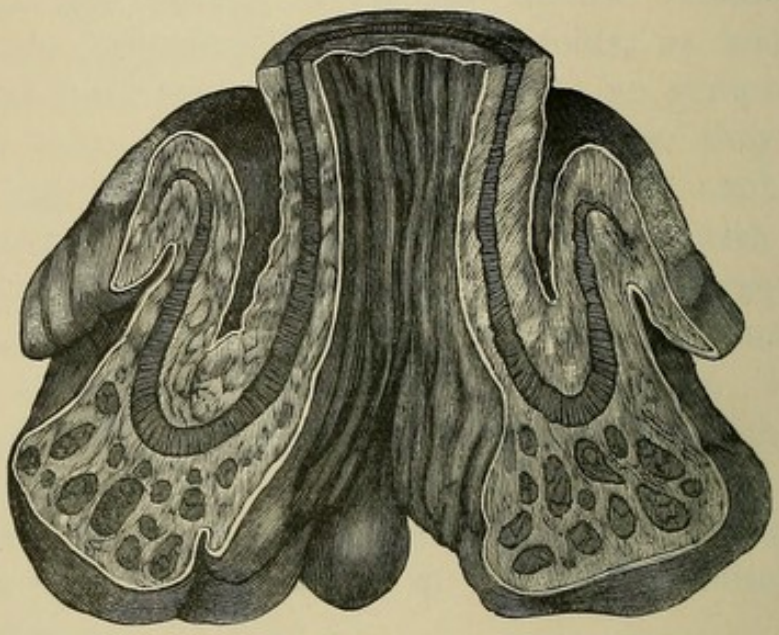
the prescriptions recommended on page 81, while the red oxide of mercury ointment, two drachms to the ounce of vaseline, or the subsulphate of iron ointment (gr. xv to ℥j) acts admirably as a local application. The parts should be thoroughly bathed with lukewarm soft water, night and morning, after which the ointment should be applied. Should, however, the inflammation be considerable, or complicated by internal piles, the treatment advocated on page 78 must be adopted.

In the last variety, where the disease consists of permanently hypertrophied tags and folds, so long as they cause little trouble and give rise to no symptoms, they had better be left alone; if, however, they are painful, and liable to become inflamed, they ought to be removed. This should always be done with the knife or scissors, and not with the ligature, and requires some care in its performance, for if too much be removed the part is liable to become unduly contracted. I am in the habit of cutting off all excrescences which are at all pedunculated. Otherwise I cut off half or two-thirds of each prominent projection, which is quite sufficient, for the cicatrisation of the wound obliterates the remainder.

If external piles be complicated with internal, the former may be snipped off at the same time that the latter are tied. When the external tumours are large and continuous with the internal pile, it is a good plan partly to dissect back their muco-cutaneous covering, and then, after cutting a deep groove, they may be included in the ligature.

Internal Hæmorrhoids.—This form of disease is of a graver nature than the external variety, with which, however, it is frequently complicated. Internal hæmorrhoids are the result of a morbid condition of the blood-vessels, terminating in and beneath the mucous coat. The terminal venous plexus is normally situated just within the anus—that is to say, immediately above the

FIG. 4.



Hæmorrhoids complicated by "prolapse" (see p. 65, line 5), —From a specimen in St. Bartholomew's Hospital Museum.

To face page 65.

junction of the mucous membrane with the skin. In hæmorrhoidal disease, especially of long standing, the dilated plexus may extend considerably higher up the mucous membrane, which in itself has more or less a tendency to prolapse.

Two well-marked varieties of internal piles may be recognised. The type of the one (the capillary hæmorrhoid), consists of a vascular area of small vessels, situated superficially in the mucous coat; the type of the other (the venous hæmorrhoid) consists of a varicosity of several large veins in the sub-mucous tissue, forming considerable tumours, covered by mucous membrane. It must not be understood that there is always a well-marked distinction between these two varieties, but it is sufficiently common to admit of frequent recognition.

It might be supposed that these forms were but different stages of the same disease. They probably are so to a limited extent, and a condition which was originally disclosed as a superficial vascular area, may in time be complicated by a varicosity of the deeper veins. Nevertheless, it will often be found that the pile consists of large varicose veins, without undue vascularity on the surface of the membrane, while, on the other hand, a superficial bleeding patch of vascular tissue may exist for years, without abnormal dilatation of the deeper vessels.

In long-standing cases, and as the result of repeated inflammations, the disease is something more than a mere dilatation of the vessels; for, partly by the obliteration of some venous canals, the thickening of the walls of others, and by hypertrophy of the intervening fibrous tissue, tumours are formed, containing a considerable quantity of solid material, the mucous membrane over the surface of which partakes of the general hypertrophy becoming thickened and tough.

Internal piles are liable to inflammation, or even gangrene, conditions to be presently described; but,

apart from these accidental complications, they are often the source of much ill-health, and even danger to life. This arises from a tendency to bleed—a tendency bearing no proportion to the extent of the local disease ; indeed, I have seen it more persistent and severe from a small patch of vascular membrane, than in other cases where the whole circumference of the bowel has been involved in hæmorrhoidal dilatation.

When straining at stool, or even from the irritation of the passage of a fæcal mass, the bleeding commences. It may be so slight in amount as to be only noticeable as smudges on the paper, or it may be sufficient to cause a dripping for several minutes, while it occasionally escapes in little jets, sprinkling the pan with minute drops.

It is a matter of some interest to consider the source of this bleeding. The fact of the blood escaping in jets has led many high authorities * to regard it as arising from some arterial twig. With due deference to such eminent authorities as Brodie and Van Buren, I am of opinion that they are mistaken, and I do not believe that it ever comes from the arteries, but that the jet is caused by its being forced as a regurgitant stream through a small rupture in a vein by the powerful pressure of the abdominal muscles. If it really came from an artery, why should the jet only appear when the abdominal muscles act ?

Undoubtedly in numerous instances the hæmorrhage is of the nature of an oozing from soft vascular patches of the mucous membrane, for it often happens when examining these cases that even the friction of the finger will immediately cause blood to exude. In some instances, however, this bleeding arises from an actual opening through the mucous membrane into a vein. In a patient at St. Bartholomew's Hospital, who was

* " Brodie's Lectures," vol. iii. p. 561. Van Buren, " Diseases of Rectum," p. 31.

reduced almost to death's door by a hæmorrhage that had existed for months, I observed on examining the part that at the summit of one of the piles there was a little adherent clot of blood, on removing which I could distinctly observe a small circular opening readily admitting a fine probe into a venous channel. I remember another instance of a somewhat similar kind. A patient had had bleeding for some days accompanied by a slight pain, and a small swelling in the anal neighbourhood. The bleeding was pretty free, and came on each time upon straining. On examination I found a little swelling beneath the muco-cutaneous surface, on the summit of which was a small blood clot. On wiping this away, a small orifice could be seen from which blood at once commenced to ooze. When the patient strained the oozing was immediately changed to a fine jet. I placed a little pellet of cotton-wool soaked in subsulphate of iron solution over the bleeding orifice, keeping it in place with a larger pad retained by the perinæal band, the bleeding at once ceased, and the patient never had any return of it. Van Buren * also mentions the case of a young lady who had suffered from severe hæmorrhage from the bowel. On examination he found a well-marked venous pouch, in which a round hole, as though made by a punch, could be seen leading into a vein.

Loss of blood, if only occasional and limited in amount, causes no trouble, but its deleterious influence becomes evident when the bleeding is persistent or large in quantity. The amount lost daily may be small. Yet if long continued it becomes a common though unsuspected cause of ill-health. This appears to be specially the case in young men actively engaged in business or professional careers. Working, as is often the case, fully up to the level of their physical capacity, any extra drain on the vital resources is quickly reflected in their mental and physical condition.

* "Diseases of the Rectum," New York, 1880.

Without a patient having any obvious or tangible disease, or, indeed, really feeling ill, he may be in a state best described as that of never feeling really well. There is all the difference between merely living, and having a sufficient superfluity of vigour to enjoy life; but yet this difference may be brought about by a very small deficiency in physical health. To wake in the morning with an increasing desire to sleep, to find the bath only tolerable by the addition of hot water, to be worried by every letter, and irritable with one's friends, to feel abnormally busy, but yet accomplishing little work—in fact, only to be in tolerable spirits after dinner and champagne, can scarcely be said to conduce to a pleasant life. Nevertheless, all such symptoms may depend on bleeding hæmorrhoids, as in the following case:—

Mr. B., clergyman, aged thirty-four, consulted me for piles. He had been troubled more or less for twelve years. At times, for many weeks together there was a dripping of blood after the morning motions; this dripping would sometimes last for nearly an hour. At other times bleeding, though not lasting nearly so long, would be even freer, escaping in little jets on straining at stool. Occasionally he would suffer pain in the parts, which pain would seem to depend upon atmospheric changes more than any other cause. Occasionally the piles would "come down," but not to any great extent, and could easily be replaced. On the whole, however, by far the most troublesome symptom was the hæmorrhage. For the last two or three years, during which time it had been more frequent, it had affected his general health. From being an active, energetic man he had a disinclination to much physical exertion, and often felt tired and weary after a walk, which he would have considered nothing a few years before. He also had some mental depression, feeling worried and irritable from slight causes, at times feeling unable to perform his official duties. When I saw the patient he had a somewhat

anæmic appearance, the bleeding having been very free the previous week. There was no albuminuria, nor could I detect any other cause, excepting the hæmorrhage, to account for his anæmic condition. By gently separating the sides of the anus, and directing the patient to bear down, the cause of his trouble at once became apparent. Upon a prominent and somewhat prolapsed fold were three distinct vascular bunches, looking almost like papillomata. The area of vascular mucous membrane converted into this papillary condition, was in each case about the size of a sixpence. The diseased part was of a very bright red colour, clearly distinguishable from the healthy mucous membrane at its margins. One of these tufts commenced to bleed directly it was touched by the finger, but all the bowel beyond was perfectly healthy.

Under ether, administered by my friend Mr. Cumberbatch, I tied the piles. With the exception of some slight trouble about passing the water, requiring the use of the catheter for a day or two, the patient made a rapid recovery, and returned to the country in a fortnight. Since the date of operation he has not had the slightest trouble of any kind with the rectum. Within a few months of the operation he completely regained his former strength, and is now as strong and healthy a man as he has ever been in his life.

In severe cases the loss of blood may be more obviously disastrous; the patient's complexion becomes tallowy, and the lips blanched; while there is breathlessness and palpitation upon the slightest exertion. In some the anæmia may become so extreme as actually to threaten life.

As an illustration I will mention the following case:—

E. G., aged thirty-three, was under the care of my colleague, Mr. Langton, in Sitwell Ward, and owing to his kindness I was able to examine and watch the case. It proved to be an admirable example of the extreme

danger to which a patient may be rapidly reduced by hæmorrhoidal bleeding, and the beneficial results of treatment. The patient was thirty-three years of age, and had been married for fifteen years. She had always been in good health, and had no trouble with the rectum till five months ago. She then noticed one day for the first time that a little blood followed her motion. This recurred daily, the blood lost being in gradually increasing quantities. Lately it had amounted to "two or three tablespoonfuls" after each motion. She had no bleeding at any other times. She stated that five months previously she was fat and rosy. At the time of her admission she was fairly stout, but her whole body had a deadly waxy pallor, the lips being white and completely bloodless. The deadly white of the hands was only relieved by a slight dusky tinge under the nails. She could not take the slightest exertion without great breathlessness, and was quite unable to walk. Her voice was little more than a whisper; indeed, her general condition was such that it would appear that a fatal syncope might at any time come on. An examination was made. Directly the anal folds were separated, and the rectum exposed by the fingers, blood commenced to drip from the anus. This blood was extremely thin and watery, and seemed to have very little coagulating power. There was only a moderate prolapse of the mucous membrane. At one point blood could be seen oozing from a minute opening, which looked exactly like the open mouth of a small vein. This opening was situated at the summit of a prolapsed portion of the mucous membrane, having some dilated veins beneath. No operation was at that time performed, but she was kept absolutely in the recumbent position, and a suppository, containing two grains of subsulphate of iron, placed in the bowel twice daily. The suppositories, after a couple of days, appeared to arrest the hæmorrhage, while at the end of a fortnight, notwithstanding slight occasional oozing, the patient

had so far recovered from her extremely collapsed condition as to render an operation a safe proceeding. The piles were tied, and the patient made a satisfactory though a somewhat slow recovery. Since the time of the operation there has been no more bleeding, and when the patient left the hospital she was quite an altered woman, having entirely lost the deadly pallor so characteristic of hæmorrhage; she no longer complaining of breathlessness, and was rapidly regaining strength.

Here is another case of a very similar kind; and shows, too, how easily the true cause of severe symptoms may be overlooked.

A woman, aged fifty, had been for long treated as an out-patient for anæmia without benefit. Supposing then that the uterine functions might be at fault, she attended at Dr. Godson's clinique, who, recognising her disorder, kindly transferred her to my care. She gave the following history:—

She had been a healthy woman until a year and a half ago, from which date she commenced to lose her health. She slept badly at nights, was much fatigued after slight exertion, which caused breathlessness and palpitation. Her appetite was good, but she had a sensation of fulness and discomfort after meals. She had been getting much worse lately, and during the last few months had two or three attacks of fainting. She stated that a year and a-half previously she noticed for the first time blood in passing her motions. The quantity appeared small at first, but increased, and now she thinks she loses a teaspoonful or two each time on going to the closet. She had never had the slightest pain about the rectum, and believed that the loss of blood had nothing to do with her illness, which she attributed to the stomach and womb. On admission the patient was very feeble. Her complexion was tallowy looking, and her lips blanched; in fact, she wore the general bloodless appearance of extreme anæmia.

Upon separating the anal margin, and telling the patient to bear down, a portion of mucous membrane protruded the size of a nut. Upon this was a red vascular patch about as large as a sixpence. One-half of this patch had a whitish look as if it had been touched with nitrate of silver. On touching the patch a very small quantity of serous-looking blood exuded. The following day, under ether, I thoroughly dilated the sphincter, and found besides the patch described there were two somewhat smaller ones.

By means of a fine syringe I injected each of these patches with four drops of the following solution :—

Acidi carbolici, gr. vj.
Glycerini, ℥xx.
Aquæ, ℥xl.

The patient experienced only a trifling amount of smarting pain. She had no more hæmorrhage whilst in the hospital, and she gained strength rapidly, and was discharged in an immensely improved condition.

Patients sometimes say that they have been told that these frequent bleedings from the rectum are to be regarded as a safety-valve by which Nature seeks relief from plethora, and that the stopping up of this vent-hole might lead to internal engorgements, apoplexies, &c. All this is nonsense, and entirely unsupported by any scientific evidence. For my own part, I can certainly say that I have never seen the slightest harm arise from the stoppage of this drain, while I have frequently seen grave conditions result from its continuance. Some plausible colouring may be given to this view in the case of stout, red-faced, middle-aged men, who, dining at least twice a day, take no more exercise than what is afforded by a cab-drive or billiard-table. It cannot be denied that such men make too much blood, a condition not to be cured by allowing it to run to waste from the rectum.

Indeed, the effect of this would be to excite the

digestive and blood-forming organs already working at high pressure to make all the more. The vital organs are thus worked at express speed, and although at the time these florid individuals appear to be in vigorous health, a day of reckoning will surely come, and the blood-creating power, so long and constantly overtaxed, becomes prematurely deficient, resulting in a general break-up of the constitution.

The rational treatment for such cases is to stop the loss of blood, and then, by exercise and regulation of the diet, to adjust the blood-supply to the normal requirements.

Another prominent trouble that arises from internal hæmorrhoids is their tendency to prolapse. This occurs in old-standing cases, and especially when the piles are large from interstitial growth. In these cases, besides the actual hæmorrhoidal tumours, there is considerable prolapse of the mucous membrane. There is also a loss of power by the sphincter, so that on the finger passing into the rectum little resistance is felt. The protrusion of the piles takes place at the time of a motion, and if only limited in extent may generally be drawn up by the action of the levatores ani; but it sometimes happens that, owing to the increasing amount of prolapse and the action of the sphincter, the protrusion requires to be replaced by the patient's fingers.

In some old-standing cases the annoyance of this protrusion is much aggravated by its tendency to escape out of season—an occurrence that may happen from some slight effort at an unguarded moment. Van Buren mentions the case of a barrister, whose piles would choose to come down at the moment of his rising to address a jury, and, as he expressed it, "he could as soon square the circle as state a case under the circumstances."

Should this protrusion take place at some inconvenient time, so that the patient cannot at once return it, the piles are apt to become partially strangulated,

owing to their neck being gripped by the sphincter sufficiently tightly to retard the return of the venous current, while the pressure is not sufficient to prevent the arterial flow. The part soon becomes swollen and œdematous, and is liable to be chafed with the clothing. From the pain and great swelling the patient may find himself unable, as on former occasions, to replace the mass, and is compelled to seek surgical advice.

A symptom occasionally produced by internal piles is that of severe pain coming on after connection. A patient aged sixty sent to me by my colleague, Mr. Bowlby, complained that he had great pain in the rectum after connection. Examination showed that there were considerable internal piles. These were removed by operation, with a complete cure of the pain complained of.

Internal piles are liable to inflammation. At these times they become swollen and œdematous, and protrude, not only into the cavity of the bowel, but even through and beyond the external sphincter. When the swelling first takes place within the bowel, it produces a feeling of pain and discomfort, as if an imperfectly passed motion or a foreign body were present. The patient is thus induced to strain, by which means the piles become extruded. Thus piles which, when uninflamed, remain within the bowel, causing little trouble, will, from inflammation, form a large mass about the anus.

We have, then, two different methods by which chronic internal piles will assume an acute condition, the one the result of accidental strangulation, to which the swelling and inflammation is secondary, while in the other, inflammation of the piles is the primary condition, resulting in protrusion.

Diagnosis.—From what has already been said, and from the cases narrated, the general symptoms of internal piles can be gathered, and it only remains for an examination to make the diagnosis certain. Before doing so,

however, much valuable information may be obtained by questioning the patient. I find it best at first to allow patients to describe their symptoms without putting leading questions. I then proceed with the catechism as given on p. 18.

Discharge alone suggests the presence of a fistula, but if much straining be complained of in addition, the suspicion of stricture may be aroused. Pain is a prominent symptom in ulceration, though, of course, it is common enough in piles if extruded or inflamed. But the occurrence of bleeding at stool and protrusion from the rectum, whether accompanied by pain or not, is particularly suggestive of the presence of internal piles.

It must be borne in mind, however, that bleeding is a common feature in many forms of rectal disease, and it is rather from its character than its mere occurrence that piles may be suspected. If the bleeding comes on during or immediately after a stool, if it be unaccompanied by any pus or grumous discharge, and above all, should it sprinkle the pan in a little jet, it will most probably be hæmorrhoidal. The "descent of the body" at stool may mean a simple uncomplicated prolapse, or more rarely it is a polypus that thus comes down, but most commonly it will be found to be due to old-standing hæmorrhoids.

Having obtained some general information as to the kind of case we have to deal with by some such questions as I have suggested, all doubt as to the nature of the disease can be cleared up by careful examination.

The patient lying on the left side, on a suitable couch, in a good light, with the head not too much raised, he should be directed to draw up the legs as high as possible, the legs being flexed upon the thighs and the thighs upon the abdomen. In this position the anus can be readily examined, and indeed it is the only position to examine a woman. In men, sometimes it may be an advantage to examine them kneeling, with the head lowered.

In examining a patient supposed to be suffering from piles, there can be no difficulty in making a diagnosis should the piles actually be down at the time of observation, but it generally happens when an examination is made that there is no protrusion to be seen.

Let us then consider, under these somewhat embarrassing circumstances, how to establish a diagnosis. It might seem a simple matter to pass the finger within the bowel, and to feel whether there may be hæmorrhoidal swellings present; nevertheless it is by no means easy to make sure of this by digital examination alone. If a surgeon has had considerable experience in rectal cases, he will be able to detect by the finger any abnormal redundancy of the mucous membrane, and occasionally, by a peculiar soft bulbous feeling, will recognise hæmorrhoidal dilatation.

Those who are commencing practice will gain little positive knowledge by the finger as regards the existence of internal piles. This is not to be wondered at, when it is remembered that the chief bulk of an internal hæmorrhoidal tumour is composed of dilated veins, which whilst within the bowel are comparatively collapsed and empty, only assuming the form of distinct tumours on protrusion from the anus, when they become engorged with blood from loss of external support.

Of course a digital examination must be made, to ascertain that there is no graver disease, such as cancer, stricture, or internal ulceration, to which the hæmorrhoidal trouble may be only secondary, but this should be deferred till the last part of the examination.

In order then to examine for piles, and to bring them into view if present, the patient lying as described, must be told to strain gently downwards, as if about to pass a motion. At the same time, the surgeon should gently draw upon the margin of the anus with the tips of the fingers: after a while, if prolapse or internal hæmorrhoids be present, sufficient protrusion can be obtained to

establish the diagnosis. It often takes some little time to expose the piles in this manner. Each time the patient is requested to strain, a little manipulation with the fingers will draw down a further portion of the bowel. The internal pile as it gradually comes into view by the eversion of the muco-cutaneous surface, will have a bright polished appearance, while its surface is somewhat irregular and dimpled, not unlike a mulberry; if uninflamed, its colour will vary from red to a dark purple, being generally the latter. It is seldom that the whole piles can be thus exposed, and it will often be a matter of some surprise to find, when operating, how large piles really are which appeared quite small at the time of examination, the fact being that it was only the lower border of the piles that was thus drawn into view.

Should the rectum contain fæces, a satisfactory examination cannot be obtained, for the patient will not strain for fear of the bowels acting.

In such circumstances (indeed it is to be preferred in most cases) an injection of a pint of warm water should be administered, and an examination made as soon as practicable after the bowels have acted. It often happens that, while at first a satisfactory examination was impossible owing to the retraction of the levator ani and the closure of the sphincter, after the injection the muscles relax, and the diagnosis is established without difficulty. If at such an examination there be much pain, it is generally due to the complication of a fissure, or perhaps ulceration, and if either of these conditions be present it will be unwise to pass the finger into the bowel, a proceeding under the circumstances extremely painful. If no ulceration or inflammation be present the finger may be gently passed within the bowel to complete the examination; and I may again repeat here, that in doing this the patient should be told to strain down, so that the rectum is rather passed over the finger, than the finger into the rectum. The sphincter and levatores ani being relaxed

by the patient at the moment of straining, allows the passage of the finger with scarcely any pain.

As a lubricant nothing answers so well as thoroughly soaping the finger with soap and water. Soap can always be obtained, is more cleanly than any ointment, and, above all, renders the finger softer and smoother than can be effected by any other means.

If we are called to examine the part when internal piles have become strangulated or acutely inflamed, the anus will be found surrounded by a considerable protrusion, which may involve part, or the whole, circumference of the bowel. In the latter case, the swollen mass will be divided by three or four deep sulci. The swelling consists of the piles and prolapsed mucous membrane. The inner part of the fold is of a dark chocolate colour. The outer portion, as it merges towards the skin, is lighter in appearance. If the piles be subjected to the friction of the clothes, they will have a rough and excoriated surface, exuding a blood-stained serum.

If left unrelieved after days of suffering, a large part of the mass may become black, and pass into a state of gangrene.

Treatment of Piles.—This will be considered under two headings.

(1) Palliative treatment.

(2) Radical cure by operation.

(1) **Palliative Treatment.**—Many cases of piles can be cured by suitable treatment, without having recourse to operative interference. Moreover, there will be cases where an operation would be the best and shortest method of treatment, but in which the fears of the patients prevent them obtaining the necessary relief. Something can be done in these circumstances by simple measures to remove the more prominent and distressing symptoms of the malady, though it may not be possible to effect a permanent cure.

As a rule, the longer the symptoms have lasted and the greater the amount of the disease, the less is the likelihood of obtaining satisfactory results without having recourse to an operation. Nevertheless, if the disease has not been too long neglected, by perseverance in the plan of treatment suggested, prolonged over a period to be reckoned by weeks or months rather than by days effectual relief may often be obtained.

Dietary is important, and by exercising a certain amount of care and discretion, the patients who have been victims to frequent attacks may, in great measure, avoid their recurrence. It is not possible to lay down any detailed rule for dietary applicable to every case, for the habits, customs, and idiosyncrasies of each individual require separate consideration. Yet there are certain general principles that may be valuable as a guide. Brodie, in his classical lectures, has given such admirable directions with regard to this matter, that I will give them to the reader in his own words:—"Is the patient a great eater—pampering his appetite by a variety of dishes, and thus exciting himself to swallow more food than his stomach can really digest? Let him make his dinner on a single dish, and eat of that in moderate quantity. Let him avoid undressed vegetables, especially those which are acid or acescent; as salad, oranges, and apples. Does he commit excesses in drinking? Let him leave off fermented liquors altogether, or take them only in small quantity; and, in particular, let him avoid such fermented liquors as from the sugar which remains unfermented in them are liable to become acid in the stomach, or which are acid already. The French light wines are injurious in these cases, especially champagne; so are all the varieties of malt liquor, from Burton ale down to home-brewed beer, but none of these liquors are worse than our old-fashioned English liquor called punch. If your patient has been in the habit of dining late in the evening, and going to bed soon after

a hearty meal, he should alter his habits in this respect, dining sufficiently early to allow of his food being digested before he retires to rest. If he has led a sedentary life he should cease to do so, walking or riding daily so as to induce perspiration. A person who takes a good deal of exercise may take liberties as to diet, which he could not otherwise take with impunity." * I would add to these directions that the patient should avoid cayenne, hot pickles, and pepper, which often appear to have a peculiarly irritating effect on the rectum. I also advise that weak tea be substituted for coffee as a drink, and that coarse foods, such as coarse oatmeal, brown bread, &c., should be avoided, the undigested particles of which appear to exercise an injurious influence on the part. Fine oatmeal, such as Scott's Midlothian, may be taken with advantage. If patients are unable to do without stimulants, a couple of glasses of dry sherry, or a small quantity of whisky and potash water, may be recommended.

Much can be done by careful attention to the local management of the part. All injury or friction from the use of hard paper should be avoided, and above all, special caution should be given against the application of printer's ink, which, especially in radical papers, is peculiarly irritating. The best plan after defæcation is gently to wash the part with a soft sponge and a little cold water.

When the patient has an opportunity of doing so, he should prefer lying more or less in a recumbent position to sitting up in a chair, for whilst he is recumbent a certain amount of mechanical pressure from the column of blood is removed, the engorgement and distension of the venous plexus being diminished. The medical treatment to be adopted will depend partly on the nature of the piles and partly on the absence or presence of inflammation. Chronic cases, such as are characterised

* "Brodie's Works," vol. ii. p. 545.

by hæmorrhage or a tendency to become prolapsed or irritable, will be first considered, leaving the treatment of acute attacks dependent upon inflammation for subsequent consideration.

The hæmorrhage being started by straining at stool, combined with the friction of hardened fæces, it is of the utmost importance for a while that a patient should have a daily soft motion without straining. This is best accomplished by some mild laxative. I have found the following prescription of Brodie's extremely useful, very marked benefit following its administration :—

Conf. sennæ, ℥jss.
Sulph. præcip., ℥ss.
Mel rosæ, q.s.

About a teaspoonful every night.

The patient will soon learn to regulate for himself the exact amount required to get a comfortable morning motion. Another prescription that I frequently employ in hospital practice is—

Conf. sennæ,
Conf. pip. nig., āā ℥j.

A large teaspoonful the first thing in the morning.

The confection of black pepper has for long had a reputation in curing piles, and when administered with another laxative it is certainly at times a useful remedy. Occasionally, the confection of pepper causes considerable smarting pain about the anus. I therefore avoid its use when there is any ulceration or unusual tenderness of the part. Friedrichshalle water, though too expensive to use in hospital practice, is an admirable laxative for private patients. It has the great advantage of keeping its efficacy for a long period. In most laxatives the dose has to be increased as the intestines get used to its effects, but with Friedrichshalle water it often happens that the dose requires to be rather diminished than increased by repeated use. The dose required will be

from a wineglass to half a tumbler, to be taken on first waking in the morning. Small doses of liquorice powder is a favourite remedy with some persons. If it be preferred to order this powder in the form of a prescription, the following are its ingredients:—

℞ Fol. sennæ, ʒiij.
Rad. glycyrrhizæ, ʒiij.
Pulv. fruct. fœniculi, ʒjss.
Sulph, sublimati, ʒjss.
Pulv. sacch, ʒix.

About a teaspoonful in a wineglass of water or milk in the morning.

The cascara sagrada, about 20 to 30 drops of the extract in a wineglass of water, is also a useful mild purgative.

Having attended to the regulation of the bowels, the local treatment must be considered. It is important, in prescribing the use of local applications, that they should at first be sufficiently mild not to cause pain, otherwise the patients will not persevere in their use. In old-standing cases, in which the chief trouble results from prolapse of the piles, medicinal applications are of little service. On the other hand, in the superficial vascular pile, in which hæmorrhage is the prominent symptom, the tendency to bleed may be effectually controlled by astringent ointments. Such applications appear to owe their efficacy to the thickening or hardening they produce on the surface of the vascular area. It is of no use, as is too commonly the case with patients, to smear the anal outlet with the ointment; to be effectual it requires to be applied to the mucous surface within the sphincter. This can be accomplished either by the patient passing the ointment in with the tip of his finger, or by means of one of the little leaden bottles suggested by Mr. Keetley. These bottles are similar to what artists use for their soft paint. They should be of a size to contain about

a couple of ounces of the ointment. They can be supplied and filled by the chemist.* The stopper being unscrewed, a nozzle is fitted in its place, similar to that of the enema tube, which, however, instead of having one opening in the centre, is perforated with several small openings at the side. Allingham's ointment-introducer is another means of applying the remedy, but the patient will not find it so easy to manage as the soft bottle which I recommend.

Of the various substances which have an astringent effect, the subsulphate of iron is perhaps the most valuable, and to commence with, an ointment as follows—

Ferri subsulphatis, gr. vj.
Ung. petrolii, ℥j.

—should be tried, the strength being gradually increased up to 30 grains to the ounce.

The powdered leaves of matico, in the proportion of 20 grains to the ounce of vaseline, often effectually stops hæmorrhage. The unguentum gallæ co. is a very useful application, but I prefer it half the Pharmacopœial strength, that is, only 40 grains to the ounce. Tannic acid, in the proportion of a drachm to the ounce, is especially useful if there be much bleeding. Suppositories, if more convenient, may be substituted for the ointment. Van Buren thinks highly of the subsulphate for this purpose, being made up in the proportion of 1 grain to 8 grains of the cacao butter, while, if preferred, the suppositories may be made of gelatine.

Treatment by Cold Water Injection.—There can be no doubt as to the efficacy of this plan in a considerable number of cases, if combined with proper constitutional treatment. It was a favourite remedy with the great Sir Benjamin, while Curling and Kelsey both speak highly of the plan. I have had cases under my care which have received most marked benefit from the treatment,

* Messrs. Cooper, 66 Oxford Street, keep these bottles in stock.

though I suspect the cases are few in which the cure is permanent. The water injections have a twofold object—the one is to soften and break up the motions, so as to prevent the parts from being bruised during defæcation; the other is its astringent effect in bracing up the muscular structure both of the bowel and dilated blood-vessels. Brodie advised: "Half a pint of cold water fresh from the pump, as a lavement every morning after breakfast, to be kept up as long as possible."

To fulfil, however, the twofold indication, the softening of the motions and the bracing of the muscular structures, the method advocated by Van Buren is the better. The patient should first throw up three-quarters of a pint of tepid water with a view to bringing the motions readily away. Then, *after* the motion, four ounces of quite cold water are injected, which can either be retained, or passed out in a few minutes.

These water injections may be combined with the general treatment already described.

Various forms of pads, plugs, and trusses have been devised for the support of piles. As a rule, they are of little benefit, if not actually injurious. In one case I have known some benefit follow the wearing of a small ivory plug. The case was one in which the sphincter was strong, powerful, and very irritable. However, I prefer in such cases the daily passage of a full-sized conical bougie passed up the bowel immediately after the motion, and kept in for a few minutes.

Treatment of Inflamed and Strangulated Piles.—In many cases "an attack" of the piles for which the practitioner is consulted, means an accidental inflammation grafted on to a chronic disorder. If the inflammation be confined to a slight œdema and redness of the external folds, a dose of castor-oil may be prescribed, while half an ounce of thin warm starch, to which twenty drops of the liquor opii sedativi has been added, gently injected up the rectum by means of a glass

syringe, is a soothing local application. If this cannot be managed, a suppository containing a quarter of a grain of morphia may be gently passed within the bowel, and the superficial parts about the anus may be smeared with simple vaseline ointment. If the inflammation be more considerable, involving not only the anal folds but also the internal hæmorrhoidal plexus, the patient must be confined to bed. Hot fomentations are very soothing, and after giving an opium injection I like to have a sponge wrung out in very hot water, kept firmly pressed against the part by means of a T-bandage. The pressure thus exercised has a very beneficial effect, giving the patient a sensation of support, and stopping in great measure the desire to strain.

The patient should be kept in a recumbent position, or he may vary this, by kneeling with the buttocks raised and the head lowered, for by thus removing the intra-venous pressure substantial relief is often obtained. Cold applications, especially pounded ice in a bladder, are recommended by some surgeons; but I have generally found the application of warmth to be more beneficial.

It will sometimes happen that a patient who has previously refused operation, will readily consent to have his piles tied, if immediate relief can be ensured by the proceeding.

Should an operation be performed under the circumstances?

Experience has proved that no harm results by operating at such a time; and it is now regarded as legitimate surgery to advise an operation for inflamed piles, thus giving immediate relief, and effecting a permanent cure by a single operation. The operation must, of course, be done under an anæsthetic. Should the patient have fears of an operation, he will perhaps consent so far as to take some ether, and to have the sphincter thoroughly stretched, which alone may often greatly relieve his

condition, with the possibility of obtaining permanent benefit, as in the following instance.

Mr. B. P., aged thirty-four, who had generally lived pretty freely, was exposed for some time to a cold east wind at a race-meeting. The following day he felt pain and discomfort about the rectum, which increased; and on the third day, when I was asked to see him, I found the patient in bed, with a coated tongue, a temperature of 101°, and a pulse of 95. He was complaining of great pain about the rectum, which had entirely deprived him of sleep during the previous night. His bowels had not been opened for two days, and he had a sensation of fulness, and a desire to strain; which, when indulged in, aggravated the pain. Upon examining the part, the anus was nearly obscured by three swellings the size of pigeon's eggs. These were composed of the anal folds in a highly œdematous condition, the œdema also involving the lower part of the true mucous membrane with which the folds were continuous.

There was no bleeding or discharge, and the part was exquisitely tender on examination, and there was some spasm of the sphincter muscle. In this case, under an anæsthetic administered by Mr. J. Morgan, I stretched the sphincter, which almost immediately relieved the patient of his pain, and in a few days all swelling and inflammation had subsided.

Mr. P. had considerable trouble from time to time with his piles before this stretching, but I ascertained that since that time (nine years) he has never had any discomfort.

Care should be taken that the patient's general condition is such that an operation is not contra-indicated, for strangulated or sloughing piles may be but one symptom of some worse disorder. I was asked by my colleague, Dr. Norman Moore, to see a gentleman aged sixty, who for some months had been under treatment for heart weakness, but had not been particularly ill.

For some days he had complained of rectal pain. An examination showed some inflamed piles. It was decided on account of his general condition to postpone operating, and he was treated with hot fomentations. Thirty-six hours later he was seized with an attack of vomiting, and died suddenly two hours later. Had an operation been done in this case it doubtless would have been regarded as the cause of his death.

Strangulated Piles.—From causes already mentioned, piles may become strangulated, causing severe symptoms, and demanding active interference. The anus will be found surrounded by a congested mass of prolapsed piles and mucous membrane, the whole in a swollen œdematous condition, and engorged with venous blood. The tumours consist of two or more rolls or folds divided by deep sulci, having a dark claret colour approaching to blackness.

Hæmorrhage cannot occur if the piles are completely strangulated, but it may be severe and even dangerous, if the strangulation is only partial.

In June (1888) I saw a man, aged sixty, brought to the casualty department, St. Bartholomew's Hospital, with some piles that had been partially strangulated for five days. The bleeding had been so severe that he was blanched and quite unable to stand.

If the patient will consent, the opportunity may be seized of performing the radical cure by ligature; if not, the piles must be reduced. Under an anæsthetic this can generally be easily accomplished by gentle and continuous pressure on the protruding mass with the finger-tips, the parts slowly returning within the sphincter. If necessary, this muscle may be stretched to effect the reduction. My experience of these cases is not so much that there is a difficulty in reducing the strangulated piles, as in preventing the mass again protruding. After reduction, pressure should be kept on the anus for a while by a firm lint pad and perinæal bandage. The

swollen mass seems to act like a foreign body when first reduced, exciting a straining to get rid of it. The swollen parts, however, become quickly reduced after their return, so that the liability to protrude soon diminishes. If an anæsthetic is impracticable, and the part too tender to admit of handling, the return may sometimes be effected by continuous pressure with a soft sponge, the patient keeping in the kneeling position, with the head lowered. Some surgeons recommend the application of an ice-bag, but I do not think it should be used, for it may cause gangrene.

If the piles have actually become gangrenous, beyond applying soft aseptic dressings and keeping the patient absolutely at rest, nothing further can be done. The pain in great measure ceases when gangrene comes on, and the mass will, in a few days, separate by itself. The case should be carefully watched, however, as severe hæmorrhage sometimes follows the separation of the slough.

(2.) **Radical Cure by Operation.**—Before describing the methods employed, it will be well to consider the class of cases in which operative interference is desirable, for while, on the one hand, in the whole range of surgery, there is no procedure affording greater and more permanent relief with less risk to life than does the operation for piles in suitable cases; on the other, it will save much disappointment to remember that some cases do not admit of cure by operation, while others can be completely relieved by simpler means.

No judicious surgeon would advise operation in slight cases which give little trouble either from pain, prolapse, or hæmorrhage; nor, indeed, in the severer forms, unless either palliative treatment had been tried in vain, or from the nature of the piles would be useless. It is not possible to lay down any arbitrary rules as to cases which demand operative interference, but generally speaking it will be found that where there has been free and

prolonged hæmorrhage, where the hæmorrhoids are large and the tissues hypertrophied, where tumours are habitually extruded at defæcation, or lastly, where recurrent attacks of pain and inflammation are frequent, the piles are best treated by operation, from which a rapid and permanent cure may be promised.

On the other hand, there are certain cases in which no benefit can be expected from operation, or in which the benefit to be obtained is so slight as not to be worth the risk incurred. Such cases include those in which the piles are complicated or caused by some other disorder higher up the bowel. Thus, stricture and cancer are not infrequently complicated by hæmorrhoidal swelling. It would be a grave mistake to touch the piles under these circumstances.

Piles depending upon disease of the bladder or enlarged prostate are unsuitable for operation. So, too, when piles complicate cirrhosis of the liver or thoracic disease, they should be left alone. Cases will occasionally be met with in which serious symptoms exist coincidently with piles, but nevertheless do not certainly depend upon them in the relation of effect to cause. If the symptoms be not those usually due to piles, the greatest care should be taken to ascertain whether the symptoms may not result from some independent disease. In such instances it may be right, if no other adequate cause can be detected, to advise that the piles be operated upon on the probability that to them alone the symptoms are due. In these cases, since there must always be some doubt in the diagnosis, a cure cannot certainly be promised.

The rectum is occasionally the seat of hysterical affection. I once nearly fell into the error of operating under these circumstances. A young lady was brought to me for the purpose of being operated upon for piles. Her sufferings, as described by herself and her mother, appeared to be very severe. There was something,

however, rather anomalous about the character of the pain, for it would come on sometimes at night, sometimes in the afternoon, and occasionally, though exceptionally, at stool. Upon examination, the superficial parts were exquisitely tender, even to the slightest touch. With all this pain and tenderness there was no sign of redness or œdema. On slightly everting the mucous membrane with the fingers a small prolapsed swelling was produced, but not more than may frequently be seen in a healthy rectum. A thorough examination made me confident that no ulceration or fissure existed. I advised that palliative treatment should first be tried. I afterwards heard that the rectal trouble had disappeared, and that a contracted knee-joint had taken its place, and have little doubt that from the subsequent history of the case the symptoms were purely hysterical.

The extreme pain upon touching any part of the anal margin, however gently, and the total absence of any lesion or inflammatory condition to account for it, taken in conjunction with the uncertain time at which the pain occurred, together with the surrounding circumstances, ought, I think, to have established the diagnosis.

Advanced pregnancy is not an absolute bar to the operation, but its performance would be seldom advisable under the circumstances. There can be no doubt, however, that if there were serious hæmorrhage, it would be right to tie the bleeding pile.

The risk involved to life from an operation for piles is extremely small. In my own practice, I have had the misfortune to lose a valuable life from the operation for piles, the patient dying suddenly on the sixth day, with symptoms of cardiac embolism. With this exception, notwithstanding that I have operated on over twelve hundred cases, I have not had one that has caused me any anxiety.

The smallness of the risk should not lull the surgeon

into a sense of absolute security, and he should spare no effort in ascertaining the general constitutional condition of his patient before subjecting him to operation. A risk that may be infinitesimal in a healthy man becomes greatly magnified in one who is broken in health from alcoholism, albuminuria, or diabetes, and no operation should be advised until the state of the urine has been carefully examined.

The amount of risk, slight as it is, should be clearly laid before the patient or his friends. If a man is to have some grave operation performed, such as the removal of a cancer or the amputation of a limb, both he and his friends are well aware of the risk involved, and are accordingly prepared. It is therefore in the smaller operations, regarded by the surgeon and public as free from danger, that a fatality, when it does occur, becomes so tragic from being unexpected.

At the same time, it should be explained, that against the small risk of harm must be weighed the immense benefit which the operation affords, and it should be further remembered that not only does the operation relieve the patient from a painful disease, but also from one which may in itself become an actual source of danger to life.

Of the many methods devised for operating on piles, the following include the chief of those which have survived the test of experience :—

(1) Crushing.
(2) Puncture with hot needles.
(3) Nitric acid.
(4) Injections of carbolic acid.
(5) The clamp and cautery.
(6) Excision.
(7) Ligature.

Far be it from me to condemn any of these methods, for I can conceive any one of them being applicable to

a particular case, but, on the whole, I fancy that the operator will have the best results who habitually practises the proceeding with which he is most familiar. Of the first two methods, I have had little practical experience. Full details of the plan of crushing will be found in a paper of Mr. Pollock's.* The results he obtained were very encouraging, and I know that many surgeons now adopt this method with satisfactory cures. The puncture by hot needles has been fully described by Mr. Reeves in an able and interesting paper.† The fact of this method being advocated by such a well-known authority is sufficient to justify such a procedure. I will now pass on to the operations of which I have had personal experience.

Application of Nitric Acid.—In a limited number of cases this is a safe and effectual method of treatment; but it is only of use where the trouble consists of hæmorrhage from superficial vascular areas. It requires to be applied freely, but with care. The patient being placed under an anæsthetic, the sphincters must be dilated. The vascular spot must then be exposed, either by a speculum or the fingers of an assistant. Its surface should then be dried by a piece of blotting-paper, after which the spot must be freely painted over with the strongest fuming nitric acid. Allowing this to remain for a few seconds, it may then be washed by a solution of carbonate of soda. A little vaseline being applied to the surface, the whole is returned well within the bowel.

After this treatment the patient should be confined to his room until the separation of the slough. The cure is effected partly by the actual destruction of the superficial vessels by the acid, and partly by the consolidation and contraction of the remainder, by the resultant inflammatory action.

Injection of Carbolic Acid.—This method was

* *Lancet*, vol. ii. 1880, p. 1. † *Ibid.* 1877.

at one time largely practised in America, and its introduction to this country was chiefly owing to Kelsey of New York, who published the details of two hundred cases treated by himself with satisfactory results. He claimed that the method was easy and certain, and that piles could be thus cured without risk, without pain, or even without withdrawing the patient from his ordinary occupation.

In this country success was not so uniform. I tried it myself in a fair number of cases. Although apparently successful in some instances, I had by no means such a series of successes as occurred in Kelsey's practice. In one instance my injection was followed by a troublesome abscess, while one patient, whom I believed cured, subsequently underwent the operation by ligature at the hands of another surgeon.

The views of Kelsey have, since his original paper, undergone considerable modification, and writing in 1887,* he says, "All that can be said of my own practice is that, while for a year or more I used it almost exclusively, and was much pleased with its results, a succession of bad cases has led me to modify my views of its value, and universal applicability, and although I now use it constantly it is only in selected cases."

Apart from the possible complication of abscess, &c., I think this method has the decided objection that there is no certainty that all the piles have been treated. True, all those that prolapse can be properly injected, but there is often further disease hidden within the bowel, that could only be properly exposed by thoroughly dilating the sphincter, which certainly could only be done under an anæsthetic. Again, instead of regarding the fact that the patient can go about his business immediately after the injection as an advantage, I consider it decidedly the reverse. It appears to me entirely opposed to sound surgical principle to inject an irritating

* "Diagnosis and Treatment of Hæmorrhoids," by C. B. Kelsey, p. 46.

material into venous structures, and then allow a patient at once to expose himself to the exigencies of ordinary life. To commence the day with an injection of carbolic acid into the venous tissues of the rectum, to continue it by a hard day's work, and to end it with a little convivial entertainment in the evening, is to court a catastrophe.

In certain selected cases, with the proviso that the patient shall be perfectly at rest for two or three days following the injection, I think the plan may have a sphere of usefulness.

Mr. S. Edwards, of St. Mark's Hospital, brought forward in a paper at the West London Medical Society a series of cases treated on this principle. Mr. Edwards, however, did not consider that all the cases were radical cures, and that the plan was rather a tentative one to be followed where there were objections to operative treatment.

In the few cases in which I tried it, I followed as nearly as possible the directions given by Kelsey, using carbolic acid in the following proportions:

Acidi carbolici, gr. x to xx.
Glycerin, ℥j.
Aquæ destil., ℥j.

Six drops being injected with a hypodermic syringe into the centre of each pile.

Immediately after injection, the pile must be completely returned inside the sphincter. Otherwise it will rapidly swell up, and become strangulated. It is important that the needle should be thrust well into the centre of the pile, for if the acid be injected beneath the mucous membrane only, the membrane will slough and an ulcer result. Several injections may be required, and the patient should be kept in the recumbent position for a day or two following the treatment.

The Clamp and Cautery. — Whoever originally suggested the idea, there can be no doubt that we are

practically indebted to the late Henry Smith for the popularity and extensive adoption of this operation, which in his hands has been followed by such excellent results as to induce many surgeons to follow his example. The necessary instruments for performing the operation consist of the benzoline cautery, the vulsellum forceps, and the special clamp devised by Henry Smith. Of this clamp Smith says, "that it is very essential for its right action that the blades should be so constructed as to have their parallelism complete when they meet, otherwise the enclosed membrane may slip."

The pile or prolapsed part is seized by the vulsellum forceps, and drawn well down. The clamp is then tightly applied to the base, being secured so firmly as to prevent all risk of slipping. This having been attended to, the mucous membrane beyond the grasp of the clamp is cut off either by scissors, or divided by the heated knife. In doing this, care should be taken not to cut too closely to the clamp blades, but to leave as much as the sixth of an inch for the purpose of searing. If cut with scissors the whole raw stump is carefully and thoroughly seared by the cautery to a dull red heat; the clamp is then slowly relaxed, the stump being carefully observed to see if there is any bleeding point. Should such be seen, the clamp is again tightened, and the stump touched with the cautery, and when all tendency to bleed is thus stopped, the clamp is removed. Each bunch of piles is treated in a similar manner, and the parts being well oiled, the whole is returned within the sphincter.

Treatment by Excision.—Mr. Walter Whitehead, the eminent surgeon of Manchester, has introduced a method of treating piles by complete excision of the mucous membrane from the lower part of the rectum. He thus describes his operation:*—

"By the use of scissors and dissecting forceps the mucous membrane is divided at its junction with the

* *Brit. Med. Journ.*, vol. i. 1887, p. 449.

skin round the entire circumference of the bowel, every irregularity of the skin being carefully followed. The external and the commencement of the internal sphincters are then exposed by a rapid dissection, and the mucous membrane and attached hæmorrhoids thus separated from the submucous 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 suitable number of sutures."

Mr. Whitehead has had so much success with this method, applied to many hundreds of cases, that there can be no doubt that in his hands it has proved a valuable remedy. I have tried his operation in a few instances, but consider that it is unnecessarily severe for the kind of piles we meet with in the south of England. Unfortunately, too, in the hands of inexperienced operators, great harm may be done. I have, during the last ten years, seen no inconsiderable amount of anal stricture resulting from this operation. A trouble far more serious than the original disease.

Treatment by Ligature.—Without confining myself entirely to any one method in the treatment of piles, I employ the ligature far more frequently than any other plan. A large and yearly increasing experience has confirmed me strongly in the belief that, in the ligature, when combined with the free use of the scissors, we have a method as easy, painless, and free from risk as any that can be devised, and, moreover, that it is absolutely efficient in effecting a permanent cure.

I propose, therefore, to give in some detail the steps of the operation.

Preparation of the Patient.—The day for operat-

ing being settled, the patient should have a dose of castor-oil (half an ounce) the first thing in the morning, the day preceding that fixed for the operation. If there be any objection to castor-oil, a couple of pills (pil. col. co., pil. rhei co., āā gr. v) may be substituted. By an unfortunate oversight in the last edition of my work, I recommended the medicine to be given the evening before the operation. To do so is a mistake, the patient is often much disturbed at night in consequence, and is therefore in a very unfit condition for any operation in the morning. The pills should be taken two nights before the operation.

A hot bath should be taken at bedtime, the parts being thoroughly cleaned with soap and water on the evening prior to the operation. On the morning of the operation the patient should have a small cup of weak tea at 7.30, to be followed by a pint and a half injection of warm water, and the nurse should be careful to see that the whole of this is expelled. I prefer to operate not later than nine, in order that the patient be not kept too long without food.

The patient being thoroughly anæsthetised is placed in the lithotomy position, the legs being securely fixed by a Clover's crutch. Some surgeons prefer operating with the patient on his side. In the lithotomy position, however, the parts are much more thoroughly exposed, and should any unforeseen accident arise from hæmorrhage or other causes, the surgeon has far better light and command of the part, than when the patient is on his side. I next proceed thoroughly to dilate the sphincter muscles, by passing the forefinger of each hand well into the bowel, and exercising firm and continuous traction. To be effectual this traction must be continued for three or four minutes. In making this traction it is necessary to have complete control over the force used; otherwise, by the muscles suddenly giving, a considerable rent may occur. Directly the sensation

of the sphincter muscle too rapidly dilating is experienced, the pressure must be at once lessened. By attending to this, the accident of a sudden rupture cannot occur.

The effect of this thorough dilatation of the sphincters is to render the subsequent steps of the operation easy and certain. Even the most inexperienced operator, after dilating the sphincters, need have no fear of not finding the piles, for the moment the sphincters are dilated the piles prolapse, and the whole part is distinctly seen and mapped out. Thus there is no fear of overlooking any piles or villous tuft, which, if left, might cause a reproduction of all the old symptoms.

The sphincters having been fully dilated, the most prominent pile is first seized with pressure-forceps. It is then drawn downwards and towards the middle line, so as to make the crease marking the junction of the skin with the mucous membrane prominent, the mucous membrane and pile are then detached from the anal margin by cutting with scissors just through this line of junction, while by a few light snips the detached portion can be dissected off the submucous coat for a short distance. This detachment is not required to be very extensive, but it must be sufficient to form a moderately deep groove. A strong ligature of floss silk well sterilised is tied firmly round the undetached root of the pile.

This manipulation requires a little care. The assistant is directed to draw down the pile with moderate force. This makes a kind of pedicle of the mucous membrane above the pile. The loop of the ligature is then slipped into the groove already cut, the knot being tied over the mucous membrane in the cavity of the bowel.

Before tightening the knot the ligature should be manipulated well up the bowel, so as to include as much as possible of the mucous membrane forming the pedicle. Great care must be taken to strangulate the part completely, but not so tightly as to cut the pedicle through

with the ligature. When the piles are numerous, several ligatures are required. As a rule, however, three or four will be sufficient. When the hæmorrhoidal tumours form a complete circle round the bowel, the most prominent portions should be treated separately. The incisions through the mucous membrane should be extended so as to form lateral cuts dividing the pile mass into segments, each of which must be separately tied. When the ligatures are all tied the piles may be cut off, care being taken to leave a sufficient portion beyond the ligature to prevent it slipping. The parts should then be gently sponged, and if any distinctly bleeding point is noticed it may be ligatured. As a rule, there is little more than a free oozing which stops when the legs are taken down from the lithotomy position.

After Dressing.—An india-rubber tube the size of the little finger and four and a half inches in length, with a piece of silk attached to one end to prevent the tube slipping into the bowel, is passed up the rectum for three inches, allowing one and a half to project from the anus. A piece of sterilised lint six inches in diameter smeared with eucalyptus ointment (Olei Eucalypti ℥j, Ung. Petrolii oz. ij) has a small hole cut in the centre through which the projecting india-rubber is passed. The lint is then firmly plugged against the anus by strips of gauze or cotton-wool. A muffin of cotton-wool seven inches in diameter and one inch thick is placed over the plugs covered with a circle of lint, the whole being kept in position by a firm, well-adjusted T-bandage. This pressure restrains all oozing. The tube allows any wind to escape, or if by any possibility there is any recurrent hæmorrhage of a serious nature it at once becomes evident by leaking through the tube. It is never safe to apply firm pressure after an operation to the anus without this tube. Severe bleeding may take place, and find its way up the rectum without any evidence externally, warning the nurse of danger. The pad and

pressure affords considerable comfort to the patient by giving support to the part, and preventing the desire to strain.

Some operators recommend a suppository containing one-third of a grain of morphia to be passed into the bowel immediately after the operation, a plan I do not think very efficacious, and I doubt whether the rectum is in a position to absorb it. I prefer to give no opium till the evening, when I prescribe 20 drops of the liquor opii sedativi. This generally ensures a night free from pain, and confines the bowels. The dose need not be repeated. If the sphincters have been thoroughly stretched, and no uncut skin included in the ligatures, there is generally not much pain following the operation. What there is comes on in spasms, and seems to be due to some twitching of the levatores ani muscles, and almost entirely disappears after eighteen hours.

On the morning following the operation the large external pad can be removed. Its removal is painless, since it is in contact with no part of the wound. The little pad beneath will be found blood-stained, and adherent. I moisten this with biniodide solution, making no attempt to remove it. The surrounding parts having been cleaned, a fresh pad of cotton-wool is applied over it. The next day, that is at the second dressing, the pad in contact with the wound is loosened, and as a rule comes away readily enough. If it does not do so, it may be detached by gentle syringing. The subsequent dressing that is required is the thorough cleansing of the part night and morning with soap and water, after which it should have a swill over with 1 in 40 carbolic lotion. The anus is then covered with a piece of lint spread with eucalyptus vaseline, half a drachm to the ounce. The ligatures come away from the tenth to the twelfth day. They should be allowed to separate by themselves, and the temptation to give them a pull avoided, for this always causes pain, and is quite unnecessary.

Dietary after Rectal Operations.—If a patient be young, strong and healthy, it is well to restrict him after pile operations to slop diet, such as arrowroot, beef-tea, milk, &c.

I think, however, that it is a grave error to apply the same principle to middle-aged or elderly men accustomed to good living. If deprived of solid food, wind will collect in the intestines, producing distressing symptoms. Moreover, suddenly to deprive a patient of much of the nourishment he is used to, cannot be done with impunity, and I think it is best in such patients, so soon as the ether sickness has passed away, to put them on a meat diet at once, restricting it somewhat as may seem necessary.

On the sixth day after the operation a dose of castor-oil should be given, and about the time of expecting a motion three ounces of olive-oil as an injection is a great comfort. If the rectum be allowed to become too distended, it is liable to produce some œdema about the anus, a condition retarding the healing. If all goes well, by the fourteenth day the patient may get on to the sofa. If practicable, it is better, though not absolutely necessary, to keep more or less in the recumbent position till the stumps of the pile are healed, which will generally be accomplished by the end of a fortnight. By the second or third day after the operation there are often one or two œdematous swellings at the anal margin. They are merely œdematous muco-cutaneous folds, and will slowly disappear. It is well, however, to caution the patients about these swellings, otherwise they become a source of alarm and anxiety.

Another small trouble which may follow the operation is retention of urine. If by the evening no water has been passed, and a hot sponge above the pubes fails to produce the desired effect, the water must be drawn off with a No. 7 flexible catheter, which may have to be repeated for two or three days.

I will now consider some of the complications which may occur during the course of treatment.

Hæmorrhage.—Of these the most serious is hæmorrhage, and the remarks about to be made not only apply to hæmorrhage from piles, but to that from any other rectal operation. The bleeding may be primary, recurrent, or secondary. In all cutting operations about the rectum, the hæmorrhage for a few seconds is pretty free, but excepting in cases of excision of the bowel, or division of fistula running high up, it is never to a dangerous extent. The arterial branches, though numerous, are small and quickly contract, the veins mostly furnishing the blood.

If the patient be old, or anæmic, it may be advisable to put some pressure-forceps at once on any point that bleeds freely, but in ordinary cases any delay is unnecessary until the operation is complete. Besides, it generally happens that, on ligaturing the pile, the bleeding stops. Upon completing the operation, any obvious bleeding point may be tied. The venous oozing is readily arrested when the cotton-wool compress is applied as already described, and the legs released from the lithotomy position.

Recurrent Hæmorrhage.—This is the bleeding that may come on soon after the operation, generally speaking within twelve hours, very rarely it may happen as late as the second day. It is due to some vessel or vessels which have ceased bleeding at the time of operation without being ligatured, but from which, when the patient becomes warm in bed and reaction is established, blood begins again to flow. Recurrent hæmorrhage is not, as a rule, sudden and severe like secondary hæmorrhage, for the vessel furnishing it is generally small. Nevertheless, it may become serious from its persistency. The blood will begin slowly to trickle through, or by the side of the pad, while at the same time it may distend the cavity of the bowel.

After operating for piles, I always like to have a final look before leaving the house to see that all is right, and to direct the nurse to watch the case carefully afterwards.

It must not be forgotten that cases have been recorded* in which hæmorrhage has taken place to a very serious extent within the bowel without its being suspected, owing to the blood being retained above the sphincter. Such an occurrence, however, could scarcely take place if the sphincter had been previously dilated.

Secondary Hæmorrhage.—Secondary hæmorrhage is the bleeding that occurs some days after the operation, generally between the fourth and seventh day. It results from the obliteration of the vessel not being complete at the time the ligature loosens, or it may be that a vessel is opened by some sloughing or ulceration in its neighbourhood. The blood in these cases often comes suddenly in considerable quantity. Recurrent hæmorrhage being due to mechanical causes, may occur in the most perfectly healthy individual; secondary hæmorrhage, on the other hand, is only liable to occur in those who have some defective constitutional condition retarding the proper healing of the wound.

Fortunately, compared with arteries of larger calibre, those in the rectum rarely furnish examples of secondary hæmorrhage; indeed, the occurrence seems to be far rarer than in former days, when, from want of cleanliness and imperfect hygienic surroundings, sloughing wounds were far more common.

Let us now consider the treatment to be adopted should bleeding occur. Nothing so taxes the skill and resources of a surgeon as cases of recurrent and secondary hæmorrhage. The danger is often grave, while patients and friends, being powerless in the emergency, are dependent on the surgeon for prompt action. I have previously published, in St. Bartholomew's Reports and the

* Sir A. Cooper's Lectures, 3rd edition, p. 422.

Transactions of the medical societies, papers* relating to the treatment of secondary hæmorrhage in various parts of the body. Fortunately, however, as regards the rectum, my experience of the accident is extremely small. Troublesome recurrent hæmorrhage I have had to deal with after operations, but I can call to mind only a few cases of true secondary hæmorrhage from the rectum.

Treatment of Bleeding.—It is sometimes found, after putting the patient into bed, that there is a slight oozing by the side of the pad. There is no occasion to be alarmed at this, for such leakage is common enough. If, however, it does not quickly subside, I tighten the perinæal bandage a little, and direct the nurse to press firmly upon the anal pad. This nearly always has the desired effect. Should the oozing continue or recommence, so that an appreciable quantity of blood is lost, it is better to remove the pad and syringe the part with cold water, passing a small oblong piece of ice into the bowel, and again applying the compress. In the extremely rare cases in which this fails to check the bleeding, it is better at once firmly to plug the wound after the manner to be presently described. Of course, should it so happen that the bleeding point can be seen, it may be seized and ligatured. Anything like prolonged search is unsatisfactory, for the bleeding has more of the character of a general oozing; at any rate, no distinct vessel can be seen. In secondary hæmorrhage, the search for the bleeding point is even less likely to be successful, but the part should be examined in a good light—which, by-the-by, is often the secret of successful surgery—on the chance of picking up the vessel.

* "Secondary Hæmorrhage from the Femoral Artery," *St. Bart.'s Hosp. Reps.* 1874; "Secondary Hæmorrhage from Palmar Arch," 1874; "Secondary Hæmorrhage from the Posterior Tibial Artery," *St. Bart.'s Hosp. Reps.*, 1875; "Secondary Hæmorrhage from Wounds of Mouth and Throat," *Med. Chir. Trans.*, 1878; "Secondary Hæmorrhage after Amputation of the Thigh," *Clin. Soc. Trans.*, 1880.

One of the difficulties in cases of secondary hæmorrhage is that the bleeding has often stopped by the time the surgeon arrives, while the granulations about the wound bleed readily on being touched. Thus the real point of the bleeding cannot be found. If the hæmorrhage has occurred but once, and has stopped on the arrival of the surgeon, all dressings of every kind should be removed, and the blood-clot which has collected should be gently syringed away with a little cold water. The patient should then be left quietly on his side with the pelvis slightly raised, the part being exposed and kept as cool as possible. The surgeon may hope that the bleeding will not recur, and that no further treatment will be required; but he must on no account leave the patient unless effectual aid is immediately at hand, if necessary.

He may leave with the nurse a large-sized hollow conical bougie, well smeared with ointment of the subsulphate of iron, to be immediately passed up the rectum if the bleeding recur. If this prove effectual and be well borne, it should be retained for some days. On the other hand, if the bougie does not completely arrest the bleeding, the rectum may be plugged. A sponge should be firmly rolled and tied in the middle by a piece of tape or strong twine, the two ends of which are left long. The sponge should then be trimmed with scissors to a circular form about the size of a hen's egg. If it can be obtained, the conical sponge recommended by Allingham should be used.

The sponge, wrung out as dry as possible, is passed three inches up the rectum, the two ends of the string hanging out at the anus. The whole canal of the bowel is then carefully and systematically plugged with cotton-wool, sprinkled with the subsulphate of iron powder, the plug being put between the two ends of the string, so that they may be tied across it, the effect of which will be to draw the sponge downwards and the plug

upwards. In this way the rectum is fairly and evenly distended.

In making one of these rectal plugs, it would doubtless add to the comfort of the patient if the sponge, &c., be arranged around a hollow tube, such as the nozzle of a vaginal syringe so that flatus may pass. The plug should be removed by gentle syringing in a couple of days.

I have not had an opportunity of using the ingenious little india-rubber tampon to be inflated by air, invented by Mr. Samuel Benton, but I certainly shall do so if occasion occurs.

The plug may be allowed to remain some days, and then removed with the greatest gentleness. If the bowels have not been well open, the retained fæcal masses by pressing on the veins higher up cause trouble. In these circumstances a full dose of castor-oil should be given. It is far easier to treat rectal bleeding in an empty than a full bowel.

I always warn the patient that there may be some pain and bleeding the first time the bowels are open after the operation; indeed, it is not uncommon to get a little bleeding each time the bowels are relieved for a week or ten days—an occurrence which will greatly alarm the patient unless it has been previously explained to him that it only arises from the granulations.

It sometimes, though fortunately rarely, happens that a portion of the wound will refuse to heal, degenerating into a condition closely resembling an anal ulcer. If by three weeks after an operation any pain is experienced on passing a motion, the part should be carefully examined, and an explanation will generally be found in an unhealed portion of the wound.

This may cause considerable annoyance to an irritable patient, who may magnify his symptoms and bring himself to believe that your operation has made him worse than before. Such a belief is apt to grow apace

till your patient puts himself under other hands to remedy the evil he believes you have originated.

These cases require patience and tact. The patient should be kept on the sofa, and the bowels not too much irritated with medicine; a soft action should be obtained daily by a small dose of Friedrichshalle water, and the following suppository introduced immediately after the action:

Morphiæ, gr. $\frac{1}{4}$.
Hydrarg. subchlor., gr. j.
Olei theobromæ, gr. x.

It will generally happen that under this treatment the symptoms will slowly disappear. Should the sore refuse to heal, it must be treated as an anal ulcer, the sphincter being set at rest either by dilatation or division.

Stricture sometimes follows an operation for piles, and I have the notes of many cases of stricture admitted into St. Bartholomew's Hospital from this cause, as well as in my private note-book. The following is an example, the notes of which are taken from Sitwell Ward Register:

"M. J., aged twenty-two, was admitted with bleeding piles and tenesmus. She had two large hæmorrhoids by the *side* of the anus. These were tied, the *skin* being divided. The ligatures came away on the fourth day and she was discharged apparently cured at the end of a month. Seventeen months later she was again admitted, stating that after leaving the hospital she had discharge and trouble with the bowel. On examination, a firm annular stricture was found close to the anus, which would scarcely admit the tip of the finger." I have no doubt that this stricture was caused by the skin being included in the original operation. I consider it a most important point in operating for internal piles that the incision and ligature should be made wholly upon mucous membrane. (*See also* cases in the chapter on Stricture, p. 206.)

If the case be an old-standing one, and complicated by large external piles, these should be removed rather

by dissecting the skin partly off them than by cutting the whole of the pile away bodily. The cicatrix in the mucous membrane stretches and gives no trouble, while that formed by the removal of skin is apt to become hard and contracted. By attending to this rule there is practically no fear of stricture following the operation for piles.

CHAPTER V

PROLAPSE OF THE RECTUM

Prolapse of the rectum is the descent of a portion of bowel in a healthy state, and must not be confused with the prolapse which occasionally complicates hæmorrhoidal tumours. To facilitate description, prolapse is divided into two varieties—the "partial" and "complete."

In the former, the mucous membrane alone is extruded, sliding away as it were from the muscular coat by the stretching of the loose fibrous tissue connecting the two. In the complete prolapse, all the coats of the rectum, including the peritoneal, are involved. It is, in fact, a true turning inside out of the lower part of the bowel. Partial prolapse is necessarily limited in extent, there being seldom more than an inch or so of the membrane protruded. In the complete prolapse, the amount is much greater, often involving six inches or more of the bowel. It is of importance to remember, too, that in complete prolapse occasionally a hernial pouch is formed, into which a portion of the abdominal viscera may descend. This pouch is, of course, situated anteriorly, so that instead of the prolapsed tumour equally encircling the anus, its bulk will be on the anterior or perinæal aspect, in which case the opening into the bowel is turned backwards.

Prolapse may occur at any age, but it is more common in children than in adults. It is generally the result of undue straining, though occasionally may be caused

by a polypoid growth. In children, in addition to the prolonged straining, the prolapse is often coincident with some weakening illness which causes absorption of the fat in the ischio-rectal fossæ, together with relaxation of the muscular fibres of the part. Stone in the bladder in children is frequently complicated by prolapse, a condition to be explained by the constant micturition and straining of the child, together with the wasting caused by the pain and suffering.

Phimosis (though much less commonly than stone, in proportion to its frequency) is a cause of prolapse. Apart from instances in which some definite cause, such as straining, can be detected, there are other cases the pathology of which is more obscure. Occasionally, prolapse in children results from the pernicious habit of some mothers and nurses of putting a child to sit on the utensil, and leaving it there with the fear of punishment if the little creature does not succeed in passing a motion. This leads to persistent and often useless straining efforts, eventually resulting in prolapse of the bowel. In children, owing to the comparative straightness of the sacrum, the parts are naturally less well supported than in the adult.

After childhood, advanced life is the most frequent period for prolapse, and in these cases, too, it can sometimes be traced to some cause leading to unnatural straining efforts, amongst which may be mentioned enlarged prostate, the pressure of which on the rectum produces a morbid sensation of fulness of the bowel, resulting in injurious efforts for relief.

Relaxation of the resisting power of the muscular and other structures of the perinæum in advanced life may lead to prolapse. In these cases the prolapse usually comes on slowly, gradually increasing in amount till it reaches large proportions. In children the first prolapse of the bowel occurs suddenly, acquiring larger dimensions by subsequent protrusions. Sudden prolapse

may also occasionally occur in the adult, and one of the most extensive cases I have ever seen happened in this way. The following are my notes of the case:

"M. F.,* aged forty, was quite well till six months before admission into the hospital. One day, the bowels being constipated, she was straining violently at stool, when a large 'part of her body suddenly came down.' After some difficulty she was able to return this, but since that time the bowel has nearly always been in a state of prolapse, and lately she has not been able to return it. Her condition is a very miserable one, for the fæces pass away without her knowledge, and she can only hold her water for a few minutes at a time. She has frequently a sensation of sickness, but no actual vomiting. On admission into the hospital, projecting from the anus was a large tumour the size of a child's head; it was of a bright red colour, and obviously consisted of a portion of the rectum turned inside out, and tightly stretched, and the canal of the bowel could be seen a little behind the centre."

By a moderate amount of persistent pressure, the prolapse could be reduced, but it quickly returned again. The case was treated by the application of fuming nitric acid. After the first application the patient was greatly improved, and the prolapse, although continuing to come down, was only half its original size. A second application of acid, five weeks after the first, was followed by still further improvement, and after a third application the patient was able to leave the hospital with the prolapse apparently cured, the treatment having extended over four months. The diagnosis of these cases when the prolapse is down is, as a rule, a matter of extreme simplicity, but it is necessary to be a little careful in the examination to make quite sure of the diagnosis.

Prolapse may be distinguished by its softer feel and uniformly smooth surface from a protruded *polypus*,

* Sitwell Ward Register, St. Bartholomew's Hospital, vol. vii. p. 35.

and above all, by the absence of a pedicle, which can always be recognised in polypus by passing the finger into the bowel, while the uniform smooth rolls of the bright red membrane in prolapse are pretty readily distinguishable from the bunched or excrescence-like arrangement of piles. The most likely difficulty, however, to arise is in recognising what particular part of the bowel forms the protrusion. In order to make the diagnosis more simple, prolapse of the rectum may be divided into three varieties. In the first there is no sulcus round the base of the protrusion, so that the mucous membrane forming the covering of the tumour can be traced by the sight or finger to be directly continuous with the muco-cutaneous anal margin.

In the second a well-marked sulcus exists round the protrusion, so that the finger passed into the anal outlet by the side of the protrusion would encounter a *cul-de-sac* an inch or two up the bowel, extending round the whole circumference.

In the third there is no external protrusion, the upper part of the rectum being invaginated into the lower, but not to a sufficient extent to reach the anus.

In the first of these varieties, the protrusion commences by prolapse of the mucous membrane at the anal margin, the remaining walls of the rectum being subsequently slowly dragged down. In the second and third varieties, the intussusception begins higher up the bowel, and is a true invagination of the upper into the lower part of the gut. They are but degrees of the same disorder. The intussusception may commence high up the bowel, possibly in the colon, or even at the ileo-cæcal valve. Cabaret relates a case in which twelve inches of the colon was prolapsed through the anus, and in which a sound could be passed a long way up between the prolapse and the anal margin.

An infant was brought for my inspection to the casualty department at St. Bartholomew's Hospital,

presenting a prolapse even more extensive than this. A piece of dry, stringy-looking matter, resembling the dried funicular cord, was protruding from the anus, the protruding part being about a couple of inches long. The mother stated that the infant had been ailing for a week. It had vomited and passed some blood and greenish slime from time to time. I pulled upon the protrusion, and soon discovered that it was the dried-up end of a bit of gangrenous bowel, and by pulling at this portion it seemed as if I might have pulled out any amount of dark red congested bowel—a proceeding I naturally desisted from. The patient was subsequently admitted under Mr. Baker's care into the hospital, and the case is recorded by Mr. Bowlby in vol. xxxiv. of the Pathological Transactions as follows:

"On May 10 a female infant, aged eighteen months, was admitted into St. Bartholomew's, and some shreds of gangrenous bowel were removed by the exercise of very slight traction. During the three following days no blood was passed, but a good deal of mucus, and on May 13 another small portion of the gut came away. From this time the patient rapidly improved, and in a week's time was discharged, the motions being fairly healthy. On June 1 a syphilitic rash made its appearance, the child refused its food, wasted and died in July, its motions having been natural until its death. A post-mortem examination showed the entire colon to be destroyed, the small intestine reaching to within three inches of the anus. At this point the peritoneum was puckered and seared, the calibre of the gut being slightly narrowed. Five inches higher up the small intestine was a fibrous polypoid growth, nearly filling the intestinal canal."

Portions of sloughy gut removed during life were respectively the cæcum with the vermiform appendix, and part of the colon. This case is of great interest both as regards the extraordinary extent of the prolapsed

bowel (the entire colon in fact) and the complete recovery of the infant by its spontaneous separation. It is difficult not to believe in this case that the polypus was the cause of the intussusception; but yet, if it were so, how are we to explain why the portion of bowel from which the polypus grew did not form the summit of the protrusion ?

Whether the polypus in this particular case was the cause of the intussusception may be doubtful, yet there are many instances in which a polypus has certainly been the cause of prolapse in the lower part of the rectum.

I do not propose to consider further these cases of extensive intussusception in which the colon or vermiform appendix present at the anus, for they belong rather to the domain of abdominal surgery than to a special treatise on the rectum.

It can be understood how there is little difficulty in the diagnosis of prolapse, when the bowel can be actually seen protruding from the anus, but in the third form of prolapse to which I have alluded, and in which there is no protrusion, the diagnosis is not so easy, and I would wish, moreover, to call special professional attention to this variety, for I am confident that it will occasionally afford an explanation of rectal symptoms otherwise unaccountable.

The extent of this invagination varies much, in some cases being slight, in others more extensive, and so may the symptoms to which it gives rise be scarcely marked in one patient, and prominent in another. The chief symptom is a peculiar difficulty in passing the motions, in other cases, in addition to this there is a certain amount of mucoid discharge. This discharge is of a simple mucoid character, seldom large in amount, and doubtless arises from the invaginated bowel. This discharge is not always present, sometimes the patient may be free for weeks together. The difficulty in passing a motion is peculiar. The patients generally complain of constipa-

tion, for which they have acquired the habit of taking various purgative medicines, and not infrequently enemata. They complain that, on going to the closet, they have a sensation of wanting to pass a motion without the ability to do so, and that the more they strain the greater is the difficulty.

Occasionally, they find as the result of experience that they can only obtain a motion by leaning well forwards with the head between the knees. From the duration of the symptoms, and the absence of diarrhœa, hæmorrhage, &c., malignant disease or fibrous stricture may be excluded; and, moreover, a careful digital examination shows that no such organic disease exists. On the other hand, if, after the bowel has been well washed out with an injection, the finger is passed within it, and the patient requested to strain down, folds of loose mucous membrane can be felt crowding down on to the finger. By a little manipulation, it may be ascertained that these folds are nothing more than the upper or middle part of the rectum invaginated into the lower portion. Although these cases are not serious in themselves, they cause great mental distress to the patient, who may become so absorbed in the contemplation of his disorder, that it occupies the greater portion of his thoughts and assumes proportions not justified by the actual lesion existing.

The following two cases are examples of this form of concealed prolapse:

"P. H., a girl aged eighteen, had been for some time in the surgical ward of a hospital for severe rectal hæmorrhage; but since no local cause could be found for the bleeding it was considered to be a medical case, and the patient was admitted under the care of Sir Dyce Duckworth. For two years and three months she had been passing blood and slime daily. Whilst in the hospital the bowels acted several times a day, blood being always passed, usually about a teaspoonful with each motion.

She generally had to strain a good deal, but had not especially noticed any protrusion, but had an idea that 'something' might occasionally come down. She never had any pain in the bowels or about the anus. On admission into Elizabeth Ward she was very weak and anæmic. After a purge and thorough injection of soap and water, the part was examined by Mr. Harrison Cripps. The anus appeared normal, but on introducing the finger the sphincter was weak; by gently drawing on the parts with the finger and asking the girl to strain, about half an inch of mucous membrane was everted, when by a sudden straining effort between two to three inches of the bowel shot out, forming a typical prolapse. On the summits of the rugæ could be seen several shallow ulcers varying in size from one-eighth to one-quarter of an inch in diameter, blood immediately began to ooze from the margin of two or three of the ulcers. On the 14th of March, Mr. Harrison Cripps operated on the patient by drawing four lines of cautery along the bowel, the anal margin in the middle line behind being also cauterised. A pad and bandage was applied; an egg and milk diet ordered; and the patient to have a grain of opium every eight hours to keep the bowels confined. The patient was on no account to sit up, and if she required to pass a motion was to do so lying on her side without straining. 16th.—Bowels open twice to-day. 17th.—Motions quite liquid, constantly running away without control. 31st.—Doing well. Bowels open and daily motions soft; no blood or prolapse since the operation. April 18.—Has been up daily since the 9th; bowels open daily, solid; quite free from blood and slime; ordered still to pass her motions in the recumbent position. A week later she was discharged with her general health improved, feeling much stronger, there being no trace of blood or other local trouble."

For the foregoing notes I am indebted to Mr. James Berry, late House Physician to St. Bartholomew's.

A gentleman sent to me by my colleague, Sir Lauder Brunton, gave the following history. For two years he had a discharge from the rectum. This usually occurred in the morning on first going to stool, and was generally repeated once or twice in the day. The discharge amounted to about a teaspoonful in quantity, and consisted of a muco-purulent material resembling the lightly boiled white of an egg. Sometimes it was darker from a mixture with blood. He often had a sensation of the bowels being incompletely relieved, and he also complained of an occasional slight aching about the sacrum, but had suffered little or no actual pain. He occasionally lost small quantities of blood. He was anxious and nervous about himself, and had for long been treated without benefit, his disorder being variously described as "catarrh of the bowel," "dysentery," and "liver complaint."

I made a very thorough examination of the bowel, on the probability of there being some ulceration, internal fistula, or possibly malignant disease, but failed to find any of these conditions. On introducing the finger into the rectum it became arrested by some loose folds of the gut, and some little manipulation was required to pass the finger into the bowel. On further examination it was found that the middle part of the rectum was so relaxed that a large fold of it became invaginated into the lower portion, and each time the patient strained it was forced down so as to make a kind of intussusception. The invaginated part did not extend low enough to protrude through the anus. The mucous membrane at the summit of the prolapsed fold had a thickened velvety appearance, caused by the development of minute villi on the surface. Having failed to find any other morbid condition, I came to the conclusion that the discharge and other symptoms arose from the intussuscepted mucous membrane becoming congested from pressure about its neck, and that if this could be prevented the case might be cured. The case was treated accordingly

with the linear cautery with the most satisfactory results. I saw the patient a year later, when he stated that since the operation he had had scarcely any trouble, the irritability of the bowel having passed away and the mucoid discharge having ceased.

Treatment of Prolapse.—In discussing the treatment of procidentia recti, it must be considered, first, as to how the prolapse, especially that which occurs in children when partly strangulated by the sphincter, is to be reduced; and, secondly, what remedies can be applied to prevent its occurrence.

Treatment of Acute Prolapse.—The child being laid across its mother's knee, in such a position that the buttocks are raised and the head lowered, the protruded part being covered with vaseline should be gently pressed upon with the tips of the fingers of both hands. If the prolapse be small, and has but recently come down, it will generally slip back with the greatest ease after a few seconds of pressure. It sometimes happens that it cannot be reduced on these easy terms, for, owing to the contraction of the sphincter, the protrusion has become œdematous and greatly swollen. Nevertheless, if the part be kept firmly pressed upon by a soft sponge for five or ten minutes, it will often so reduce the swelling as to admit of the return of the bowel. In one case in which I had some difficulty in replacing the gut, I was enabled eventually to accomplish it by wrapping a piece of lint round the index-finger, and then, by putting the point of the finger into the protruded canal of the gut, pressed it gently upwards, whilst manipulating the part with the opposite hand. The bit of lint being dry, stuck, as it were to the mucous surface, enabling me to carry it up with the finger. I then withdrew the finger from inside the lint, which was temporarily left within the bowel. All manipulation in such cases should be very gentle, as, before now, fatal consequences have followed violence in replacing a prolapsed bowel.

Cruveilhier * narrates a case of a man, aged sixty, who for some time had had a prolapse which he had been able habitually to reduce himself; but on one occasion he could not reduce it, and applied at the Hôtel Dieu. The protrusion was then congested, and the size of the fist. After prolonged and forcible efforts the bowel was reduced, but on the following day vomiting set in, and he succumbed four days later.

Roche † reports the case of a woman, aged forty-six, who had suffered for twelve years from prolapse which one day became strangulated. The doctor made a prolonged attempt to reduce it; whilst the reduction was being attempted, the patient made a violent straining effort causing the rectal wall suddenly to split, and through the rent thus made the whole of the large, and a considerable part of the small, intestines were extruded on to the floor, the patient dying in a few hours.

M. M. Quenu ‡ records nine cases in which spontaneous rupture of the rectum in prolapse occurred, but these were not during any manipulation of the gut, but happened whilst the patients were straining violently. In all the rupture was followed by a protrusion of the small intestine through the rent.

Treatment of Chronic Prolapse.— There will be but little chance of permanently retaining the gut in children so long as any condition such as phimosis or stone remains unrelieved. Assuming that no such condition exists, or has been remedied, when the part has been reduced the greatest care should be taken to prevent a recurrence of the prolapse, for if the bowel can be retained for a certain period the tendency to prolapse will be remedied. It answers well to keep a firm pad against the anus by means of a broad piece of strapping applied like a perinæal bandage, or the nates may be forcibly pressed together by a piece of strapping passed trans-

* "Traité d'Anatomie pathologique générale," tom. i. p. 553.

† *Revue Med. Chir.*, 1853. ‡ *Revue de Chirurgie*, 10 Mars 1882.

versely across them. The child should on no account be allowed to pass its motion in the sitting position. The motion should be passed with the patient lying on the side, and if the anus be drawn by the fingers a little to one side as the motion is passing, it will generally prevent the descent of the bowel in the act of defecation. In children the general health must not be neglected, and I like to give a teaspoonful of cod-liver oil three times a day, which while nourishing the child softens the motions, diminishing the chance of straining.

In the adult, especially in cases without external protrusion, the difficulty may to some extent be overcome by advising the patient to turn as much as possible on his side, and on no account to strain whilst passing a motion, or the position already referred to of leaning forward with the head as low as possible. In one instance a patient experienced considerable relief by passing a flexible bougie about six inches up the rectum immediately before having an action. I have also advised, and sometimes with permanent benefit, that a little cold water be daily injected after the manner recommended on p. 83.

As a rule, all forms of pads and trusses are of little use in retaining a prolapsed rectum. Dr. Ball,* in his valuable work, however, says that he has in several cases obtained a cure by means of a simple pessary, which he thus describes : " It consists of an oval knob of vulcanite, with a very slender curved shank, which is perforated at the extremity for the reception of a piece of twine, so that if the instrument should happen to slip within the rectum, it can readily be withdrawn. Instruments of this kind can be obtained of various sizes, and are 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 stimulus afforded by the foreign

* " Diseases of the Rectum and Anus," by Charles B. Ball.

body tends to brace up the rectum and anus, and 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." The statement of so high an authority as Dr. Ball deserves the greatest respect, and the instrument certainly should have a thorough trial.

When a prolapse has occurred suddenly and but once, there is a fair prospect, if precautions be taken immediately, that it may not recur. On the other hand, if the prolapse be chronic, always coming down at stool, it may not only be impossible to cure it by palliative means, but there will be a gradual tendency for the prolapse to increase in amount. If the case is severe, giving rise to troublesome symptoms, and cannot be alleviated by palliative treatment, other measures must be resorted to.

Operative Treatment.—Until recently, extensive prolapse was considered to be incurable, but fortunately among the rapid advances in surgical science may be included the treatment of these cases, which chiefly, owing to Van Buren's writings, can now be generally cured by a safe and simple operative procedure. In order to understand the *rationale* of the method of cure, it must be remembered that prolapse generally commences by the slipping of the mucous membrane away from the other coats of the bowel. The mucous coat is attached to the muscular coat by a loose network of fibrous tissue, so that even under ordinary circumstances there is a considerable amount of mobility of the one coat upon the other. "Partial prolapse" is the result of this mobility being greatly exaggerated by the gradual stretching of the submucous tissue. In the "complete prolapse," after the mucous membrane has slid as far as possible, it drags upon the muscular coat, thus producing the complete eversion of the bowel. It is important, then, to bear in mind that the one form is but an aggravation of the other, and that they both may commence in

a similar way. The indication for treatment is to devise some method by which the laxity of the connection between the muscular and the mucous coat can be remedied, and the two bound more firmly together. Nature provides a ready means of accomplishing this end by an inflammatory process. The effect of inflammatory exudation into the loose connective tissue between the muscular and mucous coats is the formation of a new contractile fibrous material, which binds the two firmly together. This process can frequently be observed even in the ordinary operation for piles, where it may be noticed that the mucous membrane beneath the seat of ligature which was formerly movable, becomes adherent to the subjacent tissues.

In cases of prolapse, it remains for the surgeon to devise the means of setting up the amount of inflammation to effect the cure. This can be accomplished by nitric acid, or, better still, by the actual cautery.

The bowels having been thoroughly well opened on the previous day, the patient is placed in the lithotomy position. The prolapse, if an external one, can then be drawn out by means of vulsellum forceps, and four lines of cautery are drawn along it, one in front, one behind, and one on either side. If the bowel does not protrude, the largest-sized Sims' speculum is introduced into it; the cautery lines are then traced along the four sides of the bowel, commencing four or five inches up, and terminating on the muco-cutaneous surface of the anus, the speculum being shifted as required. The cautery must not be carried too deep, but sufficiently so to thoroughly sear the mucous surface.

Paquelin's cautery is no use for this purpose, cooling too quickly. A couple of cautery irons are required. These should consist of tapering metal rods set in wooden handles; the ends are turned down at right angles expanding into knobs of metal about the size and shape of an acorn. They should be heated over a large-sized spirit

lamp to a black heat, and used alternately. Keep the bowels confined for ten days, and then have them opened by enemata. The action must be passed in the recumbent position, to which the patient must be strictly confined for at least three weeks or a month. There is remarkably little pain after the treatment; and my experience confirms that of Van Buren's, that it is a most effectual way of treating even the most extensive cases of prolapse. I certainly prefer it, and believe it to be less hazardous than that of excising the prolapsed portion.

I have tried excision in some extensive cases. The operation is severe, and in one of these I had much anxiety

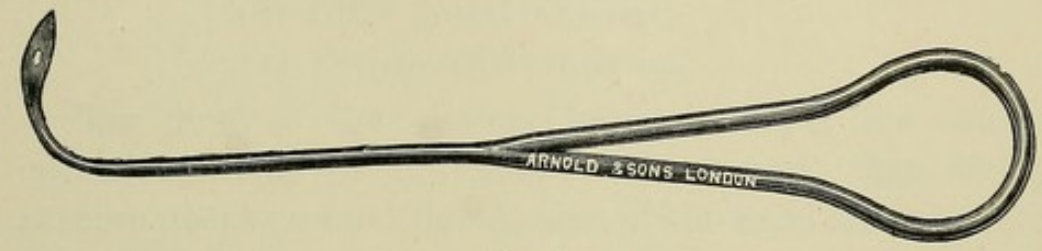


Fig. 5.

about my patient for a few days. The operation is performed thus. The patient being in the lithotomy position, the prolapse is drawn down as far as it will come. The left fore-finger being introduced into the canal at the apex of the protrusion, it can be ascertained by feeling between the finger inside and the thumb outside that there is no small intestine contained in the prolapsed pouch. Being satisfied about this, the protruded part can be transfixed with strong silk in about eight segments by means of the rectangular needle (Fig. 5). The needle is introduced, threaded, from the outside. It is then unthreaded and rethreaded with the inner end of the previous ligature, which it withdraws. The knots can thus all be tied on the outside close up to the anus. The proper use of the bougie will prevent subsequent stricture. In slight cases it will generally

be found that the hæmorrhoidal plexus is considerably dilated, even if not amounting to actual piles. Such cases can readily be cured by ligature, which is applied to the prolapsed membrane in an exactly similar manner as when operating for hæmorrhoids, the prolapsed portion being divided into four or five segments, each of which is tied separately.

CHAPTER VI

RECTAL ABSCESS

THERE are four situations in which matter forms about the rectum:

(1) Peri-anal or marginal abscess.
(2) Ischio-rectal abscess.
(3) Inter-mural abscess.
(4) Peri-proctal abscess.

The first is the abscess found beneath the muco-cutaneous folds of the anus; the second, that which is more deeply seated by the side of the anus and rectum; the third forms in the submucous tissue between the mucous membrane and the muscular coat, often extending some way up the bowel; the last is found in the pelvis between the rectum and neighbouring structures.

Causes.—The following are some of the common causes which lead to the formation of rectal abscesses: Traumatism, ulceration, inflamed external piles, tubercular disease, malignant disease, and stricture. Notwithstanding this somewhat long list, the actual starting-point of the abscess is from inoculation of the submucous tissue by some foreign or poisonous matter introduced, either directly by a wound of the part, or more remotely as a sequence to ulceration.

Owing to the mechanism of the sphincter muscles, foreign bodies, such as fragments of bones, &c., which have traversed the whole length of the alimentary canal without meeting with obstruction, become arrested in the lower part of the rectum, and are there apt to cause

puncture or abrasion of the mucous lining, a lesion which, I believe, is frequently the starting-point of an abscess. One is extremely familiar with the abscesses which form about the fingers and palm of the hand as the result of pricks, splinters, &c. The wound in these cases is often so small as to escape detection. So, too, in the rectum the initial lesion is nothing more than a minute prick, the foreign body causing it probably passing away with the motion. Occasionally it is possible to observe the whole sequence of events in these cases, as in the following instance:

E. G. applied to the casualty department at St. Bartholomew's for a sharp pricking pain in the rectum, which he had had for two days. Upon examination, I found a small spicula of bone lying transversely across the bowel. Without the least difficulty I dislodged and removed it with my finger, and since there was no bleeding, it seemed possible that the mucous membrane had not been perforated. However, a week later the man applied again with a hard tender swelling in the ischio-rectal fossa, which proved to be an abscess. This was opened, but a fistula resulted. I have on several occasions on opening an acute ischio-rectal abscess found a spicula of bone lying loose in the cavity. Mr. Goodsall,* in an interesting paper on foreign bodies in the rectum, also mentions four such cases. Of course it is not often that the foreign body will be actually caught, as in the foregoing case, *flagrante delicto*, but it seems a fair inference that the abscesses which suddenly form about the rectum in otherwise healthy persons owe their starting-point to some such lesion. The small superficial abscess that originates around the anus (peri-anal) will often be found secondary to inflammation of an external pile or to inflammation starting in one of the anal sebaceous follicles. The abscesses forming in phthisical patients will be considered in the chapter on Fistula. The amount

* St. Bart.'s Hosp. Reps., vol. xxiii. p. 71.

of disturbance caused by a rectal abscess varies greatly. When the abscess is of slow formation, there may be scarcely any pain at all, the swelling and difficulty in passing the motions first calling the attention of the patient to the part.

Brodie narrates the case of a physician in large practice in London, who felt very ill, languid, listless, and unfit for business, and in the middle of the day, in consequence of headache and an incapacity for exertion, wanted to go home and lie down for an hour before he could finish seeing his patients. One afternoon, intending to walk home, he had sent away his carriage. He found something give way, and burst into his small-clothes, and on his return he found that it was a putrid abscess—fistula. He went through an operation for it, and got well. In other cases the pain may be acute, accompanied by considerable constitutional disturbance. The small abscesses forming round the anal margin are often more painful than the larger ones situated beneath the mucous membrane, or in the ischio-rectal fossa.

The trouble generally commences with a sharp pricking sensation, which is soon followed by an aching pain accompanied by throbbing. As the abscess progresses, so does the pain increase, sometimes being so severe that the patient is quite unable to sit in the ordinary position, spending his time between walking about or sitting sideways on the extreme edge of a chair. At this period he may have a quick pulse and a furred tongue. Indeed, there are not wanting in the records of surgery cases in which the gravest constitutional disturbance has arisen from pus pent up in the rectal neighbourhood. If the part be now examined, and the abscess be in the ischio-rectal fossa, a hard, brawny swelling will be felt over the neighbourhood, which is very painful on pressure, especially so if the finger be introduced into the rectum. As the pus advances towards the surface, the superjacent skin becomes red, and fluctuation is detected.

Occasionally, these abscesses are very chronic, many weeks elapsing before the pus formation becomes apparent; but this is exceptional, and they are generally acute in their nature. I have known matter form so quickly in this position that it has actually come to the surface, and burst on the sixth day after the first onset of symptoms.

The pus from these abscesses is peculiar. It is generally thin, and has a dirty-water or greenish appearance, and it has a very fœtid odour.

If left to itself, the abscess will burst either into the rectum, or through the skin round the anal margin. Even when it primarily bursts within the bowel, it often happens in the course of a few days that the skin where previously red and distended over the ischio-rectal fossa gives way, and thus the abscess is drained by two orifices, the one within the rectum, the other external to the anus. After discharging, the abscess cavity slowly contracts, and in some instances is completely obliterated. Unfortunately, however, as will be subsequently described, a permanent fistula often remains.

The inter-mural abscesses forming within the rectum between the muscular and mucous coats are comparatively rare, yet they are important, as they are certainly one of the causes of blind internal fistulæ. They may not cause much pain nor is there any hardness to be detected outside, and for this reason they are apt to be overlooked until they burst, though a diagnosis can be readily made by introducing the finger.

These internal abscesses frequently occasion retention of urine, due doubtless to œdema in the neighbourhood of the urethra, and not infrequently it is the inability to pass water that first calls attention to the nature of the case.

J. G. was admitted into St. Bartholomew's Hospital* with retention of urine. He was a strong, healthy man,

* Henry Ward Register, vol. vii. p. 407. (Notes by author.)

but had for some time been troubled with oxyuris vermicularis. He had noticed some tenderness about the rectum, with difficulty in passing his motions. On examination with the finger a soft elastic swelling, obviously an abscess, could be felt beneath the mucous membrane, about two inches up the bowel. There was no hardness to be detected, either round the anus or in the ischio-rectal fossæ. Two days later the abscess broke, and pus discharged freely from the bowel for a few days. On the ninth day all discharge had ceased, and the patient left the hospital apparently well.

Other instances of these intra-mural abscesses will be found recorded on a later page, in the chapter on Differential Diagnosis of Cancer, for occasionally these abscesses, when chronic, may be mistaken for malignant disease.

A difficulty sometimes arises in determining whether the source of these abscesses is in the rectum or in the urethra, for sometimes matter will be found in the rectal neighbourhood which has originated from prostatic or urethral trouble.

The commonest place for a urethral abscess is in the perinæum anterior to the triangular ligament. Such abscesses result from the leakage of a little urine from the urethra into the surrounding tissue, and are generally secondary to a stricture. It occasionally happens that a leakage may take place behind the triangular ligament. In such circumstances, instead of the abscess being a perinæal one, it may present in the anterior wall of the rectum opposite the prostate. Here is an instance in point:

T. S.* was admitted into St. Bartholomew's on Nov. 4, for stricture of the urethra, the symptoms of which had commenced eight months previously. During the last month the symptoms had increased. He suffered much pain about the prostate, and had to get up several times during the night to pass water. He had a temperature

* Henry Ward Register, vol. vii. (Notes by author.)

of 102°. The stricture was near the meatus, and would only admit of a No. 1 catheter.

Nov. 8.—Temperature still raised. On examination of the rectum the prostate was enlarged, and felt very tender.

Nov. 15.—Severe rigor. Feels very ill. Temperature 105°.

Nov. 16.—Free discharge of pus from the rectum, which gave him great relief. On the following day, on examination with the finger at two inches from the anus, a hole could be felt in the anterior wall of the rectum of sufficient size to admit the finger into what proved to be an abscess cavity between the rectum and prostate. Small quantities of pus continued for many days to be discharged from the bowel. Six weeks later the opening of the abscess cavity had almost closed, a mere fistulous track remaining.

In such a case, owing to the presence of stricture, there is little difficulty in determining the source of the abscess which bursts into the rectum. It is but seldom that there is a difficulty in diagnosis, though a puzzling case may occasionally be met with.

Mr. H. consulted me under the following circumstances:—For some days he had suffered considerable uneasiness about the rectum, especially feeling pain at the time of defæcation. Upon examination, I felt just anterior to the anal margin, and slightly to the left of the middle line, a small but very hard swelling about the size of a hazel-nut. On introducing the finger into the rectum, the swelling could easily be felt beneath the mucous membrane in the anterior wall of the rectum. The patient had never had stricture of the urethra, and could pass his water with perfect ease and freedom. I advised him to apply a poultice to the part, and to see me again the following day. I did not, however, see him till a week later, when he stated that three days after seeing me something suddenly gave way in the

rectum, for he had a slight discharge, and the pain which had been increasing entirely disappeared. Upon careful examination I could find no trace whatever of the hardness previously described. Three months later he again consulted me for the swelling, which had reappeared exactly in the original spot. But, since on this occasion he suffered no pain, he would not have anything done to the swelling, which again spontaneously disappeared after a week or two. Nevertheless, a month later it appeared for the third time, being on this occasion larger and much more painful. On examination under chloroform, I could feel a hard tubular swelling beneath the anterior wall of the anus an inch in length, lying with its long axis in a line with the bowel. As before, the apex of the swelling was most prominent beneath the perinæum, just anterior to the anus. At one point, three-quarters of an inch within the bowel, there was a puckering of the mucous membrane, which appeared to be adherent to the swelling, and was doubtless the point at which it had previously broken into the bowel. A bent probe would not, however, enter it.

I incised the swelling, expecting to let out a drop of pus, but nothing escaped. On the following day a small quantity of urine escaped by the bowel. The slight wound made by the incision soon healed, with the exception of a pin-hole aperture at the extreme verge of the anus. From this aperture, each time the patient passed water, a few drops of urine escaped. Suspecting that the patient might have stricture of the urethra, I passed a catheter, but found that if the urethra narrowed at all it was only to a very slight extent. For some months a drop or two of urine would escape from the opening on his making water, but the fistula eventually closed, and he has never had any further trouble.

It would be out of place in this work to go into the pathology of urinary fistula, but I mention the foregoing case in some detail as showing how closely at times

the symptoms simulate blind internal fistula of the rectum.

Ischio-rectal abscesses should be opened as early as possible, and I think it quite right that an incision should be made into the hard swelling, even before actual fluctuation be detected. It is a mistake to wait for these abscesses to burst of themselves, for extensive damage may result from the undermining and sloughing of the skin; such, for instance, as in the following case at the hospital which my colleague, Mr. Bruce Clarke, asked me to see:—

W. W., aged sixty-five, stated that he was quite well till three weeks ago, when he was suddenly seized with pains about the rectum, and an abscess formed, which broke a fortnight later. Upon examination, the skin around the anus and inner part of the buttocks was in a swollen, brawny condition, and of a dark red colour. On the right side was a huge circular opening, two inches in diameter, from which the skin and sub-cutaneous tissue was completely destroyed, exposing the gluteal muscular fibres. On the opposite side was another circular opening, though not quite so large. A probe could be passed for a considerable distance all round the openings beneath the undermined integument, and right across the perinæum from one side to the other in front of the anus. An early incision would have prevented such extensive destruction of tissue.

Another reason for early evacuation of the pus is, that if left it occasionally separates the bowel from its connections in a curious manner worth describing, for it explains the horseshoe fistula. The matter originally collects in one or other of the ischio-rectal fossæ. It then makes its way behind the bowel to the fossa of the opposite side. This channel I have found big enough to pass a finger through. It is bounded in front by the back surface of the bowel, behind by the skin and thick subcutaneous fibrous tissue, below by the fibres of the

sphincter ani, and above by the anterior margins of the levatores ani as they pass to the side of the coccyx.

I attended a very well-marked case of this kind with Dr. Walters of Reigate. The patient had been ailing for some weeks, and had had complete retention of urine, requiring the catheter for three days before we saw him. On introducing the finger into the rectum a soft cushion-like swelling could be felt partly surrounding, and nearly obliterating, the calibre of the bowel. This proved to be an immense abscess occupying both ischio-rectal fossæ communicating behind the bowel in the manner just described.

Peri-proctal Abscess.—These abscesses form in the pelvis and not infrequently burst into the bowel in the neighbourhood between the rectum and the bladder, or into Douglas's pouch. Many of these abscesses occur in women as the result of pelvic cellulitis, and will be found referred to on p. 207, others are found in connection with rectal stricture, and are of so much importance, owing to their often terminating fatally if not diagnosed, that I have referred to them in considerable detail in the chapter on Stricture.

Treatment.—In opening ischio-rectal abscesses, if possible, an anæsthetic should be administered. The patient lying on the side where the abscess is situated, the upper leg should be bent at the knee and thigh, when the most prominent part of the abscess being selected, a free opening is made with a sharp-pointed scalpel. It is well to stand clear of the pus, which often squirts out a considerable distance, and with which it is very unpleasant to be sprinkled. If the abscess be not prominent, the forefinger may be passed into the bowel, and by pressure be brought nearer the surface. It is generally directed that the incision should be made in a line radiating from the anus. I prefer, however, to carry the incision directly downwards, for by this means pocketing of the pus is prevented, and more effectual drainage obtained.

In opening a horseshoe abscess, it is best to make an incision in the middle line behind, extending from the abscess cavity to well beyond the anal margin. A lateral cut should then be made at right angles on each side, laying open the abscess cavities in the ischio-rectal fossæ, and joining the median incision. These lateral cuts need not extend far, but should be sufficient to ensure good drainage by a tube inserted on either side.

The question naturally arises as to whether, by any plan of treatment, the abscess can be cured without degenerating into a fistula. My belief is that, although by judicious management a fistula may generally be prevented, it sometimes happens that, even with the most careful treatment, it is impossible to arrest its formation. It is well to explain this to patients, who might otherwise imagine that their subsequent fistula was in some way due to the operation employed for their relief.

The treatment indicated is to secure free drainage from the external opening. For this purpose the original opening should be made fairly free, and I commonly employ a piece of cyanide gauze tissue to keep the opening patent. It is not sufficient to use a mere narrow strip of single thickness, it should rather be folded seven or eight times, after the manner of a candle-lighter. It must be changed twice daily, and the cavity well syringed out with a weak carbolic solution, or, what is better, with the boro-glyceride lotion, ʒ iv. to ʒ viij.

The little superficial marginal abscesses should also be treated by incision. These little abscesses, although they may not contain more than a few drops of pus, are often exquisitely tender. If left alone, they will break in a day or two by a small opening just at the anal margin, leaving a little cavity in the connective tissue immediately beneath the muco-cutaneous membrane.

At first, if the probe be introduced, it will be found

that the cutaneous structures are detached over an area perhaps the size of a fourpenny piece. In the course of a week or two the part is generally completely healed, occasionally leaving as a remnant a small tag of hypertrophied cuticle, but sometimes a troublesome little fistula will result. In these tiny fistulæ will be found the explanation of a great deal of recurrent rectal trouble, the source of which is frequently overlooked. At other times a channel with an opening at each end will remain, formed by a thin bridge of tissue a quarter of an inch or so only in length.

Gangrenous Inflammation around the Rectum.—Patients with broken constitutions, especially such as have spoilt their tissues by prolonged indulgence in drink and free living, may be attacked with phlegmonous inflammation of the parts about the rectum. In such cases the inflammation runs on to sloughing, or even gangrene of the skin and subcutaneous tissue around the rectum, and there is no tendency to the formation of a circumscribed abscess cavity. I remember a case at the Royal Free Hospital in which, owing to diffuse cellulitis, the rectum was left almost isolated by the sloughing of the skin and subcutaneous tissue of the fossæ. Such cases are grave in their nature, indicating some depraved constitutional condition. If seen early, which rarely happens, they should be treated by free incision with the hopes of preventing sloughing of the skin. Great care must be taken in these cases to support the patient's strength by beef essence, and other forms of concentrated foods. Opium should also be administered in half-grain doses every four hours, if the urine be free from albumen. The parts should be covered with a warm antiseptic dressing, and cold should on no account be applied as a local application.

CHAPTER VII

FISTULA IN ANO

THE consideration of fistula in ano naturally follows on that of abscess, to which, I believe, it invariably owes its origin. It is, in fact, the remains of an abscess cavity, the walls of which have shrunk into a tubular channel. If the fistula be cut open, it will be seen to be lined with a smooth gelatinous membrane, which an examination under the microscope shows to consist of a granulation tissue exactly analogous to that found lining the interior of a chronic abscess. The leucocytes forming the surface of this membrane are but loosely adherent, and constantly becoming free, form the chief part of the pus which drains from the fistula.

The sequence of abscess to fistula is one which every practical surgeon is constantly observing; but yet the misconceptions which some authors still hold as to the origin of fistulæ are astonishing. Thus, a recent writer in the *Boston Medical Journal*, "insists upon the fact that an anatomical consideration of the rectum shows that the diverticulæ of Morgagni and the internal hæmorrhoidal veins be an adequate and obvious source of fistulæ"!!!

I would advise any surgeon who may still be in doubt as to the starting-point of rectal fistulæ to keep memoranda of all the cases of ischio-rectal abscess he is called upon to treat, and I will undertake to say that more than half of these end in the establishment of a fistula in ano; and further, if, when he is consulted by patients

with fistula he will take the trouble to question them carefully, he will find that their trouble almost invariably commenced with symptoms of rectal abscess.

Much has been written as to the reason of abscess cavities in the rectal neighbourhood so commonly degenerating into permanent fistulæ instead of healing as under ordinary circumstances. Two explanations are offered, both of which play some part in the process. The one is, that owing to an internal opening within the bowel, small particles of fæcal material are constantly finding their way into the sinus, and there, playing the part of a foreign body, prevent the healing. The other, that owing to the frequent movement of the part by the sphincter muscle, sufficient rest is not obtained for the completion of the reparative process.

The fact of foreign matter finding its way into the fistula is not in itself a sufficient explanation, for, while it would account for the cases of complete fistulæ refusing to heal, it affords no explanation as to why the blind external fistula, that is, the fistula which has no communication with the interior of the bowel, should also fail in the reparative process, which, nevertheless, quickly heals when the sphincter is set at rest by division.

Fistulæ with considerable practical advantage may be divided into four varieties :—

(1) Complete fistula ;
(2) Blind external fistula ;
(3) Blind internal fistula ;
(4) Horseshoe fistula ;
(5) Muco-cutaneous fistula.

In the first of these, the sinus extends from an opening through the skin external to the anus, to an internal opening through the mucous membrane within the bowel. In the second variety (external fistula), there is an external opening only, the fistula ending in a blind extremity having no communication with the interior of the bowel.

In the third variety (internal fistula), there is an internal opening through the mucous membrane, but there is no external opening round the anal margin. In the fourth variety (horseshoe) there is generally but a single opening into the bowel at the back part, while there may be two openings through the skin, one on either side.

Complete Fistula.—This form is the commonest, nevertheless it is exceptional for those who have had little experience in rectal examination to discover the internal opening, and to be able to pass a probe without using force from the external opening into the cavity of the bowel. Since the discovery of the internal opening is of considerable importance in the treatment, it may be well to study its situation, the reason of its formation, and the cause of the difficulty so often experienced in finding it. The diagram will help to explain this. Figure 6 represents an abscess in the ischio-rectal fossa, the pus of which is making its way to the surface in the line of least resistance, which appears generally to be both outwards towards the surface of the skin over the fossa and inwards towards the cavity of the bowel between the sphincter muscles. Thus, there are two points towards which the abscess is simultaneously making its way, the one towards the cavity of the bowel in the furrow between the sphincters, the other towards the skin at a distance of three-quarters of an inch or more from the anus. Notwithstanding that the abscess will first break at one of these points only, the skin or mucous membrane, as the case may be, at the second point will have become so thin that it gives way by ulceration, even after the actual pressure of the pus has been relieved. It consequently happens that, although the abscess primarily bursts at one spot only, a second opening becomes subsequently established. From this it will be seen that a probe passed into the external opening will have to traverse a portion of the old abscess cavity before it finds its way through the second opening into the bowel.

FIG. 6.

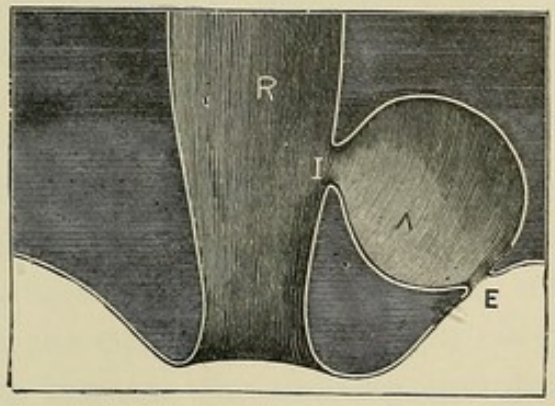


FIG. 7.

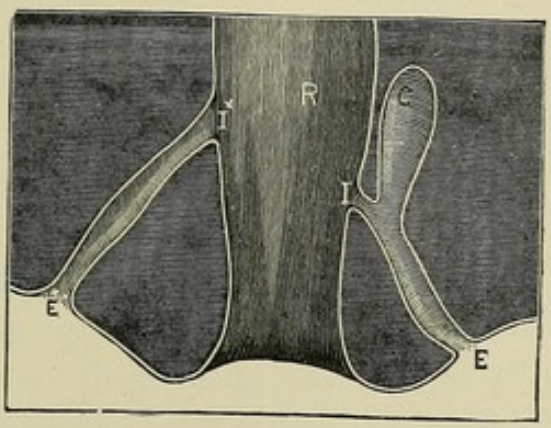
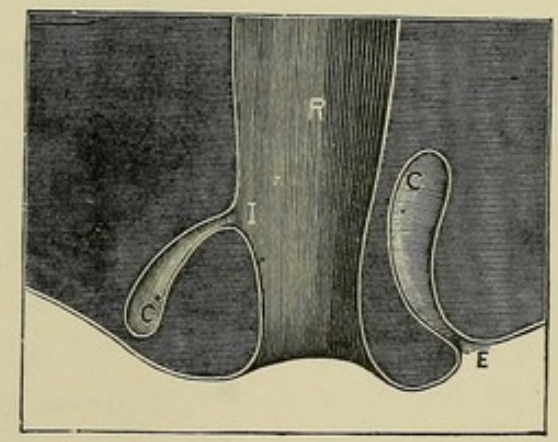


FIG. 8.



DIAGRAMS SHOWING THE VARIETIES AND FORMATION OF FISTULA.

FIG. 6.—R, rectum ; A, abscess breaking both into the rectum at I, and through the skin at E.

FIG. 7.—On the right side is shown the abscess cavity contracted, and the method of formation of the cul-de-sac at C, extending above the internal opening I, is seen. On the left side is a complete fistula without any cul-de-sac.

FIG. 8—R, rectum ; C I, blind internal fistula ; C E, blind external fistula.

To face page 138.

If the abscess cavity, as sometimes happens, has shrunk to a mere channel, at either end of which were the external and internal openings, of course there would be no difficulty in passing the probe through. The abscess, however, as already shown, does not generally break into the bowel at its apex or highest point, but rather by a hole through its side, so that on the pus being evacuated and the cavity contracting, a cul-de-sac will be formed running beneath the mucous membrane considerably higher than the internal opening. It is into this cul-de-sac that the probe so easily passes, affording a ready explanation as to why the internal opening is sought for in vain, for instead of being at the apex of this cul-de-sac, it is in reality situated much nearer the anus.

In examining a case of suspected fistula, the external orifice will be generally at once apparent. In long-standing cases it may be in the centre of a little raised papule. Sometimes the orifice is very small, and it requires a careful search to find it. In such circumstances, by carefully feeling all round the anal margin, the site of the fistula will be detected by the subcutaneous induration. This is sometimes so distinct that it feels like a hard cord. The orifice when discovered may be temporarily blocked up, but on a little pressure will easily admit the probe. It is well to have two or three of these handy, for it may happen that a fine probe will readily detect a sinus which a larger one had failed to enter.

In examining a fistula the probe should always be passed before introducing the finger into the bowel, otherwise the contraction of the sphincter on the finger will tend to draw the fistula out of the straight line, causing a difficulty in the passage of the probe. Bearing in mind the probable situation of the internal opening, that is to say, at a spot not more than half or three-quarters of an inch within the anal orifice, and slightly

guiding the probe in that direction, it will often at once slip into the bowel. If it does not do so, the left forefinger introduced into the bowel may detect the internal opening by the line of hardness, or a dimple-like feel.

Another method of examination is to pass the probe as far as possible into the cul-de-sac, and then gently to withdraw it, whilst its extremity is pressed towards the finger in the rectum, when it may slip into the bowel as it comes opposite the opening. Milk injected through the external opening, and then observing by a small speculum the point at which it flows into the bowel, has also been used as a means of finding the internal orifice.

In old neglected cases of fistula there is no longer the simple condition of a single channel, for owing to the retention of matter and the consequent formation and burrowing of secondary abscesses, the parts in the neighbourhood of the anus may become riddled with channels radiating in all directions from the line of the original fistula. Such tracks may occasionally extend three or four inches along the buttocks; more rarely they pass backwards towards the sacrum, or not infrequently they will run forward towards the perinæum.

In some rare instances, and especially in tubercular fistulæ, the walls of these tracks are dense and hard, and bound large cavities rather than simple channels. One of the worst and most extensive of such cases which I have seen will be found described in the chapter on Cancer; here the destruction was so extensive and the walls so indurated as to create a strong suspicion that the disease might be malignant, but it proved to be otherwise.

However numerous secondary tracts may be, they seldom communicate with the bowel except by a single internal opening. In such cases there is generally a red brawny condition of the skin over the area of the subcutaneous tracks, which sometimes can be traced as hard indurated lines. At other times the skin is of a bluish

colour, thin and undermined, communicating to the finger a soft boggy sensation.

Fistulæ may form about the anus, originating in causes disconnected with the bowel itself. Such fistulæ may occasionally be the result of caries of some portion of the pelvic bones, or even of the vertebral column. I examined a little girl of four years old who was brought to the hospital on account of a discharging fistula, the opening of which was over the ischio-rectal fossa half an inch to the right of the anus. Upon further examination the child was found to have an angular curvature with caries of the lumbar vertebræ, with which the sinus communicated.

Abscesses originating in the deeper part of the pelvis frequently break into the rectum, the pus being discharged by the anus, but much more rarely such abscesses may find their way to the surface external to the rectum, thus simulating an anal fistula. It is important that this should be borne in mind, for a deep and dangerous operation has occasionally been performed in such cases without the least benefit to the patient.

Fistula in ano frequently complicates simple or malignant stricture of the rectum. In such cases it would be a grievous mistake to overlook the initial lesion. I therefore strongly advise that the interior of the bowel in every case of fistula be examined by the finger, to prevent the possibility of such a mistake.

Blind External Fistula.—Many fistulæ are supposed to be blind which are in reality complete, the internal opening having escaped detection. Nevertheless there will be found a considerable number of cases of true external fistulæ in which there has either never been an internal opening, or it has become closed. If a fistula has existed for years, giving little trouble without being liable to inflammation, it will most commonly be found that it does not communicate with the bowel. External fistulæ owe their origin to an abscess in the same manner as complete fistulæ, and occasionally they are the result

of the retention of a foreign body following a wound in the neighbourhood.

A man admitted into St. Bartholomew's * had a blind external fistula that had remained after a wound of the part with a pointed stick. There was a history of an abscess, and no internal opening could be found. Upon laying open the fistula there was discovered at its apex a piece of grey flannel shirt, three-quarters of an inch square, which doubtless had been carried there on the point of the stick at the time of the accident.

With the exception of the internal variety there is little likelihood of the symptoms of fistula being overlooked. There is always some slight weeping or discharge from the part unless the opening be blocked. At such times a little extra pain and swelling will occur from the collection of retained matter. Then the discharge suddenly breaks out again in an increased quantity, while the swelling and tenderness simultaneously disappear. The amount of discharge from a fistula varies greatly. In slight chronic cases the discharge may be only just sufficient to stain the linen, while, if the disease be more extensive, it may be so profuse as to keep the patient constantly wet and in discomfort. Not only does the amount of discharge vary in different cases, but it is subject to great variation from time to time in the same individual. For weeks, or even months, there may be no pain, and only the slightest discharge, then somewhat suddenly the fistula will become painful, the part feeling hard and swollen. This indicates an increased inflammatory action, to be followed by a fresh abscess or a more copious secretion. If the secretion from a fistula be very free, I always suspect a considerable cavity to exist, and have often found in such cases that, on passing a probe through a small external opening, it can be swept round a considerable area beneath the detached skin.

* Henry Ward Register, St. Bartholomew's, vol. vii. p. 121. (Notes by author.)

Blind Internal Fistula.—The origin of these fistulæ is the same as that of the complete variety, but the abscess breaks into the bowel only. Thus there is an internal opening, but no external one. These fistulæ are of great interest, for owing to their somewhat obscure symptoms they are frequently overlooked or mistaken for some other disorder. In these cases there is a certain amount of discharge from the anus, which varies considerably in amount, being sometimes slight and at others more copious. There is a sense of discomfort in the lower part of the bowel, and occasionally there is pain of a smarting character. In fact, the symptoms very closely resemble those of ulceration, and a differentia diagnosis between the two can only be made by careful examination of the part. Upon introducing the finger into the bowel, a ragged irregular spot, feeling like an ulceration with raised edges, may be detected. So far as I have observed, the opening in these internal fistulæ is considerably larger than in the ordinary instances of complete fistula. I remember, for instance, one case in which the opening was sufficiently large to admit the tip of the finger. Sometimes there is a very characteristic feature in these cases. The patient will notice from time to time a hard, tender swelling in the anal neighbourhood. This will be followed in a day or two by discharge of pus from the bowel, while at the same time the external swelling diminishes or disappears. This phenomenon may be again and again repeated, and points to the nature of the disorder.

If the part be exposed with the speculum, it will be found on examination with the probe that the mucous membrane in the neighbourhood of the opening is detached from the muscular coat beneath. The detachment is most considerable towards the anus, so that if the probe be bent in the form of a hook and then introduced into the opening, its point may be felt beneath the mucous membrane close to the anal margin.

My experience of these cases of internal fistula is, that the lesion rather consists in the undermining of a considerable area of mucous membrane than a single distinct channel, which, however, doubtless occasionally forms.

Horseshoe Fistula.—This is the result of an abscess of the nature described on p. 132. There will generally be found an internal opening usually on the posterior wall of the bowel. From this a track leads into the ischio-rectal fossæ of either side, and from whence there is generally an opening through the skin. For this reason there are usually three openings in this variety of fistula, one into the bowel, and one through the skin on either side. It may be that there is only one external opening, and this on the opposite side to that of the internal, so that there is a semicircular channel half round the bowel.

Muco-Cutaneous Fistula.—This form of fistula has been generally overlooked, and though in a clinical lecture published some years ago, I called attention to it, it does not seem to have received the attention it deserves. In this form of fistula will often be found the explanation of rectal symptoms otherwise obscure, which together with the frequency of its occurrence requires that it should have careful consideration.

Pathology.—It originates in a small abscess at the base of one of the rectal folds just where the skin joins the mucous membrane. Such an abscess is minute, only containing a few drops of matter. It breaks by a pin-hole opening, either through the skin of one of the anal folds or more frequently just on the verge of the mucous membrane. Before it bursts it raises the muco-cutaneous surface or the mucous membrane from the subjacent tissues, with the result that the area of membrane thus raised, and often not larger than a sixpence, does not, after the breaking of the abscess, adhere again to the tissues beneath, a little cavity existing the secretion from which is discharged through the pin-hole aperture mentioned.

This may go on for many months, the undermined area neither ulcerating nor adhering. Should it ulcerate away there is no difficulty in the diagnosis, for a typical anal ulcer is established and evident.

Symptoms.—These resemble those of anal ulcer, but are less severe and less marked. Indeed, often the characteristic pain of an anal ulcer is absent. In its place an "irritation" is complained of, sometimes having the features of pruritus, an itching and slight burning sensation coming on in the afternoon, or when the patient goes to bed. There is no bleeding, and the discharge is so slight as scarcely to soil the linen, though some moisture of the part may be noticed.

Diagnosis.—The patient lying in a good light, on the side, with the knees well drawn up, the anal folds should be examined. One or two may appear slightly enlarged and swollen, or be redder than normal, the posterior fold being most commonly affected. On telling the patient to strain down, and carefully examining the fold and its base, a tiny hole can be seen, into which a very fine probe can be passed. The opening will at times lead into the centre of the fold, at others upwards under the mucous membrane. The fistula is seldom more than half to three-quarters of an inch in length. If it leads under the mucous membrane the probe's end can be made to move from side to side, showing the undermining of the mucous membrane. On withdrawing the probe and pressing over the area, a tiny quantity of purulent secretion may occasionally be pressed out.

Treatment.—In order to ensure the cure of this fistula, it must not be considered as a mere trifle just to be slit up on the couch, and the patient sent home. Of course it might be cured by such simple means, but as likely as not, beyond giving the patient a moment of acute pain, no good will be effected. Such a case should be properly prepared as to the bowels, and then,

when under an anæsthetic, the fistula should be carefully followed up and opened, after which, the knife being turned round, the posterior part should be freely incised by a cut one and a quarter inches long and one quarter of an inch deep, dividing a few of the superficial fibres of the sphincter. The case should be dressed night and morning like an ordinary fistula. Although this will entail the patient lying up for a fortnight, it is well worth it, and a permanent cure may be promised.

Fistula in Ano, complicating Phthisis.—The connection between fistula in ano and phthisis is too frequent to admit of explanation as a mere coincidence, and I should say, from my observations at St. Bartholomew's Hospital, that from 10 to 15 per cent. of all cases of fistula are complicated with disease of the lungs. No very satisfactory explanation has yet been given why rectal abscess and fistula should occur more frequently in phthisical patients. It is probably to be sought partly in the fact that in strumous patients there is an increased tendency to suppuration from slight causes, and partly that the follicular ulceration of the mucous membrane of the rectum in phthisical subjects is a predisposing cause for abscess formation in the rectal walls.

Professor G. Lormani,* experimenting on animals, found that tubercle bacilli were completely destroyed by the gastric juice in digestion, but only after being exposed to its influence for some time; thus, he considered it probable in patients with impaired health and imperfect digestion, that some of the bacilli may pass unaltered into the interior of the bowel, and produce tubercular ulceration. This view requires further confirmation before it can be accepted.

The chief interest of these cases to the surgeon centres in the question—should they be subjected to operation? The answer to this depends on the relative proportion between the two diseases. If the lung trouble be but

* "Annali Univ. di Medicina," August, 1884.

slight, while the fistula is troublesome and painful, there can be little question as to the propriety of operating. On the other hand, if the lung disease be advanced, and the cough troublesome, it would be very injudicious to operate on the fistula. The wound will frequently refuse to heal, causing perhaps even more trouble than the fistula it was intended to cure. The elastic ligature is especially suitable in these cases. I think it may often be safely employed, when it would be unwise to confine the patient to bed, which is necessary when operating in the ordinary manner. Although I have seen great advantage result from the operation in phthisical cases, especial care should be exercised in selecting a suitable occasion. If possible, summer weather should be chosen, or at least a period of cold damp weather is to be avoided. The administration of anæsthetics is a matter of considerable importance; when there is any question as to the condition of the lungs chloroform may be safely administered, but I consider either inadmissible. The irritation ether causes may re-light dormant mischief in the lung, or even place the patient's life in immediate peril. I nearly lost a patient at St. Bartholomew's Hospital from this cause. I was not aware at the time of the condition of the lung, or I should have had chloroform administered instead of ether.

This patient a year before had an attack of blood-spitting, and had been troubled for several months with an obstinate cough. For the last six months he had been much better, with scarcely any cough, had gained flesh, and had done his work as usual. The day after ether was administered the cough became very troublesome. For six weeks his temperature ranged from 101° to 103°, his nights were restless, he sweated profusely, and rapidly emaciated, the expectoration being copious and purulent. At the end of this time the patient took a turn for the better, and was eventually discharged from the hospital

in fair condition; but there can be no doubt that his life had been placed in considerable danger by the re-lighting of the old disease in the lungs.

I do not condemn the administration of ether from my experience alone, for the late Joseph Mills, the eminent chloroformist, who probably had a larger experience of anæsthetics than any practitioner of his time, told me that he had known similar instances of harm following the administration of ether in phthisical patients.

Severe Cases.—Few diseases vary more in degree than does fistula in ano. In the majority of cases the fistulous channel is nothing more than a single sinus running for a couple of inches or less between the external and internal opening. Occasionally the disease is far more severe, the buttocks and lower half of the rectum being riddled with sinuses and great cavities running far up into the pelvis. These cases tax all the skill and patience of the surgeon to bring about a successful cure, often necessitating several operations. Indeed, in a bad case the patient should understand from the beginning that it is more than likely that he cannot be cured by a single operation.

The following is a specimen of a bad case:—Mr. J., aged thirty-five, sent to me by Dr. Jones, of the Rhonda Valley, states that his trouble commenced with an abscess which burst a year ago. On examination there were six external openings, the most anterior being at the base of the scrotum, the more posterior a half-inch behind the coccyx.

On laying open the superficial sinuses it was found that a sinus which would admit the finger ran up to the right of the bowel a distance of five inches. At this height the entire rectum, with the exception of a strip on the front wall, was separated from its connections. Both the ischio-rectal fossæ were converted into large cavities. After the superficial sinuses had

been laid open, the bowel was divided posteriorly to the height of four inches. The sinuses and cavities, after being well scraped with a curette, were packed with strips of lint. The size of the cavities was such that five yards of lint one and a half inches wide had to be used to fill them. During the next year two further operations were performed, but ultimately the patient was cured.

Treatment of Fistula in Ano.—This involves many serious considerations. In the first place, the patient will naturally inquire as to whether any surgical interference is necessary, and what would be the result if the disorder was left to run its course. It sometimes happens that a fistula, forming in the ordinary way as the result of an abscess, will in a few weeks or months permanently close; or that the fistula, painful and troublesome at first, ceases to be of any annoyance, with the exception of a little weeping from the external opening. Unfortunately, however, it is exceptional for a fistula once established to heal spontaneously, nor can a patient who has passed many years without annoyance from his fistula be sure against complications and trouble arising; a circumstance illustrated by the following case which I attended with Mr. Charles Drake of Brixton. The patient, a gentleman, aged forty-four, after getting cold and wet during a day's hunting, eleven years previously, suffered great pain for some days about the rectum. An abscess then broke, giving great relief. From that time he had always had a discharging sinus. This gave him no pain or trouble until a month before he consulted me. The part then became uneasy and tender, and during the last few days had caused considerable pain. On examination at a distance of three-quarters of an inch from the anus, and on a level with its upper border, was a small elevated tubercle, in the centre of which was a fistulous opening. A probe passed readily into the sinus for three-quarters of an inch down-

wards and inwards, and there became arrested. The finger when passed into the bowel caused some pain, but no hardness was detected. I suspected, from the symptoms, matter to be forming somewhere, but I could not find its exact seat. I advised that the fistula should be laid open, both with a view to evacuating the pus and effecting a permanent cure. The operation could not be fixed until some days later. Upon visiting my patient for the purpose of operating, I found that after considerable pain that morning he had had a free discharge of pus from the sinus.

On the patient being put in the lithotomy position under ether, I passed a probe downwards and inwards through the sinus, a distance of three and a half inches towards the sacrum, well on the outside of the bowel. On substituting a steel director for the probe, its end could be felt some distance from the surface, nearly on a line with the tip of the coccyx. A small incision being made through the skin over the point of the director, it was forced through. The whole of the intervening structures were then divided. It could be seen that a sinus three inches in length had been laid open, at the bottom of which was an irregular collapsed abscess cavity. The side of the rectum was exposed, but no opening could be found into it. However, I made an incision extending at right angles from the wound through the sphincter muscles. In this case the wound healed, and the patient was perfectly cured. Nevertheless, the operation was a severe one, owing to the extent of the incision, and the patient was confined to his room for many weeks. I have no doubt that, had an operation been performed years before, it would have been of a comparatively trifling nature. Moreover, I consider the patient lucky to have escaped the more serious complications from tunnelling of the tissue. It often happens that a neglected fistula becomes aggravated by the formation of secondary channels running in various

directions from the primary one, and that a disease, at first simple and admitting of an easy cure, becomes a formidable disorder. It is by no means uncommon in hospital practice to find the neighbourhood of the anus riddled with fistulous passages, which sometimes burrow deeply beneath the gluteal muscles, or forwards towards the perinæum, while it occasionally happens that the continual irritation caused by a fistula in the submucous tissue will lead to rectal stricture (*see* p. 204).

Having recognised the necessity of interfering with the fistula, let us consider the steps to be adopted for its cure.

Fortunately, by laying open the track and dividing the sphincter, we have a certain means of curing an uncomplicated fistula, but patients will often display a natural anxiety as to whether their fistulæ cannot be cured without an operation. In answer to this, it can fairly be said that this is sometimes possible, but the treatment will require the most constant and careful attention, and even then in a great majority of cases the patient must be prepared for failure.

In trying this treatment, the following principles should be kept in sight. First, that the external opening is perfectly free; secondly, that an attempt be made to excite healthy action in the fistula itself; and lastly, that the parts be kept as quiet as possible. To accomplish the first indication, a little plug may be gently inserted a quarter of an inch or more into the external opening. This, acting like a foreign body, soon enlarges the orifice, keeps it patent, and allows the discharge to flow by its side. Such a little plug can be readily made by taking a piece of gutta-percha, the size of a large pea, soaking it in hot water, and rolling it between the fingers into the shape of a diminutive mushroom, the little stalk being half an inch in length, the thickness of a steel knitting-needle. The flattened head prevents its slipping in, and it can be kept in place by a piece of

strapping over it. The opening, if preferred, may be more quickly dilated with a piece of sponge-tent. To excite action in the fistulous passage, some surgeons advise the passage of a probe, on which a little nitrate of silver has been fused. This may be tried, but it is well to remember that it is sometimes followed by considerable pain and inflammation. Another plan is to wrap a little cotton-wool round the end of a probe, dip this into carbolic acid mixed with equal parts of water, and wipe out the interior of the cavity. Should there be an internal opening of any considerable size, I believe that all attempts to cure by simple drainage will be absolute waste of time. There can be no doubt that, in the great majority of cases, the right treatment for fistula is that of laying the sinus freely open, and allowing it to heal from the bottom. Still there are exceptional cases in which it may be wise to pause before recommending this. Unless the local trouble be very considerable, no operation should be undertaken in those who are suffering from severe organic disease. Albuminuria, diabetes, cardiac or hepatic disorders, alcoholism, and advanced phthisis, are all conditions which add risk to an otherwise safe operation. As regards local conditions, it must be remembered how frequently fistula complicates cancer and rectal stricture. If either of these be present, of course an operation must not be undertaken. Supposing that we are satisfied that the patient is constitutionally sound, and the bowel with the exception of the fistula healthy, a few points of importance concerning the operation itself must be considered. Nothing is so unsatisfactory, after strongly advising a patient to submit to operation, as to find that within a few weeks of leaving your care the old symptoms reappear. Under such circumstances your patient loses confidence, and will seldom undergo a second operation at your hands. And there will be the somewhat small consolation of subsequently learning that

a cure has been effected by some other practitioner, who succeeded by paying attention to some small matter you had overlooked. Even with the greatest care failure will occasionally occur. Nevertheless, by attention to details in the operation and in the subsequent treatment, the failures will be rare compared to the successes.

In the first place, it is of much importance to find the internal opening, if such exists, for if it be not included in the incision, it may remain as a point from which further trouble may arise. I do not mean to say that the cases will never do well in which the internal opening has been left, but that it is one of the causes of failure. A second matter of consideration is, as to the treatment of the fistulous cul-de-sac, which may run beneath the mucous membrane for a considerable distance above the internal opening. Syme,* Brodie,† Quain,‡ Henry Smith,§ and many other equally high authorities, lay down the rule very positively that such a sinus may be safely left to take care of itself, and that it will certainly heal after the parts have been divided between the internal and external openings. On the other hand, Allingham‖ states, in an equally positive manner, that in the great majority of cases the patient will not be cured unless the whole sinus is laid open from end to end. And with this view I entirely agree.

Besides the chief fistula, there are often others that run off at an angle, terminating in a cul-de-sac at some distance from the main channel. If these diverticula be not followed and laid open, they will often cause complete failure of the operation.

Sometimes sinuses burrow deeply for several inches into the gluteal region. When this occurs, with the view of avoiding severe and extensive incisions, Brodie

* "On Diseases of the Rectum," 3rd edition, p. 38.
† Brodie's Works, vol. iii. p. 545.
‡ Quain on "Diseases of the Rectum," 2nd edition, p. 117.
§ "Surgery of the Rectum," 5th edition, p. 11.
‖ "Diseases of the Rectum," 4th edition, p. 39.

recommends the following plan:—A probe is passed along the sinus from the external to the internal opening, and then by cutting down upon the probe an inch from the anus, an artificial opening is made. The portion of tissue between the new opening and the internal opening within the bowel is then laid open in the usual manner, the remainder of the sinus in the buttock being left untouched. The track thus left, relieved from irritating particles escaped into it from the bowel, heals without further treatment. In my own practice I have not hitherto adopted this plan, but should be inclined to try it should the sinuses be very deep, but I think as a rule they will be found to be superficial, and are best laid open.

Some writers, particularly Dr. S. Smith, advocate* the practice, after laying open the sinus and thoroughly scraping and cutting away the granulating tissue, of bringing the raw surfaces together so as to obtain primary union. Such a proceeding appears to me to be entirely opposed to sound surgery. The possibility of occasionally obtaining primary union cannot be denied, and in such cases the convalescence would be shortened; but against this advantage must be set the risk of obtaining union only of the most superficial and vascular part, with a reproduction of the fistula, or the retention of pent-up discharge.

Method of Operating.—The patient having been previously prepared (*see* p. 97), is placed under an anæsthetic in the lithotomy position, and a small probe-pointed director passed gently along the fistula, and, if possible, made to emerge through the internal opening. If this opening be in the usual situation, and only a short distance from the anal orifice, the end of the probe, directed by the forefinger of the opposite hand, can by a little manipulation be made to project from the anus. The whole of the intervening parts are then divided by running a sharp-pointed scalpel along the groove

* *New York Medical Journal*, June 12, 1886.

of the director. If the internal opening be so high that the end of the director cannot conveniently be turned out at the anus, the intervening tissues may be divided by a strong pair of straight scissors, especially made for the purpose. The end of one blade of these scissors is made with a small knob to fit a groove in the director which it runs along, while the other is in the interior of the bowel. A third plan is to pass a piece of soft wood, rounded at the top and about the size of a finger, up the bowel. A piece of firewood, trimmed with a penknife, answers admirably. The point of the director projecting into the bowel is pressed against this. A sharp-pointed bistoury is then passed along the director, and the point made to stick into the firewood. The two are then withdrawn together, the intervening tissues being consequently divided. In cases in which an internal opening does not exist, or at any rate cannot be found at the time of operating, the end of the probe must be felt for by the finger in the bowel, from which it is commonly separated by the mucous membrane only. Sufficient force must then be used to push the director through the mucous membrane, thus making an artificial opening.

When the main fistula has been laid open, careful examination should be made with the director to ascertain if a blind track runs further up the bowel. Unless this track runs dangerously high, it should be slit open with a pair of scissors, one blade of which is carried along in the groove of a director pushed up the sinus, the other being in the cavity of the bowel. Should the sinus run so high as to make it difficult to secure a wounded vessel, if divided, the operation may be completed by means of the elastic ligature. Having attended to any sinus that may run upwards, an examination should be made for lateral diverticula. Should any such exist, they must be followed up and laid open. I will here call attention to the extreme ease with which a probe may

be passed along the loose connective tissue between the mucous and muscular coats of the bowel, although no sinus exists, so that in making such examination care must be exercised not to mistake artificial channels thus made by the probe for morbid sinuses.

It is well, too, to bear in mind, even when examining a case of fistula, how easily a probe will run along the submucous coat, otherwise an extensive sinus may be diagnosed when none really exists.

Having completed the division of the fistula, it is a good plan to snip away freely with scissors any undermined or overlapping borders of skin and mucous membrane. Such borders if left have a low vitality, become congested and œdematous, and falling over into the wound greatly prolong the time required for its final healing. Any bleeding vessel should be secured with a fine ligature. Care in this respect will almost certainly prevent any trouble from recurrent hæmorrhage. A piece of folded lint may then be gently put into the incision, and a good pad of cotton-wool put over the anus, and secured with a firm T bandage. The following day the cotton-wool pad may be removed, the part thoroughly syringed with a little warm weak carbolic lotion. I leave the piece of lint, which is generally adherent to the surface of the wound, till the following day, when it becomes loosened and readily separates. After this, the wound may be dressed daily with a little strip of lint spread with eucalyptus ointment.

The After Treatment.—This is at least of as much importance as the operation itself, and through want of care in the dressing the whole benefit of an operation may be lost. If the discharge pockets, or does not drain freely, the edges of the wound will become undermined, and lateral channels will form. But the mishap which most frequently occurs, and which requires to be specially guarded against, is that the granulations just at the verge of the anus bridge over and adhere, leaving a

channel below, and thus in effect again producing a fistula. The surgeon should himself do the dressing daily in a good light, a single piece of lint being gently laid between the cut surfaces. Should the superficial granulations become accidentally adherent, they will readily give way if a probe be lightly run over them. On the sixth day the bowels may be opened by the administration of a small dose of castor-oil. Patients anxiously inquire before the operation as to how long they will be laid up. This in great measure depends upon the magnitude of the operation. Until the patient is under an anæsthetic and the sinus actually laid open, it is impossible to foresee the extent to which incisions may be necessary. In an average case the patient will be three weeks in bed, and confined to his room for another couple of weeks. But it may happen, if the operation be a severe one, or any cause occur to retard the healing, that he may be invalided for a much longer period before the wound is soundly healed. This uncertainty, if explained to the patient before the operation, will often save much annoyance and dissatisfaction.

Complications during the Healing Process.—At first there is loss of power over the muscles, with consequent inability to retain wind and fæces. This power quickly returns, and is generally completely restored by three weeks. If the divided fistulæ are extensive, the period may be much longer. The surgeon need have no undue anxiety even if many weeks elapse, for there is a tendency to gradual restoration of the lost power, so that although at first matters may look unsatisfactory, by six months or a year the muscles will be as strong as ever. Nevertheless, it is well to recognise the fact that a permanent weakness occasionally remains, in which circumstance the patient may be in a deplorable position, being afraid to trust himself in society from the involuntary escape of wind. Owing to the special severity of some fistulæ, the cure can only be effected

at the risk of some subsequent incontinence. But by remembering a few points when operating, such a result will be very exceptional. Complete division of the sphincter or levatores ani in more than one place should be avoided. Thus, in the exceptional cases in which two distinct fistulæ pass beneath the sphincter muscles, it becomes a choice of evils as to whether both tracks should be divided with the risk of incontinence, or one only with the chance that the fistula may not be cured. I consider the second risk the less of the two, for it will generally happen that on one sinus being completely laid open and the muscles paralysed, the other will spontaneously close.

In women, owing to the manner in which the sphincter ani and the vaginal sphincter decussate (Fig. 9), beneath the perinæal raphé, if the sphincter be completely cut through at the site of decussation, the point of resistance from which it acts will be lost. This fact is illustrated by the incontinence which follows a ruptured perinæum. I consider it a rule, therefore, in operating for fistula never to completely divide the sphincter in this position. Henry Smith, who enters more thoroughly into the question of incontinence following the operation for fistula than any other writer, states his belief that "the high division of the muscular fibres of the bowel is the commonest cause of this want of control." With this I entirely agree, and I have observed that in any operations about the rectum the want of control depends much on the height to which the bowel is divided, and especially whether the levatores ani are interfered with. In operating for fistula, it will be very seldom necessary to divide all the coats of the bowel to any height.

I had an excellent opportunity of observing one of the causes leading to incontinence in a patient who applied at the casualty department,* May 20, 1884.

* St. Bartholomew's Hospital.

FIG. 9.

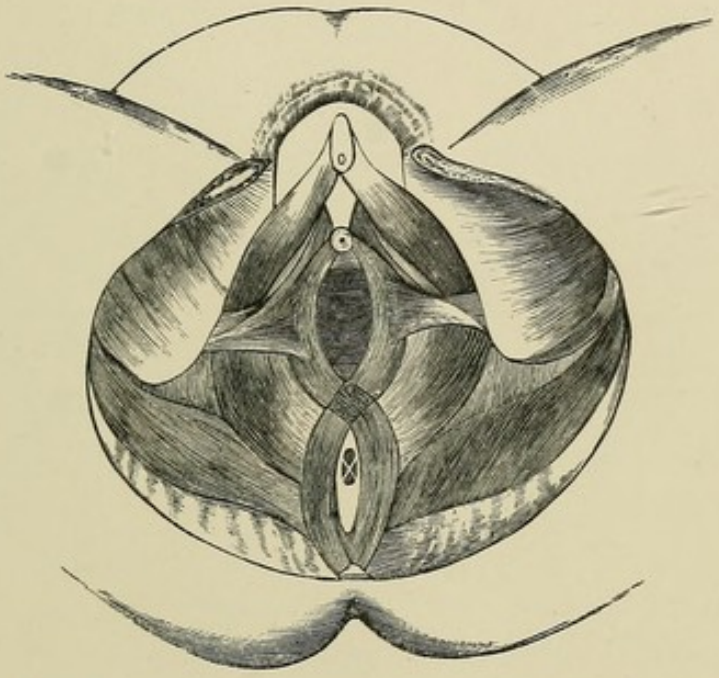


FIG. 10.

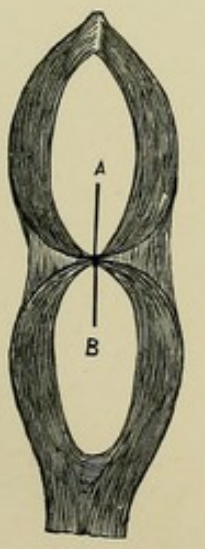


FIG. 11.



FIG. 9. (after Quain).—Shows the blending of the fibres of the sphincter ani with those of the sphincter vaginæ at the tendinous centre of the perinæum. This centre serves as a fixed point from which both sphincters act. If this centre be cut through in operating for fistula, as shown by the line A B, Fig. 10, the power of the sphincters will be destroyed, and the contraction of their fibres would cause the part at D, Fig. 11, to open rather than to close.

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FIG. 12.

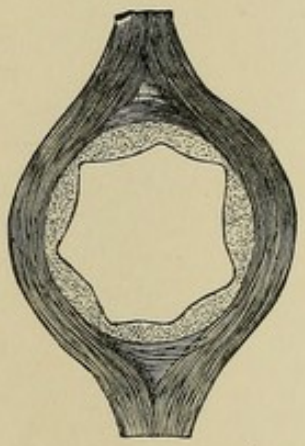
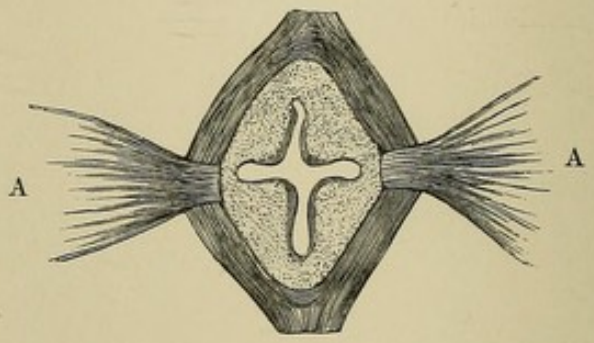


FIG. 13.



FIG. 14.



DIAGRAMS SHOWING ONE CAUSE OF INCONTINENCE AFTER DIVISION OF THE SPHINCTER.

FIG. 12.—Represents the sphincter muscle in a passive condition, as during the passage of a motion.

FIG. 13.—Sphincter contracted to prevent a motion.

FIG. 14.—Sides of the sphincter entangled in the cicatricial tissue, A A and thus prevented from firmly contracting.

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The case was that of a young man who had been operated upon seven months previously for fistula. He complained that since the operation he had suffered great discomfort and partial loss of control. If the motion was the least soft, he had great difficulty in retaining it; while, if attacked with diarrhœa, he had no control at all. He also stated that if making any violent effort, such as lifting a weight, a motion or wind was liable to escape involuntarily. Upon examination it was seen that the sphincter and cutaneous tissue had been extensively divided on both sides about midway between the anterior and posterior commissures. The lines of incision could be traced by a band of scar tissue a fifth of an inch wide extending into the skin, three-quarters of an inch on either side of the anus. Upon passing my finger into the bowel and telling the patient to contract the sphincter and levator ani muscles, a very slight and feeble compression was exerted apparently by the upper margin of the sphincter, while a groove or a narrow sulcus could be felt on each side of the bowel corresponding with the lines of incision through the sphincter. At the same time, the cutaneous cicatrix was drawn slightly inwards towards the rectum. Upon closer examination, I satisfied myself that the inability of the sphincter firmly to contract was owing to its fibres being attached to or implicated in the cicatricial tissue referred to. Thus, the sphincter on endeavouring to contract was prevented doing so completely by its margin being, as it were, tied to two points at its circumference. The cicatricial tissue at these points, doubtless by stretching, allowed a certain amount of contraction in the sphincter, but not sufficient to admit of the fibres of the opposite sides coming firmly into contact (*see* Fig. 14).

Occasionally the surgeon is consulted in these cases of partial incontinence as to whether anything can be done to alleviate the patient's condition. If it could be clearly observed, as in the case narrated, that the

incontinence was due to the outer border of the sphincter being entangled in the cicatricial tissue, an attempt might be made to improve the condition by freeing the involved fibres by lateral incisions. Should the case be that of a woman in which the perinæal aspect of the sphincter had been divided, thus destroying its anterior fixed point, I should not hesitate to operate in an exactly similar manner as would be employed for a ruptured perinæum. There is every reason to suppose that as satisfactory results might be obtained from the operation when the incontinence results from a sphincter divided by the knife, as when it has been torn asunder in the process of childbirth.

In a case which I had an opportunity of observing under the care of Mr. Bruce Clarke, in which there was some incontinence after a double operation for fistula, the patient appeared to suffer from an irritable bowel passing a small quantity of stained mucoid discharge ten or twelve times a day. He was completely relieved by taking daily the following mixture, together with a suppository containing half a grain of morphia, introduced into the bowel the first thing on rising in the morning :—

Tinct. opii, ℥ viij.
Tint. card. co., ℥ xx.
Mist. cretæ aromat., ℥j. Bis die.

He continued this treatment for two years, and whilst taking the medicine had no trouble at all, but on every attempt to give up the medicine, the symptoms were at once reproduced. The amount of opium never required to be increased. So marked was its influence in this case that Mr. Clarke was able to trace an error in dispensing, owing to the medicine on one occasion being inefficient.

The discharge from the surface which freely follows for some ten days the operation for fistula should

gradually decrease as the wound heals. If at this period, instead of decreasing in quantity, the discharge becomes more profuse, it is suspicious that all may not be quite right, and a very careful examination should be made to see that there is no undermining at the edges or lateral burrowing to account for it. If such be found, it should be at once attended to. I have sometimes found in these circumstances one of the anal folds at the margin of the incision slightly swollen and œdematous, feeling hard to the touch. If such be the case, I always suspect there is some burrowing beneath it. It is generally of no great extent, but will increase if let alone. The undermined tag may be taken hold of by a pair of artery forceps, and boldly cut off with a pair of sharp scissors. The pain is only momentary, and can be scarcely felt if the part is painted over with a 10 per cent. solution of cocaine. Another trouble which sometimes arises is that the wound, which has been quickly healing during the first two or three weeks, seems to stagnate, and the repair becomes so slow as to be scarcely cognisable from day to day. This want of repair depends much on the constitutional condition of the patient, and is seldom found in the young and healthy. I think, moreover, that the condition of the local circulation has something to do with this feeble reparative power, which is especially apt to show itself in those who from any cause have venous congestion of the part. Care should therefore be taken to prevent any accumulation of fæces causing pressure in the rectum, and the patient should be kept in the recumbent position, which materially aids the venous circulation. There is, I think, a close analogy between these slow healing wounds of the rectum and the varicose ulcers in the leg. For it is often observed that an ulcer on the leg, which has obstinately refused to heal for months, will immediately commence to cicatrise when the venous pressure is removed, the limb being kept in the horizontal position.

By acting on this view, and keeping the patient in the horizontal position, while pressure is exercised over the part by a carefully adjusted pad kept in position by a perinæal bandage, I have seen rapid improvement in the healing of the wound. Benefit sometimes follows the use of local astringents, such as sulphate of zinc, two grains to the ounce, or nitrate of silver, one grain to the ounce.

The patient's general condition must, of course, not be neglected, attention being paid to the diet, while a tonic of quinine and nitro-hydrochloric acid is serviceable. If the patient has any phthisical tendency, cod-liver oil may be taken with much benefit.

Treatment by Ligature.—There are two methods of carrying out this plan, the one by the passage of a silk thread through the fistula, the other by the elastic ligature. The first is a very simple procedure. A silver probe is threaded with a piece of stout silk. It is then bent to a curve, and passed through the fistula, and drawn out at the anus. The silk thread is thus passed through the fistula so that one end hangs out at the bowel, and the other at the external fistulous opening. The ends are then loosely knotted together, and the patient allowed to go about. After a while, ranging in time from a fortnight to a month or more, the ligature comes away, having slowly cut through the included tissue. The pathological process by which this is accomplished, appears to be a gradual destruction or disintegration of the included tissue, due to the ulcerative action produced by the thread. At any rate, the process cannot result from the strangulation of the tissue, which is not subject to the least pressure.

I have seen this plan very successful in two cases* under the care of the late Mr. Luther Holden. The relief given was at once considerable. In the one case the ligature came away seven weeks after introduction,

* Pitcairn Ward Register, vol. vi. pp. 421, 423. (Notes by author.)

and the patient was discharged a month later with the wound quite healed. In the other case the ligature came away much sooner, and the patient was discharged well six weeks after admission. In neither of these cases was the patient confined to bed.

Cases thus treated do not always run such a satisfactory course, and if the ligature, after causing considerable discomfort, fails to cut its way out, further treatment becomes necessary. If ligature be used at all, by far the most certain is the elastic one, for the introduction of which we are chiefly indebted to Dittel of Vienna, its principle being the strangulation of the parts by firm pressure constantly exercised upon the included tissue. This ligature cuts its way out in from three to seven days. Its action is bloodless, and after the first twelve hours causes very little pain, and would be an admirable resource if it were always to be relied upon to effect a cure. Unfortunately this is not the case, for it may happen that after the ligature has cut its way out, and the superficial parts have healed, the fistula will still remain uncured. The cause for this is to be found in the fact that the ligature has dealt with the main track only, leaving untouched one or more secondary channels and diverticula, which have started upon a course of further extension. Moreover, another objection is, that the detached or undermined margins of the skin, being necessarily left, retard or prevent the healing.

On the grounds, therefore, of the uncertainty of its action, I only use the ligature for exceptional cases, when the nervous or physical condition of the patient renders a cutting operation inadvisable. It is especially suitable in cases of phthisis, for the patient need not be confined to bed. Elastic ligature is also valuable as an adjunct to the ordinary cutting operation if the sinus extends far up the bowel. The method of employing this ligature is as follows:—A solid cord of red indiarubber, a sixteenth of an inch in diameter, may be

threaded through the eye of a silver probe, which, followed by the thread, is passed through the fistula from the external to the internal opening, and out through the anus. As the cord is passed through, to facilitate its passage it should be put on the stretch. Over the two ends of the cord is slipped a soft metallic ring; the cord is then tightly stretched, and the ring slipped up as high as possible and clamped. If the internal opening be any distance up the bowel, Allingham's instrument facilitates the passage of the ligature. This probe-pointed instrument is passed along the fistula into the bowel. A loop of the elastic ligature, guided by the forefinger, is then slipped over the end of the probe, and caught by an ingenious hook, the ligature being then drawn through the fistula from within outwards.

CHAPTER VIII

ANAL ULCER OR FISSURE

The true anal ulcer has a peculiar interest for surgeons. The symptoms to which it gives rise are especially painful and distressing to the patient, but it is within the power of surgery to afford complete and permanent relief by the simplest operative procedure. This disease must not be confused with the extensive and intractable ulcerations to which the mucous membrane of the lower part of the bowel is liable; nor, on the other hand, is it identical with the ragged syphilitic ulceration found at the anal margin.

It is liable to occur in those whose health is sound, and in whom no scrofulous or syphilitic taint exists; and it therefore must be considered as a strictly local disorder.

Its origin is often to be attributed to one of the small traumatic cracks or excoriations to which this part is especially liable from hard and constipated motions. In some persons the muco-cutaneous surface at the anal margin appears to be peculiarly brittle, so that it readily cracks and lacerates with undue extension. It frequently happens in such patients that, while even gently separating the anal folds in making an inspection of the part, the surgeon will see the superficial membrane give way, producing a raw surface, from which exudes a small quantity of blood. These little tears made by the surgeon give no pain at the time, and never cause subsequent trouble. I have always found them

completely healed over on examining the part twenty-four hours later. The muco-cutaneous surface at the outlet of the anus is analogous to the surface of the lips, and the same causes, whether due to dry atmospheric conditions or to some slight disturbance in the general health, render the parts dry and liable to crack from the slightest violence.

Owing to one of these cracks being deeper than usual, or from the presence of a small polypus or tag of hypertrophied mucous membrane irritating its surface, the excoriation fails to heal, and gradually assumes the character of the true anal ulcer.

I have no doubt that another source from which these ulcers take their origin is a little marginal abscess which has led to the destruction of the portion of the muco-cutaneous surface lying over it.

When such an ulcer is thoroughly established, the symptoms are peculiar and distinctive, causing suffering out of all proportion to the extent of the lesion. If the ulcer be wholly situated on the mucous membrane, the pain is less than when situated upon the muco-cutaneous surface, for the parts forming both the outlets and inlets of the body are endowed with exquisite sensibility, doubtless to guard against the intrusion of harmful substances.

The disease is usually one of adult life, but it may occur in an infant, and be the cause of much unsuspected suffering.

Dr. Wade, of Chislehurst, asked me to see the following case: A baby, five months old, was quite well till two months ago. Since that time he has been very constipated, and always screams whilst and after passing a motion, and is evidently in much pain. On examination a deep, ragged-looking fissure was discovered in the posterior wall of the anus. After its division the patient never had any more pain or constipation.

Symptoms.—The patient complains, either immediately or within a few minutes of passing a motion, of a hot smarting pain about the rectum, radiating upwards towards the sacrum and coccyx. The pain, at first smarting, gradually assumes a dull aching character, which after a while passes completely away, only to be repeated at the next evacuation. In some instances the pain only lasts a few minutes; in others, it may be half the day before it disappears. I have known a strong and otherwise healthy man practically incapacitated for business through all the earlier part of the day from one of these ulcers, no larger than a threepenny-piece. In addition to the pain, there may be a little bleeding after the motion, and there is very commonly a slight anal discharge. It is worth while to bear in mind that these ulcers occur more frequently in women than in men, and it is by no means uncommon for the sufferer to refer the pain to the vagina or womb, and thus cases may be long treated for vaginismus, the symptoms of which are really due to an unsuspected anal ulcer, and I am sure that many cases of coccydynia owe their origin to a similar cause.

An examination will at once show whether an anal ulcer is present. It is generally found posteriorly, though I have seen it both at the sides and on the anterior surface of the anus. Its situation is often indicated by two slightly red and œdematous anal folds, which might be mistaken for external piles; but on carefully separating these with the fingers the lower border of the ulcer will be found. On first inspection it appears like a fissure but by distending the anus and separating the folds, it is commonly seen to be an anal ulcer. The character of the ulcer is not constant; sometimes it is quite superficial, while in other cases it has extended through the muco-cutaneous surface, exposing the subjacent muscular fibres. In chronic cases the edges are well-marked and clean cut, not unlike a soft sore. Sometimes they

are undermined, so that a probe may be passed for a short distance beneath them, while occasionally a little fistulous channel will run some distance up the anus.

The ulcer is seldom larger than a threepenny-piece, while at times it is so small as only to be detected after a careful search. If the symptoms have existed any length of time, there is almost certainly some spasm of the sphincter muscle and levatores ani, so that the anus is drawn up and contracted upon any endeavour being made to expose the ulcer. I am satisfied in these circumstances if I can just get a view of even the lower part of the disease, for any attempt to pass the finger into the bowel is extremely painful.

Mucous Membrane Resembling Anal Ulcer.—I have seen two or three cases in which, after an operation for fistula, the normal mucous membrane which has been drawn down into the angles of the wound at the anus has been mistaken for an ulcer. One patient had had an operation for fistula three years previously, but lately had some irritation about the anus. His doctor in a letter stated that he had found "A large florid ulcer the size of a shilling on the anal margin. It does not seem painful to the touch, nor does it bleed." I found in the middle line behind that the mucous membrane had evidently spread into and covered the lower part of the incision at the anal verge, and extended half an inch on to the muco-cutaneous surface. At first sight it looked exactly like an ulcer, but closer examination showed it to be nothing more than a thin mucous membrane bright red in colour.

Attention has been called by Kelsey,* and also by Vance,† to the fact that small ulcerations may exist at the bottom of one of the little cul-de-sacs (sinuses of Morgagni), marking in some patients the termination of the mucous membrane at the anus. Such ulcerations

* "Diseases of the Rectum," p. 161.

† *Medical and Surgical Reporter*, August 14, 1880.

may be completely hidden from sight, and can only be detected by the sharp pain caused by the introduction of a small bent probe.

If the subjective symptoms of fissure be clearly marked, and if there be spasmodic contraction of the anus, notwithstanding that nothing can be seen at the margin, the patient should be certainly placed under an anæsthetic, and a thorough examination made before he can be pronounced free from this disease. I regard a spasmodic contraction of the sphincter, accompanied by pain, as pathognomonic of ulceration or excoriation, and to be treated as such, even if no ulceration can be detected on examination.

Treatment.—If the disease has only existed for a short time, and if there be not much spasm of the sphincter, there is a fair prospect of cure without operative procedure.

For these cases I recommend that a soft motion should be obtained every morning for a week or ten days, so as to prevent the surface from being roughly torn open by a constipated action. In hospital practice I prescribe two large teaspoonfuls of equal parts of confection of senna and confection of black pepper to be taken the first thing on rising in the morning.

In private practice the same may be tried, but I prefer a third of a tumbler of Friedrichshalle water, to which some hot water has been added, to be taken on waking in the morning, while the parts should be carefully washed with a soft sponge after each motion. As a local application, the unguentum hydrarg. oxidi rubri is useful. The following ointment, though sometimes causing pain, in other cases is very beneficial:—Ferri subsulph. gr. x, unguentum petrolii, ℥j. Quain recommends as an ointment, hydrarg. cum. cretâ, ℥ss., ung. simplex, ℥j.

An ointment of extract of conium, mixed as follows, is an excellent remedy:—

℞ Ext. conii, ʒij.
Olei ricini, ʒiij.
Ung. lanolini, ad ℥ij.

A small quantity should be smeared over the part five minutes before expecting a motion, and again after it is past.

If these simple remedies fail to effect a cure within two or three weeks, or if the ulcer be of old standing with the muscular fibres exposed, when I believe it is useless to try them, the patient can be almost certainly cured by the following procedure:—The bowels should be cleared by a dose of castor-oil and an injection, after which, under an anæsthetic, the sphincter should be thoroughly dilated. This being accomplished, and the ulcer being well exposed by a speculum, a knife should be drawn deeply across its surface, making a cut at least an inch in length and a third of an inch in depth.

I am fully aware that many of these ulcers are to be cured by being touched with the actual cautery; but this is so exquisitely painful that it ought not to be done without an anæsthetic, in which circumstances I prefer the procedure described. Many surgeons state that dilatation alone is sufficient to effect a cure, and this I know to be true in some cases. But, unfortunately, it is not certain. And having on one or two occasions failed to cure cases by simple dilatation, which I subsequently successfully treated by incision, I now prefer to make the slight cut recommended in addition to the dilatation, regarding it as a certain means of cure in cases free from complication.

Failures sometimes follow these attempts to cure an anal ulcer, but it will generally be found that some complication has been overlooked, such as a fistulous passage running from the ulcer beneath the mucous membrane of the bowel. The presence of such a passage might be suspected, if the discharge from the part is

out of proportion to the size of the ulceration. Another complication consists of a small hypertrophied tag of membrane, or polypoid growth, situated at the base of the ulcer, or possibly on the opposite wall of the rectum.

It is most essential that neither of these should be overlooked, for, unless in the one case the sinus be laid open, and in the other the polypoid growth removed, the simple incision will certainly fail to cure the disease.

Occasionally the spasmodic condition of the sphincter in these cases simulates the symptoms of stricture. A lady was sent to me by Dr. Muriel, of Norwich. Two years previously she had first noticed pain about the rectum on passing a motion. This gradually became worse, and at the same time she had much difficulty in passing her motions, which she ascribed not only to the pain, but to a sensation of stoppage or stricture of the part; indeed, for a year past she had never been able to have a motion without the aid of purgative medicine. The pain was sometimes experienced whilst passing a motion, but more commonly it came on a few minutes later. She had noticed a little blood at times, but no discharge with the motions. On examination the anus was very prominent; around the margin were four or five folds of skin, slightly pedunculated, but not œdematous. Between two of these folds was a club-shaped fissure, which could not be thoroughly exposed from the spasm of the muscles. When under an anæsthetic, a small polypoid excrescence of mucous membrane could be seen situated at the upper margin of the fissure, and this folded into the fissure when the anus contracted. There was no stricture. I removed the excrescence, and divided the sphincter, and with the exception of a slight smarting pain for a few days, she lost all her old symptoms, and returned home completely cured.

The benefit derived in these cases from the trivial

operation described cannot be over-estimated. Patients who, for a year or more, have been daily in acute pain, and who have suffered severely in health as a consequence, are immediately relieved, so that on the very first motion after the operation, although the wound has not even healed, they find their once characteristic pain completely gone. The cure is generally permanent.

CHAPTER IX

ULCERATION OF ANUS AND RECTUM

Apart from the typical anal ulcer described in the last chapter, there are other forms of ulceration affecting both the rectum and anus. At the present time our knowledge as to the cause and course of some of these ulcerations is very deficient, and still requires much pathological investigation and careful clinical observation to put it on a sound basis. These ulcerations are in some cases secondary to some general constitutional disorder, while in others the lesion results from a more purely local condition. Amongst the general conditions may be included syphilis, Bright's disease, and the general debility occasioned by phthisis, diabetes, and starvation. Amongst the local causes may be included tubercle, ulceration from retained discharge in stricture, congestive or varicose ulceration in elderly people, and rodent ulcer.

Symptoms.—Ulceration within the rectum gives rise to well-marked symptoms, many of which, however, are not peculiar to simple ulceration, for they are also present in cases of cancer or fibrous stricture; but any doubt as to the cause of the symptoms being due to stricture or cancer can be removed by digital examination or by the use of the speculum.

It might be supposed that the speculum would afford an easy means of examining the rectum, but in practice I rely, as a rule, on the finger. Owing to the mechanism of the sphincter muscle and the increased sensibility

so often present in rectal disease, it is generally impracticable to use the speculum efficiently without an anæsthetic. In doubtful cases, however, and after the administration of an anæsthetic, it is often of value in forming a diagnosis. The two instruments that I have been in the habit of using are the bivalve speculum opening on a hinge, and Sims' duck-bill speculum. In using the speculum the pelvis should be raised as high as possible, which to some extent prevents the gut prolapsing from above, and thus interfering with the view.

The symptoms of ulceration when combined with stricture will be considered in the next chapter, but since I fear that local rectal ulcerations are often mistaken for dysentery and treated accordingly, it may be well to remember that such symptoms as pain, tenesmus, diarrhœa, and discharge are common to both disorders.

The degree of pain suffered is no indication of the severity of the disease, which depends rather on its situation than on its extent, for the nearer the anus, the greater the pain. It is not uncommon to observe that a small fissure at the anal margin may cause excruciating suffering, while a far more serious lesion higher up the bowel may be merely complained of as discomfort.

At an early stage a looseness of the bowels or diarrhœa may be the only symptom, or accompanying this there may be a slight amount of discharge. It sometimes happens that, although there is a frequent desire to go to stool, there is no proper motion, a teaspoonful of discharge only coming away. At first the discharge may be of a mucoid character resembling a mixture of sago and yeast. As the disease advances this becomes darker, and is increased in quantity, and at this period it is often described as having a coffee-ground appearance, and closely resembles what is seen in cancer.

Patients not infrequently lose control over the motions. As the disease progresses, and as the ulceration partially

heals in places, cicatricial tissue is irregularly produced, so that the bowel entirely loses its normal soft supple feel, and becomes hard and nodulated, while at the same time a certain amount of tubular stricture is produced, and it is in these circumstances that cases of ulceration so closely resemble, and may be mistaken for, cancer of the part. For further details of the symptoms and differential diagnosis from cancer, the reader is referred to the chapter on cancer.

Before leaving the subject, however, I wish to call attention to the diarrhœa and looseness of the bowel which so often accompanies a rectal ulcer, for I am confident that many patients who have long been treated for chronic diarrhœa, chronic dysentery, intestinal catarrh, &c., without benefit are really suffering from a local ulceration which could have been easily cured by appropriate treatment. With reference to this point, some while ago I received the following remarkably instructive letter from Dr. James Irving, who kindly gave me permission to use it with his name:

Dear Sir,—

* * * * It seems to me that you might in your work on the rectum more fully allude to the fact that many cases of diarrhœa which come under the physician are in reality due to disease of the rectum. I myself was treated for more than two years for diarrhœa, supposed to be owing to the malarious climate of India, although I stated to the eminent physician I consulted that I had an idea that there was something wrong in the rectum. At the end of the period above indicated, I asked whether he would have any objection to my consulting a surgeon, and he sent me to Mr. Annandale of Edinburgh, who at once said there was an ulcer of the rectum, which was incised, and I was cured.

I had been invariably having loose motions for over two years, and the motion the day after the operation

was formed! Twice, since then, I felt slight uneasiness in the rectum, with loose motions of a morning, and at once had myself examined. In each instance there was a slight abrasion of the mucous membrane of the rectum, which was touched with nitrate of silver in one instance, and in the other with sulphate of copper, the result being instant relief, and no more diarrhœa. So, also, in the case I have brought to you in which an ulceration was found and a cure effected. The lady had already consulted many physicians, who, as she had been in India, thought the liver was at fault, and prescribed accordingly without benefit. Her case was as near as possible similar to my own.—Yours, &c.

Syphilitic Ulcerations.—These, when found about the anus, are closely analogous to those about the mouth; they generally appear from three months to a year after infection, and are often coincident with the fading of the secondary rash. Such ulcerations are usually confined to the anal margin. The deeper and more extensive ulcerations higher up the rectum are only met with at a later period of the disease, and probably result from the breaking down of tertiary gummata.

It cannot always be ascertained by inspection whether an anal ulceration is due to syphilis; but, as a rule, there are certain local features, which, combined with the history, enable the specific to be distinguished from simple anal ulceration.

Syphilitic ulcers are often multiple; sometimes, instead of ulcers, several fissure-like cracks exist between the anal folds, while the folds themselves have a whitish, slightly sodden appearance, the whole part being moistened by a thin fœtid secretion. Speaking generally, syphilitic ulcerations of the anal margin are not so painful as the simple anal ulcer, though occasionally the same wearing pain, lasting long after the passage of a motion is complained of, as in the following case:—

A woman, aged thirty, with a syphilitic history, was under my care at St. Bartholomew's Hospital. She complained of having had trouble about the anus for a year; worse sometimes than at others. She had only had comparatively slight pain on passing her motions until recently, when the pain had become severe, lasting for an hour or more. On examining the anus, I found the skin round it corrugated into a number of flat-topped folds. Upon separating these, the sulci between were ulcerated and bathed with a very fœtid secretion. The ulceration did not extend farther into the anus than a quarter of an inch. The general appearance of the ulceration closely resembled what is so often seen at the margin of the mouth in syphilitic affections. After three weeks' anti-syphilitic treatment this patient was completely relieved of her local trouble.

These syphilitic ulcerations, though generally chronic, are sometimes acute in their course.

I saw in consultation with Dr. Walker, of Putney, a patient who was suffering from syphilis contracted nine months previously. I first examined her on account of a slight pain and discomfort about the anus, and found a little superficial crack between the anal folds at one point. No local treatment was adopted. Ten days later I saw the patient again for two attacks of severe hæmorrhage. On each occasion at least half a pint of blood must have been lost. On examination I found that the slight ulceration previously described had developed into a deep ulcer spreading some distance into the rectum, while other angry-looking fissures, which had not been previously present, had developed between the anal folds. In this case, on examining the urine, it was found to contain a considerable quantity of albumen, a complication which probably accounted for the acuteness of the symptoms.*

Congenital Syphilitic Disease of the Anus.—This is a common affection in infancy; but, according

* This patient died two years later with Bright's disease.

to my experience, seldom occurs before three or four months after birth. In these cases the anus is surrounded by a dull, copper-coloured zone, half an inch or more in width. The portion of this zone near the anal margin has a coarse granular appearance, the surface being raw and bathed with a moist secretion. On separating the anal margins some fissures may be seen extending a short distance into the bowel. The infant is fretful and generally wasted, whilst it is more than probable that there are other specific manifestations about the body.

A child, aged sixteen months, was brought to St. Bartholomew's. The mother was undoubtedly syphilitic, having had a sore on the privates, followed by rash and sore throat.

The child's anus was not noticed to be sore until it was some months old. The child was fairly nourished, and did not show any other obvious symptoms of syphilitic disease. Upon examination the orifice of the anus was found to be situated three-quarters of an inch further back than normally, so that it opened close to the point of the coccyx. Around the anus was a raised red circular ring three-quarters of an inch wide; the diseased part was raised about a tenth of an inch above the surrounding level. Its surface was coarsely granular, like that of a mulberry, and moistened with a fœtid secretion, the disease appearing to extend just within the anal margin.

I advised the following treatment:

Night and morning the part to be gently washed with tepid water, and then after drying to be well bathed for ten minutes with lotio nigra; after which the surface was once more to be dried with a soft handkerchief, and then freely sprinkled with the following powder:

Pulv. hydrarg. subchlor., gr. xv.
Pulv. zinci oxidi, gr. xxx.
Pulv. amyli, ʒiij.

Ten grains of blue ointment to be rubbed into the belly every night; the child's napkins to be frequently changed, and to be kept as dry as possible. In three weeks the child was perfectly well.

Ulceration in Bright's Disease.—To Dr. Dickinson* is due the credit of first calling attention to the connection between albuminuria and ulceration of the intestines.

These ulcerations are superficial and only involve the mucous membrane, and are spread over a very large area.

Such patients commonly come under the care of the physician, and are only occasionally met with in the surgical wards. The following case, however, may be of interest on account of the diagnosis being verified by post-mortem examination.

M. D.† was admitted under the care of my colleague, Sir Thomas Smith. He had always been healthy and regular with the bowels until three months before admission, when he noticed that he had to make haste when he wanted to pass a motion, which would otherwise escape involuntarily.

The trouble increased, so that eight or ten motions a day were passed. For two months he had no solid motion. On introducing the finger into the anus, a copious flow of ill-smelling liquid fæces occurred. At the margin of the anus there was a large fold of œdematous skin, in the centre of which was a fistulous opening, from which a jet of liquid feculent material was projected a distance of several inches when he strained. The internal opening of the fistula was about an inch within the bowel.

The mucous membrane, as far as the finger could reach, appeared to be extensively ulcerated. The dis-

* Croonian Lectures, 1876.

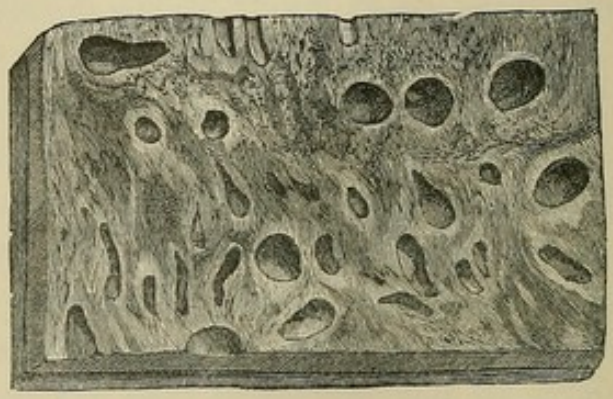
† Henry Ward Register, St. Bartholomew's, vol. vii. p. 137. (Notes by Author.)

charge increased to several pints daily, and consisted of thin feculent matter mixed with a considerable amount of pus, and occasionally tinged with blood. He had no control whatever over the sphincter. The urine was loaded with albumen. The patient was transferred to a medical ward, and died in a few weeks. At the post-mortem examination both kidneys were diseased, and there was most extensive superficial ulceration of several inches of the rectum.

Ulceration in Phthisical or Debilitated Patients.—Much confusion exists about these cases, nor am I in a position to express positive views as to the nature of rectal ulcerations in phthisical patients. It appears to me, however, that there are two different varieties—the one an ulceration commencing possibly from some simple cause, and spreading generally in a superficial manner in patients who are the victims of phthisis or any debilitating illness, and the other of a more strictly local nature, due to the part being infected by true tubercular ulceration. The first variety may take the form of an extensive superficial ulceration, commencing at the anus and spreading upwards; but more frequently, however, it begins at several points about the rectum, resembling the follicular ulceration observed in other parts of the intestine. The disease commences in the retiform tissue between the follicular glands, slightly raised nodules, not larger than millet seeds, appearing at various points.

These, when examined microscopically, are found to consist of a collection of lymphoid cells, in the retiform tissue between the follicles. After a while these cells appear to lose their vitality, either becoming caseous, or forming minute abscesses. In either case the surface gives way, leaving at first little crater-like cavities, which, gradually extending both in depth and circumference, form circular ulcers of some size with undermined edges. By the coalition of several of these, considerable tracts of mucous membrane become destroyed.

FIG. 15.



FOLLICULAR ULCERATION OF LARGE INTESTINE.

The ulcers are numerous, round and oval, from one to three lines in diameter. The long axes of the oval ulcers are placed transversely to the long axis of the intestine. Their margins are thin and regularly defined, and in several instances project over their bases. The intervening portions of the mucous membrane appear healthy.—Royal College of Surgeons, Specimen 1199.

To face page 181.

This follicular ulceration about the rectum, when accompanied by disease in the lungs, is regarded by most pathologists as of a tubercular nature. But there can be no doubt that a form of multiple ulceration without evidence of tubercular deposit is found in the rectum, and may be due to other causes. These ulcerations, according to Rokitansky, commence by the formation of minute abscesses, which, breaking into the intestine, leave ulcerations which coalesce and extend. Niemeyer describes them under the head of catarrhal ulceration, or mild catarrhal dysentery, but ventures upon no further explanation of their origin than that they may be caused by foreign bodies or retained fæces.

In the College of Surgeons Museum is a beautiful Hunterian specimen of follicular ulceration (*see* woodcut), in which a tubercular origin could scarcely be suspected. Hunter removed it from the body of the Earl of Bristol. The colon and rectum were ulcerated in a great number of places. Hunter states* that "his lordship had been long affected with the gout before his death, from which he died. He had frequent vomitings of a black fluid, which was called black bile. He had also a purging with blood; at last he had hiccup, and died."

The following case I believe to be again an example of simple ulceration which refused to heal, and spread on account of the general malnutrition of the patient rather than from any local tubercular deposit; but, of course, a different interpretation may be put upon the case:

J. G. was under my care in Darker Ward,† complaining of great pain in the rectum. On examination there was found some ulceration in the lower inch of the rectum with a good deal of discharge. The pain was very great, but so far as I could ascertain with my finger

* Hunterian MS., Specimen No. 1199, Royal College of Surgeons.

† St. Bartholomew's Hospital.

the ulceration appeared to be confined to the lower inch of the bowel. The patient was a tall thin man. He did not complain of any cough or chest trouble. The urine was examined and found to be normal. With a view to relieve him of his pain, and to keep the parts at rest, I divided the external sphincter in the middle line behind. The immediate relief was complete, but the wound healed very slowly, and was not entirely cicatrised when he left the hospital a month later. Moreover, there was very considerable discharge, more so, in fact, than could be accounted for from the unhealed surface of the wound, or from the ulceration, which was nearly well.

The patient again applied to the hospital four months later, saying that the last month the pain had greatly increased, and that the discharge was very troublesome. He had become so weak that he could scarcely walk, and now complained of a slight cough.

Upon admission, I carefully examined the rectum, which was extremely tender. The small posterior wound was still unhealed; in fact, in an exactly similar condition to what it was at his discharge. There was also considerable superficial ulceration in the neighbourhood of the anus. At a distance of three inches up the bowel there was some further ulceration.

The discharge from the bowel was now extremely profuse, resembling red-coloured gruel; the patient's temperature was always above normal; he had night-sweats, and was emaciating rapidly. There was no albumen in the water, but an examination of the lungs showed rapidly advancing phthisis on both sides.

Local Tubercular Ulceration. — Apart from the ulcerations which undoubtedly accompany general phthisis, there is a form of ulceration which affects the rectum in patients who have shown no signs of any general phthisical disease, yet the ulceration itself more resembles the undoubted tubercular ulcerations met

with in other parts of the body than any other known form of disease. In these cases the ulcerated surface has a coarse granular condition and secretes a copious supply of pus. The ulcer shows no tendency to spontaneous healing, and as it extends produces cavities of considerable size. The walls of these cavities lined by coarse, pale granulations may be slightly indurated, in which case there is some resemblance to epithelioma. On p. 373, in the chapter on Differential Diagnosis of Cancer, will be found the description of two such cases; one of these, after being treated many times with cautery and scraping and partial excision, eventually got well, the other steadily extended, producing stricture of the bowel, and ultimately caused the death of the patient.

Ulceration from Retained Discharge. — There is a superficial ulceration which sometimes commences above a stricture, and gradually spreads upwards so as to affect not only the whole rectum, but even the colon. It appears as if the superficial part of the mucous membrane is only ulcerated, the submucous tissue still forming a distinct membrane over the muscular coat, so that the bowel, instead of possessing a soft velvety lining moving freely on the subjacent muscular fibres, has a surface which, though smooth, gives a harsh creaky sensation to the finger, and is intimately blended with the muscular coat. This extensive superficial ulceration may gradually spread beyond the rectum to the colon. At a post-mortem examination the ulceration is found to end very abruptly. So sharp is the line of demarcation between the ulceration and normal membrane that it looks as if cut with a knife.

C. E. was admitted into St. Bartholomew's * with a stricture and ulceration of the lower part of the rectum. The symptoms had existed a couple of years, and she had been steadily getting worse, the most prominent

* Sitwell Ward Register, St. Bartholomew's, vol. viii.

symptoms of the case being diarrhœa and a very profuse discharge. The stricture was divided, and for a while she improved and left the hospital, but returned in a couple of months in a weak and miserable condition. The temperature ranged from 100° to 103°, and the pulse from 100 to 114. She did not suffer much pain, but the discharge of red grumous fluid steadily increased in quantity, so that in the few weeks preceding death it amounted from fifteen to twenty ounces daily. She gradually grew weaker, and died after being in the hospital four or five months. There was never any return of the stricture, and up to the time of her death a full-sized bougie passed readily into the rectum. At the post-mortem examination the entire interior of the bowel from the anus to the splenic flexion of the colon, a distance of nearly two feet, was denuded of its mucous membrane. The ulcerated surface terminated very abruptly, and had a curious aspect, looking as if covered by a serous rather than a mucous membrane. This was firmly adherent to, and apparently formed part of, the circular muscular tunic. There was no evidence of tubercle in any part of the body.

On reflecting on the cause of this fatal superficial ulceration, it would seem certain from the clinical features of the case that the condition had slowly extended from below upwards, and I cannot but think that the superficial destruction of the membrane must have resulted from contact with the purulent secretion, which, either from the living leucocytes it contained, or from the caustic products of its decomposition, caused progressive destruction of the mucous lining. If this hypothesis be correct, it would open an indication for treatment—viz., that of thoroughly washing out the bowel once or twice daily by copious enemata of water or medicated fluid

Congestive or Varicose Ulceration.—There is a form of ulceration which I have met with on more than

one occasion in old people, and in those who suffer much from venous congestion of the part, which reminds me much of the varicose ulcer of the leg, and I am disposed to think it may be due to an analogous cause. Possibly some slight wound or excoriation occurs, which, instead of healing, slowly spreads, owing to the feeble nourishment of the congested mucous membrane.

I was much interested in a case of this kind under the care of Mr. Marsh, who kindly asked me on two or three occasions to examine it with him. The patient was a man of about sixty years of age. He presented himself at the hospital with the history that some months previously he had had an anal fissure superficially divided, and the slight wound had not healed. When I first examined him there was an ulcer about the size of a shilling just within the anus, on the posterior wall. The ulcer had completely destroyed the mucous membrane, the base being formed by the muscular fibres. The edges were clean cut and slightly undermined. There was not the slightest induration in the mucous membrane forming the margins of the ulceration, nor were there other signs of malignancy. Owing to some uncertainty as to the nature of the case, and to the ulceration refusing to heal, it was excised.

I examined sections of the removed portion under the microscope, and found no evidence of malignant deposit. The wound partially healed, and after some weeks he was discharged from the hospital at his own request. Six months later he returned to the hospital with an ulceration so extensive that it was supposed to be malignant. The ulceration extended almost completely round the bowel at the anal margin. It had exposed the muscular fibres, and the skin was undermined for a quarter of an inch, the overlapping edges being red and œdematous. The ulceration extended a couple of inches up the bowel, the mucous membrane being completely destroyed, except along the anterior

wall. The ulceration had undermined the mucous membrane at the upper border of the disease in an exactly similar manner as it had the cutaneous margin, only to a greater extent, so that the finger could be passed into a kind of cul-de-sac of the depth of from half to three-quarters of an inch between the muscular and mucous coats. There was a moderate amount of discharge, consisting of fairly healthy-looking pus. On examination with the finger the whole surface of the ulcer was quite soft, and the edges both within the bowel and at the anal margin were not indurated. There was no enlargement of the inguinal glands. In this case, owing to the persistent progress of the disease, it was supposed by some of my colleagues to be malignant. But the complete absence of any infiltration, either at the base or the margins of the ulcer, in my opinion, negatived this hypothesis.

Rodent Ulcer.—This disease is seldom met with in the rectum, and few instances of its occurrence are on record. The following case, described by Dr. McDonald,* is so interesting, and is such an accurate account of the disease, that I venture to give it in the author's own words:

"The case came under my notice after it reached an extreme degree of advancement; it had then lasted some six or eight years; the destruction of tissue was terrible in extent. I have reason to know that it is the same case referred to by Duncan, in 'Duncan and West,' p. 656. At the time when he saw the case, which at least was a year before I was introduced to the patient, Dr. Duncan says: 'A case to which I was called some years ago is, so far as I know, so unprecedented in the amount of destruction as to be worth describing. I only saw it once in consultation. The disease was at one time regarded as cancerous. The patient, aged about forty, had had the disease for at least five years,

* *Edinburgh Med. Journ.*, April 1884.

and she lived many years after my visit. While the disease was already extensive, she bore a child. On the hips, just beyond the ischial tuberosities, were long scars, thin and bluish, of healed ulcers. The entire ano-perinæal region was gone, there being a hollow space as big as a fœtal head. The urethra was entire, as well as the mucous membrane between it and the cervix uteri, which was healthy. Except the anterior portion of the vagina, no trace of it, or of the anus or rectum, was discoverable; behind the cervix uteri the bowel opened by a tight aperture, just sufficient to admit a finger; when the fæces were hard, she could keep herself clean, but only then. Although the extent of ulceration was severe, the patient was attending to her household duties.' To this graphic description of the case I can fully subscribe, with this addition, that latterly the ulceration went still higher up into the pelvis, leaving the bowel hanging loose for some distance from the upper level of ulceration, giving it the appearance of a torn sleeve of a coat. This patient lived two and a half years after the time referred to by Dr. Duncan, and died of exhaustion and diarrhœa. Notwithstanding this shocking amount of, and prolonged continuance of, ulcerative action, there was no involvement of inguinal and other glands."

It must not be supposed that all cases of rectal ulceration are so severe as in the instances picked out for illustration in this chapter, for it is not uncommon to find an ovoid or circular ulcer of limited extent on the rectal mucous membrane, in which situation it may have either originated or to which it has spread; and although I regard all cases of rectal ulceration as serious, in a large number of cases the disease can be arrested and cured by appropriate treatment.

Treatment.—The success of any plan of treatment depends chiefly on the amount of the ulceration, for

the more extensive this has become, the more difficult it is to cure.

Syphilitic ulcerations, whilst still confined to the anal margin, are usually curable without dilatation or division of the sphincter. The part should be kept extremely clean, being washed twice a day with soft warm water, and then well bathed with lotio nigra, after which the part should be thoroughly sprinkled with the following powder:

Pulv. hydrarg. subchlor., gr. xx.
Pulv. zinci oxidi, gr. xxx.
Pulv. amyli, ʒij.

Great care should be taken completely to wash away the old powder before the fresh is applied, otherwise more harm than good will be done. If the discharge be very fœtid, ten grains of boracic acid powder may be added to the above. If the application of powder be impracticable in the daytime, or should it fail to arrest the ulceration, the red oxide of mercury ointment diluted with equal parts of vaseline will often prove a useful remedy. If there be any tendency to bleed, subsulphate of iron suppositories may be employed; but on account of the pain they occasionally cause I prefer not to use them, except for hæmorrhage, or when other remedies have failed.

For general treatment two grains of hydrarg. cum cretâ, three times a day, or the prescription recommended on p. 223 may be tried.

If there be any indication of a tubercular origin of the disease, the appropriate constitutional treatment must be tried; and, moreover, in these cases something may be effected by change of climate and surroundings.

In some cases of ulceration it is worth while to try the effect for a time of an absolutely milk diet. Cod-liver oil is often beneficial, while the aromatic mixture of chalk, to which five or seven minims of opium have

been added, given three times a day,* occasionally lessens the reflex irritability of the bowel. Such symptoms as flatulence may be treated with bismuth, or charcoal and turpentine.

Much can be done by the judicious local management of the ulceration. I have often wondered why, because the lesion happens to be partially concealed from view, surgeons so often lose sight of the principles which would guide them in the treatment of ulceration on an exposed surface, and why they should believe that ointments, lotions, and powders should cure an ulcer in the rectum when they fail to do so in other parts of the body.

A patient subject to much standing and with varicosity of the veins applies to the hospital with an extensive ulcer on the leg. He may be treated by the local application of all the ointments ever invented without the ulceration showing the slightest tendency to heal; but if, instead of the ointments, we apply the principles which physiology teaches us lead to the repair of tissue, the result is more satisfactory. The part is kept clean, pressure to support the superficial vessels is applied, and, above all, the venous congestion is removed by keeping the patient in bed with the limbs slightly raised, and the ulcer, which has resisted all treatment for months, or even years, heals over in a few weeks. There can be no doubt that the main factor in the successful treatment of these ulcers of the leg is the improved circulation through the diseased part by the removal of the venous blood-pressure. When a patient with varicose ulcer of the leg is in the erect position, the raw surface has a bluish congested appearance; but if the surface be again examined after the patient has been lying a short while

* The following is also a useful prescription:

℞ Liq. opii sed., ℥j.
Liq. bismuthi, ℥iij.
Tinct. catechu, ℥j.
Mist. cretæ, ad ℨviij.

Dose, two tablespoonfuls three times a day.

in the horizontal position, the bright arterial appearance of the surface affords unmistakable evidence of the improved nutrition.

Bearing in mind how materially the pressure of venous blood retards repair, and that the lower part of the rectum is peculiarly liable to venous congestion, I think it most important in cases of rectal ulceration to retain the patient in a position which will lessen such pressure. Doubtless if we went about after the manner of a monkey, on our hands and knees, with the anus well in the air, we should be saved these troubles arising from congestion; but since custom and civilisation make this impracticable, we must do the best possible instead. To remain a short time in bed, or to maintain a sitting posture, will not suffice. The patient should be kept in the recumbent posture for as much of each day as practicable. To tilt the foot of the bed a little with blocks will raise the pelvis and relieve the pressure; or the prone position may be tried on a double-inclined plane.

Night and morning the lower bowel may be very gently washed out with an enema of warm water, to which half an ounce of boro-glyceride has been added to the pint of water. After the evening washing, if an ounce of warm thin starch, containing ten drops of liquor opii sedativi, be injected by a soft tube well up the bowel, much relief will be afforded.

A simple unirritating ointment twice in the daytime by means of an ointment introducer appears to be beneficial, probably from its protecting the part from irritating secretions. An ointment made with ten grains of calomel to the ounce of vaseline may be advised.

I have reason to suppose that in one case under my care the ulceration was benefited by the introduction and retention of a perfectly smooth small conical bougie. It appeared to act by the pressure it produced, and was thus analogous in its action to the strapping that often proves so beneficial in ulcers of the leg.

Drainage.—With a view to draining the large pouch of the rectum just above the internal sphincter so as to get rid of the quantity of acrid discharge that there collects, a piece of drain-tubing four inches long can be introduced, three and a half inches lying inside and half an inch projecting through the anus. An india-rubber disc, two inches in diameter as thick as a penny, should have a hole cut in its centre, through which the projecting part of the tube can be drawn. If the hole be cut slightly smaller than the diameter of the tube, it is firmly held and will not slip within the bowel. The outlet can be covered with a thick pad of tow or wood-wool kept in position by a T-bandage. I have known much benefit result from this method of draining the bowel.

An important question arises in rectal ulceration as to whether any benefit is likely to result from a free division of the sphincter muscles, so as to afford rest and more complete drainage to the part. In selected cases, there is no doubt that this is the proper plan of treatment, so that if the ulceration be situated low down in the rectum, if the sphincter muscle be strong and irritable, and if the disease has resisted simpler methods of treatment, I advise division of the sphincter. On the other hand, in an old patient with a broken constitutional condition, and in whom the sphincter muscles are almost powerless, no good is likely to follow such an operation. Indeed, as in the case on page 185, the new wound will probably refuse to heal, and the patient's condition be made worse rather than better.

If the ulceration is of a local tubercular nature, the free use of the curette, the actual cautery or even excision may be tried. The case mentioned on p. 375 was eventually cured by this treatment.

Lastly, should the ulceration be extensive and the case of long standing, and if all plans of local treatment have been tried without success, the question of colotomy may be fairly entertained.

CHAPTER X

FIBROUS (NON-MALIGNANT) STRICTURE OF THE RECTUM

NOTWITHSTANDING the heading of this chapter, stricture of the rectum if left untreated almost invariably leads to a fatal termination. Even in those cases in which the stricture is not directly fatal, yet, from the persistency of the disease, and the train of symptoms following in its wake, it materially tends to shorten life.

When the disease has been neglected and allowed to advance unchecked, it is difficult to overrate the distress and misery it causes. Day by day the patient's attention is fixed on the part by the ever-increasing pain and trouble. After a while ulceration commences and fistulæ form, the condition of the patient becoming truly pitiful, the greater part of the day being passed in vain attempts to obtain an evacuation, the constantly recurring desire only ending in the discharge of a few teaspoonfuls of grumous matter. The nights become broken and restless, the sufferer loses flesh, becoming cachectic, and even death, longed for as a relief, is often only obtained after the agonies of acute peritonitis or total obstruction of the bowel. Death may take place from amyloid disease induced by the chronic suppuration, or more suddenly from complete obstruction, or the bursting of an abscess into the abdominal cavity.

I know but a single case in which a spontaneous cure has occurred in fibrous stricture, and this will be found

described in detail on p. 237. The distressing nature of the disorder makes its study and the possibility of cure a matter of deep interest to the surgeon.

The etiology of rectal stricture is perhaps in a more confused and unsatisfactory condition than that of any other disease of equal gravity and importance. In the earlier part of last century a valuable advance was made when the distinction was first drawn between malignant (cancerous) and non-malignant (fibrous) strictures, a distinction now well recognised in surgical practice.

Malignant strictures must be regarded as mere complications of progressive cancerous disease, and will be considered in the chapter on that disorder. The present chapter is limited to the consideration of fibrous stricture, a disease not dependent upon any progressive morbid growth, but rather to be regarded as the result of some previous irritation or inflammation affecting the part.

Authors have classified these strictures in various ways. Some, founding a classification upon the cause of the disorder, describe them as syphilitic, tubercular, or traumatic, an arrangement of value when considering the various pathological conditions terminating in the narrowing of the gut. Others are content with a division on the basis of the physical characteristics of the disease, dividing them into annular and tubular strictures, according to the extent of bowel involved, a classification of considerable practical value, as affecting the treatment and prognosis.

Before enumerating the various causes from which the stricture arises, it may be well to consider the actual nature of the disease itself, for, however diverse may be the lesions from which it originates, all strictures have more or less certain features in common.

I have in another part of this work given a description of the anatomy of the rectum, and I will only recapitulate here the points that have special bearing on the formation of stricture. The tunics of the rectum in its lower half

consist of the mucous, submucous, circular, and longitudinal muscular coats; the peritoneal membrane also forms a partial covering for the anterior wall, but only at a distance of from two to three inches from the anus.

Besides the coats properly appertaining to the rectum, the levatores ani with their fascial coverings are to be considered, as playing an important part in the mechanism of stricture. The circular muscular fibres run in a series of loops round the alimentary canal through its entire course. As the rectum is approached the bundles become coarser and stronger, till at three-quarters of an inch from the anus they are aggregated together into a strap-like ring forming the internal sphincter. Between the internal sphincter and the subcutaneous external sphincter there are only a few thin circular fibres continuous with the latter muscle. If the internal muscular coat be more carefully examined, it will be found that it by no means consists of muscular fibre only, for between the muscular bundles, and dividing them from one another, is a large quantity of white and elastic fibrous tissue which has a circular arrangement similar to that of the muscular fibres. In tracing these fibrous circles round the bowel, they are found in certain situations to be prolonged into and continuous with various structures lying external to the rectum. This is especially the case on the anterior surface, both where the bowel is connected with the prostate and at the point corresponding with the reflection of the peritoneum. Some of the fibres are continuous with the pelvic fascia, notably with the bands forming the ligaments of the bladder, and the fibrous sheaths of the levatores ani. From this arrangement of the fibrous tissue of the rectum, it will be seen that a narrowing of the canal may be effected either directly by contraction of the circular fibres, or indirectly by contractions affecting the pelvic fascia.

On p. 6 I have described the results of some careful dissections of the levator ani, showing that many

of the internal fibres run a course, so far as I know, hitherto overlooked by anatomists. These fibres run from the inner surface of the pubes to the sides of the coccyx, crossing the rectum at an obtuse angle about an inch and a half from the anus. Both the origin and insertion of these fibres being close to the middle line, when the muscles of opposite sides contract simultaneously, they act as constrictors of the rectum as it passes between them, and I believe that not a few cases of rectal stricture at this point are caused by the permanent atrophic shortening of the fibrous element of this muscular tissue (*see* p. 200, also Figs. 1 and 2 and pp. 7 and 8).

Opportunities do not occur of examining the pathological structure of rectal stricture in an early stage, but unfortunately there is no lack of opportunity of post-mortem examinations in advanced cases. In these the alteration is always more or less of the same character though varying considerably in degree. The change consists in a great thickening and blending together of the coats of the bowel at the site of stricture, so that they may be many times their normal thickness. On section, the cause of the thickening is observed to be partly new fibrous tissue developed between the tunics of the bowel, and partly to a great thickening of the fibrous trabeculæ of the muscular coats, while the muscular fibre itself has either partially or completely disappeared, its remains being represented by the fibrous bands mentioned. The thickening does not always involve equally the whole circumference of the bowel, being generally much more marked on the anterior aspect. Nor is it always confined to the bowel itself, but extends to the tissue between the rectum and the vagina and uterus, or even to the bands of fibrous tissue forming parts of the pelvic fascia, especially those extending from the rectum at the side of the reflection of the peritoneum, and up the broad ligaments in women. The length of bowel involved in these changes varies,

forming sometimes a mere "annular stricture," less than half an inch in width, and in others producing a "tubular stricture," implicating many inches of the bowel. The mucous membrane, both of the strictured part and that lying between it and the anus, is often destroyed by ulceration, though by no means universally so. When not destroyed, it occasionally presents a curious pouched condition, such, for instance, as in the following case, which I had an opportunity of examining with Mr. Bowlby, the specimen being now in St. Bartholomew's Hospital Museum:

The stricture commenced at three inches from the anus, and extended upwards for the same distance. The tightest portion of the stricture was at its commencement, but the whole of the three inches of the bowel involved was so contracted as scarcely to admit the finger. On section it could be clearly seen that this contracted condition was the result of a great thickening of the rectal walls, which appeared to be from a third to half an inch in thickness, the muscular coats being chiefly involved. Instead, however, of the red muscular fibres natural to the circular and longitudinal coats being visible, these were changed into a white fibrous tissue; the course of the fibres could still be identified as running in a longitudinal direction in the outer coat, and in a circular direction in the inner. Immediately above the strictured portion was an ulceration about an inch in diameter, over which the mucous membrane was destroyed. This ulceration had extended in the centre through all the coats into the peritoneal cavity, and no doubt was the channel through which the fatal extravasation had occurred. Except in one or two spots, the mucous membrane was still intact throughout the strictured portion, but it presented a remarkable appearance.

In four or five places the mucous membrane had been forced between the hypertrophied muscular bands,

so as to form hernial-like protrusions extending completely through the muscular coats. These protrusions formed little sacs, varying in size from a pea to a small nut, the entrance into them as they passed between the muscular bands being drawn into a ring-like constriction. In two or three places the mucous membrane thus protruded had evidently formed adhesions to the peri-proctal connective tissue, for it had been torn open on removal of the bowel at the post-mortem. There was some slight ulceration of the mucous membrane below the stricture.

In some cases of narrow annular stricture the contraction appears to be confined to the mucous and internal circular muscular coats only, taking the form of a permanent reduplication of a fold of mucous membrane.

Cause of Fibrous Stricture.—There are two pathological conditions in which I believe these fibrous strictures to originate.

(1) The tendency of fibrous tissue, subjected to chronic inflammation, to become both hypertrophied and contracted.

(2) The tendency of muscular fibre, when subject to undue and persistent nerve irritation, to undergo fibroid degeneration, with permanent atrophic contraction of its fibrous element.

The result is, in my opinion, more commonly due to the first than the second of these conditions.

Chronic Inflammation.—This leads to the production of new fibrous tissue, which, together with the old fibrous framework of the inflamed part, has a subsequent tendency to contraction. Remembering the circular arrangement of the fibrous tissue of the bowel, it can be readily understood how an inflammation affecting even a limited area of its circumference may, by drawing the circular fibres like a knot towards one point, produce a stricture of the canal; and further, it can be seen how inflammations even external to the bowel, such as pelvic cellulitis, may occasionally produce a similar result from

the continuity of some of the rectal fibres with the pelvic fascia.

As an illustration of the way in which any contraction or drawing upon of the pelvic fascia may affect the rectum, the following experiment may be tried :

If a female body be laid open in the post-mortem room, and the pelvic fascia or broad ligament strongly pulled upwards, while the finger is introduced into the rectum, a distinct kinking and drawing upwards of the bowel can be felt. This experiment shows clearly the connection between the pelvic fascia and the rectum, and, at the same time, shows how morbid conditions affecting the pelvic fascia may indirectly produce rectal stricture.

Muscular Spasm.—How far this may or may not be the originating cause of fibrous stricture has been much discussed.

Molière,* Trélat, and Deleur all deny the existence of spasmodic stricture, while Leichtenstern† "considers the existence of such an affection no longer calls for serious discussion."

In the American *Journal of the Medical Sciences*, for October 1879, is an admirable article by Van Buren on this subject. The views of this author, from his scientific culture and large practical experience, deserve great respect. After carefully analysing the views of various writers, he expresses his opinion that "neither in imaginary nor in actual stricture of the rectum is muscular spasm an element of any practical importance."

One of the chief arguments used by Van Buren and other writers in favour of this view, is the physiological impossibility of the permanent spasm of involuntary muscular fibre.

Of course I entirely agree that permanent muscular

* "Maladies du Rectum et de l'Anus," p. 273, 1877.

† "Constrictions, Occlusions, and Displacements of the Intestines: Ziemssen's Cyclopædia," vol. vii. p. 484. New York, 1876.

spasm, in the sense that a muscle is perpetually in vital action, is an impossibility. Nevertheless, there is a condition of temporary, followed by permanent, shortening to which muscles frequently stimulated by reflex irritation are liable. Illustrations of this phenomenon may be often observed in joint disease. Take, for instance, a case of untreated chronic disease of the knee-joint, where it will often be found that the hamstring muscles have dislocated the tibia from the femur, drawing it backwards and upwards. At first, from the startings of the limb and other evidence, it would appear that the intermittent contraction of the muscles is a pure reflex action, resulting from irritation of the sensory nerves of the joint. But after a while the muscles undoubtedly undergo a permanent shortening by atrophy of their muscular fibre, and by contraction of the remaining fibrous tissue element. When this stage has been reached, the contraction ceases to be in any true sense a muscular action, so that, even after all source of irritation has been removed, the shortening remains as permanent as ever.

If we observe one of these cases in a joint from the commencement, it will be found that the least movement or irritation of the diseased joint is sufficient to throw the muscles into spasmodic action; but after a while this morbid excitability gradually diminishes, giving place to permanent atrophic contraction.

Arguing from analogy, it would seem not unlikely that any constant source of irritation, such as would arise from a long-continued ulceration, might induce a similar reflex contraction in any of the muscular canals, and that such irritation, if continued, might terminate in a permanent shortening of their fibrous elements, thus producing an annular stricture. This reflex contraction of the involuntary muscular coat of a canal is occasionally illustrated in the œsophagus, where cases have been recorded in which, owing to an ulcer of the mucous lining,

the affected portion of the œsophagus has been immediately thrown into contraction by the irritation of the ulcerated surface from the passage of food or a bougie. But it is not by analogy alone that I venture to assert that muscular irritability must be reckoned as among the causes of rectal stricture, nor do I believe that such exists without any other lesion, but that muscular irritability causes an otherwise slight narrowing to assume the characteristics of a tight stricture, I can positively affirm; and further, I have known such a stricture in time acquire a permanent character. I well recollect a case at the Royal Free Hospital transferred to my care by my colleague, Dr. Allan Sturge.

A woman had a rectal ulceration with some tendency to stricture. I was puzzled about the case, for upon the first examination I found ulceration in the posterior part of the bowel, with an annular stricture situated two inches from the anus, which would barely admit the tip of the finger. The examination was extremely painful. Upon examining the same patient a few days later under an anæsthetic, the ulceration was present as before, but to my surprise there was scarcely any stricture, for the finger would pass readily into the bowel with only a sense of being slightly gripped at the spot which previously would not admit the finger-tip. I had this patient under observation for some time, and soon learnt that by introducing the finger somewhat roughly into the bowel the sense of stricture was immediately produced, but by keeping the finger gently in contact with the strictured part a feeling of gradual giving way was experienced, so that the finger would lie comparatively easily in the narrow part where, upon any rough movement, it could be felt to be palpably and immediately grasped, again relaxing in a few seconds. At the time of these observations I did not understand the action of the levatores ani, but I now believe that their contraction was the chief element in producing the sensation

of stricture. By rest and local applications the ulceration greatly improved and with this improvement the stricture in great measure vanished, and the woman left the hospital in a fairly satisfactory condition, and returned to the great unknown land to which hospital patients vanish.

Two years afterwards, my friend, Dr. Lediard, then Resident Medical Officer at Clevedon Street Asylum, now of Carlisle, told me that he had an old rectal case of mine under his care, and kindly asked me to see it with him. On doing so I at once recognised my patient with the semi-phantom stricture; but here the identity ceased, for on examining the part I found a great change, and in the place of the yielding and comparatively soft stricture which I had encountered two years previously, there existed a firm, hard, totally unyielding fibrous contraction, narrowing the bowel to the smallest circumference. The patient herself was emaciated and careworn, and for some weeks had a temperature ranging from 100° to 102.° There was a profuse discharge from the anus, the parts around which were red and swollen. I assisted Dr. Lediard to perform colotomy, from which the patient made a satisfactory recovery.

The case referred to on p. 222 is also another instance in which I am sure muscular contraction played a considerable part in the production of the stricture. In both these cases I believe the constriction experienced by the finger was due partly to the fibres of the levatores ani, already described, and partly to the circular muscular fibres normal to the bowel. While I am convinced that strictures exist which may be described as partially spasmodic, I regard them as rare; or perhaps it would be more accurate to state that at the time when the cases come under observation the spasmodic condition has passed away, leaving an atrophic shortening of the muscular fibres of a more or less permanent nature.

Since publishing the foregoing views in the first edition of this work, I am much gratified to find that so experienced and careful an observer as Dr. Ball * in great measure adopts my theory, and in his interesting chapter on stricture brings forward some further facts in support of it.

Of seventy cases of rectal stricture admitted into St. Bartholomew's Hospital between the years 1877 and 1882, the following table gives the probable primary cause of the disorder:

Syphilis	13	Internal fistulæ	2
Childbirth	8	Dysentery	2
Operation for piles	8	Tubercular disease	1
Operation for fistula	2	Unassigned	30
Congenital	2		—
Inflammation of the bowels, peritonitis (?)	2		70
			—

Of these, sixty-three occurred in women, seven only in men.

This table is made partly from my own notes when Surgical Registrar at St. Bartholomew's Hospital, partly from the notes of my fellow-registrars, Mr. Macready and Mr. Butlin.

Stricture due to Syphilis.—It would appear in the above table that 18 per cent. represents as near as possible the proportion of cases of stricture admitted into St. Bartholomew's Hospital which can be fairly assigned to a syphilitic origin.

Many authors assign a much larger number of cases of rectal stricture to syphilis, and it is somewhat remarkable to observe the habit of attributing stricture to syphilis without duly considering the evidence of that disorder. In the registration volumes at St. Bartholomew's, the heading of the case is copied from the patient's board, on which it is entered by the surgeon, while the

* "Diseases of Rectum," Dr. Ball.

history of the case is obtained independently by the Surgical Registrar. In these volumes several cases are entered as "syphilitic stricture"; yet in the notes of the cases it may be specially mentioned that there is "no history of syphilis, either local or constitutional." With the foregone conclusion that fibrous stricture is probably due to syphilis, that disorder is often assumed upon what I consider very insufficient evidence. Nevertheless, of any single cause syphilis holds the highest place, but yet we have to account for why this diathesis should so much more frequently lead to stricture in women than in men, for an infinitely larger number of males suffer from syphilis than females, about the proportion of ten to one, a proportion exactly reversed in the frequency of stricture. The true explanation of the preponderance of the disease in females, whether started from specific causes or otherwise, is to be sought rather in the anatomical relations of the rectum than in any constitutional diathesis.

Contractions of the pelvic fascia, and injuries to the recto-vaginal septum, owing to their connection with the fibrous tissue of the rectum, affections to which women alone are liable, often play a part in the production of stricture. Moreover, ulcerations of the rectum of all kinds are far more frequent in women than in men, and such ulcerations are frequently the starting-point of stricture. Different authors hold varying views as to how syphilitic disease leads to stricture; some, among the most prominent of whom is Gosling,* regard rectal stricture as the result of the healing of chancroidal ulceration which has extended upwards from the anus. Van Buren also recognises this as one cause of stricture, believing that this ulceration generally starts from the inoculation of cracks and fissures about the anus.

The difficulty in assenting to this view is the fact that chancroidal ulcerations are situated at the anal

* "Archives générales de Médecin," tom. iv. p. 667.

margin, while strictures are generally found from an inch and a half to two inches up the bowel. Kelsey* and Fournier† regard the strictures in these syphilitic cases as the result of a true tertiary inflammation or ulceration of the part, the rectal walls being infiltrated with syphilitic neoplasm, which, either by breaking down in ulceration or by becoming organised into contractile tissue, produces the stricture.

That strictures may be produced in this way by the ulceration of tertiary deposits I have little doubt, for one is very familiar with the hard puckered condition left by the healing of ulcers about the tongue and fauces of old syphilides; such a condition, if affecting the walls of a hollow canal like the rectum, would certainly lead to contraction of its calibre. I believe that both chancroidal ulcerations of the anus and simple anal ulceration may occasionally lead to stricture; but I do not agree with Gosling and Van Buren that it does so by the contraction of the cicatrix of the healed ulcer. Indeed, I rather regard the stricture as due to the permanent atrophy of the circular muscular fibres of the bowel, and the posterior border of the levator ani, an atrophy brought about by the prolonged reflex irritation excited by the ulcerated surface.

If this be the true explanation, it will account for the contracted part of the gut being not necessarily over the immediate site of the ulceration.

Stricture due to Fistula.—Fistula when found complicating stricture is generally the result rather than the cause of contraction, though occasionally this relationship may be reversed, as the following case shows:

A woman was admitted into St. Bartholomew's Hospital with a simple fracture of the tibia and fibula, who, with the exception of piles, had never suffered from

* "Diseases of the Rectum," p. 172.

† "Lésions tertiares de l'Anus et du Rectum." Paris, 1875.

any rectal trouble. A fortnight after admission she was seized with great pains in the lower part of the belly, followed by the formation of abscess. She was in the hospital for twelve weeks, and when she left had several discharging sinuses about the anus. Since that time she had a gradually increasing difficulty in passing the motions, and was again admitted into the hospital eighteen months later, when she was found to be suffering from a well-marked stricture.

It is a matter of some surprise that the irritation of a fistula should so seldom be followed by stricture, and I think it will probably be found that it is only when the fistula extends some distance up between the coats of the bowel, with a tendency to abscess formation, that the irritation is sufficient to cause stricture. The permanent thickening thus caused by a fistula reminds one very much of the ill-defined hard thickening about the groin in patients who have suffered any length of time from fistulous openings in the groin following a bubo. The thickened condition of the groin in such patients often lasts a lifetime.

Stricture following the Operation for Piles.— This is occasionally a cause of stricture which may result from the operation being improperly performed, either the skin of the anal margin being too freely removed or the submucous and muscular coat being destroyed: mucous membrane may be removed very freely without fear of stricture, but not so the submucous or cutaneous tissues. A stricture may follow indirectly owing to ulceration extending from the wound made in the pile operation; but this would scarcely occur in a healthy person. The stricture following the operation for piles is generally, though not necessarily, situated close to the anus. Since "Whitehead's" operation has been extensively employed for hæmorrhoids I have seen several cases of stricture resulting. This operation in the hands of a first-class operator like Mr. Whitehead is perfectly

safe, but by no means so in the hands of less skilful followers.

Stricture following Operation for Hæmorrhoids.—The following are a few cases of stricture consequent on the operation for hæmorrhoids:

A gentleman, aged thirty-five, sent to me by Dr. Moore, had an operation for piles three years ago. Since that time he has always had trouble with the rectum. For the last year has had considerable pain and discharge with a difficulty in passing his motions. On examination at a distance of one and a half inches from the anus was a well-marked stricture, which would only admit the finger tip. Around the anus were many tender œdematous folds. Bougies were tried for some time, with no material benefit. The stricture was subsequently completely cured by posterior division.

E. B., aged thirty-five, sent to me in April 1896 by my friend and late House Surgeon, Dr. Murray, of Johannesburg. He had been operated on at the Colonial Hospital for piles. He had recurrent hæmorrhage, which was treated by the injection of perchloride of iron. This was followed by extensive sloughing and stricture. This was very tight, and about an inch up. After dividing this I discovered a huge cavity between the bladder and the rectum, which would admit two fingers for three inches. On the left side was another large sinus passing into the ischio rectal fossa. After operating twice, and the patient being some months in bed, he completely recovered, and I am told by Dr. Lambert, of Lincoln, his present attendant, that he remains well.

Stricture following "Whitehead's" Operation.—A lady, aged thirty, sent to me by Surgeon Major Raye, had had an operation done in Calcutta for piles by "Whitehead's" method, a complete ring of muco-cutaneous surface being removed. A year later, when I was asked to see the patient, I found a stricture at the anus so tight that it would only admit a No. 9 catheter.

Childbirth.—A considerable percentage of stricture cases can be traced to child-bearing. In some of these the cause appears to have been a lingering labour with sloughing or other damage of the posterior vaginal walls, but the majority apparently result from pelvic cellulitis. The intimate connection of the fibrous tissue of the bowel with portions of the pelvic fascia, explains how its contraction from inflammation may secondarily involve the rectum (*see* p. 198).

Pelvic cellulitis is generally dealt with in works on diseases of women, but owing to the effect at times produced on the rectum, it cannot be passed over here without some consideration. Pelvic cellulitis is usually a sequence to delivery or miscarriage or salpingitis, though not necessarily so; but I will not stop to consider the pathological conditions from which it arises, for it is merely the effect produced which bears on the present question. A greater proportion of these inflammations pass on to the formation of abscess, though a certain number of them terminate in resolution without any obvious pus formation. Speaking generally, the more rapid and acute the local inflammation the less permanent are its results, and it is rather from the effects of chronic inflammation that permanent thickening and induration of the tissues result. Pelvic cellulitis commences as an acute disorder, but it is apt to degenerate into a subacute or chronic form. This is due to the anatomical situation in which the matter is formed, a situation in which the pus may take weeks or months in coming to the surface, and then only discharging itself through an imperfectly formed opening, so that from insufficient drainage the irritation is further prolonged. The permanent troubles that follow these abscesses depend rather on the result of the changes they induce in the surrounding tissue than on any subsequent contraction of their own cavities. The changes in the neighbouring tissue take the form of sclerosis and permanent contraction, and

tissues which in health admit of movement independent of each other become blended into fibrous masses. Fortunately, it is rare for the rectum to become directly implicated in this disease, the uterus, ovaries, and vagina being more commonly affected. The following case, narrated by Dr. Matthews Duncan,* well illustrates the effect of pelvic cellulitis as shown by post-mortem examination :

" A young woman died fourteen months after recovery from pelvic cellulitis. When she left the hospital at the time of her recovery there appeared to be no other morbid condition than a thickening on the left side of the uterus, by which it was almost completely fixed to the pelvis. The appearance found after death explained this thickening, and accounted for the immovability of the womb. For the folds of the broad ligament, from the upper part of the vagina to the lower surface of the ligamentum ovarii, enclosed a mass of dense cellular tissue of almost cartilaginous hardness, dense white bands intersecting each other in all directions."

Pelvic cellulitis does not always give rise to very definite symptoms, for at times its course is insidious, and this is especially the case when not directly connected with the puerperal condition. Extensive mischief may have been done, but yet no definite history can be obtained from the patient as to how the trouble commenced, beyond the fact of some febrile symptoms, pains about the bowel, or abdominal tenderness.

West mentions the following case which illustrates this point, and shows at the same time how the rectum may be implicated :

" A young woman had constipation from the fourth to the eighteenth day after her first confinement, which was followed by inflammation of the pelvic tissue behind the rectum. The action of her bowels was from this time attended by great pain and costiveness, alternating

* West and Duncan, " Diseases of Women."

with diarrhœa, the evacuations being not infrequently mixed with pus. In spite of these symptoms, however, she gradually regained her general health, and menstruation returned, though not regularly. Seventeen months after her confinement, she had been visiting the Crystal Palace in Hyde Park, and while returning home in an omnibus the jolting of the vehicle occasioned the sudden bursting of an abscess, and the discharge per anum of about three pints of matter streaked with blood. For the next three months a more or less purulent discharge took place from the bowel, behind which the abscess from whence it proceeded was situated, forming there a tumour about the size of a small apple. The discharge gradually ceased with the ultimate complete disappearance of the tumour, of which six years afterwards no trace existed." In the case just narrated there does not appear to have been any permanent stricture of the rectum.

To avoid confusion, it must be borne in mind that pelvic inflammation and abscess are often the result of stricture of the rectum rather than the cause from which the contraction originates. Such secondary abscesses are described, on p. 236, as one of the means by which a rectal stricture ultimately proves fatal.

Stricture due to Tubercular Disease.—I attended a case with Dr. Colebank, of Teddington. The patient two years previously had symptoms of rectal ulceration, which had healed. On examination there was a tight annular fibrous stricture one inch within the anus. This I divided, and Dr. Colebank kept it carefully dilated with bougies. The cut healed and the stricture was cured, but the patient died a year later with tubercular disease of the lungs.

Symptoms of Rectal Stricture.—The symptoms of rectal stricture vary widely in different cases, a variation to be expected when the different degrees and stages of the disorder are considered. Occasionally the amount

of contraction is so slight as to cause but little trouble, or it may be so tight as to lead to complete occlusion. Again, such complications as ulceration, inflammation, and fistula will materially alter the character of the disorder. It must be remembered, too, that the disease is chronic, with a gradual tendency to get worse, so that symptoms become prominent at the later stage which were wholly absent at the beginning.

Stricture frequently following upon ulceration will often be preceded by all the signs of the latter disease, which have been discussed in the previous chapter, so that the present description will apply rather to the cases in which prior ulceration has been absent. Owing to the insidious manner in which the contraction commences, it has often made considerable progress before the attention of the patient is markedly attracted to the part. Some difficulty in passing the motions may be the earliest noticeable symptom, and this is generally ascribed by the patient to constipation, requiring more than ordinary straining to get rid of a motion. The difficulty slowly but surely increases, and relief is sought from the use of purgative medicine. It may be noticed at this time that the motions are smaller than natural, being often described as resembling pipe-stems, or passed in small shapeless fragments, while occasionally they are flat and ribbon-like. It must be remembered that this narrowing of the motions is not necessarily due to a stricture, for an irritable sphincter may produce a similar result. On the other hand, cases are occasionally met with in which there may be considerable narrowing of the bowel, though the patient has not observed any special smallness of the motions.

There is a feeling after going to the closet as if the bowels had not been completely relieved, and women especially complain of a certain amount of "bearing-down pain." As the disease advances, and probably

coincident with some ulceration of the part, its character alters, all the symptoms increasing in severity. Diarrhœa alternates with constipation, the former becoming perhaps the more prominent symptom of the two. The diarrhœa is of a very teasing character, requiring the patient to visit the closet frequently. On these occasions perhaps only a little solid material is passed with some teaspoonfuls of a yeasty-looking discharge. In more advanced cases the discharge is of a darker colour, somewhat resembling coffee-grounds. The desire for a motion seems quickly to follow taking anything to eat or drink, one of my patients describing his sensations as if "everything he took separated at once into fluids and solids, the former passing out quickly, while the latter appeared to be passed with difficulty."

His pathology of course was erroneous. When the large intestine is in an irritable condition, the introduction of food into the stomach at once sets up a reflex peristaltic action in the colon, hence the rapid expulsion of any fluid it may contain.

Wind is often a source of great trouble, and this the patient dare not pass except at stool, for the effort to do so is followed by a liquid discharge. At this time the abscesses form in the neighbourhood of the stricture, resulting in the formation of fistulæ. In women it is not uncommon for a recto-vaginal fistula to form, so that fæces are passed by the vagina.

The anus becomes excoriated and inflamed by the discharges, and around its margin may be seen œdematous folds of skin having a pink shiny appearance. Albumen is often found in the urine.

When affairs get to this condition, the state of the patient is very distressing, much of the day being passed in ineffectual attempts to procure an evacuation, while the discharge, over which they have lost all control, is nearly constant. If unrelieved, there is an increasing

tendency towards death, the patient becomes hectic and emaciated, and the scene not infrequently closes with an acute attack of peritonitis or intestinal obstruction.

The foregoing is a brief sketch of the progress of a bad case of rectal stricture, the symptoms being mentioned in the sequence in which they generally occur; but it must be borne in mind that many of these symptoms are common to other diseases of the bowel besides stricture; nevertheless collectively they afford almost certain evidence of its presence. If the stricture be in the lower five inches of the bowel, the diagnosis can be established by digital examination. On passing the finger into the bowel, there is often a marked absence of contractile power in the sphincter. This is more commonly met with in advanced cases, or those in which there is much ulceration. The bowel below the stricture is seldom normal, and instead of feeling soft and velvety, a harsh creaking sensation is conveyed to the finger, more like that of a serous covering. The mucous membrane may be irregular and adherent to the subjacent tissue, sacculated in some places and nodulated in others.

The actual strictured portion may commence abruptly, the finger-tip passing into a narrow orifice in the centre of a kind of diaphragm, or the contraction may be more gradual, as if the finger was passing towards the apex of a cone. With very gentle pressure, if the stricture be annular, the finger may pass through it. It then feels like a tight ring encircling the bowel, the canal beyond being dilated. As a rule, on the first examination, it will not be possible to pass more than the tip of the finger into the stricture.

And let me here earnestly caution practitioners against the temptation to force the finger through the stricture to ascertain its extent. There is great temptation to do so from the sensation of the stricture gradually

yielding. If this temptation be given way to, sooner or later a disaster will inevitably occur, with the most distressing consequences.

The following three cases show only too well what may happen.

A young man, aged twenty-two, was admitted into Darker Ward, St. Bartholomew's Hospital, in 1883. He had been suffering from rectal stricture for four years. During the last six months some fæcal matter has passed through the penis. The patient was examined under ether. When the finger was introduced the lower half of the rectum felt narrow and hard, as if the mucous membrane had been replaced by cicatricial tissue. The finger-tip could just reach the stricture, but could not be passed through it. A small bougie was passed with apparent gentleness, though some bleeding followed. The next day the patient had a raised temperature, and great pelvic pain. He died five days later with acute suppuration in the pelvis and right testicle.

A woman, aged fifty, was admitted into St. Bartholomew's Hospital, under my care, in June 1901. I had operated upon her eight years previously by posterior proctotomy for a fibrous stricture. She had been discharged well, and passed a No. 12 bougie twice weekly for four years. She then gave it up; since that time the stricture has slowly recurred. On admission there was a stricture one inch within the anus, so tight that it would only admit the finger-tip. Assisted by Mr. West, my House Surgeon, I again divided the stricture in the middle line behind. There still remained an undivided ring of stricture two and a half inches up. I passed my finger gently through this with a view to dividing it with a scalpel, but at this moment felt a distinct tear. On again introducing the finger it passed directly into the abdominal cavity through a lacerated opening in the anterior wall. When the finger was in the abdominal

cavity, and flexed at the second joint so as to make a hook of it, the peritoneal reflexion was found to come down just under the skin of the perinæum. Apparently this descent of the peritoneum was the result of constant straining. The parts were carefully washed, and the rent gently plugged with gauze, and ultimately sewn up. The patient had some local peritonitis, but ultimately recovered.

In November 1905 a woman with a tight stricture was admitted into President Ward, St. Bartholomew's, under my care. A colotomy was strongly urged, but declined. The patient returned to the country, and a few weeks later Dr. Leon, of Sidmouth, kindly wrote to me as follows: "She had been advised to pass a bougie herself to save an operation. On Monday, after passing the bougie in the morning and feeling no more than the usual pain; in the afternoon I was sent for and found her in great pain. She died the next day. A limited post-mortem was obtained, and I found the abdomen full of liquid fæces. The point of rupture could not be ascertained." *See also* cases narrated on p. 350.

No doubt, when the question of prognosis and treatment arises, it is of great importance to ascertain the extent of bowel involved, and to know whether the stricture be annular or tubular. When the contraction is too tight to admit the finger at the first examination, it will generally be found, after a few days' rest in bed, and the careful employment of a small conical bougie, that it will dilate sufficiently for digital exploration. If this is still impracticable, I have found the use of an acorn-headed sound of great value in estimating the length of the stricture (*see* Fig. 17). The acorn-shaped head is passed through the stricture, and on withdrawal can be felt to catch against the upper boundary of the contraction, thus allowing a fair estimate to be obtained of its length.

Apart from the error of mistaking the symptoms of fibrous stricture for those of ulceration, dysentery, piles, and other slight ailments, which can be cleared up by careful examination, the real difficulty is in distinguishing between fibrous and malignant stricture, the differential diagnosis between which will be found discussed in the chapter on "Rectal Cancer."

Diagnosis of Stricture above the Reach of the Finger.—Easy and sure as is the recognition of stricture in the lower half of the rectum, the diagnosis becomes difficult and uncertain when the disease is higher up the bowel. On reference to works on rectal surgery in the early part of the last century, one is astonished at the amount of strictures which were detected and treated far up the bowel. The following extract from Salmon's * work fairly represents the views amongst specialists at that period: "Respecting the situation of stricture, I have been surprised at patients informing me that they have been examined by surgeons of considerable celebrity, and declared to be perfectly free from stricture, simply after an examination made with the finger, or with the bougie of only four or five inches in length, and that even when the most decided symptoms of the disease were present. Doubtless there are many cases where the obstruction is sufficiently near the orifice to permit of its detection by such means, but in by far the greater number the stricture is situated too high in the intestine to allow of discovery by so limited a mode of examination."

Molière, in his valuable and amusing work,† states "that at one time there flourished a class of practitioners in London who as readily detected a rectal stricture as another class now discover polypoid growths in the larynx, one of these gentlemen having carried his ingenuity so far as to have invented a special form of pantaloons

* "Stricture of the Rectum," by F. Salmon, 4th edition, 1833.

† Molière, *op. cit.*

for his patients, in order to facilitate the passage of a bougie." To Brodie and Syme belong the credit of proving the fallacy of Salmon's views, indeed the former, after sixty years' observation, could only remember two instances of fibrous stricture high up the bowel, but, he adds, "the number of people he had known treated for this imaginary disease was simply astonishing."

Without discussing the motives which induce some so readily to discover these strictures, undoubtedly a considerable proportion of cases were treated by honest practitioners, in the firm belief that they were dealing with a genuine disorder.

Syme * narrates the following case:

"I saw an elderly lady with Dr. Begbie. She had been supposed to suffer from stricture of the rectum between five and six inches up the gut, and had been subjected to treatment for it for several years before coming under Dr. Begbie's care, by two gentlemen of the highest respectability in this city. Finding the coats of the rectum, though greatly dilated, were quite smooth and apparently sound in their texture, so far as the finger could reach, and conceiving that the symptoms of the case denoted a want of tone or proper action, rather than mechanical obstruction of the bowels, I expressed a decided opinion that there was no stricture in existence. Not many months afterwards the patient died, and when the body was opened not the slightest trace of contraction could be discovered in the rectum, or any other part of the intestinal canal. One of the gentlemen who had been formerly in attendance was present at this examination, and wishing to know what had occasioned the deception—which, he said, had led to more than three hundred hours being spent by himself and his colleague in endeavours to dilate the supposed stricture with bougies—he introduced one as he had been

* "Diseases of the Rectum," 3rd edition, 1854.

wont to do, and found that, upon arriving at the depth it used to reach, its point rested on the promontory of the sacrum."

I entirely agree with Brodie, Syme, Kelsey, Van Buren, and others as to the rare occurrence of stricture in the upper part of the rectum. Of course I am only referring to fibrous stricture, for it is well known that the sigmoid flexure is not an uncommon site for malignant disease. Of the seventy cases mentioned in the St. Bartholomew's Hospital Table, only three were situated higher than four inches from the anus. In one of these the stricture was only just beyond reach of my finger, and my colleague, Mr. Langton, was able to touch it when the patient was under chloroform. At the post-mortem examination it was found to be situated four and a half inches from the anus. In the second case I performed the autopsy,* and found the stricture just below the promontory of the sacrum, while in the third case† the stricture was at the sigmoid flexure. I have also had a case quite recently in private (referred to on p. 236), in which the stricture was situated at the junction of the rectum with the sigmoid flexure. The diagnosis was made by an abdominal exploratory incision, and the patient was ultimately completely relieved by colotomy. The very fact of the comparative rareness of strictures beyond reach of the finger ought to make us careful not to overlook the possibility of their existence.

The symptoms already described as occurring in stricture of the lower part of the rectum are in some measure present when the disease is situated higher up, but until complete obstruction occurs they are perhaps less severe and clearly marked. For further details of the symptoms when the stricture is high up, together with suggestions for making the diagnosis, the reader

* Henry Ward Register, St. Bartholomew's Hospital, vol. viii. p. 175. (Notes by Author.)

† Abernethy Ward Register, St. Bartholomew's Hospital, vol. i. p. 21. (Notes by H. Marsh.)

is referred to p. 351, where the question is fully discussed with reference to cancerous stricture.

Treatment.—Stricture of the rectum presents the greatest difficulty in treatment, many careful and experienced authorities* having doubts whether the disease is curable at all in the strict sense of the word. According to my view, whether stricture be curable or not depends entirely upon its nature; for while many of the annular strictures are perfectly curable, some of the tubular strictures are beyond the hope of local remedy. I shall consider the methods of treatment in the following order:

(1) Gradual dilatation.
(2) Forcible dilatation.
(3) Electrolysis.
(4) Internal division of the stricture.
(5) Complete posterior proctotomy.
(6) Colotomy.

Treatment by Gradual Dilatation.—In a considerable number of cases great relief may be obtained by the gradual dilatation of the stricture by bougies, and occasionally a cure may be effected. The success following this method is in part dependent on the nature of the stricture, and in part on the regularity and perseverance with which the treatment is carried out.

I am in the habit of fully explaining the great length of time and sacrifice necessary for the relief of this disease. Otherwise, patients are apt to become dissatisfied unless a speedy cure be effected, and will relinquish the treatment without sufficient trial; for it will often require months, rather than days or weeks, to effect any permanent improvement.

During a long course of treatment, it is not by any means necessary that the surgeon himself should always pass the bougie, for when the stricture is within two or

* Van Buren; Molière.

three inches of the anus, the short conical bougies, described beneath, may be safely used by a good nurse or intelligent patient. Nevertheless, on the first few occasions the surgeon should personally supervise the introduction and amount of pressure put upon the bougie, and if the stricture be high up, or if there be any cul-de-sac below it, as is sometimes the case, the patient should be thoroughly taught when the bougie is really within the stricture before he is entrusted with its use.

The first question to be decided is the kind of bougie to be used. For my own part, I am in the habit of using three forms of bougie ; the one, a set of straight vulcanite bougies, graduated in size from 1 to 12, and about eight inches in length, ending somewhat abruptly in a rounded extremity. It is well to have the set made so that the alternate sizes fit the one into the other, for it will be found convenient to be able to carry five sizes all within the outside case of a No. 12. These simple cylindrical bougies are of value in ascertaining the diameter of the stricture, or what advance has been made during the progress of the case. But for purposes of dilating the stricture and carrying out the treatment, I greatly prefer short conical bougies. Messrs. Arnold and Sons have made some sets of these to a pattern that I supplied. They are made in twelve sizes, and each bougie has a slight uniform taper from base to apex, while their length gradually increases from four and a half inches in No. 1 to five and a half inches in No. 12. The diameter at the base increases regularly from a quarter of an inch in No. 1 to an inch and three-eighths in No. 12 ; while the apices have a diameter, respectively, of three-eighths of an inch in No. 1 to fifteen-sixteenths of an inch in No. 12. Each bougie has a flange at its base, which prevents the possibility of the bougie slipping into the rectum. The extreme ease to the patient with which these bougies, from their conical form, will pass into the stricture, while at the same time the certainty and complete

absence of violence with which they may be passed by the surgeon, render them immensely superior to instruments with a uniform diameter. Moreover, they can be much more safely entrusted in the hands of the patients, who have not the same temptation to thrust them through the stricture regardless of resistance. Their slightly wedge-like action exerts a gentle continuous pressure on the contracted bowel which cannot be attained by any other means.

The third form of bougie (*see* Fig. 16), also made by Messrs. Arnold at my suggestion, will be found serviceable when the stricture is some distance up the bowel, for it admits of being kept in without stretching the sphincter muscles.

The way I proceed with the bougie treatment by gradual dilatation is as follows: A small injection of warm oil and water should be administered to the patient, and, if possible, passed away half an hour prior to the use of the bougie. Such an injection not only relieves the bowel, but in some measure soothes the sphincter and levator ani muscles, rendering them less irritable and spasmodic during the passage of the instrument. The patient lies on his side with both knees drawn up. I will assume that a No. 2 straight bougie will pass through the stricture with only a very slight amount of resistance, but that on trying the next size larger it will not pass, or it will only do so if some amount of force be used. Now is the time for using the conical bougie. A size should be selected equivalent to No. 2 at the point. This will, after being well oiled, pass readily into the stricture, but from its conical shape will soon become arrested. It should then be pressed steadily against the stricture as long as the patient can conveniently bear it, which may be somewhere between a few minutes and an hour or more.

A perineal bandage, in which a piece of elastic webbing is inserted, I have found useful for keeping up pressure. After the conical bougie has been used for a few days,

FIG. 16.

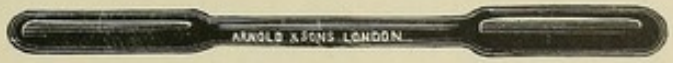


FIG. 17.



FIG. 18.

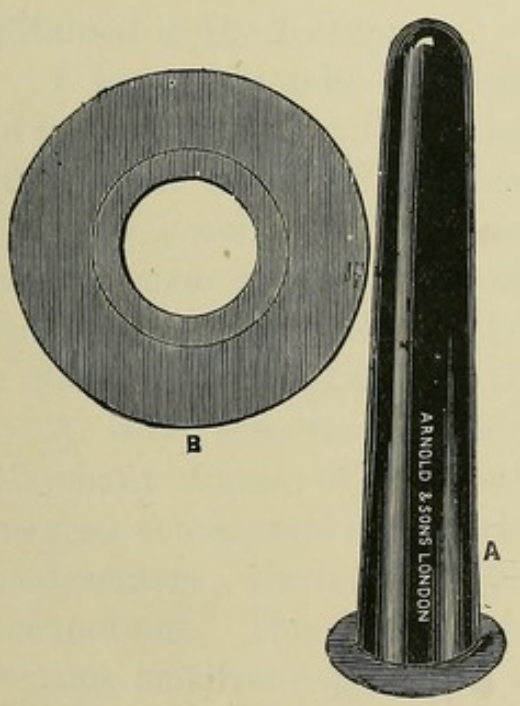


FIG. 18A.



FIG. 16.—Cripps's double bougie ($\frac{1}{3}$ actual size).

FIG. 17.—Olivary headed sound for measuring strictures ($\frac{1}{3}$ actual size).

FIG. 18.—Cripps's conical bougie ($\frac{1}{2}$ actual size).

FIG. 18A.—Cripps's colotomy dilator ($\frac{1}{2}$ actual size). The lower arms fit into the colotomy opening and from their curve are self-retaining. An india-rubber band round the upper arms causes a constant pressure to be exercised on the opening.

To face page 220.

it will be generally found that the No. 3 bougie, which before fitted so tightly, will pass with ease. The next size conical bougie should then be taken into use, and so by constant perseverance the stricture may in a certain number of cases be fully dilated; or at any rate, so much relieved as to admit of the patient passing motions in comfort. The contraction is liable gradually to return, but this can generally be prevented by urging the patient to pass a full-sized bougie twice a week as long as may be necessary, often for years.

It will naturally occur to the surgeon's mind, seeing the rapid advance sometimes obtained in the treatment of urethral strictures by the constant retention of the instrument, whether analogous results might not be obtained in the rectum.

I have certainly had extremely satisfactory results in two or three cases from keeping a bougie in the stricture for several hours in the twenty-four. In the following case, by keeping in the stricture a gradually increasing sized bougie almost constantly for three weeks, I was enabled to pass a No. 11 bougie with ease where only a No. 2 could be passed at the commencement.

A lady was recommended to consult me by Dr. Marchant Jones, of Plymouth. The trouble had commenced some years ago, with what was called an attack of dysentery, which was followed by difficulty in passing the motions. This gradually increased, so that the motions became small and pipe-like, and were accompanied by a tenacious discharge, which sometimes came away instead of the motion. The bowels hardly ever acted without a purgative, and the action was almost always attended with pain and distress. The patient had undergone various forms of treatment with only a very temporary benefit. Upon examining the anus it appeared normal with the exception of a slight unhealed crack, the remains of a wound made in dividing the sphincter some months previously.

On passing the finger into the bowel a stricture was felt at an inch and a half to two inches from the orifice. Upon gentle pressure this admitted the finger-tip, and by keeping the pressure continuously on the stricture for five or six minutes, the finger could be passed half an inch into the stricture ; it could not be passed further, partly on account of the pain, and partly from the stricture becoming narrower ; in fact, it was not unlike passing the finger into an extinguisher. On withdrawing the finger the sensation was experienced of its being slightly grasped as if by an elastic or muscular strap. The patient was confined strictly to bed, and I passed a small conical bougie, such as would enter the stricture without causing pain. This was tied in, and with the exception of being removed for half an hour on two occasions, was retained within the bowel for forty-eight hours. Its presence occasioned discomfort, but no pain. On removal I found that I could pass my finger readily into the stricture, which involved about three-quarters of an inch of the length of the gut. On moving the finger within the stricture I was distinctly conscious that, to a limited extent, the part tightened or relaxed its pressure, a phenomenon that could only be attributed to muscular action.

After three weeks' treatment by the almost continuous retention of bougies the stricture had so far yielded as readily to admit a conical bougie one and a quarter inch in diameter at the base, and the patient obtained complete relief from all the previous distressing symptoms. I advised her to pass the instrument daily for two months, and then twice a week. Six months later she called upon me ; she had completely regained her old health and strength, and had no pain or trouble of any kind with the bowels. A careful examination of the part could detect absolutely no trace whatever of the old stricture.

In other cases I have been disappointed, the rectum

becoming irritable and intolerant from the presence of the instrument, so that its use had to be discontinued for a while. Indeed, this is sometimes the case when the bougie has only been kept in for a few minutes daily. Patients may have been doing well for some weeks, making satisfactory progress, when they commence to complain of increasing pain. This is followed by more discharge, while the folds of the skin about the anal margin become tender, red, and œdematous. In these circumstances the bougie cannot be tolerated, and has to be discontinued. In such a case it may be right, when the inflammation has quieted down again, to resume gentle attempts at gradual dilatation, or the stricture may be treated by division.

During the treatment by bougies, or for cases in which active treatment has for any reason to be deferred, the question may arise as to whether by any general or local medication the patient's symptoms may be alleviated. If there be grounds for suspecting syphilis, a short course of mercury and iodide of potassium may be tried. The following prescription is a useful one :

Pot. iodidi, ℥i.
Liq. hydrarg. perchlor., ℥iss.
Tinct. aurantii, ℥j.
Aquæ destil., ad ℥xij.
Dose—a twelfth part three times a day.

The iodide may be increased or diminished. Sometimes it may be more desirable to give small doses of the hydrarg. cum cretâ. Two grains twice or three times a day is the proper amount. All patients taking mercury should be under medical supervision, its effects requiring to be carefully watched. The cases in which mercury is likely to be of benefit are those in which the symptoms are comparatively recent, and before an unyielding fibrous stricture is permanently established. If there be no history of syphilis, its administration is worse

than useless. When the patient's stomach can bear it, a dessertspoonful of cod-liver oil two or three times a day may not only have a beneficial effect on the patient's general condition, but it softens the stools, facilitating their passage through the narrow part. The diet should be of such a nature as to leave as little refuse as possible. For a while an exclusively milk diet is sometimes beneficial, and gives much rest to the lower part of the bowel. Charcoal and bismuth are useful in lessening the irritability of the bowel. The dose should be thirty grains of the former with five of the latter three or four times daily.* Purgative medicine is to be avoided, for it causes a most unpleasant griping. If, however, it should be necessary, a small quantity of Friedrichshalle water (℥iv.) or Carlsbad salts may be tried. As to local medication, considerable relief may be obtained by a full oil-and-water injection every evening. The thorough washing out of the part thus obtained often greatly diminishes the desire to defecate. After the enema, half an ounce of warm, thin starch, to which ten drops of laudanum have been added, may be injected up the bowel with a small syringe. This small starch-and-opium injection is often a great advantage to the patient. Suggestions for treatment, when ulceration is a prominent symptom, will be found in the preceding chapter.

Forcible Dilatation.—If the stricture be situated anywhere except at the anal margin, this is such a hazardous and dangerous proceeding as to be quite unjustifiable, and when it is remembered that many cases of sudden death from rupture into the peritoneal cavity have resulted from merely forcing a finger through the stricture, the peril of dilatation by the forcible stretching of the part with the bivalve instrument can be easily conceived.

* Tanner recommends:

℞ Liq. bismuthi et ammoniæ cit., ℥j.
Infusi quassiæ, ℥j.
A draught to be taken three times daily.

I have actually seen exhibited in makers' shops a terrible-looking three-pronged instrument *worked by a screw* which I have been informed is for the dilatation of rectal strictures. Let us hope that such a murderous weapon is never used.

A stricture when forcibly stretched will give way in its weakest part, which is not unfrequently at the cul-de-sac of the peritoneum. The extreme ease with which a rent may be made, even by a comparatively gentle digital examination is well illustrated by the two cases narrated on p. 350. In both of these instances death took place from acute peritonitis within forty-eight hours, after, in the one case, the simple passage of a finger through the stricture, in the other, after the passing of a bougie. In the first case, I performed the post-mortem, and found the belly full of fæces, the stricture having split into the peritoneal cavity. And I have no doubt the same accident occurred in the other.

I would urge upon students and practitioners that, however great the temptation may be to push the finger forcibly through the stricture to ascertain the limits of the disease, it should be resisted as a proceeding fraught with danger, and the two cases referred to show that the strong epithets I have applied to instruments for forcibly dilating are justifiable.

Electrolysis.—The rectum has not escaped this fashionable treatment. That a certain amount of dilatation can be obtained by the passage of electrodes of the size to fit the stricture I have no doubt, but I have seen nothing to convince me that the passage of an electric current through these metal bougies in the least degree increases their efficacy, or that any better results can be obtained through their agency than those which follow the use of a simple vulcanite bougie.

One patient I had an opportunity of seeing, in whom the treatment had been diligently pursued for six months, might, so far as any cure was concerned, equally well,

and with greater economy, have spent his time leaning against a telegraph post.

Internal Division of Stricture.—This procedure has been advocated by some surgeons, and on first consideration would appear to be a rational method of treatment. What, for instance, seems more reasonable on finding a stricture than to divide the narrow part, and thus restore the calibre of the bowel to its normal diameter? Yet this operation of internal proctotomy has not found general favour, and I have little hesitation in endorsing this common opinion, and consider the operation only of use in a few exceptional cases.

A careful surgeon, before recommending any operation to his patient, should well consider the possibility of aggravating the disease. Moreover, the smaller the chance of benefit to the patient the greater is the prominence that should be given to risk of operative interference. After dividing a stricture internally, it has happened that, instead of the wound healing, extensive suppuration with intractable fistulæ has taken place, and instances are not wanting in which death has resulted from purulent infiltration. The causes of such unfortunate results are not far to seek.

The rectum is a cavity whose outlet is more or less securely closed by muscles. From time to time pressure is exercised from above, driving the fæcal matter downwards. The rectum thus becomes dilated and stretched till the resistance of the sphincters be overcome. If the mucous membrane and wall of the rectum be divided by longitudinal incision, the wound within will alternately gape widely when distended, or the edges will fall together when empty. In this way purulent discharge or fæcal matter readily becomes entangled in the cut. Acting there as a foreign body, suppuration is excited, and matter burrows, giving rise to troublesome if not dangerous complication. Curling* narrates a case in which,

* Curling, *op. cit.* p. 141.

after two or three slight notches only, a large abscess formed behind the rectum, and burst into the bowel behind the stricture; while Gosselin* performed internal division of stricture in a man, aged fifty-six, the incision not passing beyond the limits of the contracted tissue, but the patient died on the eighth day from peritonitis.

There are occasionally cases which may be beneficially and safely treated by limited internal incision. These are the exceptional cases in which the obstruction is the result of an exceedingly narrow band, feeling more as if caused by a tight hypertrophied fold of the mucous membrane than a contraction involving the deeper tissues.

E. O.,† aged thirty, was admitted into St. Bartholomew's, under the care of Mr. Holden. The symptoms had existed for four years. On examination a stricture was found two inches above the anus. This was divided by three cuts—one upwards, two downwards. She was discharged much relieved. Two years later she was admitted with phthisis. Since her discharge she had been able to pass her motions with ease and of fair size, but still had pain; but on examination, as far as the finger could reach, no remains of the old stricture could be detected.

Posterior Linear Proctotomy, with complete Division of External Parts.—I believe this method to be one of the most valuable that surgery offers for the treatment of rectal stricture. It has been advocated by Vernueil, Van Buren, Kelsey, Edwards, and others, but yet it does not seem to have found general favour, for until quite recently it has been but seldom resorted to by the surgeons of our metropolitan hospitals. I have myself obtained such satisfactory results from complete linear proctotomy that, when combined with careful after-treatment, I consider it affords a fair prospect of cure in otherwise intractable cases. Of course, I would

* Bull. de la Soc. Anat., 1874, p. 797.

† Lucas Register, St. Bartholomew's Hospital, vol. i. p. 341.

not advocate any operation so long as there was a fair prospect of relief and permanent benefit by other means. In the earlier stages of rectal stricture much may be accomplished by the persevering use of the bougie; but unfortunately, in hospital practice, the cases are generally of long standing, and are often complicated by ulceration and fistula. In these circumstances the treatment by bougie is not improbably a failure. A certain advance may be made towards dilatation, but it often happens that bougies after a while set up so much irritation and constitutional disturbance as to make their further use impracticable. These are the cases in which Verneuil's operation of linear proctotomy affords a prospect of permanent relief; but, as the history of my cases show, the complete division of the stricture is not, in itself, sufficient to cure the disease; for, unless the greatest care be taken during the whole period of healing, the stricture will be again produced when the cicatrisation is complete. Neither will it be advisable to operate unless there be a fair prospect of dividing the whole of the strictured part. Thus, tubular strictures, extending beyond reach of the finger, and involving several inches of the gut, cannot be treated by this means. Fortunately, however, according to my experience, annular strictures within reach are the commoner lesion of the two. The method of ascertaining the length of the stricture will be found on p. 214.

These are the details of the operation:

The bowels having been thoroughly opened by castor-oil and an enema, the patient is placed in the lithotomy position under an anæsthetic, the same as described for excision of the rectum. The left finger is then passed, if possible, through the stricture. If this cannot be done without violence, a probe-pointed bistoury should be introduced into the stricture; which is divided in the middle line behind sufficiently to admit the passage of the finger. A long, strong, curved, sharp-pointed

bistoury, the point of which is protected by the finger-nail or a director is then passed well through the stricture, and the point made to transfix the rectal wall behind the contraction, coming out through the skin by the tip or the side of the coccyx. The parts are then cleanly divided by cutting outwards towards the anus. The nearer the incision is made towards the middle line the less troublesome will be the hæmorrhage. The section being made, the parts should be examined, to feel if the whole stricture has been fairly and completely divided. If this be found not to be the case, the sides of the incision should be held asunder by an assistant, and the section completed by a probe-pointed bistoury or strong scissors. I consider the complete division of the stricture of considerable importance, and since the incision is made in the posterior wall, it may be boldly carried up for a considerable distance. Any vessel that can be seen spouting should be tied. After this has been done, it will be found that there is generally some free oozing from the upper angle of the wound, and it is but waste of time to attempt to stop this by ligature. An india-rubber tube having been passed into the bowel to allow flatus to escape as described on p. 99, a long strip of dry gauze should be passed into the cut, and pressed firmly upwards and backwards. A dry gauze pad may then be placed over the anus, and kept well pressed against the part by a large pad of cotton-wool, firmly secured by a T-bandage. The following day the cotton-wool and gauze may be removed. The strip of gauze I leave, having it gently syringed with Condy or weak boracic acid lotions. By the third day it generally comes away easily enough; if not, it must be removed by careful syringing. During the next ten days nothing is required beyond careful nursing and keeping the wound as clean as possible. The discharge is often very profuse, and since there is no control whatever over the fæces, care must be taken to prevent the parts becoming

excoriated. At the morning dressing it is as well to wash the bowel as free as possible of fæces by enemata, and the bowels are best kept slightly confined by small doses of mistura cretæ.

By the tenth day I commence the use of the bougie, for it is less painful and troublesome to prevent contraction by beginning early than to resort to the bougie after it has commenced. Unless the wound be allowed to heal over a full-sized bougie, the trouble will to a certainty be reproduced, and further, not only must the instrument be kept in for some hours daily during the healing process, but should be passed every evening by the patient for the next six months, and after that time twice a week so long as there is the slightest tendency to contraction. The passage of the bougie under these circumstances gives little trouble to the patient, and is quite painless.

The following four consecutive cases were under my care during a twelvemonth, 1882–83, in St. Bartholomew's Hospital, and will serve as examples of the treatment, and what may be expected from it:

L. C., aged twenty, unmarried, was admitted into St. Bartholomew's in October. Ever since she could remember she had had some trouble and difficulty in passing her motions. About a year ago the difficulty greatly increased, and she could only obtain relief after much straining. At first the pain was slight, but in a few months it became so severe that she dreaded an action. Six months before admission the fæces began to pass by the vagina, and lately she had scarcely passed anything by the natural passage. A motion was only obtained after purgative medicine. She was in a very miserable condition when admitted, being thin and anæmic. The labia were œdematous and excoriated, while round the margin of the anus were some red shining folds of skin, the parts being continually kept moist with fœtid secretions.

Upon examination, a tight annular stricture could be felt two and a quarter inches from the anus, which would only admit the tip of the finger. Owing to a narrow vagina and well-marked hymen the opening between the vagina and rectum could not be seen, though a probe passed from one to the other.

The treatment was commenced by the passage of No. 2 bougie, and at the end of three weeks a No. 6 could be passed. Beyond this no progress could be made. No. 6 bougie caused much pain, and its passage usually brought on vomiting, which was also the case even when smaller sizes were used. At the end of some weeks, owing to this vomiting, and the inflamed and painful condition of the parts, the treatment was discontinued. With the exception that less fæces passed by the vagina, there was but little improvement in her condition.

On Dec. 2, the patient being in the lithotomy position, I operated by freely incising the stricture in the middle line behind, as already described.

Dec. 19.—The wound was very healthy. On examination, the finger passed readily into the bowel. Nevertheless, some slight narrowing was already commencing towards the upper angle of the wound. No. 8 bougie was passed, and by the end of ten days No. 12 passed easily, the contraction having entirely disappeared. Five weeks later she was discharged from the hospital. She had control over her motions, and could pass a full-sized bougie for herself without pain. Her general health had greatly improved. She was supplied with a bougie, and told to report herself at the hospital in two months' time. This, however, she failed to do.

Nine months later, having obtained her address, I asked her to call at the hospital. She stated that she had given up using the bougie after a few weeks, because she had no trouble in passing her motions. Upon examination, the finger passed readily into the bowel, but a slight, ring-like contraction could be felt at the site of the old

stricture. I passed No. 12 bougie, and urged the patient to continue its use. This, however, she did not do. Six months later, owing to neglect, the stricture had increased so as again to cause trouble. I once more divided it, so that it would admit a full-sized bougie without pain. I fear, however, from the disposition of the patient, she will not take sufficient trouble to prevent its contraction.

M. G., aged thirty-three, came under my care in May. She was married, but had no children or miscarriages. Nine years ago she for the first time noticed a difficulty in passing her motions. For this she took much purgative medicine, with some temporary relief. She gradually became worse, and for the last three years she has been in the habit of trying to pass her motions a dozen times or more in the course of the day, only passing small quantities after great straining efforts, with but temporary relief. For the last two years she had noticed a discharge from the bowel. Although in daily pain and distress, she had not lost much flesh, and was a fairly nourished woman. On admission, at a distance of from $1\frac{1}{2}$ to 2 inches from the anus was a tight annular stricture, through which it was impossible to pass more than the point of the finger. No. 2 bougie was passed with difficulty, and caused considerable pain. During the next fortnight, Mr. Hewer, my house-surgeon, daily passed a bougie, but no material advance was made in dilating the stricture. Being unable to pass my finger through the stricture, I was in doubt as to the extent of the disease; but found a small olive-headed bougie of great use in ascertaining the limited extent of the stricture. On May 22 I completely divided the stricture and the last two inches of the rectum as far back as the coccyx, in a similar manner to that already described. With the exception of a slight rise of temperature on the third day, she had no constitutional disturbance. On the fourth day after the operation she passed a full-sized motion without the least trouble or pain.

After the tenth day a full-sized bougie was passed on alternate days, and kept in for an hour.

The following notes, for which I am indebted to Mr. Featherstonhaugh, her dresser, complete the case:

June 2.—She could now hold her motions, but not for long.

June 28.—She felt quite well and strong, and was up all day; had perfect control over her motions, and passed for herself daily a bougie an inch and a quarter in diameter.

July 9.—Still a small amount of the granulating surface of the wound remained unhealed. She had no difficulty either in passing or in retaining her motions, and no stricture could be detected by the finger. She was discharged from the hospital with directions to pass the bougie for herself daily.

L. D., aged thirty, kindly transferred to my care by my colleague, Mr. Howard Marsh, was admitted in July 1882. She was quite well till eight years ago. She then for the first time noticed great pain after passing her motions. This continued till she married, two years later. She then consulted a medical man, who said she was suffering from fissure.

Three years ago she had a bad confinement, being a long time in labour, eventually being delivered by forceps. A few days after the confinement she suffered great pain about the rectum and the lower part of the body. This pain lasted a week, when it slowly got better. A few weeks after getting about, she noticed, for the first time, that she had great difficulty in passing her motions. This trouble steadily increased, and for the last year she had had much discharge from the back passage. She now had a frequent desire to pass wind, but if she attempted to do so, two or three spoonfuls of liquid discharge shot out. She suffered great pain, and was constantly tormented with the desire to pass a motion, which, when passed, gave little relief. She

had lost flesh, and was now much emaciated. On examination under an anæsthetic, the anus was normal, with the exception of two slightly œdematous folds. At two inches and a half up the bowel, a tight stricture could be felt, through which the finger could not be passed. The bowel at the strictured portion moved freely upon the surrounding parts. She had been treated with bougies, which caused great pain, and from which little benefit was derived.

July 5.—The stricture and intervening parts were thoroughly divided. The hæmorrhage was pretty sharp for a few seconds, and two or three small vessels required ligature. The wound was kept clean, and treated in all respects in a similar manner to the cases already described. She had no bad symptoms. Indeed, on the day after the operation, she expressed herself as feeling more comfortable and in less pain than had been the case for many months.

On the tenth day the wound was looking healthy, with a very copious discharge of pus. A full-sized bougie was passed. From this time to her discharge from the hospital in August, this was done daily, and left in for an hour. On leaving the hospital her bowels acted regularly, without pain or trouble, but she only had partial control over the sphincter. The wound had not completely healed, and there was still a slight discharge.

Feb. 12, 1883.—Mrs. D. called to see me to-day, seven months after the operation. She had no difficulty in going to stool, and had complete control over her motions and urine. She felt perfectly well in her general health, and only suffered occasionally from smarting pains. She was now far advanced in pregnancy.

1887.—Has no sign of stricture, but there is still at times a considerable discharge of muco-pus from the rectum.

A. B. was admitted into Sitwell Ward, October 1883, under my care. Has had difficulty in defæcation for

the last eighteen months. On examination, an annular stricture was found at two inches from the anus, which would just admit the first joint of the forefinger. On each side of the bowel below the stricture was a cul-de-sac, which extended upwards three-quarters of an inch. On first examining this patient it was not easy to make out the exact nature of the case, for the finger slipped more readily into these blind sacculi than it did through the strictured orifice leading into the bowel. The same thing occurred when using a bougie.

Oct. 23.—Stricture and external parts divided.

Nov. 16 (Note by Mr. F. Eve.*)—Rectum examined. Rigid at the lower part. The two sacculi previously mentioned could still be felt, and would just admit the tip of the finger. No stricture could now be detected, but at the site of the old contraction there is a smooth surface, slightly smaller than the rest of the gut. The patient decidedly better, and now passes her motions easily and normally.

Since recording the foregoing cases in 1883, I have operated upon a considerable number of patients suffering from fibrous stricture, by linear proctotomy, and further experience has only confirmed my views as to the efficacy of the method, provided that it is followed by the proper use of a bougie.

Colotomy.—In the chapter on the treatment of rectal cancer will be found a full detailed description of the best method of operating, and the subsequent condition of the patient, and in no cases does the operation give such thoroughly satisfactory results as when performed for fibrous stricture.

With due care in diagnosis, and by careful perseverance in treatment when discovered, it will be very exceptional for stricture to arrive at such a stage that colotomy affords the only chance of successful treatment; nevertheless, such cases will be met with from time to

* Sitwell Ward Register, St. Bartholomew's Hospital, 1883.

time, both in hospital and private practice; and amongst these will be found some of tubular stricture, which, although commencing near the anus, involve so much of the bowel as to render local treatment impracticable; while annular strictures, though amenable to treatment when near the anus, may become difficult to diagnose and impossible to dilate when higher up the bowel.

If the stricture be high up beyond reach of the finger, the diagnosis can be made absolutely certain by an intra-abdominal examination in the first stage of an inguinal colotomy. I attended such a case with Dr. Pearson of Kensington. Here, notwithstanding violent fæcal vomiting, and great abdominal distension, we were not sure as to the nature or situation of the stricture till opening the abdomen in the inguinal region. It was then discovered that the bowel was almost obliterated at the junction of the sigmoid flexure with the rectum. The operation was then proceeded with, and the patient is now, the second year after, in perfect health, and has scarcely any inconvenience from the colotomy opening. I have also seen a patient at St. Bartholomew's who, many years previously, had been subjected to colotomy for stricture. He assured me his condition caused very little annoyance, and that he was quite as capable as before of performing his somewhat arduous duties as a railway porter. In another most interesting case the patient was in excellent health for seventeen years after the operation of colotomy for stricture.

Abscess connected with Rectal Stricture.—I will conclude this chapter by calling special attention to abscesses which occasionally form in the neighbourhood of a stricture, for such abscesses may cause death by obstruction, or bring about a fatal termination by suddenly breaking into the peritoneal cavity. By bearing in mind the possibility of these formations, obscure symptoms occasionally occurring in the course of stricture

may be explained, which, if recognised in time and the abscess opened, might save the patient's life. These abscesses generally form between the rectum and the uterus, in the neighbourhood of Douglas's pouch in the extra-peritoneal tissue. Their most probable course is to break either into the vagina or rectum, when all may be well, but it is their liability to burst into the abdominal cavity which forms their peculiar danger.

The course and symptoms of these abscesses may be gathered from the four following cases, all occurring in St. Bartholomew's Hospital, and I give them in some detail. The first case is of interest, owing to the remarkable recovery of the patient. Indeed, it is the only case within my knowledge, either from observation or reading, in which a spontaneous cure of a true rectal stricture can be said to have occurred. I had a daily opportunity of observing this patient, and give the notes of her case as I recorded them at the time in the surgical registration volume of the Hospital.* The three remaining cases also form a valuable record, owing to a careful post-mortem having been made in each instance.

B. A., aged twenty-seven, was admitted under the care of Sir Thomas Smith. She had been married for four years, but had never been pregnant. Before her marriage she had often noticed a slight trouble in passing her motions.

She had acquired the habit of passing a motion only twice a week, and taking a dose of castor-oil previously. After marriage the trouble increased, and the act of defæcation was accompanied by violent bearing-down pain.

She also lost blood, and had a most offensive discharge. She then became an out-patient of St. Mark's, and was treated by bougies; for the last year, however, she has had no treatment, has a slight constant discharge, has great pain and trouble with her motions, which are

* Lucas Ward Register, St. Bartholomew's Hospital, vol. vii. p. 149.

rarely formed, but, when they are so, are of extremely small diameter.

She is emaciated, has sleepless nights, and suffers considerable pain.

Upon examination, at the height of two inches from the anal margin there is an annular stricture, so tight as only to admit the tip of the finger. By gentle and long-continued pressure the finger tip can be passed well into the stricture, but not beyond it. The sensation conveyed is that of a piece of string encircling the bowel external to the mucous coat. The bowel at the strictured part is freely movable.

Nov. 1.—Under an anæsthetic, No. 5 bougie was passed.

Nov. 4.—Bougie No. 5 passed daily.

Nov. 9.—Up and about the ward; feels well, but is constipated.

Nov. 10.—Rigor at 9 A.M. Temperature, 104°. Complains of headache and sickness, and some tenderness about the abdomen.

Nov. 11.—Vomiting continued till 11 P.M. last night, at which time after a morphia injection she had some sleep. Temperature, 103°.

Nov. 16.—For the last four days she has had profuse discharge from the rectum; the part is less painful, and the temperature, which has been gradually falling, is to-day 100°.

Nov. 25.—For the last few days the pain about the rectum has greatly increased, and the temperature has again risen.

Dec. 1.—Is now all day under the influence of opium; is very weak, has a thin, careworn face, and has had no action since the 22nd. Has less pain in the rectum, but a frequent desire to pass water. Abdomen not distended.

Dec. 9.—The stricture will now readily admit the finger without much pain, though bougies have been discontinued.

Dec. 23.—For the last week has complained of increased pain in the rectum. The evening temperature has ranged from 101° to 103°. Yesterday an abscess burst, and half a pint of fœtid pus escaped per anum, which was followed by much relief.

Is very pale and wasted, has a free discharge of pus from the rectum, also at times from the vagina. Upon examination, the finger can now be passed well into the stricture, but not through it.

Jan. 20.—Has a free discharge of pus through the anus, and some from the vagina. Matter appears to be collecting in the upper part of the vagina.

Feb. 2.—Abscess in vagina opened.

Feb. 17.—Pus still discharged through the vagina, but there is none from the rectum.

The patient became so weak that it was not considered likely that she would live long; but being very desirous of getting home, she was taken away from the hospital. On leaving the hospital the motions were only passed with great difficulty. She had a free discharge of pus from the vagina, but very little from the rectum. After returning home she felt somewhat better, and noticed that she could pass the motions a little easier, but that they were very small.

Towards the end of April she again felt worse, having febrile symptoms and intense pain about the lower part of the pelvis. At this time, one day when straining at stool, she felt something suddenly give way, and found that she had passed about a pint of thick pus by the rectum, immediate relief to the pain resulting. During the next week pus flowed from the back-passage, and then gradually ceased, and from that time she steadily improved.

Hearing from the sister of the ward that the patient was well, I wrote requesting her to come and see me, and found, nine months from her discharge from the hospital, that she had become quite rosy and stout.

She stated that she felt perfectly well and strong, and passed full-sized motions without the slightest straining, pain, or discomfort. Upon examining the rectum with my finger, there was no constriction whatever, but at the site of the old stricture a slight hardness could be felt on the anterior wall, all the rest of the bowel being perfectly soft and normal.

E. M., aged forty-nine,* was admitted on Nov. 25, under the care of Sir Thomas Smith, with the history that she had had syphilis sixteen years previously, since which time she had always had a great deal of trouble about the rectum. The bowels had been much constipated, the motions small, and the passing of them accompanied by forcing pains. Upon examination, there was considerable stricture and ulceration of the part. The bowels were generally opened but once in four days. She was ordered iodide of potassium internally, and lotio nigra to be used as an injection.

Under this treatment she improved, and was to have been discharged on the 17th of December, but since on that day she did not feel well, complaining of sickness and discomfort, she was allowed to stay in a day or two longer. Two days later, about four in the morning, she got out of bed, and complained of feeling sick and faint. Two hours later she was found dead in her bed.

Post-mortem.—Body somewhat wasted. No signs of syphilitic disease on the skin. Vagina very spacious; posterior wall considerably prolapsed. Upon opening the abdominal cavity, it was found to contain from two to three pints of pus. There was no peritonitis, but an abscess situated between the rectum and the vagina had burst into the peritoneal cavity. On removing the rectum and vagina, there was found an immense abscess cavity between them, which was evidently the source of the pus. The abscess appeared to communicate by

* Stanley Ward Register, St. Bartholomew's Hospital, vol. iv. p. 228. (Notes by E. Milner.)

small valvular openings both with the vagina and rectum. The internal surface of the rectum was much ulcerated and thickened, and was covered with excrescences. There was no appearance of syphilitic disease in the brain or in any of the internal organs.

E. G., aged thirty-five, was admitted to the hospital, September 20, 1873.* For two years she had suffered pain in defæcation, every motion being preceded by a thick discharge. She was married, but had had no children or miscarriages. There was no history of syphilis. For some months she had been treated as an out-patient, bougies being passed. An examination showed a tight annular stricture one and a half inches from the anus.

During October she was treated by the occasional passage of a No. 4 bougie. A larger size was tried, but could not be passed. In the first part of November No. 5 was occasionally passed.

Nov. 20.—Has not been so well for the last few days; takes her food badly; No. 6 passed.

Nov. 24.—Feels very ill: pulse 106; temperature normal. A swelling, which has been noticed for some little time in the left groin, seems to have disappeared this morning. The groin is painful on pressure.

Nov. 25.—A severe rigor early this morning. Temperature, 103°; pulse, 128. Has been twice sick. Pus was passed in her motion, which now runs freely away from her.

Nov. 26.—Gradually became unconscious, and died during the night.

Post-mortem.—Body fairly nourished, and the organs of the chest healthy. Upon opening the abdomen there was no general peritonitis, but in the left iliac fossa the intestines were glued together with recent inflammation. There were also some old inflammatory adhesions. The kidneys were large. There were no abscesses in any of the internal organs, and no free pus in the peritoneal

* President Ward Register, St. Bartholomew's Hospital, vol. iii. p. 88.

cavity. The left Fallopian tube was distended, and nearly the size of the small intestine, and stood out in the left iliac fossa. A probe could not be passed from the uterus into it.

The rectum was much dilated above a well-marked annular stricture. Near the stricture were three holes in the bowel, two of which communicated with a large abscess cavity, occupying a good part of the pelvic cavity on the right side, and behind the rectum. The abscess had no communication with the one in the Fallopian tube.

R. J.,* admitted to the hospital Dec. 29. The patient states that she had been treated in the hospital four years ago for dysentery, but she remained in good health till Christmas 1881, when she entered Guy's Hospital, and was operated upon for fistula. About three months ago she became ill, and has since been lying up. On admission she was wasted, and very weak. She could not hold her motions, which were quite loose.

Jan. 5.—Examined under chloroform. Around the anus were several œdematous piles. The sphincters were much relaxed. About three inches up the bowel the finger encountered an annular stricture. The stricture and recto-vaginal septum felt hard.

Jan. 13.—Belly much distended, scarcely anything passed by the rectum; colotomy advised, but declined; constant vomiting.

Jan. 16.—Death.

Post-mortem.—The pelvis was found filled by a tumour which presented a smooth and rounded surface. To the right side of the upper surface of the swelling the cæcum was adherent. To the posterior wall the lower half of the sigmoid flexure of the rectum was attached. Over the front of the tumour the uterus was stretched and flattened out, so as to appear to form part of its

* Stanley Ward Register, St. Bartholomew's Hospital, vol. x. p. 173. (Notes by J. Macready.)

walls. The bladder was stretched over the front surface between it and the pubes, but was not adherent.

On examining the rectum with the finger before removing the cyst, a narrowing of the bowel was felt about three inches from the orifice, and was due to the lower border of the cyst pressing towards the sacrum, and compressing the gut. The finger could be passed beyond the narrow part of the bowel, and there was no occlusion of the canal in any portion. Subsequent examination of the rectum showed that it was ulcerated over the lower six inches. There was a distinct line at the upper limit of the ulceration, marking it off from the healthy mucous membrane above. The rectum presented numerous fistulæ. One of these beneath the tumour admitted a probe, which entered the lower part of the cavity by a valvular opening.

The tumour proved to be a huge abscess, containing thick, greenish pus, and had a smooth thick wall. The abscess lay in Douglas's pouch, closely applied to the rectum behind, and the uterus in front. Other parts of the intestine and internal organs healthy. Pelvis of right kidney somewhat dilated by pressure on the ureter.

CHAPTER XI

PRURITUS ANI

The irritation and itching about the anus designated by this name is an exceedingly troublesome affection, for although the ailment is in no way dangerous to life, yet it often produces a considerable amount of ill-health by seriously interfering with the night's rest. In some instances the cure is easy and simple, in others the greatest perseverance and patience is required before a material improvement is obtained. The severity of the disorder varies considerably, ranging from a slight amount of irritation to an itching which is almost intolerable. Most frequently the irritation comes on when the sufferer gets warm in bed. Relief is sought by scratching, but this only aggravates the condition by the eczema it produces. If the part be examined, occasionally little or no morbid appearance is presented, but more commonly the skin about the anal margin is red and hard, and it is thrown into several deep folds, which appear to be drawn almost into the external sphincter. On separating these folds the skin will sometimes be found in an eczematous, moist, and excoriated condition. If the case be of old standing, the skin has lost much of its suppleness, feeling harsh and rough, while the natural pigment peculiar to this situation is absent.

The source of this troublesome affection is to be sought both in general and local causes, or in the combination of the two. Amongst the local causes minute threadworms are common, and occasionally pediculi

are present, while a vegetable parasite causing "eczema marginatum" is sometimes the source of irritation. The minute fistula mentioned on p. 247 should also be remembered. Internal piles are the occasional cause of pruritus, the congestion of the muco-cutaneous margin thus produced rendering in some persons the surface peculiarly irritable. An analogous condition is to be found in the extreme irritation of the legs and the thighs in some women during pregnancy, from the pressure on the iliac veins. Again, in some persons the skin when congested is extremely liable to eczema, as can be constantly observed about the legs of those suffering from varicose veins. Indeed, eczema of the part is a frequent complication of pruritus. In other cases, the general constitutional condition plays a more important part than any local defect. Many of these patients are gouty, or have a more or less marked lithic-acid diathesis. It will be observed that such patients are liable to eczema in other portions of the body, and that such attacks are produced or aggravated by errors or carelessness in diet.

Treatment.—This must be directed both towards the general and local condition of the patient. If the sufferer has a lithic-acid diathesis, he must be treated accordingly. Such a prescription as the following (Brodie):

℞ Magnesiæ, gr. vj.
Potassæ bicarb., gr. xv.
Potassæ tartratis, gr. x.

May be taken in water twice a day three hours after meals.

The second dose can be taken with advantage on going to bed.

Lithiæ carbonatis, gr. iv.
Aquæ destil., ℥iv.

To be taken twice a day, is also a useful prescription.

The above remedies may be tried for ten days or so, when their effect can be measured. In the meanwhile the diet may be regulated on the lines laid down on p. 79. Regular exercise, so as to produce sweating, should be encouraged, or, if this be impracticable, a Turkish bath once or twice a week may be tried as a substitute.

Having taken into consideration the treatment of any constitutional defects that may be detected, local remedies become important. If from examination pediculi or threadworms can be observed, the cure is easy. The free application of the unguentum hydrarg. ammoniati is effectual in the former, while injections of lime-water may be tried in the latter. An ointment containing carbolic acid and mercury is often most effective:

Acidi carbolici, fl. ʒss.
Unguentum hydrarg. nitratis, ʒij.
Unguentum petrolii, ℥j.

Another ointment possessing excellent properties is one suggested by my friend, Sir W. Whitla of Belfast, so well known for his valuable contributions to practical medicine and materia medica. It is prescribed as follows:

℞ Extracti conii, ʒj.
Olei ricini, ʒj.
Ung. lanolini, ad ℥j.

Occasionally ointments seem to disagree, when one of the following lotions may be well dabbed on the part, those containing boracic acid being especially serviceable. The simplest lotion of this kind is two drachms of boracic acid to the half-pint of water. Kelsey advises the following formula:

℞ Sodæ biboratis, ʒij.
Morphiæ hydrochlor., gr. xvj.
Acidi hydrocyanic. dil., ℥ss.
Glycerinæ, ℥ij.
Aquæ, ad ℥viij.

Dr. Carson considers the following ointment a specific for pruritus: A drachm of camphor should be powdered very finely, but not dissolved by too much spirit of wine, and then rubbed up with an ounce of lard. This ointment should be applied by the finger both within the anus and round the margin.

Two grains of bichloride of mercury to the ounce of lime-water is often a valuable application, or simple carbolic lotion (1 in 30). Before using any of these applications the part should be thoroughly washed with soap and water.

If the itching be so severe as to prevent sleep, firm local pressure is often very beneficial. This can be applied by obtaining an oval piece of wood the size of a walnut, which, after being wrapped in several layers of lint, can be pressed firmly against the anus by means of a T-bandage. Ease is sometimes obtained by the passage and retention of a conical vulcanite plug within the bowel. This should be about the thickness of the little finger, and an inch and a half in length. The plug should be provided with an india-rubber ring to prevent it slipping within the bowel. Another means I have found successful in allaying the irritation is by thoroughly bathing the part with water for five or ten minutes as hot as can be borne.

A very considerable number of cases are due to a minute fistula which will be found on close inspection to lead into one of the anal folds. The tiny opening has to be carefully searched for. It will probably admit only the smallest probe, so is frequently overlooked. With the discovery of this fistula and excision of the offending fold an immediate cure can be promised.

In some cases in which careful examination shows no crack or minute fistula as a cause, and in which simple treatment has failed, I have cured the trouble by the following operation. On examination it will be seen from the excoriated and rotten condition of the skin

that the chief stress of the disease appears to be in the middle line either in the crease of the perineum in front of the anus or behind. A triangular piece of skin with its base at the anus may be dissected entirely away, and then the edges brought together with fine horsehair sutures. The depth should be only just through the true skin, and the size of the piece about half an inch at its base, and an inch or so to its apex.

Lastly, it must be remembered that pruritus may be but a symptom of more serious disease about the part, such as fissure, piles, or even cancer, so that the possibility of these complications must be borne in mind.

CHAPTER XII

IMPACTION OF FÆCES, STERCOLITHS, AND FOREIGN BODIES IN THE RECTUM

It occasionally happens, especially in elderly people, that a mass of fæcal material collects and becomes impacted in the rectum, a condition which, if not recognised, may lead to complete obstruction. There are various causes for these accumulations. Sometimes they result from the nature of the food taken, at others they depend on some purely local condition. Rectal concretions were a marked feature during the Irish famine of 1846, and an interesting paper* was published at the time on this subject by Dr. Popham, Physician to the Cork North Infirmary. Many cases were admitted into the infirmary for intestinal obstruction, the result of enormous concretions. After removal these were found to consist of diseased portions of potato mixed with the undigested peel, which famine had driven these miserable creatures to consume.

As met with in ordinary practice, the collection consists of hard fæces in the rectal pouch which, either from want of effort on the part of the patient or the fear of pain, have been allowed to accumulate until, from the size of the mass, all power of expulsion is lost. The symptoms, such as constipation, distension, and pain, generally point pretty clearly to the nature of the disorder, but owing occasionally to the occurrence of diarrhœa, a mistake in the diagnosis has been made.

* *Lancet*, 1850, p. 80.

Cruveilhier has called special attention to this matter, and aptly compares the occurrence to the overflow of urine from a distended bladder. The rectum being full of solid fæces, its mucous membrane becomes irritated, giving rise to a mucoid discharge which, being darkly stained by a fæcal collection, is mistaken for diarrhœa, as in the following case.

Cases of Impacted Fæces.—M. F.* was admitted into the hospital, complaining that she had incontinence of fæces since being operated upon for piles six weeks previously, and she stated since the operation she had been "quite unable to hold her motions." Upon examining the patient, I found the sphincter very weak, and the rectal pouch enormously dilated by a mass of putty-like fæces, small portions of which were constantly coming away with the mucoid discharge. The mass with some difficulty was washed away by copious water injections. The patient was discharged five days later completely relieved.

A remarkable case of prolonged obstruction from slight stricture about the anus came under my care in 1885,† and shows the length of time complete obstruction may last (when situated near the anus) without producing inconvenience.

A patient, aged forty, gave the following history, that for some time he had had pain after passing a motion, but his general health had been good. He had been fairly regular, though somewhat constipated until nine weeks ago. Since that time he had passed nothing whatever from the anus. He had noticed the abdomen gradually becoming swollen, and he had very little pain, and was able to continue his daily work until six days ago. He then experienced nausea after his meals, and during the last two days had had some slight vomiting. The man did not look particularly ill. On

* Lucas Ward Register, St. Bartholomew's, vol. vii. p. 256. (Notes by author.)

† Colston Ward Register, St. Bartholomew's, 1885.

examining the abdomen, it was found to be enormously distended.

It had a somewhat doughy feeling on pressure, and appeared to be dull in every part. On further examination an annular stricture was found close to the anus, so tight that it would only admit the little finger with considerable difficulty. A No. 12 soft catheter was passed through the stricture, and at once became embedded in a hard fæcal mass. An attempt to wash this out through the catheter only succeeded in removing a small quantity.

Under an anæsthetic I completely divided the stricture, which was less than an inch in length, with a probe-pointed bistoury. After this, with the aid of a scoop and copious washing, several pounds of very hard, dark-coloured fæces were removed. This proceeding was repeated for several days, after which the mass seemed gradually to move down by itself from above. During the next ten days an enormous quantity of dark fæcal material came away, the distended abdomen gradually diminishing inch by inch. During this time he had a fairly good appetite, and eventually left the hospital in good health with the stricture cured.

A patient was sent to me by Dr. Wallis of Cambridge. For many months he had been complaining of pain and discomfort about the rectum, with a frequent desire to go to stool, but during the whole time had only passed loose motions. On examination I found a solid mass of hard fæces in the rectum. It formed a solid cylinder six inches long, and three to four inches in diameter. This was broken up, removed in fragments, and the patient cured.

Fæcal Concretions (Stercolith).—These are something more than merely impacted fæces. They are rare, and I have only met with three cases. In each of these the patients had taken large quantities of carbonate of magnesia for constipation. In each case the stone was circular, and nearly the size of a lawn tennis ball. On

section they were distinctly laminated, of dark brown colour, with a considerable quantity of mortar-like mucus between the more distinctly laminated portions. These laminated portions consisted of tough interwoven vegetable fibres more resembling the structure seen in the nest of the tree-wasp than anything else. I failed in both cases to extract the stone with forceps, but succeeded in extracting the concretions after a free posterior linear proctotomy by means of the fingers and a scoop. In one case the stone was delivered entire; in the other it had to be broken up into fragments.

Mrs. ——, thirty-eight, stated that for the last eight months she had had a constant feeling of wanting to go to stool, but only passed small fluid motions with mucus, and sometimes blood, and, from time to time, there was much colicky pain. On examination, a circular hard mass the size of a cricket ball could be felt, covered by mucous membrane. By a little manipulation the finger touched a hard putty surface, which was impacted in the middle part of the rectum and had caused partial invagination of the rectal walls. The concretion was eventually broken up with forceps and removed piecemeal.

A lady, aged fifty-six, was sent to me by Dr. Collins, in 1904, with the following history. Eight months ago she was operated upon for hæmorrhoids by "Whitehead's" operation, and has had trouble since. Passes five or six stools a day, always loose, with mucus, but no blood. On examination the lower part of a firm oval tumour could be felt, the size of a tennis ball; it was just as high as the finger could reach. The tumour was covered by mucous membrane. The same tumour could be more distinctly felt per vaginam in Douglas's pouch. The nature of the tumour being very doubtful, a further examination was made under an anæsthetic. After a great deal of manipulation and pressure from above, I discovered that the body was a stercolith felt through

a double fold of mucous membrane, and invaginated. It was eventually broken up and extracted. It had a laminated structure, and in the centre was a scybalous lump the size of a marble, which formed its nucleus.

A lady, aged fifty-five, sent to me by Dr. Hall of Mayfield, Sussex, was well till eighteen months ago, when she was laid up in bed with an attack of influenza, and took a considerable quantity of carbonate of magnesia for constipation. Soon after this she commenced to suffer with irritability of the bowel, having a constant feeling as if the bowels had never been properly opened. She has gradually grown worse, and now has a constant desire to go to stool as often as fifteen to twenty times a day, only passing small quantities of fluid fæces or mucus. Has not lost flesh. Cancer had been diagnosed from the symptoms, and a hard swelling found in the rectum.

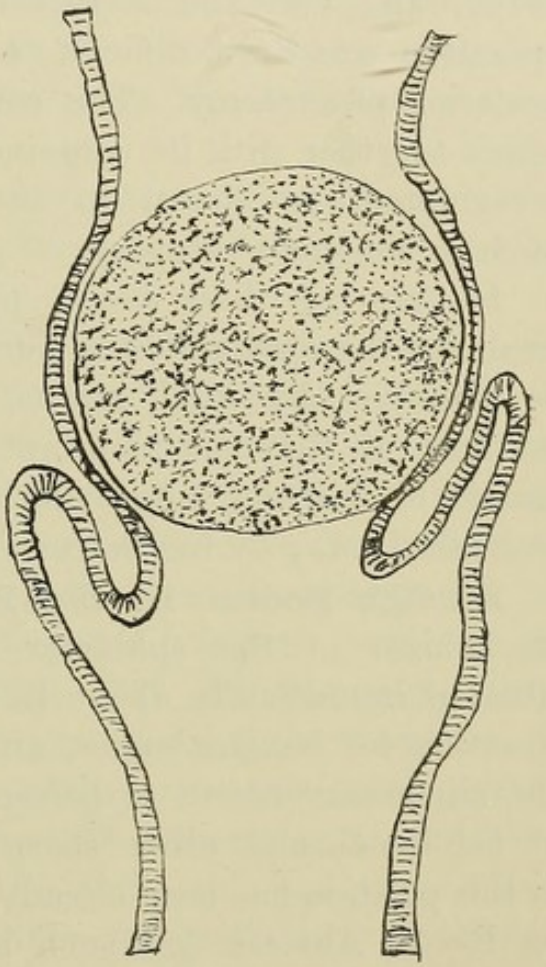


FIG. 19.—Stercolith impacted 4 in. above anus

On examination, two and a half inches up the bowel the finger came on a swelling the size of an orange. This was an invagination of the middle into the lower segment of the rectum, with a deep cul-de-sac round it; the swelling was densely hard and covered by stretched mucous membrane. In the centre of this was an area the size of half-a-crown not covered with mucous mem-

brane, and the finger-tip touched on this area a stone that felt like a piece of granite. Indeed, the feel to the finger was exactly like that of the head in the stage of labour when the os is partly dilated. Under an anæsthetic, with the assistance of Dr. Hall and Dr. Drummond Robinson, I removed a densely hard concretion,* perfectly round, and two and a half inches in diameter. The operation was most difficult, and involved an extensive posterior proctotomy. The concretion lay in a pouch, which together with its contained concretion had become invaginated, as shown in the diagram. The patient made a complete recovery.

In treating these cases, purgatives should not be used, for the obstruction is purely mechanical, and must be remedied by local means. The lower and harder portions of the collection are best removed with the handle of a spoon, after which the remaining part can be washed away by free warm water injections.

Foreign Bodies in the Rectum.—Owing to the mechanism of the sphincter muscle, and the pouch situated immediately above it, the rectum is a common situation for foreign bodies, after passing safely through the alimentary canal, to become arrested. The liability of fish-bones and other sharp fragments to do injury in this position has been already referred to in the chapter on Rectal Abscess, but such bodies may be frequently removed without any further trouble ensuing. Bodies swallowed pass to the rectum with surprising rapidity.

A man was admitted† complaining of great pain about the anus. He had been wearing a hard irregular vulcanite plate in the mouth, which was in position on his going to sleep. In the morning he missed it, and it could not anywhere be found. On examining the anus with the finger, the lost plate was discovered tightly wedged just within the sphincter.

* Specimen in St. Bartholomew's Museum.

† Harley Ward Register, St. Bartholomew's, vol. vii. p. 449. (Notes by author.)

Foreign bodies are sometimes introduced into the bowel by the anus, and human ingenuity seems to have been much exercised in this matter, judging from the extraordinary variety of articles thus mislaid. The most remarkable case within my own knowledge occurred in the practice of Dr. Burnett of Mottram. Dr. Burnett has very kindly furnished me with the following particulars, interesting not merely from the extraordinary nature of the foreign body, but also from the skilful treatment employed in its removal.

The history was obtained from the patient's wife, the patient himself refusing any information on the subject.

"C. S., a tall, robust man, of temperate habits and sound mind, returned home after remaining at his work a few hours, looking blanched, feeling faint, complaining of having lost a large quantity of blood from the bowels. Soon afterwards he disclosed to his wife that before going to work he had forced a jam-pot up his seat, and whilst there, owing to a constant desire to go to the closet, and finding that the pot completely obstructed a motion, he proceeded with a poker to knock out the bottom which was uppermost. This was followed by considerable hæmorrhage, and the symptoms mentioned. He then solicited his wife's aid, but as she was unable to remove it with her finger, he requested her to purchase a hammer and smash it. This she refused to do, and begged to be allowed to send for me. But, being ashamed of his conduct, he would not consent, saying that he would see a surgeon out of the place. This he did not do, but at the end of six days, on account of pain and nausea, he consented to my being called in.

"I found him complaining of colicky pains and nausea, while the abdomen was swollen and tympanitic. On examining the rectum, I found a jam-pot, which measured two and three-quarters of an inch in diameter

and three inches high, tightly embedded in the rectum; the lower portion or mouth of the pot being an inch above the sphincter, the surrounding parts being swollen, soft and pulpy. The inside of the pot was full of intestine, in the same condition, which had prolapsed through the broken bottom, by the constant straining in attempts at stool. Owing to the patient objecting to the knife, and finding it impossible to dilate the sphincters to the necessary extent, I resorted to crushing with Lever's craniotomy forceps, breaking as much of the sides of the pot as I could include between the blades, removing the pieces with polypus forceps. By successive crushings and syringings, which occupied an hour and a half, I succeeded in removing the whole of the obstruction.

"The patient recovered without any unpleasant symptoms. The principal difficulty I experienced in the operation was from the prolapsed bowel, and the external wall closing in as each portion was removed, completely burying the remaining parts, and making it extremely difficult to apply the blades without including a portion of intestine. The patient refused to take chloroform."

The following case was operated upon by me at St. Bartholomew's in 1897:

Blacking-Bottle in the Rectum. Removal by Abdominal Section.—A man, aged thirty-five, was admitted into the hospital under the following circumstances. On the day of admission he had introduced by some means a blacking-bottle (*see* Fig. 20) into the rectum. He soon commenced to suffer great pain. He was put under an anæsthetic by the house-surgeon, who made a thorough trial, lasting two hours, to remove the bottle without success. The following morning the patient was again put under chloroform, and a further attempt made to remove the body. Lithotomy, craniotomy forceps, and every conceivable appliance used without success—the rectum being freely divided

posteriorly. Owing to the bottle being introduced neck upward, it was impossible to get hold of it below seeing that it fitted tightly into the rectum. My colleague, Mr. Willett, under whose care the case was admitted, owing to his hands being contaminated by the trial to remove the pot by the rectum, asked me to perform abdominal section to see if I could push it down from above. This I did. On introducing my hand into the

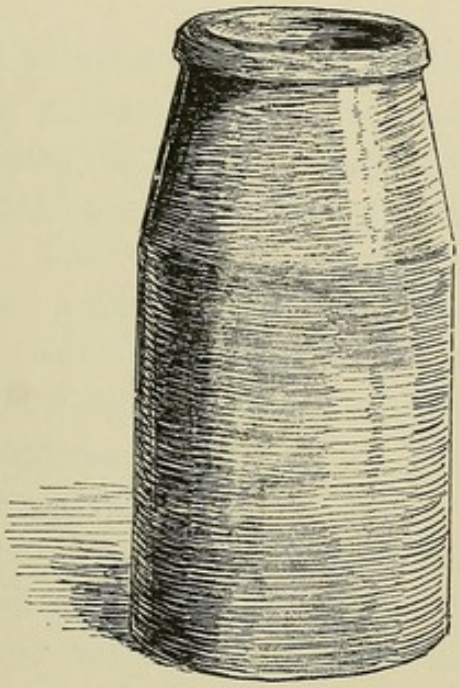


Fig. 20.

abdominal cavity down into the pelvis, I could distinctly feel the pot in the rectum. By gentle pressure with the finger and thumb, and pushing the pot at the same time, I was able to dislodge it, and the bottle was eventually extracted per anum. The patient was extremely collapsed, and died two days later. At the post mortem the whole of the rectum was in a sloughing condition. Should I meet with another foreign body of this description, after moderate trial below I would not waste further time, but perform abdominal section, and press it out by the hand in the pelvis.

The method of removing foreign bodies must depend upon their nature. Fish-bones and similar small objects can generally be taken out with the finger and thumb without difficulty, but if there be any trouble, the patient should be placed under an anæsthetic, and the sphincters carefully dilated. By this procedure the risk of tearing or damaging the mucous membrane is much diminished.

CHAPTER XIII

POLYPUS OF THE RECTUM

Two forms of polypus are commonly found in the rectum; the one, the *fibrous polypus*, a pedunculated tumour chiefly composed of fibro-cellular tissue; the other, the *adenoid polypus*, a soft vascular growth of pedunculated gland tissue. The villous tumour, though closely allied to this latter variety, will be separately considered. As extremely rare growths, to be regarded rather as pathological curiosities than of clinical importance, are the two excrescences described as the dermoid polypus, and the cystic polypus.

The polypoid growths of early life attached to the bowel by a well-marked pedicle, are of an innocent nature, but the villous tumour, especially when growing from a broad base, is not so certainly benign, occasionally showing a tendency to return *in situ* after removal.

The typical polypus of the rectum occurs as a growth, varying in size from a pea to a small walnut, and is attached to the bowel by a narrow pedicle often an inch or two in length. If the structure of one of these growths be more closely examined, it will be found that the pedicle consists of a mucous membrane, in the interior of which is retiform tissue, supporting the blood-vessels, supplying the mushroom-like head of the polypus. The structure of the mucous membrane of the pedicle is identical with that of the normal membrane lining the bowel; its follicles, however, are somewhat atrophied, extending to a less depth than usual, while the lining epithelial

cells are not so long or column-shaped as in the normal state.

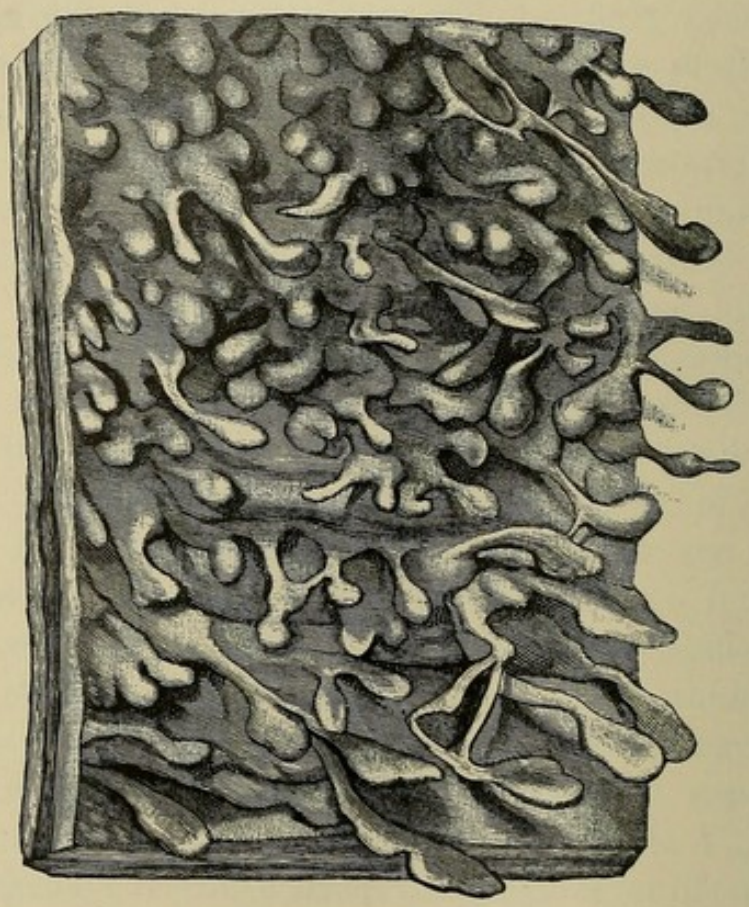
In both forms of polypus the pedicle is alike, and it is in the expanded head that the difference in structure between the two varieties is observed.

Adenoid Polypus.—This will be first considered, as representing the more complex structure of the two. The head of this polypus is seldom larger than a hazel-nut, while its pedicle, no thicker than a crow-quill, may be of two or three inches in length. To the naked eye the pedicle has the same smooth appearance as the mucous membrane, but the head from being lobulated resembles a raspberry. If the growth be examined in section under a low power, it can be seen that the fibrous tissue of the stalk on entering the head of the polypus expands, forming a central nodule of fibrous tissue. Radiating from this central nodule are fibrous branches of greater or less extent. These form the central supporting stalks of the lobes and lobules composing the surface of the growth. From these main branches fibrous twigs are given off, which, expanding into a delicate retiform tissue, furnish the supporting framework of the epithelial covering (*see* Plate V., Fig. 1). The epithelial covering consists of a single layer of columnar cells arranged in a bipenniform manner on the retiform tissue, so as to form a beautiful leaf-like or feathery surface when examined under the microscope.

However intricate is the pattern formed by the branches and leaves of the expanded head of the polypus, the epithelial covering is in direct continuity with the cells covering the stalk, and through these with that lining the intestinal surface. (*See* Plate VI.)

If the central nodule of fibrous tissue be small, while its radiating branches are long and luxuriant, so much greater will be the surface for spreading out the epithelial layer, and the resulting polypus will be soft and vascular. On the other hand, if the central nodule be large, while

FIG. 21.



DISSEMINATED POLYPI.

The mucous membrane is thickly studded with growths—some forming simple rounded elevations, others stalked processes an inch in length. The disease extended from the ileo-cæcal valve to within three inches of the anus.—Drawn from a specimen in the Middlesex Hospital Museum.

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the radiating branches are short and shallow, the growth will have a corresponding hardness and closeness of texture.

It will be seen from the foregoing description that the adenoid polypus is the result of an abnormal development of both the fibrous tissue element and the columnar epithelium. It is, in fact, an extreme exaggeration of the plan upon which the normal mucous membrane is constructed.

A further detailed account of the microscopic anatomy of these growths will be found in the chapter on Adenoid Cancer.

Fibrous Polypus.—This differs from the preceding in that it consists of a definite fibro-cellular tumour, covered by a normal mucous membrane. It would appear that the polypus in this case commences as an hypertrophy of a limited portion of submucous tissue. The hypertrophied nodule is at first merely embedded in the rectal wall, but as it grows it becomes gradually extended into the canal of the bowel, so that, after a while, a pedunculated tumour is produced, still covered by mucous membrane.

I believe the two forms of polypus—the adenoid and the fibrous—are as distinct in their origin as are the warty papillomas of the skin from the pedunculated fibrous tumours in cases of molluscum fibrosum.

Polypi, whether of fibroid or adenoid variety, are commonly single, but not infrequently a second, or even a third, may be found in the same rectum; while occasionally they are multiple, forming a grave disease.

Disseminated Polypi.—Here considerable areas of both the rectum and colon are thickly studded with polypoid growths.

In the living subject I have met with but three instances of disseminated polypi, nor do our pathological collections furnish many specimens of the disorder. Some few years since, in a search through the London museums,

I could only find three specimens of these disseminated growths.

The first specimen is in the Middlesex Hospital museum* (Fig. 21). It is beautifully preserved and carefully mounted, and thus described in the catalogue :—

"The mucous membrane is thickly studded with growths, some forming simple rounded elevations, others stalked processes, varying in length from a quarter of an inch to an inch, with club-shaped ends. In many places the ends are branched, and in some the ends of neighbouring ones are united together, so as to form an irregular meshwork. They extended from above a cicatrix which was situated three inches from the anus to within a short distance of the ileo-cæcal valve. The patient was a man, aged forty-six, who died in the hospital from phagedænic ulcer of the foot, and had suffered from ulceration and bleeding of the bowel for three years."

To this description I will add that the mucous membrane looks exactly as if it had been cut into narrow strips an inch long, and these strips detached except at one extremity. This specimen is very remarkable, and it is much to be regretted that a microscopic section of the growth could not be obtained.

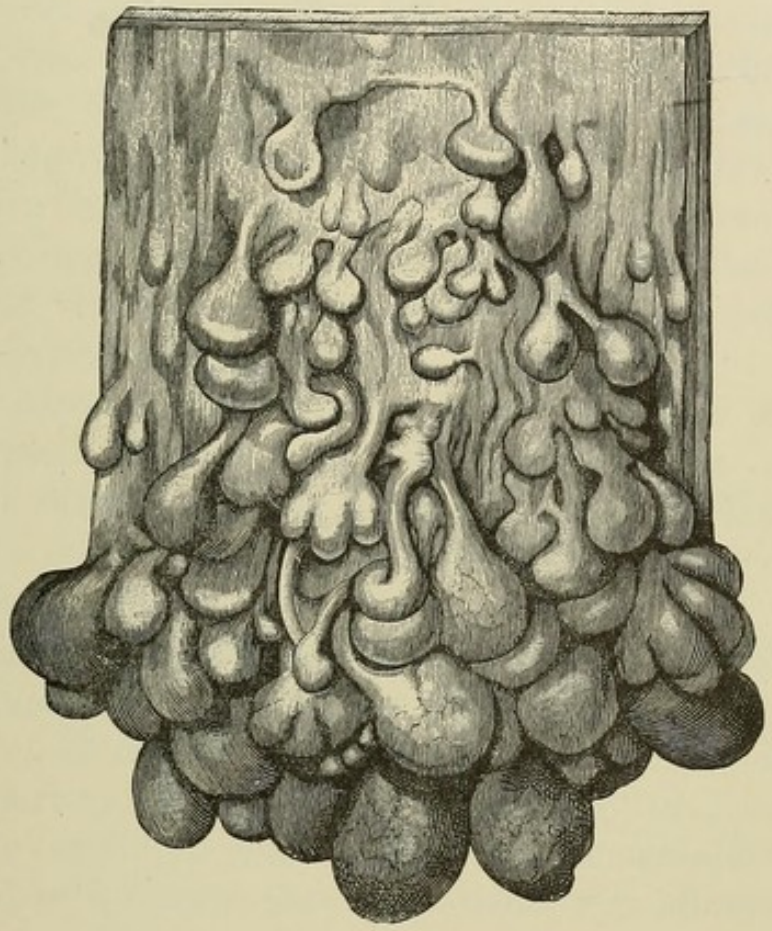
The second specimen is in Guy's Hospital museum.† Here the stalks are very fine, and of a uniform diameter, projecting from half an inch to an inch into the bowel. They do not expand at their extremities into any definite head, and are scattered pretty regularly over the surface of the bowel, there being one or two to each square inch. The catalogue gives no account of this rare specimen.

The third is in King's College museum, and owing to the courtesy of the late Mr. Henry Smith, I am able to furnish a drawing of it (Fig. 22). In this case the growths are

* Middlesex Hospital Museum, Series 8, 100.

† Guy's Hospital Museum, No. 1863[80].

FIG. 22.



MULTIPLE POLYPI.

A mass of adenoid polypi the size of a cricket-ball. Each growth is pedunculated, varying in size from a pea to a hazel-nut.—Drawn from a specimen of Mr. H. Smith's in King's College Museum, London.

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undoubtedly adenoid. They were growing in the colon, and formed a mass the size of a cricket-ball. Each growth was pedunculated, varying in size from a pea to a hazel-nut, and they were about seventy in number. Many of the growths sprang from a common pedicle, others were isolated. The pedicles were from half an inch to two inches in length; some of them thin and round, like the stalk of a cherry, others flattened and ribbon-shaped. Scattered through the rest of the colon were a few isolated polypi, but towards the rectum they again became more numerous. The patient died from peritonitis ten days after the removal of some polypoid growths in the rectum.

Two cases I observed during life occurred when I was Surgical Registrar at St. Bartholomew's, and I exhibited sections of the growths at the Pathological Society.* A third case I have seen more recently also at St. Bartholomew's.

All three cases were under the care of my colleague, Sir Thomas Smith,† who has published an interesting account of them in the Hospital Reports, and it is due to his courtesy that I had an opportunity of observing the cases carefully. One of the most remarkable facts connected with them is that the patients were all members of the same family. Moreover, the first case, which will be found described in detail on page 360, has a peculiar pathological and surgical interest, showing the connection between innocent growths and malignant disease. The second case I give from my own notes as recorded in the first edition of this work. The notes of the third case I have, with Sir Thomas Smith's permission, transcribed from his article.

M. C., aged sixteen, a sister to the patient whose case is described on page 264, was admitted into St. Bartholomew's in 1882, with almost identical symptoms.

* "Path. Soc. Trans.," vol. xxxiii. p. 165.

† St. Bartholomew's Hospital Reports, vol. xxiii.

The trouble had been noticed for seven years, and she had twice been operated upon. The growths were rather larger, though less numerous, than in the boy. A few of the more prominent polypi were removed.

Ernest C., aged seventeen, a barman, brother of the last patient, was admitted under Sir T. Smith's care at St. Bartholomew's Hospital in 1887. As long as he could remember his bowel had been liable to come down and bleed, and for the last five years he suffered pain on going to stool. He has had great difficulty in passing his motions, the bowel always prolapsing and bleeding.

On admission he was suffering from extreme anæmia. The rectum was found full of polypi, soft, vascular, and pedunculated, varying in size from a pea to a small cherry. Several of the polypi were removed, and he was discharged to the Convalescent Hospital at Swanley.

This family was altogether six in number; three of them were affected as narrated, while the remaining two sisters and one brother have escaped the disease up to the present time.

Disseminated polypi are generally adenoid in structure, but occasionally they are fibrous, as in a case I recently examined with Mr. Bowlby, in which the colon was studded with polypoid growths in various stages of pedunculation. On microscopic examination, these were found to consist of loose connective tissue, covered by normal mucous membrane.

As has already been stated, polypi, whether fibrous or adenoid, are seldom larger than a hazel-nut, but exceptions occur. The largest fibrous polypi I have seen is one that is now in our museum. It was exhibited by Mr. Bowlby at the Pathological Society,* who thus describes it:—

"A girl, aged twenty-four, who had not been aware of anything the matter with the rectum, and who could give no symptoms pointing to the presence of a tumour,

* "Path. Soc. Trans.," London, vol. xxxiv. p. 107.

one day while straining at stool felt something come down which she was unable to retain. Soon afterwards she was seen by Mr. Everley Taylor, of Scarborough, who found a large red mass about the size of a fœtal head protruding from the anus, and tightly gripped by the sphincter. Under chloroform, the tumour was found attached to the anterior wall of the rectum four inches up; after transfixion and ligature of its base, it was removed with scissors, its weight when fresh being two pounds all but one ounce. The tumour consisted of very loose connective tissue, the meshes of which contained much viscid fluid. The base of attachment was about an inch and a half in diameter, and the growth was covered by normal mucous membrane."

Dermoid Polypus of the Rectum.—Of this rare tumour but few cases are recorded. Danzel* narrates the following:—

A woman, aged twenty-five, complained of hairs protruding from the anus. Upon examination, a pedunculated tumour, the size of an apple, was found growing from the rectal wall, two and a half inches above the anus. Upon removal, the tumour had some long hair on its surface, together with a tooth. Brain-substance, enclosed in a bony shell, also formed part of the tumour.

The second case occurred in the practice of Dr. Port, and was shown by him at the Pathological Society.†

"A girl, aged sixteen, was admitted into the German Hospital complaining of obstruction and a forcing pain upon any attempt to relieve the bowels. These symptoms were only of a recent date, about three months. Some days after her admission, it was observed that a polypoid tumour of large size came partly out of the anus when the patient wanted to pass a motion. A mass of long hair repeatedly made its appearance, and could only with difficulty be replaced. Under chloroform, a round

* Langenbeck's Archiv., 1874.

† "Path Soc. Trans.," London, vol. xxxi. p. 307.

tumour was drawn down as much as possible, and its attachment, somewhat to the right of the middle line, three inches from the anal orifice, was ascertained. It was decided to delay an operation until the pedicle became more stretched. Three weeks later the tumour came out to its whole length, so that the sister in charge could not replace it. It soon became gangrenous, and was easily removed with the help of two ligatures. As regards its composition, the bulk of it was made up of fibrous tissue, with numerous fat cells. Embedded are two masses of bony substance, the one hard, the other of spongy consistency. The integument of the tumour shows all the characteristics of ordinary skin—epidermis, papillæ, hair follicles, and sebaceous glands. A well-formed canine tooth was observed to be growing from the tumour, not far from the pedicle."

These dermoid polypi are probably allied to the congenital coccygeal tumours described in a subsequent chapter. I would throw out the suggestion that possibly they might have been ovarian in their origin, the tumour, when small, gradually pressing into the rectum from the pelvis invaginating the wall at one spot. If this view is correct, the pedicle should have consisted of all the coats of the rectum, and the usual broad ligament pedicle of the ovary within.

Cystic Polypus.—The following remarkable case of "cystic polypus" is recorded by Dr. Prideaux:*—

"Mrs. H., aged twenty-eight, had an extremely difficult labour, the head being prevented from passing by some obstruction. She was eventually, after much trouble, delivered by forceps. After the labour, Mrs. H. complained of intense pain at one spot in the pelvis. The next day the belly was tympanitic, being distended with flatus, which could not be passed, owing to some obstruction in the rectum. On examination, a large swelling, about the size of a fœtal head, was found in

* *Lancet*, Oct. 18, 1883.

the rectum. It moved freely, and was at first supposed to be a portion of intussuscepted bowel. As the case was obscure, it was determined to reopen the perineal wound (the perinæum had been ruptured at the labour), and enlarge it up to the recto-vaginal septum, thus exposing the tumour to view. On this being done, it was seen that the tumour was not covered by mucous membrane, its surface being rough and much injected. The tumour was dragged down, and found to be a cyst as large as a fœtal head, with a long narrow pedicle extending far out of reach up the bowel. At least six inches of pedicle could be made out; this was tied in two places and cut off with scissors. The tumour, when opened, contained half a pint of a thick albuminous fluid, with one part a little thicker than the rest. Its wall was found one-eighth to a quarter of an inch thick. The patient made a good recovery. There had been for some years trouble with the bowels, in the shape of constipation, but nothing to excite suspicion of any tumour."

Symptoms and Treatment.—These may be gathered from the two following cases at St. Bartholomew's Hospital, treated by me in 1883 :—

W. S., aged twenty-one, stated that he had been suffering from piles for over a year, for which he had been treated at a hospital, but had received no benefit. He complained that he had occasional bleeding after stool, which sometimes was pretty free. He also said that a bit of his body "came down" at times, which he replaced by pressure from his finger. Occasionally there was a slight mucoid discharge, and he sometimes felt after a motion as if the bowels were not completely relieved. He suffered no pain, but had a sensation of discomfort in the part. On examination the anus appeared quite normal, but upon telling him to bear down, a slight ring of hæmorrhoids became visible, but not more than is frequently seen in a healthy rectum.

Upon introducing the finger there was no pain, and

the mucous membrane felt smooth and healthy, and nothing abnormal could be distinguished.

I could not, however, make a satisfactory examination, owing to the bowel not being empty of fæces, so a purgative was prescribed, and the patient told to come again the next day. Upon making the second examination, I could not immediately detect anything abnormal, but on directing the patient to strain down, and on pressing the finger upwards to its full extent, I could detect what felt like a small cord running across the rectum.

By a little manipulation, I was able to hook my finger round this, and draw it downwards, and was thus able to extrude the polypus from the rectum. The stalk upon which it was situated was quite three inches in length, having a uniform thickness of a No. 6 catheter. At the head of this was a soft polypus the size of a small walnut. The pedicle appeared to be attached to the lateral wall of the rectum, two and a half inches from the orifice. I passed a silk ligature round the stalk and tied it as near its origin as possible, and then cut off the polypus beyond the ligature. The patient was, of course, completely relieved of his symptoms.

A boy, aged nine. In this instance I discovered an exactly similar growth, with even a longer pedicle than in the former case. With the aid of Mr. Harding, my house-surgeon, without trouble I drew the head of the polypus out of the anus, and was about to apply a ligature to its pedicle. Owing, however, to a movement of the boy, who was not under an anæsthetic, the head of the polypus was suddenly dragged off before the ligature could be applied, the unligatured pedicle slipping up into the rectum. I could not again find it with the finger. The hæmorrhage, however, was but slight, and consequently no trouble arose.

I can readily understand that some troublesome hæmorrhage might follow the sudden breaking away of one of these polypi, for there is often a vessel of some

size running up the stalk. I strongly advise, therefore, that even so small a procedure as ligaturing the pedicle of a polypus should be done with the patient under an anæsthetic.

The sphincters should be dilated in the usual manner, then the polypus should be carefully and gently drawn downwards, and the ligature leisurely tied as close to the base of the pedicle as possible.

Polypi, when widely disseminated, cannot, of course, be removed by operation. Nevertheless, some benefit can be obtained by removing those within reach, for it appears that either from protrusion at stool, or injury from the passage of fæces, that the lower polypi are the chief source of the bleeding.

After such a history as that recorded on page 360, some anxiety must naturally be felt as to the prognosis in disseminated polypi. I do not think, however, it need necessarily be unfavourable. In the cases recorded, some of the growths were spontaneously exfoliated, and it is possible, as is observed in papillomata of the skin (warts), that the tendency to recurrence may in time disappear.

CHAPTER XIV

VILLOUS TUMOUR OF THE RECTUM

These growths stand on the boundary line between the innocent polypus and the malignant adenoma, differing from the former in having a far shorter and broader pedicle, and from the latter by their growing as free tumours into the cavity of the bowel, and not spreading along the submucous tissue. Their clinical features are usually those of an innocent growth, though occasionally they cease to be so, having a tendency to spread into the deeper tissues, eventually developing all the characteristics of a malignant adenoid growth.

The villous tumour differs from the ordinary polypus rather in size than in structure, for the latter is always small, while the former may form a growth of considerable extent. The pedicle, too, is much less clearly marked for the growth springs from a considerable area of mucous membrane, and has a short thick attachment to the surface of the bowel.

Microscopically, the structure of these growths is identical with that of the adenoid polypus—that is to say, it is composed of gland tissue such as is fully described in Chapter XIII.

The disease is comparatively rare, but I have seen twenty-five to thirty cases in the last twenty years. The following are amongst them, and afford good examples of the disease :—

A woman, aged sixty, who was under the care of the late Mr. Gowland, the eminent surgeon of St. Mark's,

who kindly afforded me an opportunity of examining the tumour before and after removal, had noticed the tumour for twelve years, but during the last year it had greatly increased in size. Each time she went to stool the growth protruded, and latterly she lost considerable quantities of blood, and had become very anæmic. The tumour was not particularly painful, but a constant source of annoyance. There was a great deal of mucous discharge, causing the linen to stick together. The growth, the size of an orange, was of a dark red colour, soft, and covered with a transparent slimy mucus. Upon close examination it was seen to be lobulated in a very distinct manner, looking like a salivary gland. The main branches or lobules were fifteen or sixteen in number; upon these, again, the smaller nodules were crowded together, giving it a mulberry-like appearance. The tumour had an indistinct pedicle, which grew from a considerable surface of mucous membrane. When the tumour was dragged upon, the pedicle was well marked. This was caused by the exceeding mobility of the mucous membrane. The base of the tumour moved freely with the mucous membrane, and was not fixed to the subjacent tissues. In this it showed a marked distinction from ordinary malignant adenoma.

Another case was one in which I assisted my colleague, Mr. Marsh, to remove the growth at St. Bartholomew's Hospital.

The patient, an elderly man, had first noticed blood in his motions a year before admission; this continued, blood dripping away some minutes after a motion had passed. He also had a thin gluey discharge which stuck to his linen. Lately, he had complained that something protruded from the anus. On examination, opposite the prostate, on the anterior wall of the rectum, was a soft villous mass the size of a plover's egg, with a broad, well-marked pedicle. The growth was removed by Mr. Marsh after ligaturing the base.

The next case was under my own care.*

A woman, aged forty, was sent to me by Dr. Godson. She stated that she had never felt anything wrong until six weeks before coming to the hospital, when for the first time she noticed a free watery discharge from the bowel, which has been very copious ever since. She had a sensation of the bowels not being completely relieved, but had no pain at all, nor had there been any discharge of blood. On admission, the patient was a well-nourished, healthy-looking woman, but with an extremely nervous, suspicious manner. She adhered, however, very strongly to the fact of her having had no discharge of mucus from the bowel till its sudden onset at the time mentioned (an inaccurate observation, probably). Upon examination, on the anterior wall of the rectum, about three inches from the orifice, I felt a large growth. It projected into the rectum, was distinctly lobulated, and of moderate firmness. It had a peculiarly soft velvety feel on the surface. The extent of the growth could not be ascertained, as it extended beyond reach, but so far as could be judged, it was the size of the fist, and appeared to have a broad pedunculated base.

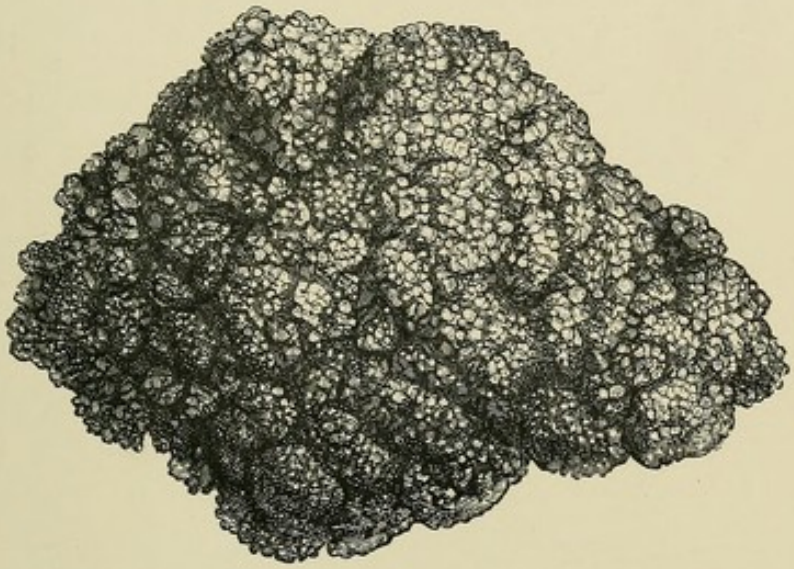
I proposed to remove the growth by ligature, but the patient obstinately refused to have any treatment whatever. The most prominent symptom during her stay in the hospital was the copious thin watery discharge, which, however, materially decreased after remaining in the recumbent position for a few days.

A fourth case, sent to me by Dr. Johnson, of Swindon, I operated upon at St. Bartholomew's Hospital.

The patient was a fairly healthy-looking woman, aged forty-five. For some time she had noticed hæmorrhage from the bowel, and also a considerable amount of glairy discharge. She often had a sensation that the bowels were not completely emptied, and recently

* Sitwell Ward, St. Bartholomew's Hospital.

FIG. 23.



VILLOUS TUMOUR OF THE RECTUM.

The specimen measures about eight inches in circumference, and was removed during life ; it was growing from the posterior wall four inches from the anus by a broad base.—From a specimen in St. Bartholomew's Hospital Museum.

To face page 272.

FIG. 24.



VILLOUS CONDITION OF MUCOUS MEMBRANE.

From a colon in which the mucous membrane was extensively destroyed by ulceration; the remainder forms villous tufts, which thickly stud the surface, some in the form of velvety patches, others as long, branched, floccular processes; the lower part of one portion is free from ulceration, but here the entire mucous membrane is thickened and velvety as in the woodcut. The patient was a man, aged fifty, who died at the hospital, February 20, 1855. In the preceding September he had a severe attack of cholera; he recovered from this, but died six months later with diarrhœa and bloody discharge.—From a specimen in Middlesex Hospital Museum.

To face page 273.

from time to time after stool noticed a protrusion from the anus. Upon examination with the finger a soft velvety mass could be felt about three inches up the bowel. The finger could be passed partially round this, and a broad ribbon-like pedicle could be distinguished, but its attachment was too high up to be felt. The anus was very patulous.

Under an anæsthetic the anus was further dilated and was so large that it would nearly admit the whole hand. The growth was seized with a vulsellum forceps, and was readily drawn down outside the anus. It was nearly the size of the fist with a pedicle three inches broad, and about half an inch thick. The pedicle appeared to be formed by a broad fold of mucous membrane shelving off indefinitely into the bowel. It was difficult to estimate its length owing to this fact. When the growth was pulled forcibly upon the pedicle was stretched, and probably would be a couple of inches long. This pedicle gave me strongly the impression of being formed not merely by the mucous membrane, but by the whole coats of the bowel, so that had it been cut across the peritoneal cavity might have been opened. It was situated on the anterior wall of the bowel. The broad pedicle was tied with six ligatures, each including about half an inch of its width. The ligatures were kept pretty close to the growth for fear of opening the abdominal cavity. The tumour was then removed with scissors. The patient convalesced without accident, and returned home in three weeks.

The general features of these tumours may be gathered from the foregoing description, from which it will be seen that they do not cause much pain, but sometimes give rise to troublesome hæmorrhage, and after a while are liable to protrusion in the act of defæcation. But perhaps the most characteristic feature is the amount of sticky mucoid discharge which they cause from the anus.

Treatment.—This consists in their complete and free extirpation.

The patient being placed in the lithotomy position, the sphincter should be carefully but thoroughly dilated. The growth should be then seized either by the finger and thumb or by a vulsellum forceps, and drawn down as far as possible. Although these growths are pedunculated, their attachment has usually a considerable area. By means of a blunt needle armed with strong silk the base close to the mucous membrane is transfixed, and the needle withdrawn, leaving a double thread, the loop of which is divided, and the pedicle securely tied in as many portions as its width may demand; the growth is then cut off by scissors, care being taken to leave sufficient material beyond the ligature to prevent it slipping. These tumours are very vascular, and any mishap in a ligature slipping may result in severe and troublesome hæmorrhage.

CHAPTER XV

CONGENITAL COCCYGEAL TUMOUR — TUMOUR OF SACRUM — NÆVUS OF RECTUM — SIMPLE CYST — SEBACEOUS CYST — CONDYLOMATA OF ANUS — PAPILLOMA OF ANUS

Coccygeal Tumour.—The coccygeal region is occasionally the seat of a peculiar congenital tumour. In the various London museums are several specimens of these growths. The tumours sometimes appear beneath the skin external to the coccyx, or they are situated in the lower part of the pelvis between the rectum in front and the coccyx and sacrum behind.

In the Royal College of Surgeons * is a fine example of such a tumour. It was presented by Mr. Mason, and is thus described in the catalogue: "The pelvic cavity is filled with a soft encapsulated tumour, the outer surface of which is yellowish, and shows small cystic cavities. The pelvic viscera are displaced upwards and forwards. After microscopic examination, the tumour was considered to be a lymphadenoma.

"From a female infant, sixteen months old. The disease was first detected six weeks before death, when the patient was constipated, with considerable protrusion of the anus. Obstruction of the bowels and retention of the urine frequently recurred and passed off. The temperature rose to 104°, and the patient died with vomiting, dyspnœa, and great distension of the abdomen. One of the patient's sisters, aged nine, had a congenital

* Specimen No. 414.

cystic tumour, situated in the posterior part of the sacrum and coccyx" (*see* Fig. 25).

Sir F. Treves, at the Pathological Society,* showed a specimen of congenital tumour he had removed from the coccygeal region.

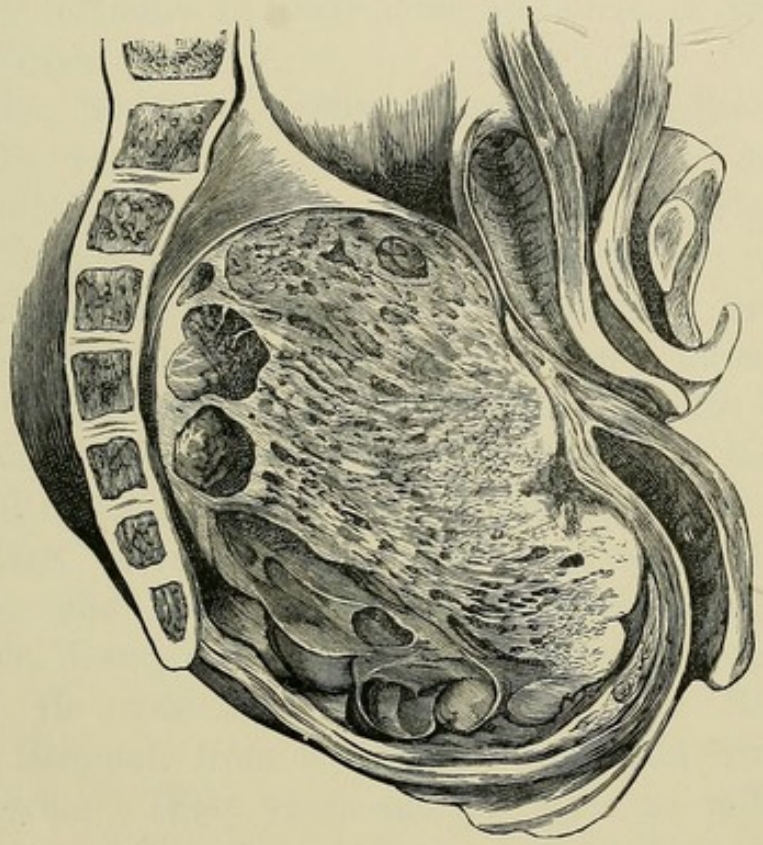
In this case "the tumour was external, covered by a purplish skin, and attached to the sacro-coccygeal region by a broad pedicle. The mass was covered by a scalp-like integument, and at one part there was long hair, similar to that on the infant's head. At the posterior extremity of the tumour was a transverse crease that separated it from a mass of much smaller dimensions. About the situation of this fissure, on the right side, were five nipple-like processes of flabby, hairy skin, resembling rudimentary digits, while in a corresponding position on the left side, was a raised granulating surface. Below the digits was a pendulous, claret-coloured mass, presenting longitudinal folds exactly resembling prolapsed gut.

"The mass was readily removed with the knife. It was found to be attached to the posterior surface of the coccyx and lower half of the sacrum. These bones were perfectly normal, and showed neither defect nor displacement. One artery alone required ligature, and that issued from the substance of the sacrum and entered the lower part of the pedicle. An examination per rectum showed the anterior aspects of the bones to be quite normal, and demonstrated the absence of any deep connection with the tumour. The wound healed well and entirely. The child had to be brought up by hand. It became ill-nourished, and vomited the greater part of the milk it took. It was much troubled by diarrhœa, and died of inanition seven days after the operation."

Mr. Treves, after dissection and microscopic examination, found that the tumour in this case consisted largely of fœtal remains, and concluded that it was an instance

* "Path. Soc. Trans.," vol. xxxiii. p. 285.

FIG. 25.



COCCYGEAL TUMOUR.

The tumour can be seen growing between the rectum in front and the sacrum and coccyx behind. The pelvic viscera are displaced upwards.—Drawn from a specimen in the Royal College of Surgeons' Museum.

To face page 276.

of attached fœtus, and further believes that many of the congenital tumours found in this neighbourhood have a similar origin.

One of the most valuable and complete papers * with which I am acquainted on this subject is one by Mr. W. Wagstaffe, who points out how closely some of these tumours resemble in their contents some of the more solid ovarian cysts.

Pelvic Tumour partly occluding the Rectum.—W. H. was admitted under my care into the Hospital † in Nov. 1882. Seven years previously the patient commenced to suffer from pain in the region of the sacrum. He was treated at the County Infirmary, and was told that he was suffering from ulcer of the rectum. He, however, received no benefit. He fell into the habit of taking large doses of morphia, and for a time was said to have been out of his mind and lost the use of his legs. Five years ago he came up to St. George's Hospital, and after a fortnight he was discharged as incurable, being told that he was suffering from rectal cancer. He was then admitted into the Brompton Cancer Hospital, from whence he was again discharged as incurable. Three years ago he began to suffer from incontinence of urine and fæces, but at the same time completely regained the use of his legs. On admission into the hospital, the patient was a thin, highly nervous man, and when speaking kept up a constant spasmodic movement of the head and arms. He had complete incontinence of urine and fæces, and could not tell when either were passing. On digital examination of the rectum, a hard elongated swelling could be felt commencing about two inches above the anus, and extending upwards beyond the reach of the finger. The tumour was situated altogether behind and to the right side of the rectum,

* "Congenital Tumours of the Sacral and Perineal Regions: St. Thomas's Hosp. Reps.," vol. iv.

† St. Bartholomew's Hospital.

but by pressing upon the posterior wall it greatly diminished the calibre of the bowel. The tumour appeared to spring from some part of the anterior surface of the sacrum, and, from what could be felt of it, was estimated to be about the size of a fœtal head. Towards the middle line it was almost of a bony hardness, but at the margin its consistency was softer. The tumour was growing rapidly, for the patient had been carefully examined three months previously, and there was some doubt as to the existence of a tumour. A small trocar was driven into the hardest portion of the tumour, with a view to ascertaining its nature, which proved not to be bony. In consultation, the majority of my colleagues considered the growth to be of a cartilaginous or malignant nature, and that any operation for its removal was quite impracticable.

Nævus of the Rectum.—Two cases of this rare condition were brought before the Medical Chirurgical Society in April 1883.* One case referred to by Mr. H. Marsh, was that of a girl, aged ten, who had suffered repeatedly from severe hæmorrhage from the rectum. Upon examination under chloroform, with the aid of a speculum, a nævoid growth was seen in the lower part of the rectum completely surrounding the bowel. This was treated by several applications of Paquelin's cautery, which relieved the symptoms, but did not cure the growth.

The other case was under the care of Mr. E. T. Barker. The patient, whose earliest symptom was an attack of diarrhœa accompanied by great loss of blood, usually suffered from constipation, and was obliged to strain much during defæcation. Sometimes, however, he had intervals of diarrhœa, always with great loss of blood, and felt no pain and lost no flesh, and there was no particular discharge from the rectum except during the attacks of bleeding. A diagnosis of the condition was

* *Lancet*, vol. i. 1883, p. 637.

made by a large speculum with a powerful artificial light; by this means the mucous membrane of the bowel was seen to be marked by smooth longitudinal folds mottled with a peculiar purplish tint. On these folds were three shallow ulcers, whence the blood flowed freely. The patient gradually sank, and died from loss of blood. The post-mortem examination showed the walls of the rectum to be much thickened in the lower four and a half inches by nævoid growth in its walls, on the rugæ of which were the ulcers already described.

Condylomata of Anus.—This is extremely common, and is generally, though not necessarily, a syphilitic affection. The patches vary in size from a sixpenny-bit to a five-shilling piece or larger. They are often symmetrical, there being corresponding patches on opposite sides. The patches are raised slightly above the level of the surrounding skin. They have a coarse, granular surface, with a pink or whitish appearance, and are moist, being bathed with a thin fœtid secretion. They are easily cured by local treatment, though, if of a syphilitic origin, the ordinary constitutional remedies must be administered. The essential part of the local treatment is that the patches should be kept clean and dry. With this object, the part should be thoroughly washed twice a day, and then well bathed with boracic acid lotion, twenty grains to the ounce. The patches must then be thoroughly dried with a soft pocket-handkerchief, and the following powder freely dusted over the surface:

Pulv. hydrarg. subchlor., gr. xx.
Pulv. iodoformi, gr. xxx.
Pulv. zinci oxidi, ℥j.
Pulv. amyli, ℥ss.
To be well mixed.

It is important, on each application of powder, that what remains of the old dusting should be washed off.

Papilloma about the Anus.—Occasionally a papillomatous growth springs from the thin skin around the anal margin, and sometimes these may be traced to the irritation of gonorrhœal or syphilitic discharge, and appear to be an exaggerated form of the condylomatous patches so common in this locality; but they can undoubtedly originate without any such source of irritation.

A girl, aged thirteen, who had never menstruated, and in whom the hymen was intact, was admitted into St. Bartholomew's.* Around the anal margin, and forming a complete ring, was a mass of warts the size of a small orange. There was very little discharge from their surface, nor did they cause any pain, The tumour was removed by the scissors and cautery. In this case there was not the slightest reason for supposing that the growth was due either to syphilis or gonorrhœa.

Simple Cyst of the Rectum.—A gentleman, aged seventy, was sent to me by Dr. Batt, of Witney. Had always had good health, but for the last few months has had a feeling of tightness and pressure in the pelvis. The bowels act daily without pain, and there is no blood or discharge. An examination found the anus and lower part of the rectum normal. Just as high as the finger could reach a swelling the size of a small orange could be felt projecting into the rectum. It had a tense elastic feel. Under ether, and with the aid of a speculum, I cut into this, and let out about two ounces of clear, straw-coloured fluid. The wall of the cyst seemed blended with the mucous coat. A portion of the wall was cut away, and the cavity drained. I saw the patient five years later; the rectum was healthy without any sign of recurrence.

Sebaceous Cyst of Rectum.—A woman, aged thirty, was admitted into St. Bartholomew's in August 1901, complaining that for the last two years "something" protruded from the anus each time she defæcated. It

* Sitwell Ward Register, vol. vi. p. 250. (Notes by author.)

gave her no pain, and she had no bleeding or mucous discharge. On examination, a tumour the size of a large hen's egg could be felt two inches up the bowel. It was covered by mucous membrane which moved freely over it. On straining the whole tumour was extruded with a pedicle formed by the dragged down mucous coats of the bowel. The mucous membrane over the tumour was quite smooth and healthy. This was divided, and, with some difficulty, the tumour was dissected out. It proved to be a sebaceous cyst, containing about three ounces of thick creamy matter.

CHAPTER XVI

CANCER OF THE RECTUM *—ETIOLOGY

THERE is no reason for supposing that cancer when situated in the rectum differs in its nature from the same disease in other parts of the body. It may be well, therefore, to take a brief glance at the general character of the disorder.

So much ambiguity has arisen as to the meaning of the word cancer, that I will define the sense in which the term is used in this chapter. The modern school of pathologists limit the term to express a group of tumours presenting certain definite structures under the microscope. In this group are included scirrhous, medullary, colloid, and epithelial growths, but the various forms of sarcoma are excluded. The older surgeons, on the other hand, consider the expression cancer as synonymous with the term malignant. It therefore included all varieties of growth that have a tendency to recur after removal, to infect neighbouring glands, or to become generally disseminated about the body. When the Council of the College of Surgeons set the subject for the Jacksonian Prize Essay for 1875, on "Cancer of the Rectum considered with regard to the possibility of Cure by Extirpation," it was in the latter sense that the term was used. I shall, therefore, use the word cancer as equivalent to malignant growth.

The death-rate from cancer has shown a pretty steady

* The Jacksonian Prize Essay, Royal College of Surgeons, England, 1876 ; 4th edition, 1907.

relative increase during the whole period of which we have accurate returns. The following Table, compiled from the Registrar-General's Reports, shows the proportion of deaths from this disease, compared with those from other causes, during each of the forty years from 1865 to 1904:

TABLE

1865, 1 in 60 ..	1879, 1 in 42 ..	1892, 1 in 27
1866 „ 59 ..	1880 „ 40 ..	1893 „ 27
1867 „ 54 ..	1881 „ 36 ..	1894 „ 23
1868 „ 53 ..	1882 „ 37 ..	1895 „ 25
1869 „ 52 ..	1883 „ 36 ..	1896 „ 22
1870 „ 52 ..	1884 „ 35 ..	1897 „ 22
1871 „ 52 ..	1885 „ 34 ..	1898 „ 22
1872 „ 48 ..	1886 „ 33 ..	1899 „ 22
1873 „ 46 ..	1887 „ 31 ..	1900 „ 22
1874 „ 47 ..	1888 „ 29 ..	1901 „ 20
1875 „ 47 ..	1889 „ 28 ..	1902 „ 19
1876 „ 44 ..	1890 „ 29 ..	1903 „ 18
1877 „ 42 ..	1891 „ 29 ..	1904 „ 19
1878 „ 43 ..		

Or if we compare the death-rate with the number of persons living, it will be found that whereas in the ten years, from 1871 to 1880, it averaged annually one death from cancer in every 2128 persons living, in the next ten years, 1881 to 1890, the proportion had increased to one in 1696, and in the decade 1891 to 1900 the proportion became one in 1323. The mortality from the disease varies widely in the different districts of England. Nor is it only in different parts of the country that this variation is marked, for even in the subdivisions of the metropolitan districts there is a considerable divergence in the rate of cancer mortality. For instance, in Marylebone, St. George's, Hanover Square, and West London, the rate is 80 in 100,000, while it is less than half this in St. Luke's, Bethnal Green, and Rotherhithe. In forming these tables, deaths amongst women have alone been included; for cancer is not only more than twice as frequent amongst females as it is amongst males, but the occupation of men in the London districts often takes them away from their homes for at least half the twenty-four hours, and

would thus bring them under different influences from those to which they would be subject at home; while, on the other hand, women generally pass the greater portion of their day in the same locality.

Upon reflection, there are many causes which might invalidate the statistics showing this apparent increase in the cancer mortality, and amongst these, the most important is the progressive improvement in diagnosis, so that many deaths which are now properly assigned to cancer would formerly have come under various symptomatic headings, such as "marasmus," "abdominal obstruction," "gout," &c. For instance, how many cases of cancer of the larynx, ovaries, or rectum were diagnosed forty years ago? But, notwithstanding the wide margin that must be allowed for these cases, it is more than probable that there is an actual increase in the amount of cancer amongst the population.

Modern surgeons differ materially in their views as to the origin of cancer. The widest divergence in opinion lies between those who consider that the origin of the disease is to be sought in purely local causes, and those who deem that it is rather to be found in some deep-seated condition of the constitution. Those who consider that the constitution is in fault, believe that there is a condition of the body generally, which renders it liable to burst into cancer with some slight accidental irritation, or even without any apparent irritation at all. In fact, they consider that there is a predisposition or liability to the disease, found only in a certain proportion of human beings, and the tumour is looked upon as merely the expression of a previously morbid condition of the body in general, analogous to the sudden outbreak of inflammation in the joint of a gouty person, or the development of bony growths about the joints of a rheumatic sufferer. Dr. Payne* expresses the meaning of the word "constitutional" as a "lesion or change

* "Path. Soc. Trans.," vol. xxv. p. 338.

in which the general disposition of the body has a very large share, and the influence of external causes—injury, irritation, and so on, has a comparatively small share." As opposed to these views, those who think that the disease is purely local in its origin, contend that the tumour is due to some cause acting locally on a particular part, and that this is the starting-point of the cancer, there being no previous disposition of the body to the disease, but that it only becomes secondarily affected from this original centre.

Many facts and arguments have been brought forward to support either view of the origin of the disease. The chief arguments in favour of the constitutional origin are, first, the hereditary nature of cancer; secondly, its very frequent return after removal; thirdly, its production in certain persons as the result of injury.

The transmission of cancer by inheritance, or the particular condition of body liable to be attacked by the disease, has been taught from the earliest times, and is, perhaps, the strongest argument in favour of the constitutional view. Indeed, it cannot be regarded as other than certain proof that a tendency at least to the disease has been directly transmitted. Sir James Paget,* a high authority on the subject, goes so far as to state that "he is disposed to hold that it is not possible to conceive the origin of cancer, or any disease of the kind, except by inheritance." Instead of elaborating ingenious theories, such as the localists employ to get over the difficulties of inheritance, or the still more complicated excuses which the constitutionalists find for cancer skipping a generation or two, it may be well carefully to weigh the facts upon which the doctrine of inheritance is founded.

I have published elsewhere† a short paper on this subject, from which I give the following extract:

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* "Path. Soc. Trans.," vol. xxv. p. 317.

† St. Bart.'s Hosp. Reps., vol. xiv. (1878).

The hereditary nature of cancer is based upon evidence derived from the following sources:

1st. That it is a matter of common notoriety that cancer runs in certain families.

2nd. Evidence founded upon certain statistical facts.

Now, in dealing with the former statement, such evidence is wholly inadmissible from a scientific point of view without the positive facts upon which it is based. General impressions are often the result of hasty generalisation upon imperfect observations.

From time to time isolated instances may occur of an amount of cancer in a particular family in excess of the average to be expected. Such, for instance, as the case narrated by Sir James Paget,* in which a lady died of cancer, two of her daughters died of cancer, and eight of her grandchildren; however, the number of her children and grandchildren who did not die of cancer is not mentioned.

The rareness of such an instance is proved by finding that, out of nearly 300 cases of cancer at St. Bartholomew's Hospital, nothing in the least approaching this history is to be found.

The evidence derived from statistics will now be examined.

In an article by Mr. Baker† will be found a table of cases from the practice of Sir James Paget. Mr. Baker makes the statement that 22·4 per cent. of the cancerous patients were aware of one or more relatives with the same disease. He then gives a table of 103 cases in which one or more relatives were affected. These 103 cases representing only 22·4 of the total number of cases examined, the whole number of cases investigated must have been 460. In these 103 cases amongst the relatives are included aunts, uncles, cousins—first, second, and third—great-aunts, and a great-uncle. But since it is

* "Path. Soc. Trans.," vol. xxv. p. 318.

† St. Bart.'s Hosp. Reps., vol. ii.

impossible to conceive how a man can inherit cancer from his uncles, aunts, or cousins, the necessity for excluding these is obvious. Further than this, the impossibility of knowing the number of these distant relatives, in order to form a table for comparison between a cancerous and a non-cancerous family, renders them useless for our present purpose.

This objection cannot apply to a man's parents or grandparents; two of the former and four of the latter must be the invariable amount. Now, it is not within the range of ordinary observation that an individual, especially of the hospital class, could even with approximate accuracy assign the cause of death in his four grandparents. The cause of death in the parent is, however, commonly known, especially if the deaths were from cancer. On these grounds, therefore, will be considered the relative frequency with which malignant disease is found in the direct offspring of a cancerous or non-cancerous parent.

Referring to the 460 patients mentioned by Mr. Baker, these must have had 920 parents, unless brothers and sisters belonged to the same family. This was so in four instances; the number of parents will thus be reduced to 916. Amongst these 916 parents cancer occurred 30 times in the mother, 7 times in the father, or a total of 37 times.

This gives one death from cancer in every 24·8 among the parents of cancerous patients.

Two objections to these facts might well be raised:

1st. That it is assumed that all the parents of the cancerous patients were dead—but this would not be the case—and that those still living might eventually die of cancer, thus swelling the cancer mortality.

2nd. That they might have died of an unknown cancer.

The first objection must readily be admitted, but taking into consideration that in a vast majority of

instances cancer is a disease of advanced middle life, it would be in only a small number of instances that the parents, if living, would eventually die of the disease.

As a proof of this, it will be found that in the whole series of Sir James Paget's cases only three instances are recorded in which a parent has succumbed to cancer subsequent to an offspring dying of the same disease; this amounts to less than 1 per cent. in the whole number of cases. The objection that the disease might have been an unknown cause of death would apply equally to the Registrar-General's returns, to be presently alluded to.

The figures given in Mr. Baker's table of Sir James Paget's cases will now be compared with those derived from the Register of St. Bartholomew's Hospital. From June 1869 (the first commencement of registration), till October 1878, 280* cases of cancer were under treatment in the female surgical wards. Of these 280 cases in 111 no family history of any kind is recorded; in the remaining 169 cases a special record is made as to the family history. In these 169 cases no cancer was known in the parents in 156 instances; in 11 cases either the father or mother had cancer; in 2 cases it was doubtful whether or not one of the parents had the disease, one of these being so doubtful that I have thought fit to exclude it. There will remain, then, 12 cases among 336 parents, or 1 case in 28.

As Mr. Baker very properly observes, in speaking of Sir James Paget's cases, these statistics in themselves do not prove in any way the inheritance of cancer, and this question can only be finally answered by discovering the proportion of cancerous relatives belonging to those not cancerous, and comparing the two sets of figures.

What we have to do is to compare the death-rate

* Cases entered in the hospital index under the head of "Cancer" are alone included.

from cancer in the parents of cancerous patients with the death-rate from cancer amongst adults generally. Fortunately, in the Registrar-General's returns we have a means of making this comparison.

It would not be right in this calculation simply to take the whole number of deaths in the community and find out how many of these deaths were due to cancer, for the parents of cancerous patients must certainly have been adults at the time of their deaths.

The total number of marriages below the age of twenty only amounts to 8 per cent., and the proportion of these who both become parents and die below the age of twenty is so small a percentage that it can be fairly ignored. Thus, then, we will compare the death-rate from cancer in the parents of cancer patients with the death-rate from the same disease in all persons in the kingdom dying above the age of twenty years.

In the ten years, 1861 to 1870, in England and Wales—

1,185,189 men died above the age of 20 years.
1,194,433 women died above the age of 20 years.
24,845 men died of cancer.
56,854 women died of cancer.

The addition of these figures gives 81,699 deaths from cancer out of 2,379,622, or 1 death in every 29·1 from cancer.

By comparing these figures with the figures given in the previous page, the following result is arrived at:

Amongst the parents of cancerous patients the death-rate from cancer amounts—

According to Sir James Paget, to 1 in 24·8.
„ St. Bartholomew's Register, to 1 in 28.

Amongst the whole community over twenty years of age— According to the Registrar-General, to 1 in 29.

The relative frequency of cancer in these two sets of cases differs so slightly that this difference may well be looked upon as accidental, in which case the figures given in the paper bear proof that cancer in the parent

does not increase the liability of the offspring to suffer from the same disease.

Statistics collected by other observers might lead to different conclusions. I have made every endeavour, however, to make the foregoing figures accurate, and until more evidence is adduced than is now accessible to prove the inheritance of cancer, I do not feel justified in admitting the doctrine as evidence of the constitutional origin of the disease.

Recurrence after Removal.—This, not merely *in situ*, but disseminated about the body, has been regarded as evidence of the part played by the constitution in the production of the disease. In speaking of this argument, Sir James Paget states:* "I would hold that the constitutional element in the origin of cancer is strongly marked in the constancy and in the method of its recurrence after operations—recurrence after complete excision. . . . You may cut out little cancerous tubercles here and there from some old person three, four, five, or six times over, but that is a different disease. You cannot find an instance of rapidly growing soft-textured, vascular cancer of any form which can be removed three, four, six, eight, ten, or twenty times without recurrence, not in the place of growth alone, but in distant organs; and I believe it is vain to attempt to explain this difference of the recurrence in distant and dissimilar parts which we find in recurrent tumours, or occasionally, in the more ordinary kinds, upon any facts of difference of physical constitution. I observe it is referred to the mobility of cells, to their readiness to travel, that now and then these tumours pass from one part to the other. Now, really there are cancers that multiply themselves in dissimilar parts whose physical condition looks as unfit for travelling as any that could be named. If I could name any kind of cancer which propagates itself more widely and readily than

* "Path. Soc. Trans.," vol. xxv.

another, it would be osteoid, a mass as hard as any mass of fibrous tissue you ever found in the uterus. I know no fibrous tumour which is so hard as the fibrous mass, to say nothing of the bony structure, of an osteoid cancer, yet it propagates itself speedily everywhere. Ordinary scirrhous cancer of the breast is at least as hard as an ordinary fibrous tumour; but the one does what the other does not—propagate itself. The recurrent fibroid, or recurrent cartilaginous growths, are just as soft, and are composed of cells and free nuclei as little held together as in any of the soft forms of cancer. They do not, except in rare cases, propagate themselves. Cancers do not fail, except in rare cases, to propagate themselves, so that I must maintain that, whichever way we look at them, the facts of the method of propagation to distant and dissimilar parts are so strong, and so characteristic on the side of cancers, that we must assume an essential difference between them and any other tumours that we can name."

But yet this argument, when considered, amounts to no more than stating that there is a marked difference in the physical character of cancer and that of the innocent tumours, a fact readily admitted. If, however, it can be shown, as I will endeavour to show subsequently, that all the particles of the disease found disseminated about the body are the results of the primary tumour, and started from it, then, instead of the dissemination being an argument in favour of the part played by the constitution, it appears to point in an exactly opposite direction.

Cancer following an Injury.—In a certain number of instances the actual starting-point of cancerous growth appears to follow more or less directly an injury of the tissue, and this outbreak, known under the name of "traumatic malignancy," results from injury of a peculiar nature and in certain parts. The form of injury that apparently starts the disease is not an incised, lacerated,

or punctured wound, but rather that form of injury known as "contusion," and this, too, often of a trivial nature. Again, the parts in which a malignant tumour follows a blow is generally glandular tissue, as shown in my notes of a case which was under the care of Sir. T. Smith, at St. Bartholomew's.*

In this case the constitutionalists would see evidence of a constitutional tendency excited to activity from the injury, for they would say, and probably with truth, that ninety-nine such blows might be struck on as many individuals, without producing a similar result, and from this they would argue that there must be a second factor besides the blow to produce such an exceptional phenomenon, and in this factor they recognise a peculiar disposition in the constitution. If such an hypothesis be correct, it would seem that any blow struck on a patient with such a diathesis should be followed by tumour formation; but yet this is not the case, for wounds or contusions of innumerable kinds have, from time to time, occurred to persons who are actually suffering from cancer, yet, save in the rarest instance, no cancerous growth has resulted, unless the injury has occurred in the immediate neighbourhood of a primary disease. The late Mr. De Morgan narrates a case† which admirably illustrates this fact.

* E. R., police constable, in June 1878, while arresting a prisoner, received a kick on the left breast; it was not very severe but caused him some pain at the time, and did not prevent his being on duty the following day. Twenty-four hours after the injury there was a bruise the size of a florin around the nipple. The marks of this remained for some weeks and then disappeared. Ten weeks afterwards he noticed for the first time some hardness round the nipple, about the size of a small marble. He treated this by fomentations and poultices, but it continued steadily to increase. On entering the hospital, rather more than a year after first noticing the growth, there was a large projecting tumour, the size of a fœtal head; the skin over it was dusky in colour and firmly adherent, while in the axilla were two large glands the size of walnuts. He was a strong burly man, no family history of cancer, and had got rather stouter than thinner during the last six months, since he had been off duty. The tumour was malignant.

† A man was brought into the hospital with a compound fracture of the radius, which had occurred four or five days previously. The whole arm was enormously swollen and in a condition of what may be called

Now, I will readily admit that, seeing the exceptional nature of the constable's case, there must have been some condition in addition to the mere blow, to produce so untoward a result; but what I do deny is, that it is necessary to assume that the additional factor should lie in the patient's constitution at large, rather than in some local condition excited to activity by the injury to the tissue.

Having mentioned some of the chief arguments used by the constitutionalists to support their view of the origin of the disease, I will glance at those features which appear to me to supply the strongest evidence of its local origin, the constitution only becoming secondarily tainted.

First. Amongst these we have the evidence of the tumour itself, a single spot being alone affected, the rest of the body being in perfect health. In fact, the first indication of the disease is its local manifestation. As an instance, I will take a case* which was under my

putrescent cellulitis. There was putrid pus and serum distending the cellular tissue up to the middle of the arm. The general appearance of the man, notwithstanding this, was regularly healthy. His pulse was 84, he had a clean tongue, and ate and slept well. I contented myself by making incisions, expecting that amputation might soon be necessary; by-and-by the carpal bones and the head of the radius became carious, many of the former were removed, the head of the ulna exfoliated. There was copious suppuration, at first foul but afterwards becoming healthy. During all this time, a period of a couple of months, he retained his health, eating, drinking and sleeping well, with a good colour and slow pulse. I determined to let Nature have her course. All at once he was seized with peritonitis. I feared it was pyæmic peritonitis, and that I had carried the experiment too far. He died, and it was found that the peritonitis was due to a portion of the gut having got entangled in a band, the result of a peritonitis which he had told us he had previously suffered from. But in addition to this there was found in the pelvis and lower part of the abdomen, a mass of colloid cancer, while the omentum and intestines were throughout studded with nodules of the disease of various sizes. There was no sign of cancer about the injured arm.—" Path. Soc. Trans.," vol. xxv. p. 391.

* A woman, aged forty-five, had enjoyed thoroughly good health since she was a child. A few months ago she began to feel slight discomfort in the right breast. This came on so gradually that she could fix no exact date for its commencement. A week ago she noticed for the first time a hardness in part of the right breast. She is still in perfect health and has no pain to speak of. On examination a hard nodule is felt deep in the breast, but no per-

care at the Royal Free Hospital, as being fairly representative of what is commonly observed.

When the patient was first seen her health was good, but anxiety of mind, sleepless nights, and pain soon told their tale, and accounted for the so-called cachexia. After the removal of the local disease she regained to a great extent her former health, only to be lost when the disease returned. Such a history is common in cancer, all the constitutional symptoms being consecutive to the tumour.

Second. The manner in which cancer spreads and propagates itself. There are four methods by which the disease extends. Three of these methods of extension are as clearly recognised, and as universally allowed, as any fact in pathology—viz., growth from the periphery, extension by the lymphatics, and dissemination in the course of the blood-stream. The fourth method is by auto-inoculation, but notwithstanding the utmost importance that should be attached to this method of extension, it is practically ignored by the majority of authors on the subject, although it has not escaped the observation of such accurate pathologists as the late Dr. Moxon, Dr. Goodhart, and the late Mr. De Morgan. Many museums afford specimens of malignant ulceration of the stomach with patches of cancer scattered here and there along the small intestines and colon. The appearance of these specimens combined with their clinical history leaves little doubt but that these deposits were

ceptible glandular enlargement. An operation was advised but declined. She again applied to the hospital four months later; her condition was then much altered, the tumour was larger and very painful, and in the axilla was a gland as large as a pigeon's egg; she had lost appetite and her nights were often sleepless. She had quite lost her good looks and complexion, her face being thin and careworn; she was very considerably thinner. Being very anxious for an operation the breast was completely removed, together with the axillary gland; the wound healed rapidly. She left the hospital in good spirits and during the next few months she regained her appetite and once more looked fairly healthy; unfortunately six months after the operation the disease returned *in situ*, she became rapidly cachectic, and, I believe, died eight months later.

secondary to the gastric disease. In the Middlesex museum is a cancerous ulcer in the stomach of a boy who had previously suffered from the same disease in the mouth. In the "Pathological Society's Transactions" it will be found recorded, and specimens have been exhibited showing how the uterus has become inoculated with cancer through the Fallopian tubes from a diseased ovary, how the lungs and bronchi have become infected from a primary cancer of the larynx, and how the skin of the abdomen has become cancerous from contact with a pendulous breast already diseased.

I have myself recorded* a very remarkable case of this auto-inoculation. The patient was a woman in St. Bartholomew's Hospital, who had a cancerous ulceration involving the breast and skin of the thorax. For two months, being unable to put on any dress, she had kept her arm bent at right angles in constant contact with the disease; the result of this contact being that the skin in the neighbourhood of the elbow became the seat of a cancerous ulcer several inches in diameter.

As regards these four methods of extension, the first and last—viz., growths from the periphery and from auto-inoculation—afford positive evidence of extension by direct local infection, while the manner of extension by the lymphatic glands, and of dissemination about the body, leaves little question that the secondary points of disease are propagated from the primary tumour. The parts in which these secondary deposits first appear are almost invariably structures in direct communication with the primary growths, by means of the lymphatics and blood-vessels; thus, for instance, the glands of the axilla are first affected in cancer of the breast, the sub-maxillary in cancer of the tongue, and the liver-substance after disease of the intestine. Moreover, when it is remembered that one of the functions of both lymphatic glands and liver is to act the part of a filter—

* "Path. Soc. Trans.," vol. ii. 1881.

the one to the lymph, the other to the blood—it would be expected that these would be the organs in which morbid material would first become arrested. But after a while, the glands and the liver becoming disorganised, they are no longer able to filter out the obnoxious particles, and thus, eventually, general dissemination occurs by the blood-stream.

The whole course and progress of these secondary growths can at times be as clearly traced from the primary tumour as can the abscesses of pyæmia from the original scratch on the finger.*

When we see the manner in which malignant disease spreads, it is impossible not to be struck with the close analogy it bears to any poison introduced into the body locally, such, for instance, as the poison of septicæmia, glanders, or syphilis. The constitutionalists, admitting the extension of cancer by the channels mentioned, see in it only another proof of a "predisposition," they say that a something is absorbed that irritates a gland, and this irritation, instead of subsiding or going on to the formation of an abscess as it would in an ordinary case, excites the formation of cancer owing to the predisposition to that disease inherent in the patient. Sir W. Jenner expresses this by saying that† "something is absorbed, it is not necessarily pus, there is a disposition in every part to burst forth into cancer, when an exciting cause

* A patient, a healthy woman, aged twenty-seven, had upon her right leg a small dark-coloured mole which had been there since her birth. A year previous to admission into the hospital a small warty excrescence appeared on one part of the mole. This she treated with caustic, which in a few days was followed by some tenderness of the groin below Poupart's ligament. In the course of a few weeks a tumour made its appearance in the groin at first no larger than a nut; other swellings soon appeared both above and below Poupart's ligament, and also in the popliteal space. Each of these soon developed into well-marked tumours. After the lapse of nine months from the first application of caustic, tumours had appeared over the clavicle, sternum and abdomen, while there were obvious symptoms of tumours in many internal organs. She was removed by her husband from the hospital in a dying state, eleven months after the application of the caustic. No opportunity was afforded for a post-mortem examination.—Sitwell Ward Register, St. Bartholomew's, vol. vi. (Notes by H. T. Butlin and author.)

† "Path. Soc. Trans.," vol xxv.

is applied; something is absorbed from the part which irritates a gland, and in the constitutional state of the patient, cancer is produced instead of abscess or extravasation of blood, or thickening of a tissue. Whether it goes by the lymphatics or the veins is a matter of insignificance; it would not develop into cancer unless you had a primary condition in the patient—viz., a disposition under irritation to form cancer."

Yet it would seem to me as reasonable to hold that the disseminated abscesses of pyæmia or the tertiary gumma in syphilis were due to predisposition in the constitution of certain individuals to form such masses "under irritation." But no one for a moment doubts that the characters of the secondary effects of pyæmia and syphilis are stamped not by the constitution of the patient, but by the specific nature of the original poison.

Again, if further proof of the direct relationship of the secondary deposit to the primary tumour were necessary, it is afforded by microscopic examination from such deposits, for the peculiarities of their structure often admit of their being identified as starting from the primary tumour. If, for instance, the primary tumour have cartilaginous nodules in its substance, portions of cartilage may frequently be found in the secondary deposits, while in cancer of the liver, secondary to the same disease in the rectum, not only can the large epithelial cells of the rectum be recognised, but they actually attempt to develop into an adenoid growth, having all the characteristics of Lieberkühn's follicles.

Certain local applications have the undoubted property of exciting malignant growth; the example of this is to be found in chimney-sweep's cancer of the scrotum.

It can scarcely be contended that sweeps have a special constitutional tendency to cancer. It must, therefore, be acknowledged that it is due to an irritant locally applied. The question would further arise as

to whether this cancer of the scrotum is caused by any specific irritation inherent to soot, or whether any irritation constantly applied to the skin of the scrotum will produce similar results. Now, seeing that there are many forms of manual labour by which the parts in question are kept constantly irritated by dirt, yet the impunity from cancer in these circumstances points rather to some specific irritation due to soot; possibly the exceeding fineness of the particles may afford an explanation, but I will not venture at present to speculate on this matter. The fact, however, and that too of the greatest importance, remains, that a local irritant can produce what is at first certainly a true local disease. In this form of cancer the commencement of the disease is almost obvious, its gradual progress can be traced until neighbouring glands become implicated, and the patient ultimately dies of the disease. It is, too, in this class of case that the sufferer, being aware of the nature of his malady, applies for advice at an early stage, and the surgeon operates with a fair hope that the cure may be permanent.

When there is such positive evidence that the disease is local in a particular case, and when there is no proof that it is due to a constitutional origin, it is more logical to assume that the disease always has a local though unknown cause than to regard as of an exceptional nature the cases in which local origin is obvious.

Taking into consideration the points in the history of cancer upon which we have already touched, it would seem that the preponderance of evidence is strongly in favour of the view that the origin of cancer lies in some local condition of the part attacked. With a view to ascertain the cause of the disease, it is natural that pathologists should have paid considerable attention to the structure of the growth itself; but yet, in studying the histology of the tumour, we are rather examining the product of the disease than investigating its cause.

What the surgeon removes, and the microscopist cuts into sections, cannot be the cancer, that is to say, the whole cancer. This seems pretty evident by the disease remaining in the patient and ultimately causing his death. What has been removed consists of a mass of hypertrophied tissue and cellular element formed as the result of a disease, portions of which have most certainly been left behind. No doubt that part which appeared to be acting most violently had been removed with the tumour, but what remained behind only required time to increase and to become as active as the part already removed.

The careful study of the tumour itself by the microscope has in a way greatly increased our knowledge of the disease, and supplied us with a vast amount of valuable facts; but yet I doubt whether, by the study of the tumour alone, the true cause of its growth will be eventually established; certainly, if for our knowledge of pyæmia we had been dependent upon the microscopic examination of the secondary abscess, we should never have attained to the knowledge which is now so successfully employed in guarding against the disease.

If the tumour be cut into sections and examined, it will be found that there is nothing mysterious in the elements of which it is composed. The cells which represent the growing part of its structure are similar to those naturally existing in the part affected, and, moreover, often have a tendency to form themselves into glandular tissue, with a structure more or less in imitation of the healthy glands in the immediate neighbourhood. The source from which the cells forming the tumour are derived would seem to be almost certainly the pre-existing cells of the part, and are the result of a proliferation of the lymphoid and epithelial cells previously existing in the healthy tissue. Since it is the accumulation of these cells that forms the tumour, it is to the cause of this accumulation that attention should be directed. In searching for this we will briefly consider what causes

are already known as leading to unnatural cell aggregation.

Simple mechanical irritation, such as results from friction or intermittent pressure, will lead to cell growth; and of this we have a typical example in the formation of corns and bunions.

Again, the presence of a foreign body in the tissue will lead to a local hyperplasia, such as is seen in the hypertrophy of bone, when a sequestrum long remains enclosed in its cavity.

Lymphatic obstruction is considered by some to be a cause of cell overgrowth.*

Another group of causes is to be sought in certain specific inoculations; for instance, vaccine lymph will in a few days lead to an extensive effusion of leucocytes. Here the manifestation is local, so far as the cell collection is concerned. In the same category may be included the poison in pyæmia, but this not only produces a primary abscess (cell collection), but also by means of the lymph and blood-channels will cause secondary formations of pus wherever arrested. Other instances, such as inoculation in small-pox, might be cited, but sufficient have been mentioned for purposes of illustration. Such causes, moreover, act more or less acutely, and the cellular product takes the form of pus, being formed too quickly to become organised into fixed tissue.

Such an accumulation is like a quickly collected, unorganised mob, the individuals of which act independently. In the haste of their collection the commissariat has been neglected. The capillary blood-vessels, which should supply the lymphoid cells with food, have had no time for development. The collected cells are consequently short-lived, and soon become little more than dead refuse. Regarding pyæmia and small-pox then as examples of rapid cell effusion from a specific cause, we will pass on to some specific poison,

* Holmes's "System of Surgery," third edition, vol. iii. p. 579.

which both locally and secondarily will produce a cell formation, having sufficient vitality and blood supply to allow of its formation into cohesive tissue. Of this we have an admirable example in syphilis.

In descending the scale of creation we find the vegetable kingdom rich in examples of cell formation due to specific irritation. Those who have studied the formation of galls, will know how these bodies are produced by such irritants.*

Here we have a tumour formation, the individual cells of which are derived from the bark or leaf on which it is placed, and can be easily identified with the cells of the neighbouring normal tissue; but yet it is established beyond doubt that this extraordinary behaviour of a portion of a tree is the result of a specific irritation, which in the case of the oak-tree is an insect (the *Sineps quercus folii*).

In considering whether any of the causes just mentioned bear upon the question of malignant tumour, the "mechanical irritation" will first come under consideration. It has frequently been sought to prove that mechanical irritation is the source of cancer, but as yet with entirely negative results.

Patients with cancerous ulcerations on the lips or tongue are invariably questioned as to smoking, or as to the existence of broken teeth. Affirmative replies are considered evidence of a connection between the irritatives and the morbid growths. If these relations be regarded as cause and effect, why should the cause be at work in 1000 cases, the effect following in one only? Instead, therefore, of such irritations being the cause of morbid growths, we have overwhelming evidence that they are not so, save in the rarest instances.

Without denying the connection that occasionally exists between injuries and malignant growths, it is

* Sections of Galls, "Path. Soc. Trans.," London, vol. xxxv. (Paper by Author.)

evident that the determining cause must lie in some factor beyond mere irritation, and, as already mentioned, the constitutionalists with unscientific vagueness regard this factor as a "constitutional predisposition," so that, instead of the irritated part producing a simple hypertrophy or abscess, a malignant tumour results.

Simple mechanical lymphatic obstruction might account for the formation of a local tumour, the cells formed in a given part being unable to pass away, but such obstruction must either lie between the tumour and the nearest glands, or beyond the glands. In the former case the glands could never become diseased, in the latter it should be the primary seat; both of which are contrary to fact.

Lastly, we will consider specific infections as a cause for cell accumulation, and herein we find an analogy closely resembling what is seen in malignant disease. The poison of small-pox or glanders not only produces the cell accumulation at the seat of the inoculation, but passing by the lymphatics and blood-stream causes secondary accumulations in various parts of the body. Syphilis runs a similar course, merely differing from its action being slower. In these instances the medium by which the poison travels from the seat of inoculation is not determined; it may be that the germs (Bacteria) are simply washed along the channels, or they may be carried along in the interior of the leucocytes coming from the infected part.

In cancer, however, we can go further, and can prove almost certainly that the infection, whatever its nature, is carried by, or resides in, cells derived from the neighbourhood of the original disease. It is found, for instance, that the secondary deposits in the liver, when following rectal disease, can not only 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.

Accepting it then as a fact that the secondary deposits found in the liver after rectal cancer are formed from cells originally derived from the rectum, what a field for inquiry is immediately opened. Is it to be supposed that it is only in disease that cells derived from the intestinal glands find their way to the liver? or is it but part of a normal physiological process that cells should thus migrate? This question is more fully considered on p. 16, and, as the result of the microscopic examinations there described, I venture to suggest that each of the epithelial cells of the intestine represents an individual life; requires nourishment, grows, and multiplies by the division of its nucleus, which nuclei from time to time find their way into the subjacent retiform tissue, pass hence through the lymphatics to the blood stream, where they become identical with the leucocytes. Should this view be correct, or even partially so, we have a solution to the surprise that is first experienced on recognising a structure peculiar to the rectum transplanted to the liver.

Such cells, unable from their altered form, due to a diseased condition, to pass readily along the usual channels, collect first in the sub-mucous tissue, and subsequently in the liver or lymphatics, thus producing tumours, while at the same time it is more than probable that they may infect the cell elements of the part in which they are arrested. Let us for a moment compare this theory with the interpretation of facts suggested in the study of primary rectal growth. Lymphoid cells, offspring of the glandular epithelium of the intestine, are infected with the disease at birth. The function of such embryonic cells, if healthy, would have been to have passed through the lymph channels into the blood, and there to have circulated until required by some particular portion needing their assistance for repair, but owing to their alteration by disease they not only have great difficulty in passing along the lymph paths,

but when they succeed in doing so have a tendency again to become arrested in the fine structures of the glands. In the first instance their undue sojourn in the lymphatics in the immediate neighbourhood of their birthplace gives them time to develop into the more perfect type of cell, or even to a tissue similar to that formed by their parents, and the same development taking place when arrested in distant parts causes the formation of secondary growths.

The nature of the irritant infecting the cells is unknown, but seeing the increased prevalence of malignant disease in certain districts, it would appear to be from some cause originating external to the body, and to have a special affinity for certain structures, such as gland tissue, in the same way as particular galls only infect the leaves, bark, or root of the plant, according to their special variety.

The undoubted starting-point of malignant growths, especially in glandular structures, can from time to time be directly traced to some blow or injury, yet, as a rule, thousands of such blows or injuries may occur without being followed by any such result. But we can study an almost analogous process in the acute necrosis affecting the bones of children.

Hundreds of slight contusions of the periosteum may occur without producing acute pyæmic necrosis, but yet the starting-point of this grave disease can at times be clearly traced to such an accident. If the product of one of these acute abscesses be examined it will be found crowded with organisms, notwithstanding that no communication with the air previously existed.

Such a phenomenon can, I think, only be explained upon one hypothesis—viz., that such organisms, by absorption, find their way into the blood, and whilst still circulating within the healthy tissue are incapable of multiplying or doing harm, but when in damaged tissue they become stationary by extravasation as the

result of a blow, they immediately become active, and produce the phenomenon of sub-periosteal abscess or pyæmia.*

In cancer no parasite has been discovered by the microscope, but this is no evidence whatever of its non-existence, for it must be borne in mind that it is only within the last few years that even the larger microscopic organisms have been detected, and some of these would never have been suspected had not their movements attracted attention in recent specimens. The myriads of minute specks of granular material seen by the microscope, when examining a section of malignant disease, might contain any amount of organisms which, at present, are incapable of recognition.

Since writing the foregoing in 1880, some most valuable investigations† with a view to the discovery of the cancer organism have been carried out by Messrs. Ballance and Shattock, D'Arcy Power, and others. At present their experiments have led to a merely negative result, but such accurate and patient work will doubtless clear the way for future investigation.

If cancer could be propagated from one person to another, it would support the view that one of its causes may lie in some specific contagion. Hitherto, all direct experiments with a view to inoculation have failed; but yet, when we read the accounts of these experiments, they merely prove that when a portion of a tumour, or of its secretion, is inserted *beneath* the skin of an animal, the results are negative. If portions of the disease could be kept sufficiently long in contact with an *epithelial*

* Some time after advancing the above theory as to the cause of pyæmic abscesses occasionally following blows, the view has been confirmed by actual experiment. Rocher performed the following experiment. Healthy dogs were fed on the flesh of animals dying from septicæmia, with no apparent deleterious effect. The periosteum in some of these animals was subjected to contusion without any skin wound being made. Abscesses of a pyæmic nature rapidly developed at the site of injury, the animal dying subsequently of general septicæmia, the original abscess being crowded with organisms.

† "Path. Soc. Trans.," London, vols. xxxviii. and xxxix.

structure, there is reason to suppose that inoculation would take place. Such an experiment is occasionally carried out by nature, as in the instance narrated on p. 295. The fact that when sound epithelial tissue is kept in constant contact with malignant disease, it becomes infected, lends no small support to the view that the poison in at least some cases of cancer may prove to be of a parasitic nature.*

* The foregoing chapter was written sixteen years ago for the third edition of this book. Since that date many of the ablest minds of the day have been working constantly on this subject, but still the practical advance in the knowledge of the causes of cancer have been very small, the most important being the demonstrations by Professor Jensen of Copenhagen, that the disease can be transmitted to animals by inoculation. In this country, admirable work has been done by Dr. E. F. Bashford, of the Cancer Research Laboratory. Under his able directorship, a large mass of facts have been carefully collected, the analysis of which will surely bear fruit in the near future.

CHAPTER XVII

PATHOLOGY OF RECTAL CANCER

I NOW pass away with some satisfaction from the unsafe region of theory; for I feel that this problem of cancer is not to be solved by speculation on ill-considered hypotheses. Physicians from the earliest dawn of medical science have been busied in speculating on this problem, and yet have scarcely advanced a step in its solution. In recent years some progress has been made in our knowledge of the structure of the tumour, but such knowledge has only been arrived at by the aid of microscopic examination. If knowledge of the disease is to advance, it will be by the continuation of this process of investigation, aided by clinical observations and accurate experimental research. With this view, in the following pages I will give the results as briefly as possible of the histological characters of malignant growth as found in the rectum. The observations made are fragmentary and imperfect, but I venture to give them in order to compare notes with other workers in the same field.

Malignant disease of the rectum has enjoyed its full share of classification. Its nature has been described under the heads of scirrhous, medullary, and epithelial cancers, sarcomas, round and spindle-celled, myxomas, adenomas, &c., while the innocent tumours have been described as villous growths, papillomata, and polypi.

The older writers founded a simple classification,

according to their clinical experience, of these growths, and were content with two varieties—cancer (malignant growth) and polypus (an innocent formation). This classification into simple or malignant growths is of considerable clinical value, but it assumes too much, and draws too hard a line between the two varieties of tumour. For, notwithstanding that, in a large number of cases, the future of the disease can be certainly predicted, there remain a certain number of growths whose malignancy is of such a modified type that it is impossible accurately to forecast their future behaviour. They form, as it were, the connecting link between the malignant and innocent disease, but yet are not provided for in either nomenclature.

Recent attempts to define these growths according to their minute anatomical structure are certainly more scientific, and, if only accurate, would form no cause of complaint. In the rectum, however, to which the present observations are confined, I have failed to discover any growths or tumours consisting entirely of the characteristic structure which pathologists designate as scirrhous or medullary cancers, or as belonging to the different varieties of sarcoma, with the exception of melanotic sarcoma of anus.*

Considering the eminence of many careful observers †

* *Case of Melanotic Sarcoma of Rectum and Anus.*—Marian H., aged thirty-nine, admitted into President Ward, St. Bartholomew's Hospital, May 16, 1895. For the last six months noticed some blood with the motions, and pain at the anus. Three months ago, for the first time, when straining at stool, "a lump came down," and has done so each time she goes to stool ever since. A few days ago she could not return it, and was admitted into the hospital. Examination showed just within the anus a hard movable mass the size of a big walnut, projecting into the bowel, and two or three black growths the size of peas just at the anal margin, but not connected with the larger tumour. The nodules and larger tumour were removed in one piece. The tumour had a papillomatous surface, and was almost black in colour, but soft to the touch. Microscopic examination showed both the large and small tumours to be melanotic sarcoma.

† Dr. Ball, of Dublin, in his work, "Diseases of the Rectum," p. 219, states that in the Museum of the College of Surgeons of Ireland are two specimens of sarcoma of the rectum. He also records an interesting case of melanotic sarcoma under his care.

who have applied such names to these growths, it would be quite unjustifiable to assume that such distinctive structures never form the entire bulk of the tumour; but I feel bound to state that with, perhaps, a more than average opportunity of examining such growths from the rectum, I have been unable, with the exception of melanotic sarcoma, myself to discover tumours composed entirely of the distinctive features appertaining to these diseases.

It must not be supposed that all these growths have a similar structure. On the contrary, it is seldom that any two accurately correspond in their construction, but such differences as exist depend rather upon the details of the growth than on any difference in the general plan on which it is formed. The length of time that the tumour has existed, the particular tunic which it has invaded, or the portion of growth from which the section has been cut, are sufficient to account for the varying appearances obtained by the microscope without the assumption that different types of the disease exist. For instance, I have seen growths which, while confined to the mucous membrane, displayed the most typical microscopic characteristics of adenoid or cylindrical cancer, yet, when they had spread to the skin of the anal margin, they gradually and imperceptibly changed their characters into perfect examples of epithelioma as it ordinarily affects the skin (*see* Plate XIII.). It not uncommonly occurs that the particular features supposed to be characteristic of each type may be observed in the several portions of the same specimen, or that a tumour which, on its original removal, presented one variety, will on its recurrence present another.

Excluding the form of cancer known as colloid, as to the nature of which I am not altogether satisfied, it will be found that there is one characteristic structure common to almost all morbid growths in the rectum. This structure consists of gland tissue similar to

Lieberkühn's follicles. By careful examination this tissue can be demonstrated in almost every specimen, but yet now and again search fails to disclose this gland tissue. These exceptional specimens usually present dense fibrous tissue, with only a small amount of cell element; but a considerable amount of such structure is always found in the older parts of typical glandular growths, where it can be demonstrated to be in direct continuity with, and to be formed from, the adenoid tissue. It is probable, therefore, that in the exceptional specimens either glandular growth existed in other portions of the specimen, but escaped detection, or that it had been present in an earlier stage of the growth, but had passed away before the specimen came under examination.

If these growths are to be named according to their anatomical structure, the term adenoid will appear to be the most applicable.

Such expressions as malignant, semi-malignant, or simple adenoid, would, moreover, be sufficiently distinctive for surgical purposes, and at least have the merit of being in accordance with clinical and histological observation.

It is generally easy for a surgeon of experience to determine, as the result of clinical observation, whether a growth in the rectum be of an innocent or of a malignant nature. Occasionally, however, the characters of the disease are not sufficiently marked to admit of a positive prognosis. The quickly growing tumours, or those which have deeply eaten into the surrounding texture, are almost certainly malignant, while the more slowly developed growths projecting into the rectum, without extending into the deeper tissues, are generally innocent.

Growths will be found occupying, as it were, a position in regard to their clinical features midway between the extremes mentioned. Such growths admit only of approximate prognosis, as their features tend

more or less in the direction of the innocent or malignant type.

Seeing thus, that from clinical observation it is possible to speak with considerable certainty as to the future of rectal growths, the question naturally arises whether the anatomical structure when examined by the microscope presents any constant appearances by which a malignant may be distinguished from an innocent tumour.

Although, as before stated, these growths are all constructed upon the plan of glandular tissue, yet I have no hesitation in affirming that it is generally possible to find appearances presented under the microscope by which the innocent or malignant nature of the growth can be established. However, just as in clinical observation so under the microscope, there will still remain specimens in which the structure presented lacks the distinctive feature common to either of the pronounced types.

In commencing a description of these growths it may be well briefly to call attention to the typical appearance both of an innocent and malignant specimen without attempting to describe intermediate links.

The innocent growth forms a soft tumour projecting into the cavity of the bowel. It sometimes has a fairly marked pedicle, especially if the growth has existed any length of time, but this pedunculated appearance is generally produced by the mass being constantly dragged upon during efforts of defæcation, and thus drawing down the healthy mucous membrane around the base of the growth so as to produce the appearance described. These growths have already been described in the chapters on Polypus and Villous Tumour.

The malignant growths present two well-marked varieties, the chief characteristic of the one being its tendency to spread as a thin layer between the mucous and muscular coats of the bowel, while that of the other

is to increase more uniformly in all directions, thus producing a distinct tumour.

The laminar form of disease is the commoner, and when well marked exists as a thin layer of adenoid growth spreading in a horizontal plane between the mucous and muscular coats. The thickness of the growth is often not more than a quarter of an inch, while its area may extend over several square inches. At an early stage it feels like a flat foreign body between the mucous and muscular coats, slightly more raised at the centre than towards the circumference. The mucous membrane is firmly attached to the subjacent growth, while this in its turn is adherent to the muscular coat; it appears, in fact, as if the inter-fibrous bands naturally running from one coat to the other, had been rendered tight by the deposit of new growth between the fibres. The diseased portion of bowel is, as a whole, at first fairly movable upon the surrounding structures.

As the layer of the disease spreads it is not always in a regular manner; it usually extends more rapidly laterally than in the direction of the long axis of the bowel. The result of this lateral extension is often seen by the whole circumference of the bowel being affected, while the width of the ring of disease is less than an inch. It is this form of disease which constitutes the annular malignant stricture so common in the large intestine, and most pathological museums afford specimens of this annular form of cancer.*

The deposit having existed a certain length of time ulceration of the mucous membrane over its centre takes place, and the membrane is generally slowly destroyed from the centre towards the circumference. Sometimes the ulceration of the mucous membrane commences at many points at once, so as to give it a honeycombed

* In the Middlesex Museum will be found two beautiful specimens; they stand side by side, and are numbered 116 and 117, Series 8.

appearance, and the growth can be seen projecting through these holes in the mucous membrane (*see* Fig. 26, p. 315), but this is not common. After a while, instead of the centre of the growth being its most prominent part, it becomes excavated and depressed by the ulcerative action that commences in the mucous covering and extends to the disease, which in its turn becomes eaten away. At first the base of the ulcer will consist of the adenoid growth; as this gets completely destroyed the base of the ulcer is formed by the remains of the muscular coat, generally blended into a firm, hard cicatricial tissue. The dense mass thus formed appears to be in great measure due to inflammation set up beneath the ulcerated surface, for under the microscope it resembles an inflammatory rather than a malignant deposit. Towards the edge of the ulcer the new growth, with the hypertrophied disintegrating mucous membrane lying over it, is apparent. The edge of the ulceration is hard and raised, and often overlaps the healthy mucous membrane. It sometimes happens that after the destruction of the mucous membrane, instead of the subjacent adenoid growth sharing the same fate, it continues to increase, especially at certain points, and projects as a fungoid mass into the bowel cavity.

On section the borders of the diseased patches will be found raised a quarter of an inch above the level of the neighbouring bowel, overlapping the surrounding healthy membrane to a considerable extent. This heaping up is caused by a soft, flocculent-looking growth in the submucous tissue.

The portions of the muscular coats subjacent to the diseased mass are considerably altered. They appear at first sight to be greatly thickened and intersected by dense, glistening, fibrous bands. These bands blend in a dense mass of cicatricial-looking fibrous tissue, situated external to the muscular coat, and thick bands again pass out from this and are continued

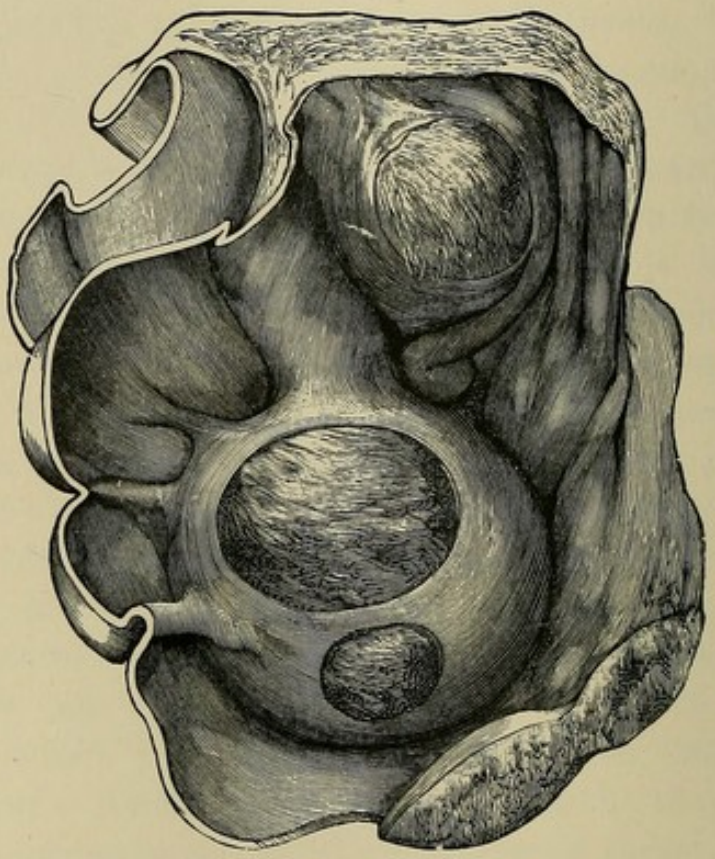
into the surrounding fat, being imperceptibly lost by a gradual blending with the natural fibrous stroma of that tissue.

On a more minute examination the mucous membrane on the portion destroyed by ulceration is found thickened by a large accumulation of hypertrophied papillæ, looking much like the circumvallate papillæ of the tongue, giving a villous velvety appearance to the membrane. Beneath this hypertrophied membrane is a large quantity of retiform tissue, in the deeper portion of which is found the new adenoid growth, consisting of a soft, caseous material, dipping down here and there a considerable distance towards, and even between, the muscular fibres (*see* Plate I., Fig. 4.) The portions that dip down are seen to lie between the glistening white fibres already alluded to as intersecting the muscular coat. These dipping portions sometimes expand at their extremities so as to have the appearance of inverted flasks, and in places are distinctly lobulated. The little masses are only loosely adherent to the walls of the spaces in which they lie, and when picked out with the point of a needle the cavities in which they were contained are smooth. The boundaries of these cavities are the glistening fibrous tissue before mentioned (Plate VIII., Fig. 1).

As the adenoid growth extends downwards, it takes the place, and causes the absorption, of the bundles of muscular fibres lying between the fibrous trabeculæ; the trabeculæ themselves, however, instead of being destroyed, appear to become greatly thickened.

Beneath the central or older portions of the growth, the muscular coats are replaced by dense white fibrous tissue, the result of enormous thickening of the natural fibrous tissue between the muscular fibres. The thickened fibrous tissue extends beyond the muscular plane, and branching into the surrounding fat blends with its fibrous

FIG. 26.



MALIGNANT TUMOUR OF THE INTESTINE.

A malignant tumour, which has raised the mucous membrane and projects into the cavity as a nodule the size of a pigeon's egg. On the surface of this nodule the mucous membrane has been destroyed in two small circular patches, one the size of a sixpence, the other about a quarter as large. At these spots the growth, relieved from pressure, slightly projects, but is rather smooth than fungating. There are two smaller nodules in this specimen about half the size of the one described; over these the mucous membrane is still intact.—Drawn from a specimen in the Royal College of Surgeons' Museum.

To face page 315.

stroma. These branching fibres undergoing contraction draw the fat and neighbouring tissues towards the diseased portions. If an attempt be made to dissect the coats of the rectum, the one from the other, in the neighbourhood of the disease, it will be found scarcely possible to do so, for each coat seems firmly blended to its neighbour by the great thickening of the connecting fibrous bands.

What has just been described is the appearance seen on section of that form of disease which tends to spread horizontally. We will now consider the disease when it forms more or less a distinct tumour. This second variety commences in a similar manner to the one just described, that is, as a deposit between the mucous and muscular coats. The deposit is generally at a single spot, but there may be several nodules sprinkled over a considerable area. Instead of the growth extending in a thin layer between the coats it increases in size pretty regularly in all directions, and forms a distinct oval or circular tumour projecting into the bowel cavity. Such a nodule may attain the size of a pigeon's egg, or even larger, yet still retain an intact mucous membrane over its surface. But the mucous membrane will, after a while, give way (*see* woodcut), and the growth, released from pressure, quickly forms a fungating mass projecting into the rectum.* These tumours vary considerably in their consistency, some being so soft as to break down on the slightest pressure, while others are fairly firm.

* Specimen 1217, Royal College of Surgeons, is a good example of this form of growth at the time when the mucous membrane is just giving way. There is a tumour, which has raised the mucous membrane and projects into the cavity as a nodule, the size of a pigeon's egg. On the surface of this nodule the mucous membrane has been destroyed in two small circular patches, one the size of a sixpence, the other about a quarter as large. At these spots the growth, relieved from pressure, slightly projects, but is rather smooth than fungating. There are two smaller nodules in this specimen about half the size of the one described ; over these the mucous membrane is still intact. In the same museum will be found a specimen, No. 1221. This specimen (or rather specimens, for there are two in the bottle, the second and most interesting being placed at the back, so that it cannot be seen without turning

It will generally be found that the firmness of the tumour is in inverse proportion to the rapidity of its growth. Some of the rapidly growing tumours are so fragile that they fall to pieces on the slightest manipulation. On section of the firmer growths, bands of fibrous tissue can be distinctly seen by the naked eye. Such bands are scarcely visible in the softer growths.

It may be gathered from this sketch of the naked-eye appearances of adenoid rectal disease how different the appearance under the microscope would be according to the portion of the growth examined and the length of time it had been growing. Sections involving the older portions of the disease, and in which the adenoid growth has been destroyed by ulceration, would show little more than dense fibrous tissue, the result of a preceding active condition of disease, while sections from the margin would show the cellular growth, in varying stages of development towards adenoid structure, according to the rapidity of the growth.

In order to understand the appearances found in the morbid bowel, it is desirable to trace the disease from its very commencement, and follow its progress step by step.

Unfortunately the cases are rare in which the growth can be discovered at an early stage, and rarer still that

the bottle round) shows two forms of the disease in the same intestine. It is described in the catalogue as "a portion of the jejunum, on the inner surface of which is a flat tumour, superficially lobulated, occupying the whole circumference of the intestine for about two inches wide. The tumour has a soft obscurely fibrous structure, and part of the surface is ulcerated. On another portion of the same intestine a smaller nodule has been cut through, and its section presents a soft surface with long threads hanging from it." This nodule, which is as large as a plover's egg, projects into the bowel cavity like the half of a sphere. The peritoneal surface of the bowel is quite level and not pushed out by the growth. The mucous membrane is perfectly intact over the tumour: on section it looks like a collection of exceedingly fine vermicelli crowded and squeezed together; here and there a loop or end of one of these has been drawn out from the cut surface and hangs down like a fine coil of thread over an inch in length. Upon further examination, they are apparently enormously lengthened villi crowded and pressed together, but not adherent. Some of these are two inches in length, but retain a uniform thickness throughout.

opportunity is afforded for microscopic examination. There is no reason, however, to doubt but that the condition of the tissue found towards the advancing margin of the disease would supply good evidence of the condition we should have expected to have found at the precise spot where the disease commenced. In support of this view I have by me a specimen in which the disease had only existed a few weeks, and its section has much the same appearance as seen in sections cut near the border of more advanced disease. In this specimen the disease had not advanced farther than the development of a portion of mucous membrane, a quarter of an inch in diameter, into a villous-like structure, while the subjacent retiform tissue was considerably thickened and crowded with lymphoid cells, the muscular coat being normal. The evidence afforded by this specimen, together with others at a more advanced stage, shows that the morbid action commences in an increased activity of growth in a portion of the mucous membrane.

Having briefly considered the naked-eye appearance of the growth, the use of the microscope is necessary for its further elucidation. The powers I have found most convenient in examining sections under the microscope are a one-inch for a general view of the section and one-ninth for studying the same in detail. Satisfactorily to understand the position of the growth relative to the natural structures of the part, the composition of its elements, and its method of extension, it is necessary to examine many sections cut from different portions of the morbid mass. The appearances presented by such sections will vary greatly, not only according to the portion of the growth from which the section has been cut, but also according to the variety of adenoid disease from which it has been selected.

The drawings illustrative of this portion of the subject

are from sections chosen from many thousands cut from different portions of sixty separate specimens. I have taken every care to draw the specimens exactly as they appeared in the field of the microscope, and the lithographs are exact copies of my drawings.

Plate IV. represents a section of the laminar form of disease. It has been cut at right angles to the bowel cavity, close to the margin of the growth, before the superjacent mucous membrane had been destroyed by ulceration. The section displays the mucous membrane and the new adenoid growth in the submucous tissue. The follicles in this portion of mucous membrane are three or four times their normal length. Their diameter, however, is but slightly increased, their lining epithelium is large, the boundary line between the cells being very clearly defined. The bed of retiform tissue upon which the blind extremities of the follicles rest is enormously increased in thickness, and it is in this bed of tissue that the new adenoid growth is apparent, but, as seen in the figure, there is considerable distance between the bases of the normal follicles and the new glandular growth, the intervening space being crowded with a mass of small cells. There is no clear line of demarcation between the lymphoid cells of the submucous tissue and the new adenoid growth. At the upper portion of the section the submucous tissue appears crowded with the simple lymphoid cells; in the lower portion most beautiful glandular tissue can be seen almost as perfect in its formation as the normal Lieberkühn's follicles. The change from the lymphoid cells to the gland tissue is by imperceptible degrees. If the lymphoid cells be followed downwards towards the growth, they appear as if they slowly change their character from a simple lymphoid into an epithelial type of cell. It looks, indeed, very much as if the small lymph-cells gradually surrounded themselves with protoplasm, and thus became the nuclei of epithelial cells. Anyhow, the more nearly they

approach the growth the more epithelial is their character. Almost immediately after the epithelial type of cell can be recognised small embryonic-looking portions of gland tissue can be seen. These little bits often consist of four or five embryonic-looking epithelial cells arranged in a cluster. At first the acini are difficult to make out, owing to their being irregularly and indistinctly marked, but they gradually merge into the perfect and regular adenoid structure seen in the plate.

This adenoid tissue, as seen on section (Plate VIII., Fig. 1), consists of a series of cavities divided from one another by fibrous tissue. In some places the fibres of this tissue are close together, forming dense bands. In other places they open out, forming a loose retiform network. The cavities vary in shape from perfect circles to long irregular channels with various inlets. These spaces are lined with a single layer of epithelial cells. The bases of these cells rest upon the fibrous or retiform tissue before mentioned, while their apices look into the cavity. Cavities, however, do not always exist; they are exceptional, for it seems that the apices of the cells covering one wall of the cavity are in contact with the apices of those of the opposite side. In some instances the cavities are obliterated by the opposite walls coming into contact as if from external pressure; in others they become filled by offshoots growing from the epithelial boundary of their walls.

These offshoots frequently show a beautiful tree-like arrangement, the original stalk throwing off secondary and tertiary branches. The stalk and branches consist of retiform tissue, the surface of which is covered with epithelium (Plates V. and VII.). In this way the interior of many of these cavities is completely filled with adenoid tissue. However complicated be the pattern formed by the crowding together of these branches or convolutions, every branch, whether it be primary, secondary, or tertiary, will consist of its central stalk of retiform

tissue, upon which the epithelium is arranged in a bipenniform manner—*i.e.*, bipenniform as seen on section, for if the whole thickness of the branch could be seen it would, of course, be entirely covered by epithelium. In examining the tumour as it extends into the deeper tissues, it must be remembered that it is not merely the new growth that is seen, but it is the new growth *plus* the remains of the old normal structures into which it is growing, and partially displacing. Thus the growth has not the same regularity of structure as when growing unimpeded on the surface. Here and there bands of thickened fibrous tissue can be seen, which represent the connecting links which normally exist between the muscular and mucous coats. These bands seem to have offered obstruction to the advancing growth, which has insinuated itself around or between them, and thus become very irregular.

In order to understand the true arrangement of tissue belonging to the new growth, a specimen must be selected which is growing unimpeded into the cavity of the bowel. Before, however, cutting such a specimen into sections, the free surface immersed in spirit should be carefully examined with direct light by a two-inch power. The surface of some of the tumours thus viewed has a very remarkable appearance, resembling an ant-hill thickly studded with fungi. Upon closer inspection these bodies are seen to be projections from the surface of the tumour. Some are mere asparagus-looking spikes, while others are thin broad leaves arranged like those of an artichoke.

On cutting the tumour into fine sections, the appearance presented beneath the microscope will depend upon whether the section has been made parallel with or at right angles to the growing surface. If cut in the first direction, a beautiful network of circular, oblong, or irregular cavities will be seen. Some are open, lined by a single layer of epithelium ; others are filled by secondary

offshoots. The groundwork between the spaces consists either of a delicate open tissue filled with leucocytes, or of fine bands of fibrous tissue (Plate VIII.).

In viewing such a section it must be remembered that it represents but an isolated slice from a beautiful and complete structure, in order to understand which sections must be made so as to include the free or growing margins.

If such a section be made and examined by the microscope, it shows very clearly the structure of the projections already mentioned as growing on the surface.

The degree to which these projections are developed varies enormously in different tumours. In some they are so highly developed as to cover the whole surface of the tumour with an infinite number of almost tree-like projections, in which central stalks of fibrous or retiform tissue can be seen shooting upwards and sending off lateral offshoots on which the columnar epithelium is arranged in a bipenniform manner (Figs. 1 and 2, Plate V.); while in others, the projections are much more simple, amounting to little more than the raising of the epithelium into undulating ridges (Fig. 2, Plate VI.). Some of these projections, as shown in section, look like villous spikes, but it must be borne in mind that this appearance is produced by the specimens being thin slices, and, therefore, many of these spikes are but broad processes or leaves seen in section (Fig. 1, Plate VI.).

Both surfaces of each leaf consist of a layer of columnar epithelium, between which lies the retiform tissue forming the central portion of the leaf. In some places these leaf-like processes have a tendency to bend over towards each other at their margins; in others, the leaves curl upon themselves, their opposite borders coming into contact. Sometimes, however, each border curls upon itself like a dried-up leaf. In some, at one or more points, along their surface, little ridges appear, which in time become secondary leaves, and after a while behave in a

similar manner to the primary ones. These secondary processes always appear on the concave surface of the parent leaf, so that they often become enclosed by its advancing border. The secondary offshoots, just mentioned, throw off tertiary projections, so that ultimately an exceedingly intricate pattern is produced.

To understand the relation of the epithelium to the fibrous tissue we may regard the growth in the following light. A central stalk of fibrous tissue exists. This gives off secondary branches; these, again, sending off tertiary branches, and so on, till the ultimate fibres expand into a delicate retiform tissue on the surface of which a single layer of columnar epithelium is arranged, and thus the growth resembles a tree or any other complex form of plant life.

By reference to Plate VI., Fig. 1, the explanation of the cavities previously described, whether lying near the surface or far away in the substance of the tumour, and lined with epithelium, is apparent; for it will be at once seen that such epithelium was at a previous stage a portion of the surface of the tumour.

In a previous publication on this subject I stated my belief that these cavities were actually cut off from the surface by the arching over and subsequent coalescing of the cells forming the epithelial margin. As the result of further observation, I do not now believe that such spaces are in reality actually cut off by such coalescing, nor is it necessary that this should be the case to account for these cavities. It is probable that the epithelial lining of such a cavity is still in continuity with that on the surface through intricate and convoluted folds. These cavities in the tumour, far away from the surface, become filled with secondary growths by a means precisely similar to the extension of the growth on the surface.

The method by which the free epithelial border extends should be studied under a high power. The process is as follows:—At one or more points along the border

the epithelial cells increase in length, so that they stand out like a small bud beyond the heads of their neighbours.

If such a bud be closely examined it will be seen that the two central cells forming the group act as the leaders of the growing branch. At the same time it is seen that these lengthened cells are in an active state of generation, and appear as if multiplying by cleavage of their extremities (Plate VII.). As new cells are progressively formed they bend over, and gradually assume a direction at right angles to the line between the primary cells. The line of junction between the walls of the two original cells, which at first was barely visible, becomes more strongly marked, assuming a distinctly fibrous character, and increases in thickness at the expense of the cell contents. After a while, small dark cells appear in the very centre of this line, as if they were again separating the bond of union by which the two contiguous cell walls had united to form the original fibre.

Such cells become vacuolated, and the central line becomes a channel. In time a considerable amount of retiform tissue is formed in the centre of the growing leaf. It would appear as if the fibres of this tissue were formed from what is left behind of the walls of the epithelial cells, that is to say, if the line of junction between any two of the contiguous cells forming the surface of the branch were followed inwards it would be continuous with the fibres of the retiform tissue (Plates II. and X.).

The formation of fibrous tissue has long been a vexed question with physiologists, the prevalent opinion being that it is a formation from connective-tissue corpuscles, and that when found in new growths it is an extension upwards from pre-existing connective tissue. Its formation in health will not be here considered, but in the morbid tissues under consideration I believe that it admits of positive demonstration that it is in great measure derived from the walls of the epithelial cells.

The connection between the fibrous and the cellular elements in any given portion of a morbid growth is not easily traced. The stages of the transformation of the one into the other have passed away, leaving a more or less perfectly formed tissue as a result.

On the margin of a growing tumour, or in the normal tissue, increasing more actively than usual in its immediate neighbourhood, a definite relation can be traced between the cell growth and the fibrous tissue formation; and it is a fair inference to assume that the fibrous tissue of the deeper portions has been produced by a similar process.

The large and clearly defined columnar cells found lining the acini of adenoid growths in the rectum afford singular facilities for tracing the formation of intercellular fibrous tissue.

Almost every writer upon gland structure has assumed the existence of "basement membrane," upon one surface of which are the epithelial cells, and upon the other the retiform tissue, the cells being kept in position by the adhesion of their bases to the membrane. Granting for a moment that a clearly defined line can be seen in some sections lying between the epithelial cells and the subjacent tissue, it does not necessarily follow that such a line is a section of a thin membrane independent of the cells. Such an appearance may be produced by the bases of the cells resting on the same level, and being cut on the same plane. If a section be made of a portion of a bee's honeycomb an analogous line can be seen running down its centre, marking the boundary between the cells of opposite sides, but yet it admits of clear proof that such a line belongs to no independent structure, but is produced by the bases of contiguous cells, each of which participates in its formation.

Now, this fibrous line, supposed to mark the existence of "basement membrane," is frequently absent if the

section be cut exceedingly fine in a direction parallel with the long axis of the cells, and direct continuity can be traced between the fibres of the retiform tissue and the lines between the epithelial cells.

In Plate VII. and in Fig. 2, Plate X., such continuity is seen. It remains, however, to be shown that the fibres are formed from the cell wall rather than by an extension upwards of pre-existing fibrous tissue.

If sections be made in such a way as to cut the growing cells across close to their apices, the lines marking the contact of the cells with one another will show as a fine hexagonal network. This hexagonal network must inevitably be the form taken by soft cylinders in contact with each other (Fig. 20, Plate II.). If a second section be made, nearer the bases of the cells, the hexagonal network will have assumed a circular form, the lines forming it being considerably thicker than those of the first section, the cavities being correspondingly smaller (Figs. 21 and 22, Plate II.).

It is impossible to doubt that the fine lines described in the first section are due to the thickened outline of the protoplasm of the cells, for the same appearance is produced in every cellular effusion.

It can, moreover, be shown by vertical sections (Fig. 4, Plate III.) that the fine network just described, formed by the apices of the epithelial cells, is in direct continuity with the thicker lines seen in the second section, and beyond these with the subjacent fibres of the retiform tissue. If, therefore, it be accepted that the epithelial cell wall and terminal fibre of the retiform tissue be one and the same structure, it would be a fair inference to draw that the deeper part of the same fibres had a similar cellular origin.

In examining various cross-sections of epithelial cells, it will be seen that the original fine hexagonal network does not undergo an equal thickening in all its parts, for it is at the angle of the hexagons that the greatest

thickening takes place, and on this account the circular form of the spaces is gradually assumed.

The hexagonal or circular outlines are often very irregular, as the result of unequal pressure from various quarters. In some sections, such a network has an appearance strongly suggesting the idea of a series of stellate cells, anastomosing by their processes. This delusive appearance is occasioned by the processes of the supposed stellate cell, being, in fact, portions of the circumference of pre-existing cells; the body of the supposed stellate cell being the point of greater thickening, where four or more ordinary secreting cells come into contact (Figs. 24 and 25, Plate II.).

I must confess to some difficulty in understanding the existence of stellate cells. I have never seen one isolated, and it is difficult to conceive that, if the fine lines radiating from such cells be in reality hair-like processes, how it comes to pass that a razor should happen exactly to catch many such processes on a plane so precisely parallel as to show them on section anastomosing across from one to the other. On the other hand, if these supposed processes were membranous walls of other cells, they would always show like fibrous lines in whatever direction the section was cut.

Believing the fibrous tissue to be the permanent refuse, so to speak, of pre-existing cells, the appearance it presents in these morbid growths will be briefly described.

It is first clearly recognised as an open network at the bases of the epithelial cells under the name of retiform tissue.

If the fibres of this tissue be traced downwards from the surface to the deeper parts, it will be observed that the majority of the fibres gradually converge, and coming in contact form bands of fibrous tissue of greater or less thickness. All the fibres, however, do not thus converge, for occasionally, instead of coming in

contact, they form boundaries to well-marked spaces or channels.

Now and again, fibres, forming a bundle, once more spread out in an open network.

Bearing in mind that the examination of this retiform tissue is by thin slices only, it is at once suggested that the appearance presented is not the result of a simple network of fibres, but may be due to a series of convoluted channels, the fine walls of which, on irregular section, give the appearance of a fibrous network. The convolutions of such channels would in great measure account for their not looking like tubes on section. Occasionally, however, a very suggestive appearance is produced in the retiform tissue lying between two adjacent follicles, and instead of a haphazard-looking network, the fibres are arranged in two or three concentric circles, between the lines of which a single layer of lymphoid cells lying in contact with each other can be seen as if contained in a definite canal.

If the retiform tissue is really a series of channels, each channel would appear to commence at the base of a glandular epithelial cell, and such a cell must be regarded as the active living root of the lymph system. If the retiform tissue is really a tubular structure some of the channels become obliterated by their opposite walls coming in contact, as if by stretching, while others dilate into large lymph spaces.

I will now glance briefly at some of the leading characteristics of the cell elements found in these growths. These cells represent extraordinary variations (*see* Figs. 1 to 12, Plate II.).

One of the most prominent features of these morbid cells is their large size. Whereas the normal glandular epithelium is seldom more than $\frac{1}{1000}$th of an inch in length, many of the cells in question are at least ten times as long, some of them of such a size, in fact, as to be almost visible to the naked eye.

On the surface some of these cells resemble tubes $\frac{1}{100}$th of an inch in length, but not wider than the $\frac{1}{800}$th of an inch. The line of contact between the adjacent cells is very clearly marked. In some parts, these tubular cells are filled with a faintly staining, homogeneous, granular material, without the slightest trace of nuclei. They appear, in fact, to be barren cells, like pods without peas. In others, again, all the cells are nucleated. Some contain two or three nuclei arranged equidistant apart between the summit and base of the cell. In these circumstances the cell wall bulges opposite the nuclei, with corresponding hour-glass constriction between the nuclei.

The nuclei in these multi-nucleated cells are so arranged that the bulging portion of one cell fits into the hour-glass constriction of its neighbour, so that every alternate nucleus only is on the same level.

Another form of cell, especially in the growing buds, is where the lower or attached half of the cell is narrowed to the finest tube or line, but its outer half forms an oval bulb, which contains the nucleus. Sometimes the condition is reversed, the outer portion of the cell being reduced to a narrow tube, the nuclei being contained in the bulging portion at its base.

The tubular cells just described are met with in the chronic forms of adenoid tumour. In the more rapid growths the cells are of a more spheroidal shape and more irregular, presenting every grade of variation between a lymphoid and an epithelial type.

On page 323 the development of the leaf-like offshoots by the progressive formation of epithelial cells has been described. If, however, we more closely examine the club-like extremities of these growing buds, it will be seen that the young epithelium is first represented by a little projecting mass of protoplasm closely resembling a leucocyte (Plate VII.), and that the epithelial type of cell is subsequently assumed by this little mass remaining

as a nucleus, and surrounding itself with a material staining more faintly. It thus appears that a young columnar epithelial cell on its first emerging into distinctive life bears a closer resemblance to a simple leucocyte than to its own epithelial parent.

The method has already been described by which the tumour extends on its free surface, and it has been shown that it does so by a progressive development of its epithelial border.

The view is commonly held that the growth advances into the deeper tissues by a similar process, and that it is by a downward prolongation and branching of the follicular crypts that the epithelial growths are formed in the deeper parts.

That this is one method by which the tumour extends into the deeper portions I admit, but that it is the only, or even the commoner, method of extension is doubtful. Until quite recently, I had never been able directly to trace this downward extension, but a specimen has recently come under observation in which something like direct continuity can be traced between the surface follicles of the mucous membrane and those in the body of the tumour. As a rule, however, careful search fails to show any such connection.

Notwithstanding the inability to trace this downward growth from the surface, such continuity might have existed, but yet have remained undiscovered in the sections. It is possible that such a downward dipping might have begun at a single point, and then have spread horizontally like an inverted mushroom. In such a case the connection could not have been demonstrated save in a fortunate section through the connecting pedicle itself. Seeing the destructive process which occurs in the older portions of these growths, such a pedicle would probably have disappeared before the specimen came under observation.

It is certain that these growths must have other

means of development in addition to direct extension by continuity of their epithelial element, otherwise the development of morbid adenoid tissue in isolated patches on the peritoneal coat of the bowel, or in the internal organs, could not be accounted for. It admits of demonstration that these separate points of disease are not directly connected by continuity of epithelial tissue with the primary growth.

Again, when we come to examine under the microscope the line of demarcation between the morbid growth and the tissue which it is invading, we generally fail to find a clear epithelial border marking the boundary. In the more chronic growths a line of fairly formed epithelium may occasionally be seen marking the boundary, but this is not generally the case. For if a section be cut through the new growth, extending into the healthy submucous tissue, it will be seen that there is a kind of no man's land intervening between the growth and the normal tissue. This is infiltrated with a cloud of cells.

The cells forming the extreme border of this infiltration differ in no way from ordinary lymphoid cells, but as they are traced towards the growth they are seen gradually to become larger, and to assume a distinctly epithelial type. These in their turn gradually assume the appearance of an ill-marked adenoid tissue, which in time assumes a more definite type.

In short, the appearances suggest that the growth increases by the gradual conversion of the lymphoid cells on its border into adenoid tissue, and that the source from which these lymphoid cells are derived is the epithelium of the growing tumour, a portion of them gradually developing into the likeness of their parents causing the extension of the growth.

I have already described, on page 16, how the growth invades fatty tissue—viz., by the infiltration of a layer of leucocytes between the fat cells, and by these leucocytes gradually assuming an epithelial appearance.

It may be asked whether the foregoing description applies equally to the rapid-growing malignant disease, which runs its course in a few months, as to the more chronic form, which may be some three or four years in progress before producing a fatal result. A further question also arises as to whether the microscope will afford evidence whereby the slow-growing malignant adenoid tumours can be distinguished from the innocent forms of villous tumour and polypi.

In answer to the first question, I would state that the plan and structure of the growth is similar, but the more rapid and malignant is the growth the less perfect and complete is its structure. If, for instance, under a low power, we examine a section, such as is seen in Plate IX., Fig. 1 (which was a rapidly recurrent tumour that had attained a considerable size in a few weeks), we can there trace the whole outline of an adenoid growth; the various convolutions can be made out, the epithelial, fibrous, and retiform tissues can all be seen in their relative situations, but yet nothing is distinct or clearly defined, and it looks as if the specimen was seen through a thin veil. Upon examining the minute structure under a higher power, the want of definite formation becomes still more apparent, for, instead of the epithelial lining showing well-marked cells, it has rather the appearance of a band of darkly stained protoplasm, indistinctly striated at right angles to its length, and well sprinkled with nuclei (Plate IX., Fig. 2.) If we examine the tissue lying between these vaguely marked epithelial cells, instead of the retiform and fibrous tissue of the more chronic growth, we find embryonic-looking oat-shaped fibrous tissue cells with little or no definitely formed fibrous tissue. An appearance exactly similar to the so-called spindle-cell sarcoma is produced, but the identity of this sarcomatous-looking material with true retiform or fibrous tissue is established, beyond doubt, by following a track of it in the direction of the base of the growth,

where its real nature gradually becomes apparent as it merges into well-marked fibrous tissue.

Not uncommonly in a single growth may various degrees of development of the adenoid tissue be found, from portions so embryonic as scarcely to be recognisable, to others in which well-marked glandular tissue is apparent. Again, a growth which upon its first removal showed well-formed glandular structure, upon its recurrence often shows a tissue of a much more embryonic character.

When embryonic adenoid growth can be recognised under the microscope, it invariably means that the disease will be rapid in its progress.

In answer to the question as to the difference between the slow-growing adenoid cancer and innocent tumours, I have no hesitation in saying, notwithstanding the close resemblance between the two, that they admit of differentiation by the microscope. In innocent growths the arrangement of the branches is far more regular (*see* Plate V.) than in adenoid cancer; while, at the same time, both the fibrous tissue and epithelial cells are more clearly defined.

If a section can be obtained extending through the base of the growth into the rectal tissues, all doubt can be set at rest. In innocent disease the muscular tissues of the bowel are *never* invaded, while in cancer the adenoid structure can be seen spreading into and between the layers of the muscular coats of the bowel. Indeed, I consider the essential difference between the two consists in the fact that the one grows outwards into the lumen of the bowel, while the other extends inwards into the coats of the intestine, or, in other words, that adenoid cancer is a polypus growing upside down (*see* case on p. 360). If, under the microscope, the muscular coats of the bowel can be seen incorporated into the growth, it is certainly malignant (*see* Fig. 4, Plate I., and Plates IV. and VIII.)

CHAPTER XVIII

SYMPTOMS OF RECTAL CANCER

Cancer of the rectum may occur at any age, but like the same disease in other parts of the body, is far more common in middle and advanced life than in young persons. Table B shows the number of cases at different periods of life. It will be seen that in only 10.8 per cent. it occurred in patients under forty years of age, the youngest case in Table A being fourteen, and the oldest eighty-four. As regards sex it is nearly twice as frequent in the male as in the female (*see* Table C).

Few diseases commence in a more insidious manner than malignant disease of the rectum. It is always difficult, and in many instances quite impossible, to obtain exact data as to the duration of the symptoms; nor is this a matter of surprise if the nature of the disease be considered. At one time a patient is absolutely healthy, at a later period as certainly diseased; the gradations between the two are by exceedingly fine degrees.

The earliest symptom of malignant, as of many other diseases of the rectum, is the consciousness of the patient that he possesses such a portion of the body. There is just sufficient uneasiness about the part to excite the imagination from time to time, this uneasiness seldom at first amounting to such distinct pain as to make the patient aware that there is anything actually wrong; sometimes there is merely a sensation of itching about the anus. As the disease advances symptoms

of a more definite character make their appearance; these symptoms are very varied. Speaking generally, and in typical cases, the discomfort gradually increases to a dull, heavy pain, especially noticed after exercise and at night. The fæces become streaked with blood, or covered with a white slimy matter. As time goes on, the symptoms of stricture appear, and calls to the closet become frequent. The motions come away in fragments, or, if cohesive, are small in diameter. At this period constipation may alternate with diarrhœa. The anus becomes excoriated, although not always so, and the linen is stained with a dark, offensive discharge. The patient has a constant feeling of the bowels being full and requiring evacuation. At times there is considerable tenesmus, the frequent calls to stool resulting in a blood-stained purulent discharge. The patient begins now rapidly to emaciate, the pain becomes more constant and severe, and he is much troubled with wind. Secondary symptoms begin to develop, the digestion is impaired, the legs swell, the liver, perhaps, becomes large and nodular from secondary affection. The patient gets worse, and gradually dies of exhaustion, worn out by pain and bleeding, or the fatal termination may be more abrupt by an attack of acute peritonitis, or of complete intestinal obstruction. From the commencement of the symptoms to a fatal termination, the time depends partly on the nature of the cancer, and partly on the age of the patient. In the Table of Cases, page 450, it will be seen that patients have generally had some symptom from six to twelve months before consulting me, and that the average of life in unoperated upon cases after my examination was about eight months. These facts point to about two years as the time in an average case for the disease to end fatally if left to run its course.

When soft and fungating, its course is more rapid than when spreading as a superficial ulcerating layer,

while the younger the patient the more quickly does the disease run its course. Thus, the most rapidly fatal case of which I have notes was that of a lad, aged seventeen, seen in consultation with Dr. Forbes, of Rock Ferry. The progress of the disease was so rapid in this case, that the period from the onset of the symptoms to the date of death was only eight months. As a rule, however, the disease destroys life between the second and third year after the onset of the symptoms, though occasionally life is extended to a longer period.

A gentleman consulted me in 1886 who two years previously, whilst staying at Leeds, had an attack of complete obstruction, and lumbar colotomy was performed by Mr. Pridgin Teale. A few weeks afterwards the motions again commenced to pass the right way, and the colotomy opening was allowed to close, and he remained in what he described as good health and little discomfort till about six months before seeing me. Since that time he has had an intermittent dull aching pain in the lumbar and sacral regions. He has also had a considerable amount of mucoid discharge occasionally stained with blood. On examination I found nothing left of the colotomy wound with the exception of a sinus which would just admit a slender probe.

On rectal examination a cancerous mass could be felt high up the bowel. After consultation with Mr. Teale I performed colotomy, and the patient lived in comfort for another two years, the date of his death being four and a half years after the first symptoms of obstruction.

To illustrate the general symptoms of rectal cancer I have selected the three following cases from my note-book.

The first illustrates a somewhat rare form, for the amount of disease in the bowel itself was very small, compared to that in the surrounding tissues; the second and third cases represent very common forms of the disease.

For the following notes I am indebted to Mr. Gillam:—A. H., admitted into the Great Northern Hospital early in 1877. No family history of phthisis or tumours. He had been a healthy man up to two years ago. At that time he first noticed an uneasy sensation about the rectum. This sensation scarcely amounted to pain, except occasionally on the passage of a constipated motion. After these sensations had existed some months, the patient noticed for the first time a little blood in the fæces. His linen, also, was occasionally blood-stained. At this time he consulted a doctor, and was treated for piles, but the symptoms remained nearly the same during the next twelve months. He then thinks that he caught cold; anyhow, the symptoms became, on a sudden, considerably aggravated. He suffered so much pain as to be kept awake at night, and had a good deal of diarrhœa. About a week after this attack he had a good deal of offensive blood-stained mucous discharge, but with this discharge the pain became less. The discharge has continued ever since, but only in moderate quantity. For the last six months he has had considerable trouble with his motions, and has taken much purgative medicine. The motions have been getting smaller, being scarcely thicker than the little finger, and always passed with difficulty. On admission into the hospital he was weak and much emaciated, with a sallow, jaundiced appearance. He complained much of a burning pain in the region of the coccyx; this was always worse at night, depriving him of sleep. There was only a small amount of discharge from the anus. For two or three consecutive days he would complain little of pain during the day. At other times he would suffer more, and be much tormented with a constant desire to stool. The pain was not aggravated on passing a motion, after which, indeed, he often obtained relief.

Upon examination a considerable amount of œdema existed over the sacral region, and pressure on this spot

caused pain. The liver was not noticed to be enlarged, nor did it feel nodular, but three months later it could be distinctly felt to be both enlarged and nodular. There were two very small, slightly œdematous folds of skin about the anus, otherwise it appeared healthy. On passing the finger into the bowel it felt healthy for about an inch and a half, then became harder than natural. and a distinct lump could be felt projecting under the mucous membrane of the posterior wall. It appeared at first as if at about three and a half inches from the anus the bowel ended in a cul-de-sac, but upon a little manipulation the tip of the finger could just enter a tight annular stricture, which appeared to extend upward some distance. The bowel was evidently firmly adherent to the surrounding tissues; the tip of the finger in the stricture was unable to move it. The patient lingered at the hospital for some months, gradually growing weaker. He was one night seized with sudden severe abdominal pain, which in a few hours terminated in fatal collapse.

The post-mortem was performed forty-eight hours after death. The body was thin and emaciated, the blood in the vessels was not coagulated, the belly was much enlarged and tympanitic. Upon opening the abdominal cavity a large quantity of purulent fluid escaped; the whole of the right and left hypochondriac regions were occupied by the liver, which presented a mottled appearance, being thickly studded over the surface with hard white masses about the size of three-penny pieces. Upon the liver being removed and cut into, nodules were seen pretty equally distributed over the left side, each nodule being about the size of a pea or bean. On the opposite or right side were three large white patches instead of the smaller deposits found on the left, the largest patch being two and a half inches in diameter. These had at their margins a stellate appearance, due to white bands radiating a short distance into the healthy structure; the centre of these masses was

of a soft consistency, the interior of the larger patch being like thick cream. The liver weighed seven and a half pounds, it was in no place adherent to the parietal layer of the peritoneum, and it appeared as if this membrane had resisted the advance of the disease. The gall-bladder was distended with bile, the spleen and kidneys were free from disease, but the pancreas was affected with nodules much in the same manner as the liver. The whole chain of lumbar glands was infected, many of them being the size of a hen's egg. The intestines were apparently free from disease, except at a spot situated four inches from the anus; at this point the intestine became quite suddenly constricted. This constriction felt like a tight ring outside the mucous membrane; this was the stricture felt during life.

The bowel was greatly distended above the strictured portion and full of soft fæces, but no ulceration could be detected in it. A further examination of the seat of stricture showed that the constriction was caused by a deposit of cancerous material, one-eighth of an inch thick, and a quarter of an inch broad, just at the line of the recto-vesicular fold of the peritoneum. This band extended half round the bowel. A tight portion of fibrous tissue occupied the remaining half of the bowel circumference, and was continuous at each end with the line of cancer. Indeed, it appeared as if some of the fibres of the fibrous tissue that here encircle the bowel, were continued into the cancer line, and that the contraction of the cancerous portion had caused the tightening of the fibrous band.

The deposit of cancer was beneath the mucous coat of the bowel, involving the submucous and muscular coats. Upon putting the finger into the cul-de-sac between the rectum and bladder from the opened abdomen, the peritoneum passed over the deposit just described with quite a smooth surface. Behind the rectum, between it and the sacrum, but not adherent to the wall of the

bowel, was a mass of cancer as large as an orange, softened in the centre to almost creamy consistency. This mass had caused the absorption of a considerable portion of the coccyx and lower part of the sacrum. It appeared as if this mass sprang from one of the lower coccygeal glands.

J. W., aged forty-two, a well-developed, tall woman, with a good family history. She had the appearance in the face of some suffering, but was not much emaciated. Eighteen months ago she noticed pain in the back about the lumbar region. She had no other symptom until a year ago, when she first noticed a slight discharge of blood, but she suffered no pain or uneasiness. Seven months ago she first had local pain, but this only during and after defecation. After a few weeks the pain became continuous, especially bad at nights, compelling her to walk about the room for hours. Three months ago a fetid, sanguineous, purulent discharge came on. After the onset of this discharge the pain became a great deal less. She has lost blood for six months from the rectum; slight at first, more of late, but never profuse. Has had little diarrhœa. The purulent discharge, which soon after its first onset was very diffuse, has been much less of late.

Upon examination, a growth of firm consistency, the size of a large nut, was seen springing from the mucous membrane just within the anus. Upon introducing the finger within the bowel, the rectal wall, especially the anterior portion, felt hard and irregular, with some ulceration in places, and was more like a semi-rigid tube than a contractile canal. As far as the finger could reach, the bowel was thickly sprinkled over with hard nodules, from a sixth to a quarter of an inch in diameter.

The rectum, notwithstanding its nodular, rigid condition, was fairly movable upon the surrounding parts. On a further careful examination under chloroform, it was found impossible to ascertain the limits of the disease;

no operation was thought advisable. She continued to attend as an out-patient for the next two months, obtaining great relief by using, night and morning, warm injections of starch and opium (thin fluid starch ℥j, liq. opii sed. ♏xx.) The patient became gradually weaker, and died four months after she was first examined at the hospital.

A medical practitioner at Manchester, aged fifty-six, consulted me for the following symptoms. His attention was first called to the bowel by a sudden attack of diarrhœa seven months previously. The diarrhœa passed off in a few days. For nearly a year before this attack he had felt from time to time a slight sensation of the bowel not being completely empty, but he never had the slightest pain or inconvenience, and never passed any blood. Since the attack of diarrhœa, however, he has on three or four occasions noticed the fæces stained with blood. He has also noticed that when the fæces are soft they are distinctly grooved on one side. He has some discomfort about the bowel, but nothing like pain. He feels well and strong, and is able to play golf, but, somewhat to his surprise, he finds that he has lost a stone in weight during the last three months. Upon examination, I found the anus quite healthy with a normal sphincter, and there was no excoriation and no discharge. The first inch and a half of the bowel was also natural, but the finger then came into contact with a series of hard, nodular projections, most marked over the prostate, but extending all round the bowel. On further examination these projections proved to be the margins of a considerable mass of malignant deposit.

This patient persevered for some time with the Chian turpentine, then a fashionable treatment, but without the least benefit, and died twenty-two months after my examination.

Perhaps it will be well to consider in a little more detail the various symptoms mentioned.

Pain is of such common occurrence in all rectal disorders that it only becomes a valuable adjunct to the diagnosis when in conjunction with more definite symptoms. It is seldom an early symptom, being commonly the result of the morbid changes in an advanced stage of the disease, for at first discomfort merely is experienced, especially after walking or sitting long in a constrained position. There is often an uncomfortable feeling of wanting to stool, yet upon trial nothing but a little mucus is passed. As the disease advances the pain increases. So far as my experience goes the amount of pain greatly depends upon the situation of the disease. When situated at the anal margin or opposite the prostate the suffering is much greater than when situated higher up the bowel, in which situation the tissues have more room to expand. Sometimes when situated high up the bowel scarcely any pain is felt until quite late in the disease. Indeed, I have seen cases where from first to last, that is, till the time of complete obstruction, the patient never had the slightest pain of any kind. The sharp burning pain complained of during and after the passage of a motion is due to the irritation of the tender ulcerated surface. Not infrequently a dull, aching pain, more or less constant, is referred to the lumbar or sacral region. This pain is often rather relieved than aggravated by the passage of fæces. It is due to the direct pressure by the disease on the nerves lying between it and the sacrum, or to the accumulation of fæces above the narrow part. As already noticed, the onset of pain is generally gradual, but it not infrequently happens that a somewhat sudden aggravation of the pain occurs, followed in a few days by a copious muco-purulent discharge which somewhat relieves the patient. There can be no doubt that this acceleration is due to accidental inflammation of the parts in the neighbourhood of the disease, and is often accompanied by a rise in the temperature and the formation of an abscess. On the whole I am inclined to believe

that the accounts given of the pain suffered in rectal cancer are much exaggerated, and that it is less severe than is often suffered in fissure or inflamed piles. I have more than once found considerable masses of cancer in patients who were quite unaware of the disease owing to their having suffered scarcely any discomfort. If there is any tendency to inflammation about the growth the pain undoubtedly becomes severe. Under these circumstances the patient can scarcely bear examination. Some patients, again, seem to have a natural anæsthetic condition of their whole nervous system, while others are morbidly sensitive. Indeed, it is a fact constantly observed by all surgeons that no two patients appear to suffer in the same degree from similar diseases or injury.

Bleeding from the bowel is almost sure to take place at some period of the disease ; it appears to depend upon two causes. In the early stage, the blood comes from the congested mucous membrane lying over the disease, and is much increased by constipation, which retards the free return of venous blood. At a later period it may not only be due to this cause, but to actual ulceration of one of the hæmorrhoidal vessels. Cases are recorded in which the bleeding has been so alarmingly persistent as in itself to cause the death of the patient. Bleeding from the bowel, when copious and persistent, and when not dependent upon hæmorrhoids, should always be looked upon with some suspicion.

In the following two cases severe bleeding seemed to be the only symptom at an early stage.

Mr. W., aged thirty-five, a patient of Dr. Morison's, and seen in consultation with Sir Thomas Smith, had for two years passed blood in large quantities from time to time. Has always felt strong and well, taking part in ordinary exercise, shooting, fishing, &c., up to the present time. For the last six months he has had some irritation of the bowel, requiring to go to the closet two or three

times a morning. A year ago he was carefully examined for the hæmorrhage, but beyond some piles, nothing wrong could be detected. On examination I found a large mass of cancer commencing two inches from the anus, and extending upwards for three inches, but it only occupied about half the circumference of the bowel, and had produced no stricture.

Mr. M., aged sixty, a patient of Dr. Connor's, of Wandsworth, had for fourteen months some slight irritation of the bowel, which he thought of no consequence. A year ago he had a very severe hæmorrhage, coming on quite suddenly. Since that time the irritability of the bowel has increased, but with only very slight bleeding occasionally. A few days ago he had a second most severe bleeding, losing some pints of blood. I was asked to see him on account of this bleeding. On examination a ring of adenoid cancer was found commencing just within the anus, and extending upwards only two inches. The growth was excised, but a rapid recurrence took place.

There are, however, many other conditions besides malignant disease which may give rise to the bleeding. As an instance, it may not be out of place to mention an interesting case, for the details of which I am indebted to my friend Mr. Edwards, of St. Mark's Hospital.

A patient was admitted into St. Mark's on account of hæmorrhage from the rectum. She had been very unwell, with vague pains about the abdomen, for some months. During the last few days she has had violent bleeding from the bowel. Soon after admission she had another violent attack of bleeding, from which she never rallied, and died in a few hours. A post-mortem examination showed a small deep ulcer of the stomach, which had opened into the gastric artery. She had vomited no blood, nor could any other lesion be found in the alimentary canal.

A somewhat similar case of profuse hæmorrhage from the bowel, the result of gastric ulceration, is mentioned

in the catalogue of the Middlesex Hospital (Series 8, No. 33), but in this case there was also hæmatemesis.

Discharge of a muco-purulent nature is seldom absent if the disease has existed any length of time. At first this is simple mucus, but becomes purulent after ulceration has taken place, while at a further stage of the disease it may become dark, forming the "coffee-ground discharge" so often described. From time to time this discharge is considerably augmented in quantity, while at the same time it is more purulent in its nature. A day or two prior to this increase the patient will complain of intense pain, which is greatly relieved by the discharge. The explanation of this has been already mentioned. The discharge has a highly offensive odour, the peculiar odour being considered by some surgeons pathognomonic of the disease. Personally, I must confess to be unable to verify these assertions beyond the fact that all discharges from this neighbourhood are very offensive.

The examination of this discharge under the microscope may be a considerable aid to the diagnosis in those cases in which the disease is beyond reach of the finger. The bulk of the solid particles found in the discharge consists of lymph or pus-cells with fæcal débris, but not infrequently little masses of the growth may be detected here and there, especially if it be of a soft, friable nature. Such little portions can of course only be observed in a comparatively advanced stage of the disease after ulceration of the mucous membrane. I attended, with Dr. Norman Moore, a case in which there were obvious symptoms of stricture, beyond the reach of the finger, so that there was considerable doubt as to its nature, until one day a fragment, the size of a hazel-nut, was discovered in the discharge, which, on examination under the microscope, proved a beautiful specimen of adenoid cancer.

Diarrhœa is an intermittent symptom during the

course of the disease. The sufferer often has a sensation as if he required to go to stool, especially in the morning, and, after a little straining, passes a small quantity of fæces, as well as some muco-purulent material. He does not feel, however, as if the bowel had been emptied, and may have recourse to the closet many times. On these occasions the discharge is more of a muco-purulent material than any true fæcal evacuation. The desire for a motion in some patients quickly follows taking anything to eat or drink, especially if very hot or cold. When the large intestine is in an irritable condition, the taking of food appears at once to start peristaltic action in the colon, causing the expulsion of any fluid it may contain.

In some cases the patient is much troubled with "wind," which he fears to pass unless at the closet, in case at the same time some discharge should come away.

In using the word diarrhœa, the surgeon must be careful not to be misled by regarding it in all cases as resulting from simple looseness of the bowels. Indeed, when there is any stricture present, the so-called diarrhœa is often but a symptom of extensive fæcal collection behind the stricture. What the patient passes in these cases is a purulent mucoid discharge, stained by small particles of fæces washed from the surface of the collected mass.

Many of these patients fancy they are suffering from "chronic dysentery," and have undergone prolonged treatment for the supposed disorder without benefit.

This spurious diarrhœa is often one of the most marked features of the disease, and when the cancerous stricture is too high to admit of being felt by the finger, is perhaps the most important and reliable of all the symptoms.

I give below an exact copy of some notes sent to me by a patient six months before his death from malignant disease of the upper part of the rectum. The record

shows how the diarrhœa may vary from day to day, and how at times well-formed motions may be passed.

June 9, 8 A.M.—Blood and mucus.
„ 9 A.M.—Blood with little solid motions.
„ 10.50 A.M.—Blood with little solid motions.
„ 11 A.M. to 3.30 P.M.—Three very small, well-formed motions.
„ 4.45 P.M.—Blood and mucus.
„ 5.30 P.M.—Blood and mucus.
„ 6.40 P.M.—Blood and mucus.
„ 10 P.M.—Blood and mucus.
„ 10.45 P.M.—Blood and mucus.

Up five times in night, blood and mucus, some dull aching pain in the back most of the day.

June 10, 9 A.M.—One small thin action.

Nothing else all day. Only up once in night, passing a little blood and mucus, quite free from pain.

June 11, 8 A.M.—Blood and mucus.
„ 9 A.M.—Blood and mucus.
„ 12.30 A.M.—A large full-sized motion quite free from blood.
„ 5 P.M.—Blood and mucus.
„ 6 P.M.—Blood and mucus
„ 9.30 P.M.—Blood and mucus.
„ 10 P.M.—Blood and mucus.

Up four times in night. When blood and mucus is passed, it comes quite suddenly.

Constipation is a symptom of importance as a means of diagnosis, if the disease is too high for digital detection. It is generally an earlier sign than diarrhœa, but not unfrequently intermits with it. It may exist to almost any extent, from a slight trouble at the commencement of the disease to a grave complication as it advances. Complete intestinal obstruction, a frequent complication of intestinal cancer, sometimes results from the blocking up of the intestinal canal by the gradual encroachment of the growth into its calibre. It is not rare, however, to find that the earliest symptom causing a suspicion of cancer of the large intestine is the sudden onset of complete obstruction (*see* page 352).

The various symptoms just enumerated in detail are of the highest importance in calling attention to

the probable existence of cancer, and have to be relied upon if the disease is in the sigmoid flexure or upper part of the rectum; but in the lower portion of the bowel the diagnosis can be made sure by digital examination.

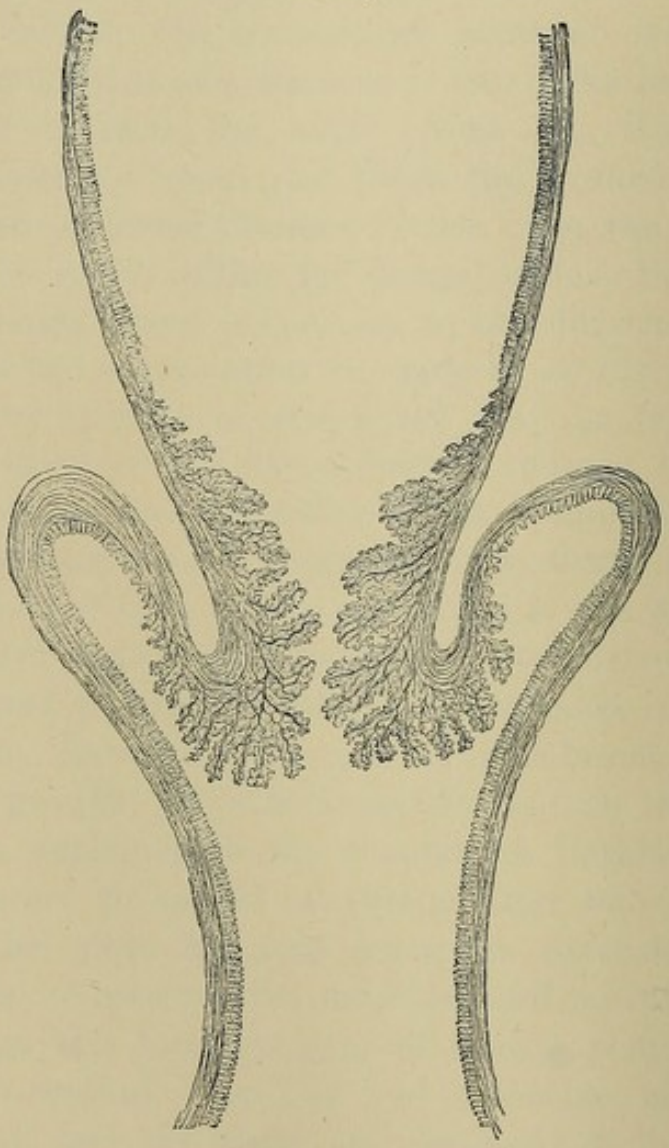
Digital Examination.—In order to make this satisfactory it is essential to have the bowel empty. With this object the rectum should be thoroughly washed out with a warm water enema. The best position for an examination is to have the patient lying on his side with the knees drawn up. From four to five inches of the rectum can be examined by the finger, and if the patient be directed to strain and bear down a further length of bowel is brought within reach. If, at an ordinary examination, nothing can be felt, but yet the symptoms are suspicious, a second examination under an anæsthetic should be advised, and its value, if properly conducted, is inestimable. I have often been asked whether such an examination could not be made on my consulting room sofa with "a sniff" of chloroform. Such half measures are dangerous and useless. To make such an examination satisfactorily the patient should be properly prepared, the anæsthetic being given on a proper table. He will require to be thoroughly under the anæsthetic, and the examination made in the lithotomy position. I have many times made an accurate diagnosis, and been able to actually feel the growth in patients on whom previously an examination without an anæsthetic had revealed nothing.

The margin of the anus should be carefully scrutinised for any portion of growth that may be in sight. It sometimes happens that a fungating projection from the anus at once declares the nature of the disease. More frequently, however, the anus is normal, or merely slightly œdematous and red from the irritation of the discharge. Upon introducing the finger, the condition of the part will depend upon the length of time the disease has

existed, the portion of the bowel implicated, and the physical character of the growth.

Commonly a certain interval of healthy bowel exists between the anal margin and the lower border of the disease. Perhaps the commonest point at which the disease is situated is at a distance of two and a half inches to four inches from the anus. After this the disease is more frequently found just below the sigmoid flexure. The amount of bowel diseased varies from the smallest patch to the whole calibre for several inches, the extent being in almost direct proportion to the duration of the growth. If the examination be made at an early period, an indurated portion of the bowel may be felt. This induration does not feel like a distinct tumour, but more like a thickening and hardening of the submucous tissue. The mucous membrane is generally pretty firmly adherent to the subjacent mass. The membrane is not ulcerated, but may feel somewhat irregular on its surface, being slightly raised in places while it is depressed in others. As a whole, however, the mucous membrane, pushed up by the growth, projects more or less into the bowel cavity. As explained in the chapter on Pathology, the disease appears to spread or extend after two different methods, the most frequent being its extension as a thin, firm layer between the muscular and mucous coats. By the time this laminar form of disease comes under clinical observation, more or less extensive ulceration has occurred, and the finger can distinctly feel the firm base of an ulcer with abrupt, hard, raised overhanging margins, beyond which the disease apparently terminates somewhat abruptly in the healthy tissue. If the disease has extended so as to form a distinct tumour in the submucous tissue, the lump or lumps can be clearly felt projecting into the bowel cavity, or, again, a tight annular stricture, around which a hard deposit exists, indicates the disease. Sometimes, though more rarely, the rectum seems studded with hard, small nodules. If the disease

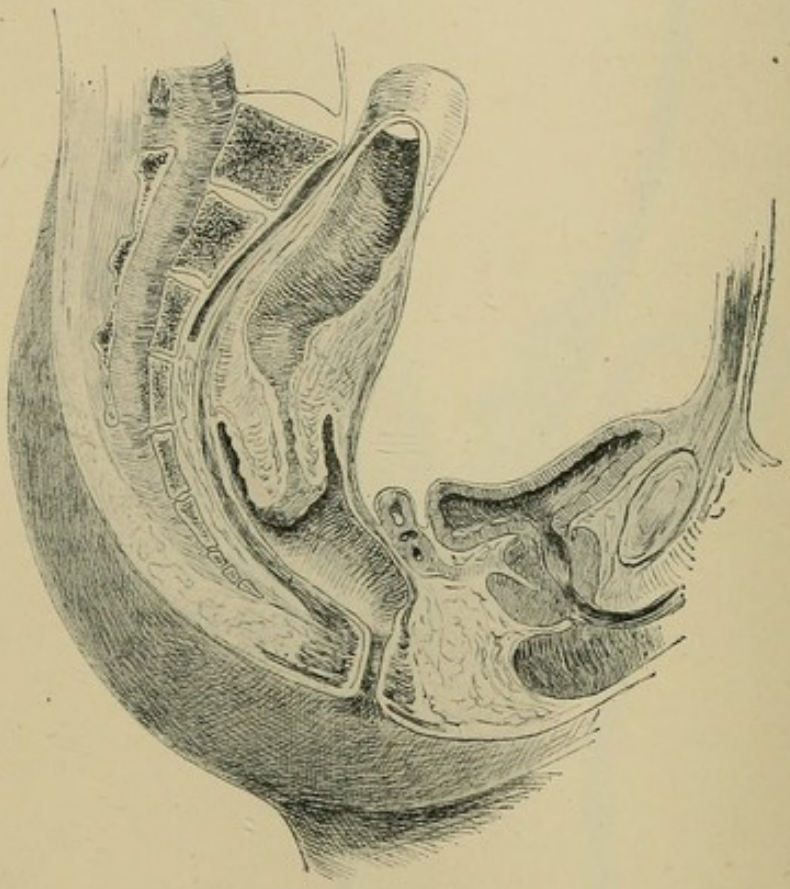
Fig. 27.



A diagrammatic illustration of the way in which the bowel at the site of the disease becomes invaginated.

To face page 349.

FIG. 27A.



Sagittal section of pelvis showing a malignant growth invaginating the rectum. The constricted lumen in the middle of the growth and the cul-de-sac surrounding the growth are well seen.

To face page 349.

be advanced, soft fungoid masses, blocking up the canal, may be felt; such masses bleed with the slightest irritation. When an annular stricture exists it is commonly just below the reflexion of the peritoneum.

I may here refer to a curious condition often present. On a hasty examination it may appear as if the disease were confined to the anterior or posterior wall only, while in reality it surrounds the bowel. The mistake arises from the tendency for that portion of the bowel in which the disease is situated to become invaginated from constant straining, so that there is a deep cul-de-sac of healthy bowel all round the growth. The finger passed into this cul-de-sac feels the growth lying in front or behind, as the case may be. Of course, with a little further examination the condition of things may be ascertained, and the orifice of the intussuscepted bowel with the disease surrounding it can be felt not unlike an os uteri projecting downwards into the bowel cavity (*see* Fig. 27).

This annular stricture is so common in malignant rectal disease that its structure requires special consideration. Sometimes it is due to a deposit of new growth in the submucous tissue around the entire circumference of the bowel. In such a case the mucous membrane may have given way, and the growth protrude into the bowel all round. This, however, is not the common cause of the stricture, which appears to be generally due to a deposit of cancer at one spot of the bowel, commencing in the submucous tissue, and extending into the muscular coat, and as it does so incorporating into its substance the fibrous trabeculæ of the muscular coat. These fibrous trabeculæ naturally extend round the whole circumference of the bowel, so that, when they are drawn upon at one spot by the action of the growth, it has much the same effect upon the bowel as if it had been surrounded by a piece of string, the knot of which is being continually drawn tighter.

If a stricture exist the greatest caution should be exercised in passing the finger through. It is surprising the ease with which such strictures will suddenly tear and the rent extend into the peritoneal cavity. All temptation to forcibly thrust the finger into the stricture should be resisted as a proceeding fraught with danger. And the greatest possible gentleness must be used at the examination.

The following case will show the extreme ease with which a rent may be made, even by a comparatively gentle digital examination :—

A patient was admitted into St. Bartholomew's Hospital with stricture of the rectum at two and a half inches from the orifice. She was placed under chloroform, and examined in the lithotomy position for the purpose of diagnosis. On the finger of the surgeon being introduced, the tip just entered the stricture, which, on gentle pressure, yielded slightly. On passing the finger a little further still, without using any force, the stricture suddenly split, the finger apparently passing into the peritoneal cavity. Further examination was at once desisted from, and the patient put back to bed and ordered opium. Within a couple of hours the patient was suffering intense abdominal pain, and by that night the belly was distended and the knees drawn up. The following day the face was pinched and hollow, the pulse hard and rapid, and after a day of intense suffering she became collapsed, and died within thirty-six hours of the examination. At the post-mortem, a stricture on the level of the peritoneum was found, the upper wall of which, from ulceration, was little thicker than blotting-paper. In the centre of the thin portion was a ragged rent, extending into the peritoneal cavity, which contained a considerable quantity of liquid fæces.

Such a case is sad beyond expression, for the mere attempt to ascertain what might be beneficial to the poor creature was followed by a sudden and violent death.

I was present at the examination in question, observed the patient carefully afterwards, and performed the post-mortem. I need not say that this accident strongly impressed me with the extreme care required in examining a patient with rectal stricture.

I also know of another case which occurred recently. A bougie had been passed twice for a gentleman without a mishap. On the third occasion a larger size was employed, and some difficulty experienced in passing it through. Immediately afterwards the patient complained of great pain at the site of the stricture, which quickly extended to the whole of the abdomen, and he died on the third day with all the symptoms of acute general peritonitis. There can be no doubt that, in this case, the stricture had given way into the peritoneal cavity. The cases mentioned on page 213 are also an object lesson in the same direction.

Diagnosis when beyond reach of the finger.— The symptoms already described as occurring when the stricture is in the lower part of the rectum, are in some measure present when the disease is situated higher up, but until complete obstruction occurs they are generally less severe and clearly marked.

The constant desire to defecate is not so prominent, neither is the same amount of pain and discomfort noticeable. This is what might be expected when the different functions and nerve-supply of the upper and lower part of the rectum are considered. The lower part is more sensitive, and even in health intolerant of the pressure of fæces which at once evoke the desire to defecate, while the descending colon and upper part of the rectum are comparatively tolerant of fæcal collections.

In cases of high obstruction the symptoms may consist of obstinate constipation, alternating with diarrhœa, while colicky, griping pains are of frequent occurrence. Occasionally even these symptoms may be absent, or not sufficiently marked to cause the patient to seek

advice, the first indication of the danger being the sudden onset of complete obstruction.

The cause of this sudden onset is a matter of considerable interest, for it seems difficult to understand how such could occur without previous symptoms, or with symptoms so slight as scarcely to have attracted the patient's notice. The following cases throw light on this point, and explain the occurrence, showing that it is the result of the sudden accidental blocking of a previously narrowed though pervious gut.

C. B.,* without having had previously any marked symptoms, was suddenly seized with obstruction of the large intestine. Colotomy was performed by one of my colleagues, but the patient died on the fifth day. The following were my notes of the post-mortem. The whole of the peritoneum showed signs of recent acute peritonitis, being everywhere matted together with large masses of yellow lymph. There was a small amount of fæcal extravasation in the neighbourhood of the colotomy wound, but owing to the state of the parts its source could not be easily ascertained. On tracing the descending colon downwards, it was much dilated. At a distance of five inches from the anus was an annular stricture not more than three-fourths of an inch in length, which would only admit a No. 12 catheter. The opening was completely blocked by a small oval piece of fæces of extreme hardness. In the Hospital Museum† (specimen 2017) is a very similar case, interesting not only as regards the cause of complete obstruction, but for the remarkable length of time the patient lived after the obstruction became complete.

"The patient was a lady, thirty years old. She had been for three years subject to occasional attacks of obstinate constipation which were generally followed

* Henry Ward Register, St. Bartholomew's Hospital, vol. viii. p. 175. (Notes by Author.)

† St. Bartholomew's Hospital.

by diarrhœa. Four months before her death the obstruction of the intestine became complete, and after this time she had no fæcal evacuation. Death was eventually caused by the bursting of the intestine, which was enormously distended. The cause of the obstruction was found to be a cherry-stone, which had lodged above a stricture in the descending colon, and had completely closed the canal." *

In Guy's Hospital Museum (Specimen No. 1887[75]) is a specimen of adenoid cancer causing intussusception. In this case a patch of adenoid disease affected a portion of the bowel, somewhat narrowing its calibre. The pressure of fæces above this had caused its invagination into the bowel immediately below, producing complete obstruction. Many such specimens have been shown at the Pathological Society, and such a condition readily explains the sudden onset of obstruction without previous warning.

A very slight amount of such intussusception is sufficient to cause obstruction.

A woman of middle age died at St. Bartholomew's after colotomy performed for sudden intestinal obstruction. At the post-mortem was found a narrow ring of growth projected into the canal for about a quarter of an inch all round the circumference of the bowel. It looked like a diaphragm, the hole through its centre just admitting the little finger. The portion of bowel immediately below this diaphragm was considerably contracted, so that when the growth was pressed upon from above it passed a short distance into the narrow portion below, the opening through its centre being completely obliterated.

Another, although perhaps rarer, condition is sometimes found, which will also account for sudden obstruction. In such a case a considerable dilatation forms above a slight annular stricture; after a time a pouch from this dilatation extends downwards below the level

* St. Bartholomew's Hospital Museum Catalogue.

of the strictured portion of the gut. The collection of a hard lump of fæces in this pouch pressing upon a point below the stricture occludes the bowel, the margin of the strictured bowel being closed in a valve-like manner.

Breschet publishes a case, in which he describes such a condition causing obstruction in the body of Talma. In this case Nature had made a marvellous effort to remedy the defect. The dilated bowel above the contraction was put into connection with the part of the rectum situated below the contraction, a new canal having established itself between the two by the absorption of the adjoining walls, adhesions having formed between them.

If subjective symptoms be present, the bougie may be of value in confirming the diagnosis, although I believe from its use alone it would be rash to assume the existence of a stricture. The bougie best adapted for an examination is No. 6, which should be made hollow with a small pipe at its base, so that water may be injected through it at the time of examination. In passing a bougie it is very common to find an obstruction at five or six inches from the orifice. This is either due to the bend of the sacrum, or to the bougie catching in one of the loose folds, but by a little very gentle manipulation the obstruction may be overcome. If caused by a fold of the mucous membrane, by injecting water through the hollow bougie the bowel will be distended and the fold obliterated. I have by these means on one or two occasions passed the bougie far up the bowel, when, prior to the injection of the water, it would only enter a few inches.

In the passage of the long bougie no force should on any account be used, for the bowel can be perforated with the greatest ease. In a case* at St. Bartholomew's Hospital, in which an injection was given by the long tube prior to an operation on the perinæum, the patient

* St. Bart.'s Hosp. Reps., Appendix, p. 88, 1883.

immediately after the injection became collapsed, and died of acute peritonitis, and it was found that the bowel had been perforated by the enema tube, and the whole of the soap and water thrown into the peritoneal cavity. Many similar cases have been recorded.

The question is sometimes raised as to whether in obscure cases of obstruction the whole hand might not be introduced within the bowel with a view to thorough examination. In eight consecutive cases, in the post-mortem room, I endeavoured to practise this manœuvre. In two I failed to get within the anus. In two of the remaining the rectum was extensively lacerated; in one the rent extended into the peritoneal cavity. In the remaining cases I was enabled by perseverance to get my hand as far as the sigmoid flexure, but the fingers were so tightly grasped that I doubt very much whether I could have made a diagnosis in the living body. My own hand is moderately small for a man (seven and a half), but from my experience on the dead body I feel that it would be an extremely hazardous proceeding to attempt to pass my hand into the living body. If cases pointed strongly to a stricture of the upper part of the rectum or sigmoid flexure, I should not hesitate to confirm the diagnosis by a small abdominal incision made in the inguinal region, so that if the diagnosis was confirmed, the operation of inguinal colotomy or excision could be at once proceeded with, as in the case I have referred to in my practice, on page 236.

Colloid Cancer in its physical characteristics differs in some respects from the foregoing description, owing to its soft semi-fluid consistency. This disease is stated by some authorities to be the commonest form of malignant rectal disease. This is entirely opposed to my experience, for I believe that this disease is rarely met with; nor do our pathological museums lead one to suppose that it was more common formerly than at the present time. A specimen in the Middlesex Museum, Series 8, No. 131,

and another in the College of Surgeons, are described as examples of this disease. It appears in both these cases as if a fine transparent membrane had been spread over the mucous lining of the bowel, and this membrane had then been raised into a number of small vesicles containing the colloid material. Some of these excrescences are so minute as to be scarcely cognisable to the naked eye; others, again, are as big as large peas; the whole, in fact, strongly impresses one with the idea that a certain number of Lieberkühn's follicles had become obstructed by a thin membrane dilated into bladder-like excrescences by the mucoid secretion.

Cruveilhier* gives the following excellent description of a case of colloid cancer. It seems to be little more than an exaggeration of the condition just described:

"A case of colloid cancer of the lower part of the rectum of an old woman. The gelatinous matter is contained in cysts of various sizes, pressed firmly one against the other, so that an appropriate name would be encysted gelatiniform cancer. The anus was surrounded by a number of different-sized swellings, several of the larger of which were surmounted by smaller swellings, in such a way that the anal opening occupied the bottom of an extremely deep cul-de-sac. Two ulcerations could be seen at the entrance of the anus. The rectum, at a little distance from the orifice, presented a zone-like ulceration; it was deep, and had destroyed all the thickness of the rectum in one part of its circumference and communicated with furrows, which penetrated to the diseased skin which was contiguous to the anus. The disease, which had given the rectum an enormous thickness, stopped suddenly about three inches from the anus. Immediately above the muscular coat was greatly thickened. This disease presented an appearance which I have never seen before. Imagine a multitude of acephalo-cysts of unequal size, of which some resembled

* Cruveilhier, "Traité d'Anatomie Path. Gén.," tom. v.

pigeons' eggs, tightly pressed one against the other in a fibrous woof, and one would have a sufficiently exact idea of the disease. But these were not acephalo-cysts. The envelope of each cyst was fibrous, very dense, and very thin, and contained matter resembling apple jelly. On the surface was a cretaceous matter containing calcareous grains. In the centre of the gelatiniform matter were seen blood-vessels, resembling those formed in an egg, vessels without linings, terminating in a swelling of one of their extremities. The fibrous network, in the middle of which these cysts were situated, was evidently composed of the membranes of the rectum. I there recognised the longitudinal coat of the intestine. The external covering of the rectum had not the slightest vestiges of cysts, but was alveolar tissue of fibrous meshes, filled, like a sponge, with gelatinous matter, which was squeezed out with difficulty. This degeneration extended to the skin. An extremely thin pellicle, almost epidermic, had resisted and covered the swelling on its surface. Behind the rectum was a gelatiniform mass freely supplied with blood-vessels."

Melanotic cancer or sarcoma is very rare. I have only seen two cases, and in both of these the disease was practically confined to the anus and the lower inch of the bowel.

CHAPTER XIX

RECTAL CANCER—DIFFERENTIAL DIAGNOSIS

With an ordinary amount of experience in rectal examinations, and after a careful consideration of the history and symptoms, there are few disorders liable to be confounded with rectal cancer. Nevertheless, at times considerable difficulty may be experienced in forming an accurate diagnosis. Omitting rare and exceptional diseases, the following include the chief disorders liable to be mistaken for rectal cancer :—

1. New growths in rectum.
   - *a.* Villous tumour.
   - *b.* Disseminated polypi.
2. New growths outside rectum . . .
   - *a.* Tumours of prostate, bladder, and uterus.
   - *b.* Tumours of sacrum and pelvic bones.
3. Inflammations . .
   - *a.* Abscess.
   - *b.* Fibrous stricture.
   - *c.* Tubercular ulceration.
4. Misplaced uterus.
5. Chronic enlargement of the prostate.

Diagnosis from Villous Tumour.—Villous tumour differs so entirely from the ordinary laminar form of malignant disease that it could not be mistaken for it, and it is in the somewhat rare form in which large fungating masses of cancer protrude into the bowel that the difficulty of diagnosis arises. The duration of the disease is here of considerable importance. When true cancer produces a fungating tumour in the rectum, its course is always most rapid. On the other hand, a villous tumour may remain for months, or even years, with little change. Then the discharge differs materially in the two diseases.

In villous tumour the discharge, though very free, resembles normal mucus, being viscid but fairly clear, and as it dries on the linen faintly stains it, making it harsh, as if starched. The discharge may from time to time be blood-stained, but there are nearly always intervals when it is quite clear. On the other hand, in cancer it is generally darkly stained, being mixed with discoloured blood and fæcal débris.

On examination a very different sensation is conveyed to the finger by the two disorders. The villous tumour has a peculiarly soft velvety feel, while, at the same time, it gives the impression of being fairly tough and resistant. The fungoid cancer, on the other hand, though soft on the surface, is very friable, bits readily breaking off on pressure by the finger-nail, and the least touch producing hæmorrhage. The surface of the growth feels harsh to the finger, as if from an absence of mucoid secretion. In villous growth, not only is the surface soft, but the whole mass feels so also, while in cancer the deeper parts convey a hard rigid sensation.

In villous tumour the bowel near the margin of the growth feels soft, and moves in a normal manner on the surrounding parts. On this account it can often be partially invaginated and drawn down nearer the anus. In cancer the bowel is hard at the margin of the growth, and is generally, at least to some extent, fixed to the surrounding parts, and cannot be drawn down.

A large villous growth may be present in the rectum with very little disturbance to the general health, while, in a cancerous tumour of this nature, there is much cachexia, and marked wasting.

Lastly, if a little portion be broken off with the finger, and submitted to the microscope, confirmatory evidence of the one or other form of growth can be obtained (*see* page 344.)

Disseminated Polypi.—The symptoms often have a close resemblance to those accompanying cancer. Here,

again, the duration of the disease becomes important, for the record of symptoms extends in polypi over many years. In disseminated polypi there is often a clear mucoid discharge similar to that in villous growth. There is frequently hæmorrhage, but the blood lost is generally pure and bright-red in colour, and has not the dark, treacle-like character, and free mixture with fæcal débris of that commonly observed in cancer. A digital examination shows the nature of the disease. The soft isolated growths with well-marked pedicles, and an absence of induration at their bases, disclose the nature of the disorder.

It must not, however, be forgotten that after many years of innocent life one of these polypi may take on malignant action and assume all the characteristics of adenoid cancer. The following case proves this point:

A. C., aged nineteen, was admitted under the care of my colleague, Sir Thomas Smith,* in 1881. So far as was known, he was a healthy child until nine years of age. It was then noticed that, after being exposed to cold one day, he had considerable hæmorrhage from the rectum. Six months later a bleeding protrusion was occasionally observed after defecation. He was admitted into a hospital, and the protrusion removed when he was eleven years old. The symptoms were temporarily relieved, but returned again in a couple of years. He was again subjected to operation, with only slight relief. Since that time he has on three occasions, at St. Bartholomew's and other hospitals, had growths removed from the rectum, but without permanent benefit. When admitted into St. Bartholomew's he was extremely anæmic, having suffered severely from hæmorrhage for some months. His pulse was rapid, and he seemed scarcely in a condition to bear even an examination. After a few days' rest in bed he recovered from his collapsed

* St. Bart.'s Hosp. Reps., vol. xxiii. I am indebted to Sir Thomas Smith for permission to use these notes.

condition, no more bleeding having occurred, but there was a free mucoid discharge. On examination under chloroform with the sphincter dilated, several mulberry-like growths were observed, varying in size from a pea to a filbert. Some of these had little or no pedicle, while others had well-marked stalks half an inch in length. The growths were soft, nor was there any induration about the mucous membrane from which they sprang. By the aid of a duck-bill speculum, from twenty to thirty distinct polypoid growths could be seen; besides which, others could be felt higher up the bowel by the finger, which failed to define any limit to the diseased condition of the bowel.

Sept. 1883.—Again admitted, and some of the larger and more accessible growths removed.

March 1885.—Re-admitted for severe hæmorrhage, when some more polypi were removed. At this time he complained of some pain in the left lumbar region, and a circumscribed area of dulness was detected in this part. There was also tenderness on deep pressure.

Jan. 1887.—Was admitted suffering great pain and frequent loss of blood. Several large growths were removed, and he left the hospital, free from his symptoms, to resume his work as a waiter.

March 15, 1887.—He was brought in in a moribund condition, his friends stating that since his last discharge from the hospital he had suffered dull, aching pain in the abdomen; that two days since he was seized with violent cramping pain in the lower abdomen, and sickness. He had taken no food for two days. He had had constant hiccough. On examination, he was found to be moribund, with the signs of peritonitis, and he died next day.

On post-mortem examination, he was found to be suffering from adenoid cancer of the lower part of the sigmoid flexure, and there was at this point an almost impervious stricture of the bowel. The rectum below this contained a large number of polypoid growths similar

to those that had been removed during the patient's lifetime; above the seat of the cancer there were but few to be found, and in the ascending and transverse colon not more than three or four, and these were small and rudimentary.

The larger number of the polypi were more or less globose, having slender stalks, but here and there were ribbon-like, ragged, slender, branched-out growths, and some few of the smaller growths were sessile. On microscopic examination the polypi proved to be well-marked examples of the adenoid variety.

There was a considerable deposit of adenoid cancer just at the junction of the sigmoid flexure with the rectum, surrounding the bowel, and almost obliterating its canal. The rectum, where it passed over the concavity of the sacrum, was adherent to the neighbouring parietal peritoneum.

The large intestine above the stricture was enormously distended by fæces. The peritoneum over the anterior longitudinal muscular band of the cæcum had been split by the excessive stretching. There was no effusion or peritonitis, the other organs were normal.

New Growths outside Rectum. — Occasionally tumours growing in the pelvis and surrounding or pressing upon the bowel may be mistaken for rectal cancer. Such tumours originate either in front or behind. When in front they either spring from the bladder, prostate, or vesiculæ seminales, and in the female from the uterus or ovaries. When arising in front there is, as a rule, not much difficulty in the diagnosis. Partly from the history of the case, but chiefly by careful physical examination, it can be discovered that the earlier symptoms pointed to bladder or prostatic trouble, while it can generally be determined by examination that the organs mentioned are chiefly invaded by the new growth.

A point, again, that is of considerable service in the diagnosis is the nature of the discharge from the rectum.

In rectal cancer, although at first the disease spreads in the submucous tissue between the mucous and muscular coats, it quickly gives rise to an ulcerated surface from the destruction of the mucous membrane over it, while this ulceration in its turn is accompanied by a blood-stained grumous discharge. On the other hand, when the disease arises external to the bowel, it may cause considerable stricture, either by direct pressure, or, by the fascia surrounding the rectum being drawn towards the growth, yet the rectal mucous membrane remains intact, and although other symptoms of stricture are present, there is an absence of the fetid sanious discharge so common in malignant disease. Sometimes, however, the diagnosis is of great difficulty.

The following is a case in point which I attended for some time in conjunction with Mr. Montagu Smith :

A gentleman, aged sixty-nine, of a highly nervous and desponding disposition, dated his trouble from eight months previously, when he was seized suddenly with pain in the left iliac fossa. This, however, soon passed off.

On first getting up in the morning he has a desire to stool, but generally only passes some gelatinous-looking mucus. The amount varies much, being sometimes slight, sometimes considerable. Sometimes it is fairly clear, at others stained with fæcal material not tinged with blood. He is often constipated for days together, at other times requires to visit the closet frequently, passing loose motions without a sense of complete relief, and very rarely passing any blood. He often feels discomfort about the lower part of the bowel, but with the exception of being much troubled with wind, suffers little actual pain. He has lost flesh during the last year, and very markedly so within the last ten weeks.

Examination under Chloroform.—The anus was normal, with a weak sphincter. The bowel itself, as far as the finger could reach, was natural. In front of the anterior wall, about the position of the base of the bladder,

was a large, firm, oval, swelling feeling like the half of a cricket-ball. It appeared to be situated behind the prostate, though continuous with it. It compressed the rectum between itself and the coccyx. Taking into consideration the somewhat rapid way in which the symptoms had developed, the emaciation of the patient, and the size of the swelling, I came to the conclusion that it was a case of malignant disease affecting the prostate, and consequently gave an unfavourable prognosis.

During the next year I saw the patient on two or three occasions. But owing to nervousness he stoutly refused to be examined. The only new symptom which he had developed was the occasional passage of air through the penis, and, later on, the urine at times contained a blood clot, and a dusky deposit, probably fæcal.

At the beginning of 1886, a year and a half after I had first seen the patient, I was again asked whether I still considered the disease to be malignant. At this time his appetite was good, he had plenty of strength, and emaciation had apparently ceased, and he had comparatively little trouble with the bowel, but suffered from a certain amount of cystitis.

I had not the advantage of an examination, but considering that his general condition seemed to be no worse than it had been a year and a half before—indeed, one would say there had been an improvement during the last few months—I had grave doubts whether my original diagnosis of cancer had been correct, and I expressed a more favourable view of the case, considering that the enlargement originally felt about the prostate might have been either of a fibroid, or, more probably, of an inflammatory nature.

The patient's condition remained stationary for some months after this. Then the urinary troubles, together with symptoms of obstruction, quickly increased, and he died in a little less than two years after my first examination.

A post-mortem was fortunately obtained. A mass of cancer was found involving the prostate, from whence it had extended into the cellular tissue around the rectum, causing almost complete occlusion of the bowel.

This case shows an exception to the general course of malignant disease, for the patient's condition, instead of progressing steadily from bad to worse, remained practically unchanged for more than a year and a half. Moreover, the case is instructive as showing how unwise it is to express an opinion as to the nature of a disease without proper examination.

Doubtless the implication of the rectum occurred many months before death, and with the certain diagnosis that an examination would have afforded, a colotomy should have been strongly advised.

Another case, which I saw in consultation with Dr. Allen Sturge, of Nice, was also an example of a difficulty arising in diagnosis between tumours external to the rectum and those involving the bowel.

A gentleman, aged sixty-two, dated his illness from about six months previously. At that time he suffered much pain in the right iliac fossa, shooting down the thigh to the testicle. The pain continued, coming on at night, and causing him to wake up. The bladder was at times irritable, and he passed water three or four times in the night, and every two hours in the daytime. There was considerable discomfort about the bowel, but the actions were fairly regular.

Examination. — Sounded. No stone found in the bladder. By the rectum a large irregular mass could be felt. It appeared as if divided into two distinct lobes, one in the middle line very hard and prominent, and one on the right side. Each lobe was about an inch and three-quarters in diameter; they were of a stony hardness, and covered with mucous membrane. The middle lobe gave the impression that it was an outgrowth from the posterior border of the prostate. The large mass on the right side

probably also proceeded from the prostate. Nevertheless, it gave the idea that it was growing from, or fixed to, the pelvis somewhere about the region of the spine of the ischium. The patient died six months later, the urinary troubles increasing, but he had little trouble with the rectum, pretty clearly showing that the source of the disease was prostatic and not rectal.

On page 277 a case is described which is a good example of a growth encroaching upon the rectum from the pelvic bones.

Diagnosis from Inflammatory Disorders.—This had better be considered under two conditions—the one, acute inflammation, leading to suppuration or sloughing, the other, chronic inflammation, ending in permanent thickening or stricture.

From Acute Inflammation.—The three following cases well illustrate the difficulty that may arise in making a diagnosis between acute inflammation and cancer :

Mr. D., aged fifty-two, with a strong family history of cancer, was recommended to me by Dr. Bright, of Glastonbury. About a year before he noticed that he was getting weak and somewhat thinner than usual. The weakness decidedly increased during the year, but he had a fair appetite. During this period he had suffered some slight, vague pains about the rectum, but not sufficient to induce him to take medical advice. There has been no diarrhœa or discharge of any kind ; he has never passed any blood, nor, until recently, had he pain on going to stool. Three weeks ago, for the first time, he had severe pain about the rectum, and this has continued ever since, prevents sleep at night, and he has some difficulty in passing his water. Great pain was caused by introducing the finger. The interior of the bowel felt slightly œdematous, and the vessels pulsated strongly, and an indefinite hardness could be felt about as high as the finger could reach.

Half a pint of warm water was injected, which did not return till a rectal tube was passed. It then came back,

only slightly tinged with fæces, but it contained several white flaky membranous shreds.

I rather suspected an abscess, but the case was not clear. A week later there was a copious discharge of pus from the bowel, which gave immediate relief to the symptoms, and confirmed the view that the case was merely inflammatory.

A sailor, about thirty years of age, was admitted into St. Bartholomew's, under the care of my colleague, Mr. Bruce-Clarke. He stated that he had suffered great pain about the rectum for nearly a month. On examination, a deep cavity could be felt, on the anterior wall of the rectum, an inch and a half across. The walls of the cavity felt hard, but the edges towards the mucous membrane were fairly soft and not everted. Considerable doubt was felt as to the nature of the ulceration, as to whether it was a breaking-down malignant mass, or a cavity left by the bursting of an abscess. No history could be obtained of any sudden discharge of pus. Chiefly on the ground of the absence of eversion or induration of the mucous membrane edge, we considered the trouble most likely to be inflammatory. This proved to be correct, for it ultimately completely filled in, and the patient was discharged well.

A gentleman, aged thirty-six, was sent to me by Dr. Doig, of Ross. The patient, for the last six years, has been occasionally troubled with piles, but, as a rule, has enjoyed good health. Four months ago he had more decided discomfort about the rectum, but no actual pain until the last five weeks. One afternoon, at that time, he felt so ill, and had so much pain about the bowel, that he went to bed. The pain remained very bad for four or five days. He then took a large dose of purgative medicine, and had a copious evacuation. He also thinks that, after the motion, some matter came away from the bowel. After the evacuation the acute pain left him. A sensation of weight and discomfort has continued, and there has been some slight discharge.

On examination, at about an inch and a half up the bowel, partly on the side and partly on the front wall, was a swelling beneath the mucous membrane. It was somewhat ill-defined at the borders, but prominent in the centre, was fairly soft, but certainly did not fluctuate, and was about an inch and a half wide from above downwards, and a little more from side to side. I could not make a certain diagnosis, but, from the history of the case, I was inclined to regard it as inflammatory. I never saw the patient again, but Dr. Doig has kindly supplied me with the following information:

"For the next year after you saw him he remained in much the same condition; acute symptoms then set in. A large abscess formed, which was opened, and in the end led to the formation of a fistula, which still remains. He enjoys fair health, and the fistula gives but slight annoyance compared to his former suffering."

From Fibrous Stricture.—In the great majority of instances a practised finger has little difficulty in recognising the distinction between fibrous and malignant stricture. Nevertheless, the most skilful practitioner will at times meet with cases when an accurate diagnosis is extremely difficult. The following case may serve as an example. A patient, aged thirty, was sent to me by Dr. Brook of Lincoln. She had various opinions about her case, but her disease was generally considered to be malignant. The patient was a remarkably fine healthy woman and a great huntress. For a year and a half she had suffered from constipation which was getting worse. At times she will feel completely blocked up and the abdomen swells, and she can pass neither motion nor urine. After a day or so she will pass a little motion and a lot of urine, then feeling better. She has no diarrhœa, but occasionally passes a little mucus but no blood. Has not lost flesh. Examination under chloroform showed a normal anus. At three inches up the bowel the lumen seemed to be blocked with a dense hard mass. It appears to divide

into nearly equal masses very convex and each the size of a bantam's egg. Between these was a narrow slit which would not admit the tip of the finger. This afterwards proved to be the entrance to the bowel, there being a deep cul-de-sac on either side of bulging masses. It was subsequently found that the mass was about two inches in length and quite an inch thick and was very fixed. Per vaginam Douglas's pouch occupied by a densely hard mass continuous with that in the rectum. The uterus only moved slightly. So far as I could feel, the mucous membrane was intact over the swelling though pretty firmly adherent to it. It was partly owing to this fact that I considered this case to be fibrous and not malignant. Nevertheless I was in considerable doubt as to the nature of the case. In the presence of Dr. Clement Godson and assisted by Mr. Brook I made a complete posterior division through the whole mass of the stricture right back to the anus. The cut section was densely hard and about three-quarter inch thick. After a fortnight a No. 12 bougie was introduced and kept in daily for half an hour. It was difficult to pass on account of the cul-de-sac on each side of the divided stricture. The patient went home after ten weeks with directions to pass the bougie twice a week. She soon recovered complete control and lost all her old symptoms. Three years later she married, and afterwards being pregnant, came to consult me on Dr. Godson's advice whether the rectal trouble would interfere with labour. On examination nearly five years after the operation I found the patient remarkably well and six months pregnant, the rectum giving no trouble. She was subsequently delivered of a 10 lb. baby without the slightest trouble.

I will now draw attention to a few symptoms which may assist in forming an opinion.

Time.—This is an exceedingly important consideration in determining the question of malignancy. Although malignant disease may be of a somewhat chronic nature,

it must be remembered that when it has advanced sufficiently to produce well-marked stricture its course is comparatively rapid, and a fatal termination not far off. With a considerable experience of these cases, I know but a single instance in which the patient has survived three years after the symptoms of stricture became prominent. Indeed, as a rule, the time is far less than this, the survival even for a year being exceptional. It may be safely assumed, therefore, that, if well-marked symptoms of stricture have existed for over three years, it is improbable that the case is one of cancer.

The following case illustrates the importance of this time element, and shows how an exceptionally careful surgeon may form an inaccurate diagnosis by omitting its consideration :—

M. A. B.* was admitted into St. Bartholomew's Hospital, March 1874.

"Three years ago, after her last confinement, she was troubled with piles, never before having had any pain or disorder of the bowel. Since that time has had increasing difficulty in passing her motions. From time to time she passed blood in small quantities. She was often seized with pain and straining during the day, sometimes ten to twenty times, after which a fluid motion passed. The motion was very seldom solid, and when so was no bigger than a pipe-stem. She had never noticed discharge of matter from the bowel, and there was no history of syphilis.

"Upon examination there was seen a ring of small pale external hæmorrhoids, and the finger introduced into the bowel detected a funnel-shaped cavity leading from the anus down to a stricture situated three inches from the orifice. The rectal walls were hard, nodular, and thickened. The stricture was annular, edges thick and indurated, and was so tight as not to admit the

* Sitwell Ward Register, St. Bartholomew's Hospital, vol. iii. p. 33.

little finger. When examined by a speculum the stricture presented a ragged ulcerated edge of ashy-grey colour. After a short treatment by bougies she was discharged uncured from the hospital, and the disease was considered by the late Mr. Callender to be malignant."

The above record I have abstracted from the excellent notes of Mr. H. T. Butlin, who was then Surgical Registrar. The abstract I have had by me for some time, and the case had excited my interest on account of the rareness of malignant stricture lasting so long. I could, however, obtain no further history of the case. In 1882 M. A. B. again turned up at the hospital, and being admitted I had an opportunity of examining the patient, which I need hardly say I did with considerable interest. Of course, with the knowledge that the symptoms had now existed for ten years, it was absolutely certain that the case was not one of cancer. Yet I am confident that at the time of my examination a diagnosis could not have been certainly established apart from the history of the case. The parts were bathed with a foul discharge, and she had no control over the fæces, which ran partly from the anus and partly from a hole in the vagina. The parts about the posterior vaginal wall and the stricture felt hard and irregular, while the bowel was firmly fixed to the neighbouring parts. Her general condition was one of debility with emaciation, and would have corresponded well with the cancerous cachexia. The stricture was a fibrous one, and she was greatly improved by appropriate treatment.

Discharge.—In malignant stricture the discharge, if not at the beginning, certainly before very long, is generally dark and blood-stained. In fibrous stricture, on the other hand, it may for months and years be comparatively slight, and more resembles thin pus. It is true, that, in advanced cases of fibrous stricture, where there is deep ulceration, the discharge may be of a dark coffee-ground colour, as in cancer.

In cancerous stricture there is often a marked tendency to bleed. Bleeding is exceptional in fibrous stricture, This is particularly marked after an examination. In the one case, even the gentlest introduction of the finger may cause bleeding, while in the other, even introduced roughly, it seldom excites hæmorrhage.

Condition of the Bowel below the Stricture.—In malignant disease this portion of the bowel is generally comparatively healthy, in fibrous stricture it is seldom so, and the bowel, instead of feeling soft and velvety, conveys a hard, creaking sensation to the finger, the mucous membrane being irregular and adherent to the subjacent tissue, sacculated in some places, and nodular in others.

The stricture itself feels different. In malignant disease the lower border is abruptly marked, and there is often all round it an everted, hard, nodular ring marking the border of the advancing disease on the mucous membrane. This nodular border is absent in fibrous stricture. The entrance into a fibrous stricture may sometimes be felt like a small orifice in the centre of a kind of diaphragm, but far more commonly the contraction is gradual, as if the finger were being passed into the apex of an extinguisher. Fibrous stricture is softer and less rigid than a malignant stricture.

Careful examination should always be made of the inguinal glands, for, though rectal cancer frequently runs its course without these being implicated, nevertheless they often become infiltrated when the cancer has been some time in progress, and has encroached upon the anus. The absence of glandular enlargement therefore proves nothing, but its presence would be of the highest diagnostic value. The general weakness and malaise forming the group of symptoms known as cachexia, although not always absent in simple stricture, generally form a very marked feature in malignant disease.

In conclusion, I believe that it is occasionally impossible to express a positive opinion as to the nature

of a stricture until the case has been some weeks under careful and continuous observation.

From Tubercular Ulceration.—There is a rare form of ulceration about the anus and rectum as to the nature of which all authorities are not agreed. Some describe it as lupus, some as rodent ulcer, while others regard it as of a tubercular nature. I am not familiar with lupus in this part of body, but I have seen an ulceration here which so closely resembles in its appearance and course the rodent ulcerations met with on the face that it is probably the same disease. Such a case will be found described on page 186, but the peculiar ulceration to which I am about to refer seems rather to be of a tubercular nature. In some of its features it closely resembles epithelioma, but I have little doubt that it is not cancerous.

The two following cases will serve as illustrations of this rare disease :—

A gentleman, aged thirty-five, seen in consultation with Dr. F. O. Smith and Mr. Pepper, had always been an active man with good general health. Thirteen years ago he had an ischio-rectal abscess which ended in a fistula. This fistula, with the exception of a little weeping, gave hardly any trouble till three years ago, when the parts inflamed, and owing to the pain he had the fistula operated upon. The wound healed very slowly, indeed part of it never healed at all, for there remained a large tunnel running up the ischio-rectal fossa for about an inch and a half outside the bowel. The canal ended in a cul-de-sac, and was of such a diameter as would readily admit the index finger. Until eight months ago this large sinus gave little trouble, there was always some discharge from it, but it gave no pain. At this time he noticed that he was gradually getting very constipated, having to strain a good deal to pass his motions. These troubles continued to the present time, and he has lost much flesh during the last six months.

Seven weeks ago, owing to pain and inflammation

about the anus, he was again examined. Two or three fistulous openings were found in the anal neighbourhood, one being as far forward as the scrotum. Three fistulous channels were freely laid open, and I was asked to see the patient because the wounds had refused to heal. On examining the part, the anus appeared to be quite gone, as if an excision had been performed. A circular opening existed, about one and a quarter inch in diameter with a thin cicatricial margin. The skin adjoining the margin was thin and smooth, having a white cicatricial aspect. On looking into the cavity that represented the anus, the rectal orifice could be seen, and on passing the finger into this, the mucous membrane felt fairly healthy, but was much contracted.

The narrowing gradually increased as far as the finger could reach, at which spot it fitted the finger-tip, with no room to spare.

On each side of the bowel, running up for a couple of inches, were two channels, each large enough to admit the index-finger. The sides of these channels had a hard, harsh, nodular feel, so that the two formed rigid tunnels. A probe, introduced into the fistulous opening referred to in the perineum, passed five inches downwards, but it did not enter the rectum or either of the hard tunnels. We were in doubt as to the nature of the disease. The hard, nodular condition of the tunnels suggested epithelioma, but, with this exception, the general character of the disease scarcely accorded with cancer. The discharge especially was unlike that found in cancer. It was scarcely blood-stained, almost free from odour, and had a healthy, gelatinous look.

The induration referred to, though very marked in the tunnels, did not affect all the ulceration, and some superabundant granulations covering part of the ulceration were soft. Mr. Pepper informed me that colotomy was performed soon after my visit, with relief to the symptoms of obstruction, and that the patient lived for just a year,

getting gradually weaker, the urine containing more than half albumen. The sinuses discharged as freely as ever. There was no fungating growth, spread of the disease, or anything new to suggest that the disease was cancerous.

A woman, aged about thirty-five, kindly sent to me by my friend, Mr. Sankey, of Oxford. A year ago an abscess formed and burst by the side of the labium. A few months later a fistula was found on the anterior rectal margin. This was freely laid open by Mr. Sankey, and the sphincter divided. The wound thus made refused to heal, notwithstanding many changes of local treatment.

On the front wall of the rectum is an ulceration the size of a half-crown. It is covered by some red, irregular granulations. It feels soft on direct pressure with the finger; neither are the edges, which are scarcely raised, indurated. With one finger in the rectum and one in the vagina, there is some hardness felt about the base of the ulcer. The lower border of the ulcer is close to the anal verge, and at one spot the thickness between it and the vagina is no more than that of a penny. A hole in the centre of the ulcer leads into the rectum again an inch higher up. Mr. Sankey tried scraping and the cautery, but the part refused to heal. The ulcer was then excised, and the patient got well.

Ossifying Ovaries mistaken for Rectal Cancer.—In 1903 I saw, in consultation with Sir William Bennett, a lady, sixty-one years of age. During the last five years she had occasionally some sharp attacks of pelvic pain. During the last six months she has had almost constantly a dull aching pain with considerable irritability of the bowels, requiring to go to stool five or six times a day, with a sensation of the bowels never being quite relieved. There has been no blood or discharge. She has consulted many surgeons, and "had been advised a colotomy for malignant disease." On examination under ether, *per vaginam*, a lump could be felt in Douglas's

pouch. Bi-manually it was free of the uterus. On examining by the rectum at four inches up the bowel the finger came upon a densely hard tumour, so hard that it felt like a stone, and about the size of a hen's egg. The tumour seemed to be situated in the bowel, which had become invaginated at the spot, so that a considerable cul-de-sac lay all around it at least two inches deep in front. The tumour appeared to have a double thickness of mucous membrane over it, as if it might be a growth higher up the bowel that had invaginated a double fold of the bowel. The most careful attempt was made to pass the finger beyond the invaginated bowel and touch the supposed growth itself, but it could only be felt through the fold of the mucous membrane. It could be moved slightly from side to side, and pushed up to a small extent. I could not make up my mind as to its nature, but was inclined to think it might be a rectal concretion lodged in a pouch which had become invaginated by straining, as it felt too hard and movable for malignant disease.

I advised an abdominal section first with a view to accurate diagnosis, and, if possible, to deal with the tumour, as it was too high for access from below. On opening the abdomen, and passing the hand deep down into the pelvis, two hard masses were at once felt—that on the left the largest. This, with some little difficulty, was raised out of its bed. It could then be seen that the tumour had been lying in a deep pouch formed by the invagination of the anterior wall of the rectum, which it had gradually pressed downwards into the bowel below, the pouch being two and a half to three inches deep. It was now seen that the tumour was of the left ovary, about the size of a large duck's egg; it had a long pedicle, and was removed. It was roughly lobulated on the surface, and so densely hard that it could not be cut with a knife. There was a similar tumour, about half the size, of the right ovary some way down into Douglas's pouch. This also was removed. Subsequently the tumour was cut

across with a fine saw, and appeared to consist almost entirely of dense bone and fibrous tissue. The patient made a good recovery, and all her previous symptoms vanished (*see* Fig. 28).

Fibro Muscular Tumour mistaken for Cancer.—In November 1899 I was asked by Dr. Marshall, of Bexhill, to see with him the following case. Mrs. V., aged forty-eight, had for the last six months suffered with slight symptoms of bowel irritation. Until under

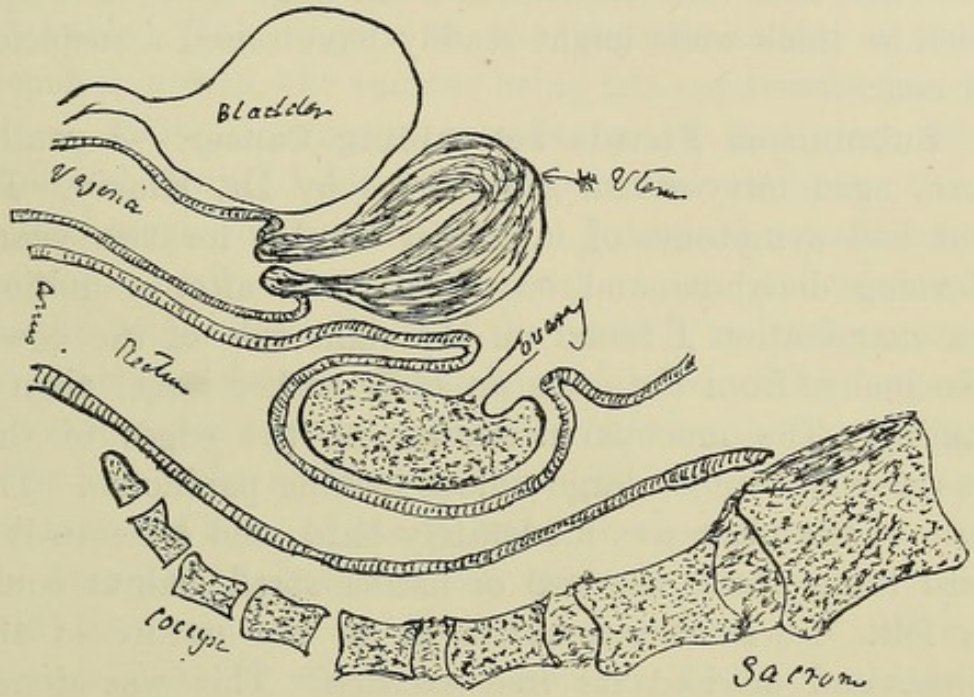


FIG. 28.—Diagram showing position of Calcified Ovary in an invaginated fold of the Rectum.

ether nothing could be felt, then just as high as the finger could reach a swelling the size of a bantam's egg could be felt high up in the anterior wall. It appeared to be in the muscular coat, the mucous membrane being intact over it, and moving slightly on the subjacent tumour. The swelling was so high up that only after considerable trouble in getting the finger beyond some folds of the bowel it could be felt at all. Operation. The rectum being split in the middle line behind, sufficient room was gained to seize the tumour with volsella, when it could be drawn down fairly within reach. The

mucous membrane was incised and the tumour dissected out of the muscular wall in which it seemed to be incorporated. A kind of pedicle was formed by dragging it out; this was transfixed and the tumour cut off. The growth was not malignant, but rather a thickened lump of the muscular coat converted into dense fibrous tissue. No sinus or cyst could be found in its interior.

Cyst of the Rectum resembling Cancer.—Cysts of the rectum are extremely rare. I have only come across one case, and that is described on page 280. The cyst with its thick walls might readily have raised a suspicion of cancer.

Submucous Fistula resembling Cancer.—A gentleman, aged forty-seven, sent to me by Dr. Kinsey. He had had symptoms of intestinal trouble for two years. Morning diarrhœa and occasional pain after a motion. On examination I found on the right side of the bowel two inches from the anus an ulcer rather larger than a shilling. The mucous membrane at the edges of this was elevated into a large villous-looking papilloma. The base of the ulcer was moderately hard, and beneath it a hard lump about the size of half a small walnut could be felt. I was very doubtful as to the nature of the lump, and advised its free excision. This was done; the lump was carefully excised with a quarter of an inch of healthy tissue around it. After removal a careful examination showed the following condition. In the centre of the ulcerated base a tiny hole was seen, admitting a fine probe. This led into a cavity about half an inch in diameter. The walls of the cavity were very hard, and one-sixth of an inch thick, composed of dense fibrous tissue. The cavity was lined with a soft granular membrane, and contained about half a drachm of muco-pus.

Kidney mistaken for Rectal Cancer.—I was asked by Dr. Frampton to see a gentleman, aged fifty, who had been pronounced by two very competent surgeons to be suffering from rectal cancer high up the bowel. He

had had symptoms for two years, slight at first, but more troublesome lately. He suffered from wind and spasmodic pains in the belly. He had no actual diarrhœa, but an irritable bowel with a little discharge of mucus from time to time. I made a thorough examination under an anæsthetic, and made the following note: Bimanually a tumour the size of a hen's egg can be felt, but this can only be done by passing two fingers of the right hand high up the rectum, and pressing firmly down with the left hand above the pelvis. The tumour is movable. The fingers in the rectum cannot actually touch a growth, the tumour being felt apparently through some folds of mucous membrane. I had very little doubt that what I felt was malignant disease in the bowel, felt through some rectal folds. I advised an abdominal exploration in the left inguinal region, considering it might be possible to draw the growth up and excise it, or if not, a colotomy might be performed. The suggested operation was subsequently performed by another surgeon, who found the tumour was the left kidney flattened out against the brim of the pelvis. It was removed.

Stercolith mistaken for Cancer.—On pages 252–3 will be found the details of three cases of this rare disease, both of which were sent up to me as cases of cancer. The diagnosis can be made by a careful digital examination. At first the concretions could only be felt as hard, firm masses through a double fold of invaginated rectum, but with care and perseverance the finger could disentangle the folds, and actually touch the surface of the stony concretions with the finger tip.

Uterus mistaken for a Cancer.—It would seem scarcely possible that the uterus could be mistaken for malignant disease of the bowel, but yet I have reason to know that such mistakes are not infrequent. In some women the uterus has a tendency to tilt a little more forwards or backwards than usual, so that its long axis lies more or less at right angles to the rectum. In

such cases, upon introducing the finger into the rectum, a hard, well-defined swelling can be felt on the anterior wall, encroaching considerably on the calibre of the gut. Occasionally this encroachment is sufficient to produce symptoms of partial obstruction. In those circumstances a hasty examination of the bowel leads to an error in diagnosis. A little further investigation, however, will soon correct the mistake. The mucous membrane is always smooth and intact, and glides over the swelling, which can itself be moved from side to side.

A bi-manual examination by the vagina and the rectum, of course, immediately clears up the nature of the supposed tumour.

Chronic Enlargement of the Prostate. — The situation of the swelling, and its firm, well-defined character, together with the fact that the rectal mucous membrane is healthy and intact over it, generally points to the innocent nature of the enlargement. A difficulty in diagnosis will, however, occasionally arise, such as occurred in the case recorded on page 363, but here, had a second examination been permitted, the alteration in the character of the swelling, and the fact of its extending round the bowel, would have made the diagnosis clear.

CHAPTER XX

TREATMENT OF RECTAL CANCER BY EXCISION

THE treatment of rectal cancer will be considered under the following headings :—

(1) Excision.
(2) Colotomy.
(3) Palliatives.

The relative number of cases treated by these different methods will be found in Table D.

Treatment by Excision.—The name of Lisfranc stands prominently forward amongst the earlier advocates for treatment of rectal cancer by extirpation. The operation had been previously mentioned by Morgagni, and performed by Faget. During the earlier portion of the last century Pinault published some remarks on the subject, but the able paper read by Lisfranc before the Académie Royale de Médecine, March 24, 1830, together with Dieffenbach's many successful cases, were without doubt the leading cause that established the treatment of rectal cancer by extirpation in modern surgery. Some six or seven years later Velpeau described the operation, with some ingenious modifications, and gave the result of an extensive personal experience. About the same time Recamier's operations were published by Massé. In the year 1854 Chassaignac employed the écraseur. Maisonneuse in 1860, and Fumouze, Nussbaum and Schuh later, are all well-known modern authors on the subject, while Marchand's work, published

in 1872, was a valuable contribution. In America, Roberts,* Briddon, Kelsey† and Professor Tuttle have done much in improving the operation. Dr. Tuttle's book, published in 1903, is the most thorough and comprehensive work on the rectum, while his chapter on rectal cancer is one of the best accounts of the disease yet written. In this country we are greatly indebted to Sir Alfred Cooper, Mr. Swinford Edwards and Mr. Eve for doing so much for establishing the operation on a sound footing. I may, too, perhaps claim that my prize essay of 1877 has not been without influence on the treatment of rectal cancer.

To the younger surgeons of the present day any question as to the propriety of removing a cancerous growth from the rectum in suitable cases might seem superfluous. Nevertheless, the general acceptance of this operation is of comparatively recent date. It is only thirty years ago that the Royal College of Surgeons of England set as the subject for the Jacksonian Prize Essay: "The possibility of cure or relief of cancer of the rectum by excision." At the time this prize was awarded the operation was never practised in this country, and merely mentioned in the text-books as a useless proceeding to be condemned.

As in the history of many other now well-established operations the pioneers were much abused. This preliminary criticism had its value, for it quickly produced in thoughtful and enterprising surgeons the desire to improve the methods of operating, which were soon followed by the operation becoming recognised as the most valuable method of treatment in suitable cases.

In discussing the treatment by excision the following are the chief points requiring consideration :—

* Excision of Rectum for Cancer, Philadelphia Med. Soc., June 1887.

† An Analysis of 140 Cases of Excision of Rectum, *New York Med. Jour.*, December 1880.

(1) Selection of cases suitable for operation.
(2) Immediate risk to life involved.
(3) Amount of benefit to be expected.
(4) Best method of operating.

Selection of Cases.—It is of no avail to show that anatomy will allow and that there may be theoretically carried out a surgical operation, unless it can be further proved that, in a majority of cases, it is followed by beneficial results. There is scarcely an operation upon the human body which is not liable to be abused by the ignorant or enthusiastic, although in the hands of a discreet surgeon of the utmost value to the sufferer.

It requires much care to select cases of malignant rectal disease in which benefit is likely to result from its removal. Unfortunately, suitable cases are in the minority, for the symptoms are often overlooked or neglected until the disease has assumed uncontrollable proportions, or it may be that even from the first it was situated too high to admit of operative interference.

To regard excision as the ordinary treatment for all cases of rectal cancer is but to throw discredit upon the method; and the mortality following Billroth's operations should stand as a warning against the indiscriminate performance of excision.

In selecting cases for operation the general constitutional state of the patient, together with the local conditions of the growth, have both to be considered.

The same rules that would guide a careful surgeon before undertaking any severe operation must hold good in cases of rectal cancer. The age of the patient, his general strength, and the condition of the urine, must be taken into consideration, for an operation, which, in a middle-aged and comparatively healthy patient, is one of small risk, becomes extremely hazardous in the aged and feeble.

It will be seen on referring to Table E, that out of four deaths two of the patients were over seventy-

five years of age, and one aged sixty, an advanced drinker (page 387).

The abdomen must be examined to ascertain that the abdominal viscera and lumbar glands are not implicated.

If the general state of the patient be satisfactory, the local conditions of the growth should next be inquired into.

In dealing with cancer no operation should be undertaken without a reasonable prospect of its being possible to remove the whole disease. Under ordinary circumstances the finger can explore to a distance of from four to five inches. If the patient be told to strain down or the abdomen pressed with the hand, a slightly further distance of bowel can be reached. If at this examination the finger fairly pass beyond the disease in an upward direction, the next point to be ascertained will be the implication of the surrounding tissues, and the extent to which the disease has formed adhesions to the neighbouring parts. If the whole circumference of the bowel be involved, it will be found that it is attached more or less firmly to the surrounding structures, especially on its anterior aspect. It is of great importance to ascertain with some precision the extent to which the prostate, vagina or uterus are implicated. In the male, although the disease may be situated in that portion of the bowel in contact with the prostate, it is a long while before the prostate itself becomes infected; in women, on the contrary, when the disease is on the anterior part of the bowel, the vagina quickly becomes implicated. So long, however, as the vaginal mucous membrane remains free, it is possible to dissect the anterior wall of the rectum from the vagina without making an opening into the latter. If the disease is adherent to the upper portion of the vagina in the immediate vicinity of the uterus, the peritoneal membrane of Douglas's pouch is nearly sure to be drawn towards the disease, which cannot be removed without opening the peritoneum. In these

circumstances, it is better, save in exceptional cases, that no operation should be undertaken; not so much on account of the necessary opening of the peritoneal cavity, as that the disease, once having implicated this membrane, is nearly sure to have spread in the course of the lymph-paths beyond the reach of complete removal. It is well to remember in the female how near to the perinæum the peritoneal membrane descends, it being much more commonly at a shorter distance than three inches than at a distance in excess of that measurement. The cases in which invagination occurs, as referred to on page 349, must also be remembered. In these instances the origin of the disease springs from the bowel much higher up than might be supposed from the examination. Moreover, it is not improbable that a considerable fold of peritoneum has been drawn down by the growth in its descent.

I do not consider the implication of the lower part of the vaginal wall as necessarily forbidding an operation. Indeed, in one of my cases where this complication existed the woman did remarkably well, notwithstanding that a considerable portion of the septum had to be excised.

If the disease is confined to the posterior wall, the case is in every respect more favourable to the operation than when situated in front. In this position there are no anatomical difficulties to prevent the thorough removal of the disease to the extent of four to five inches, care being taken to ascertain, if possible, whether the coccygeal or sacral glands are involved. As a rule, glandular infiltration comes on late; if it is extensive, hard nodular masses lying behind the rectal wall can be felt.

To sum up briefly the general outline of the cases suitable for operation from below, I should say that the disease must be within five inches of the anus, and in women must not have extended on the anterior wall further than three inches, and that the rectum must be fairly movable on the neighbouring parts. If the growth

is higher than five inches above the anus, and if the disease is suitable for removal at all, the possibility of its removal by abdominal section should be considered. Each case will, however, have to be decided upon its own merits, after due consideration has been given to the surrounding circumstances. The distances just mentioned must only be considered as approximate. Should there be any doubt as to whether these conditions are fulfilled, a second examination under an anæsthetic is advisable before deciding absolutely against an operation. It has occurred many times in my practice to find, on such second examination, that a growth came readily within reach which had at first appeared too high up for safe removal.

I find from an extensive experience that the cases of rectal cancer which fulfil the condition rendering an excision advisable amount to about thirty per cent. of cases coming under observation.

Risk to Life involved in the Operation. — The difficulty of estimating with exactness the relative mortality following operations of an exceptional nature is notorious.

> "The evil that men do lives after them,
> The good is oft interred with their bones."

But whereas in surgical cases the operators are usually their own chroniclers, success is apt to survive in history, failure to pass into oblivion with the bones it consigns to decay. When statistics, however, are principally drawn from authors who publish the whole of their experience, this objection is in a great measure obviated, and data sufficiently reliable for comparison may be obtained.

In the earlier editions of this work it was necessary to rely a good deal upon the collective experience of others as to what risk is run in the operations, and as to what benefits may be expected. In this edition the deductions are entirely drawn from Table A, that is, cases occurring in my own private practice. The reason

of this Table being confined to private cases only is referred to later on.

In Table D, page 512, it will be seen that eighty-five cases were operated upon by excision out of a total of 380 cases. The whole number suitable for operation was considerably larger, but the operation, though advised, was on various grounds refused.

Out of the eighty-five cases (*see* Table E)—

Recovered, 81
Died, 4.

A death rate of 4.6.

The causes of death were as follows :—

Case 42.—Death on twenty-second day. The patient, an old gentleman of seventy-six, gradually lost ground. During the third week he became very weak, with wandering delirium, but the wound remained healthy throughout.

Case 145.—A lady, sixty years of age, died on the fourth day from peritonitis.

Case 329.—A lady, aged sixty, accustomed to large amount of stimulants, died on the thirteenth day from acute spreading cellulitis.

Case 371.—A lady, aged seventy-five, did well till the eighth day, when she died suddenly with symptoms of cerebral embolism. The wound remained quite healthy.

In the second edition of this work a large series of cases by different operators was published, and the death-rate amounted to nineteen per cent., nearly all from sepsis. It must be remembered that a very large number of these operations were performed prior to the general introduction of aseptic surgery, whereas in Table E the operations were mostly performed after the rules of aseptic surgery had been well established.

By the ordinary antiseptic precautions at the time of operation, and great care in thoroughly washing the wound night and morning with soap and water, the case can generally be kept aseptic throughout. It does not matter how much fæcal material passes over a rectal

wound, for it does no harm, and excites no inflammation. On the other hand, should any fæcal matter or discharge be allowed to collect for twenty-four or more hours about the anal orifice, it will quickly decompose from organisms coming from without, and tenderness and local inflammation will result. Still, notwithstanding all precautions, two of my cases died of sepsis—a preventable cause which, it may be hoped, will be eventually eliminated.

The Amount of Benefit to be Expected.—The first question that arises is the one asked thirty years ago by the Royal College of Surgeons, namely, is it possible to cure the disease by excision? The whole subject of the surgical treatment of cancer is regarded in a far more hopeful way by surgeons to-day than it was thirty years ago. Sir James Paget, the greatest living English authority on cancer at that date, stated "that the number of cases in which cancer does not recur after operation is not one in five hundred." * I venture to say that no surgeon of to-day takes this gloomy and hopeless view. I am old enough to remember well Sir James Paget's operations, and those of contemporary surgeons. The operations in those days were not comparable with those of recent times. The growth was generally cut out only from an organ, with scarcely any margin of safety, while glands were seldom interfered with. No wonder these cases were said to "recur." As a matter of fact, the original growth was very rarely removed. It is far different now, when a wide margin is given, and often the entire affected organ removed, with clearing out of all glands affected. So far as general operations for cancer are concerned, surgeons can now claim quite a fair proportion of cures. As regards the rectum, which for the moment only concerns us, I can now speak very confidently as to the proportion of cases cured. Cancer of the rectum, speaking generally, is of a less virulent type than the same disease in many other parts of the

* "Path. Soc. Trans." vol. xxv. page 321.

body. It is far less liable to return than cancer of the tongue or bones, for instance, and is more in the category with cancer of the lip or the scrotum. A free removal of cancer from these regions at an early stage before glandular complications, often leads to a permanent cure. So, too, in cancer of the rectum, an early and free removal is followed by a good percentage of cures. I have not been able to follow all my cases of excision of rectal cancer, but taking the three years' limit, Table E shows thirty-two cases known to be well out of eighty-five operations, giving a percentage of 37.6 as cured. Many observers have taken the limit of three years as a period during which, if the disease has not recurred, the patient may be fairly considered as cured. As regards cancer of the rectum this view can be strongly endorsed. In Table G is shown the number of months after the original operation that a recurrence was noted. In all the thirty-one cases of recurrence, it will be seen that in twenty-four of them the disease again appeared within a year, that in six more within two years, while in one single case only did it recur later. The deductions from these figures warrant the statement that if a patient is free from cancer three years after operation, it is unlikely that the growth will ever return again, and the case may be considered cured.

The reader is now referred to a very important table—Table F; this shows the number of years that elapse between the operation and a subsequent date, when the patient was known to be in sound health, without signs of recurrence. The period extends to twenty years and more. In one case, No. 23, the disease twice recurred after short intervals, but it is now twenty years since the last operation, and the patient still remains well.

If the first four cases are excluded on account of the time taken as a standard for cure, three years not having been reached, and assuming that none of the seven un-

traced cases were cured, we have thirty-two cases known to be cured out of eighty-six operations, or a percentage of 37.2 successes, or if it is wished to put the subject in a more favourable light, there were only thirty-three known recurrences in eighty-two patients who survived the operations, or a return of the disease known to have occurred in only forty per cent.

Condition of the Patient after the Operation.—Relief from Pain.—A most distressing symptom of rectal cancer is pain at the seat of the disease. This pain is in no proportion to the extent of the growth, and, indeed, is often more intolerable from a small cancerous ulceration involving the sphincter than from extensive disease in the higher part of the rectum. Complete relief from this pain is the first and most marked result of the operation. Indeed, the patient will often state on the morning following the operation that a better night has been passed than for months previously.

With the removal of disease not only is there cessation of pain, but also the tenesmus and blood-stained discharge ceases, and the patient rapidly improves in general health and strength. If the disease return in distant organs the suffering is usually inconsiderable, while in the event of a local return there appears to be very little pain compared with that caused by the original growth, a fact probably accounted for by the destruction of the terminal nerve filaments at the seat of operation.

The possibility of incontinence cannot be urged as a drawback to the operation, for if the cancer be allowed to remain unoperated upon, incontinence is nearly sure to become a complication.

In the majority of cases in which no return of the disease has taken place, there is practically perfect control over the bowel, while in others there is good control except when there is any diarrhœa or looseness.

It might be supposed that the destruction of the in-

ternal sphincter, and at the same time more or less damage to the external muscle, would be followed by an incontinence of fæces. In all cases, after operation, there is at first complete incontinence, and the patient loses all consciousness of the passage of fæces, but as convalescence advances control returns. In those instances where portions of the levatores ani have been left intact, the muscles, temporarily paralysed, probably regain their power, but when they have been wholly removed, retention of fæces requires another explanation. Chassaignac attributed it to an hypertrophy of the circular fibres around the termination of the cut margin, constituting a sort of rudimentary sphincter. Lisfranc considered that it depended most probably on the somewhat narrow, tortuous course through the cicatrix, assisted by the surrounding muscles. In the Bulletin of the Société de Chirurgerie, 1861, an interesting discussion on this subject will be found. In the majority of cases it does not appear that hypertrophy of the circular fibres has anything to do with the power of retention, nor in cases that I have examined has any such hypertrophy been found. The common plan by which the passage of fæces appears to be prevented will be best gathered from a description of MacM.'s case, whose rectum I have frequently examined since the removal of two inches and three-quarters of bowel. She is able to restrain both wind and motions, as a rule, completely, but if she has any diarrhœa the linen is slightly stained. Upon separating the sides of the buttocks the anal aperture appears as an oval opening in the skin, one inch long by three-quarters wide. The margin of the opening is formed by a slight inversion of the skin. The edge is not hard, and admits of a certain amount of stretching; just within the orifice is seen a bright red protrusion, which, upon examination, is found to be a sort of prolapse of one side of the bowel, completely blocking up the opening. Very slight pressure enables the finger

to pass into the bowel. This valve-like approximation of the sides of the bowel would appear to be but a feeble guard against the passage of fæces, but nevertheless in practice it is completely efficacious, assisted by the contraction of what remains of the levatores ani.

It is probable in discussing this question of incontinence that sufficient consideration is not given to the normal method by which fæces pass from the bowel. It must not be supposed that there is always a mass of material just within the sphincter ready to pass away. In health, unless the bowels be very loose, a certain amount of straining by means of the abdominal muscles is necessary to bring the fæces against the sphincter, which eventually yields to the pressure, so that during the greater portion of the day the last few inches of the rectum is empty. Again, it must never be lost sight of that the chief agents brought into play to prevent, even in health, the passage of fæces, is the voluntary contraction of the levatores ani exerting a strap-like compression across the bowel.

Contraction of the anal outlet is often a trouble, and will invariably occur unless proper attention is paid during the healing of the wound. If stricture is allowed to take place, incontinence and a dribbling away of fæcal material will render the patient miserable, and may, as I have seen in one case, end in complete obstruction. Stricture, however, can always be prevented by early and proper treatment.

Taking into consideration that death is inevitable from rectal cancer if left alone, and that no other form of treatment holds out the slightest hope, there can be no possible question that it is the duty of every practitioner to advise an operation in all cases in which there is reasonable probability of removing the whole disease, for it converts, with a small immediate risk, the absolute certainty of death into more than a thirty per cent. chance of a permanent cure.

Method of Operating for Excision of the Rectum.—It is some years since I published the fourth edition of my work on this subject, and gradually, from the accumulative experience, I have considerably modified my original method of operating. The écraseur has been entirely done away with, and the use of the curved pressure forceps substituted, which has practically removed the risk of dangerous hæmorrhage. There are two plans of operating: the one where the disease is fairly accessible and movable, where, beyond the removal, perhaps, of the coccyx, no bone is taken away; the other, where the disease is high and extensive, involving a partial removal of the sacrum—the trans-sacral operation.

Operation from Perinæum.—The patient being prepared by half an ounce of castor oil administered not less than twenty-four hours previously, and by a warm water enema one hour before the operation, is placed under chloroform in the lithotomy position, and kept there by means of Clover's clutch. This consists of a metal bar eighteen inches in length, at each end of which is a semicircular padded crutch with a strap and buckles attached. The legs being flexed on the thighs, the bar is placed between them, so that the crutches fit against the legs just below the knee, and are kept in position by means of the straps and buckles. The thighs are then bent on the abdomen, and a soft leather strap passes over the head and one shoulder, and the free ends being then buckled to the crutch, the strap is tightened so as firmly to fix the thighs in a bent position. The patient is now lifted down to the edge of the table, a towel rolled into the form of a firm pad five inches in diameter being placed under the sacrum, so as to elevate the rectum, and get it into a good light. In the hospital a sand-bag can be used, but in private, a carefully rolled-up bath towel answers the purpose. The instruments required are:—Two strong scalpels; one straight blunt-pointed bistoury; one pair strong

blunt-pointed scissors; one pair strong sharp-pointed scissors; two large volsella forceps; eighteen pairs of pressure forceps, nine of them being curved (Fig. 29); two rectangular needles with large oval eye (Fig. 5); one saw and one pair bone-cutting forceps—if sacrum or coccyx to be removed.

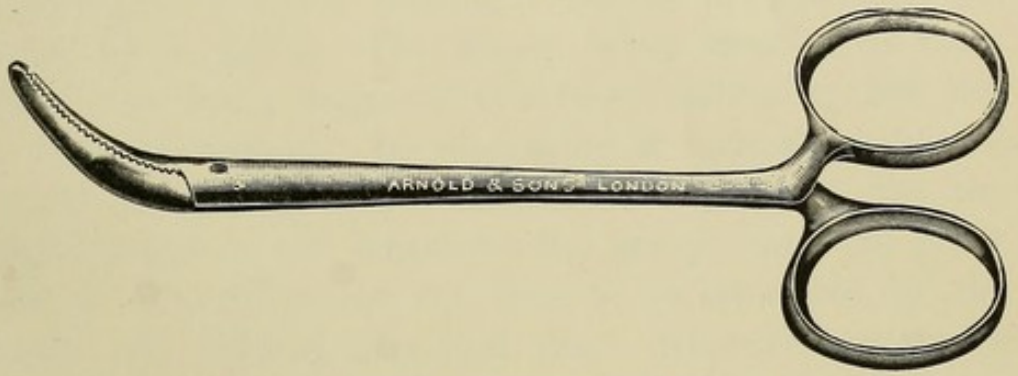
Silk ligatures.—These should be fourteen inches long, and of soft silk, so as not to cut through the tissues. The best plan is to get a skein of soft silk (Messrs. Arnold, Smithfield, E.C.) the thickness of No. 2 catheter. After cutting this into fourteen-inch lengths, it should be unravelled into its three primary strands, which will be found quite sufficiently strong, and can be threaded easily through the rectangular needles.

The left forefinger is now passed into the rectum, so that a clear notion as to the position of the growth is obtained. If the growth is small, and the bowel movable, it may occasionally be everted through the anus without splitting this part, but, in far the majority of cases, it will be necessary to divide the anus and the lower part of the rectum in the middle line behind.

Formerly I used to do this by transfixion with a strong curved bistoury, but I now generally split the bowel from below upwards; two fingers of the left hand being inserted keep the bowel open, so that the anterior wall is not injured. The two fingers being separated, the bowel is divided between them in the middle line by an ordinary straight scalpel, cutting from below upwards. The length of this posterior cut depends on the height of the growth. If the cut is carried up the bowel for three inches, which is about as far as the middle of the coccyx, this will generally be sufficient, but there is no reason why it should not be carried up further by the side of the coccyx or sacrum, if necessary. If a vessel is divided of any considerable size, which is exceptional, it can be temporarily secured by straight pressure forceps.

Assuming the whole circumference of the bowel is

FIG. 29.



CURVED PRESSURE FORCEPS.

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to be removed, the next step is its lateral separation. A sharp-pointed scalpel is now plunged through the muco-cutaneous surface, half an inch to one side or other of the middle line in front, into the ischio-rectal fossæ, and, by a slight sawing movement, cuts its way downwards so as to join the posterior incision already made at right angles, at about an inch within the anal margin. By doing this the main fibres of the external sphincter are left. The right forefinger thrust into this incision, separates the bowel as high up as may be necessary or is possible. During this separation with the right first finger, the left forefinger should be put into the bowel as a guide. The finger being used with some force, can easily separate the bowel laterally, but not in front or behind. In separating it behind, a pair of strong sharp-pointed scissors should be used, for the attachments of the bowel to the coccyx and the lower part of the sacrum are too firm to be separated by the finger. By cutting here and there, wherever resistance can be felt, the bowel is separated from its posterior attachments. It may be that it is not necessary to separate the bowel higher than the apex of the posterior incision, but it is often necessary to go far beyond this. If so, before continuing further separation posteriorly, the opposite or left side of the bowel must be treated in an exactly similar way as the right side. When these two lateral separations have been effected, it is much easier to deal with the firm posterior attachments, for the bowel is to a certain extent set free, and can be grasped by the fingers or by a volsella.

This posterior separation can be carried up as far as possible before commencing the anterior separation, but if the case is a high one, it cannot be completed till some of the anterior separation has been effected.

Separation of the Anterior Wall. — This is the most difficult part of the operation, and requires the utmost care, for it is easy enough to tear into the vagina

in a female, or into the urethra in a male. To avoid this in the male, it is a great assistance to have a full-sized catheter or sound in the bladder, which can be readily felt during the operation, and is a good danger signal against approaching too near the urethra, while, in a female, safety is only to be found by having a finger in the vagina from time to time during the dissection.

In separating the anterior wall, it is in the first two inches that the greatest trouble is experienced. The rectum is normally very adherent here, and will not strip with the finger, but requires careful dissection. After the first two inches or so, it separates much more readily, and, indeed, unless adherent from infiltration, will strip off the vaginal wall or the prostate fairly readily with the finger-tip.

The dissection is commenced by joining the anterior part of the two lateral incisions by a cross incision just within the anus. The separation here can only be effected by cutting with the scalpel and dissecting the rectal wall off, but, as already mentioned, the higher up the easier the separation. After the separation has been carried up about three inches in the female, but higher in the male, the peritoneum is not infrequently met with. In a good light it can be identified, and stripped from the anterior surface of the bowel.

At this period of the operation, the bowel, being detached laterally and posteriorly, can be grasped by the left hand and drawn forcibly downwards, bringing the anterior attachments into view before separation. It is, at this stage, that the peritoneum is so often opened.

If the disease is confined to the mucous membrane there is no necessity to open the peritoneum, and, if opened by accident, it can be closed. Although the danger in opening the peritoneum is very small, I have seen a case in which death took place from peritonitis from this cause, and, therefore, think it worth while to take some trouble to avoid it. In many instances

it cannot be avoided, but in many cases I have had deliberately to open the peritoneum, and take away a portion of it with the bowel as the only means of getting free of the disease. I have opened accidentally or purposely the peritoneum in some twenty-five to thirty cases in about 160 cases of excision, but I have only once seen it followed by septic peritonitis. With an opening into the peritoneum at the apex of the wound, care should be taken, not to push a dirty finger into it, but have the upper part of the wound and fingers kept thoroughly clean with lotion.

After a dissection such as has been described in the male, the lateral lobes of the prostate are clearly visible. If the dissection has to be carried higher than this, besides the peritoneum, the risk of wounding the bladder must be remembered, and here, the sound previously placed in the bladder is invaluable as a guide. I have twice accidentally opened the bladder in this region, but in neither case was any permanent damage done. For some days most of the water came through the wound. This gradually decreased in quantity, and by the end of the third week had entirely ceased, the opening doubtless having cicatricised.

In describing the operation, we have now arrived at the stage when the walls of the bowel have been completely separated from their lateral connections, the remaining stage being the cross section of the bowel above the disease. Up to this stage there has been comparatively little hæmorrhage, for the chief vessels running down between the coats of the bowel have not yet been divided.

Before effecting this transverse division, it is of the utmost importance to see that the bowel has been so separated laterally that it will admit of being cut across well above the seat of disease. With the left forefinger passed up the bowel, and the thumb outside, it can be readily ascertained between the finger and thumb whether

the proposed line of section will be sufficiently high to be quite clear of the growth. Examined in this way, the walls of the bowel in which the growth is situated will feel sometimes nearly an inch thick, while, if the finger and thumb can be passed beyond it, a somewhat abrupt upper border to the disease can be felt, the coats of the bowel beyond being soft, and comparatively thin. It is at this stage of the operation that the plan I introduced many years ago of using curved forceps is invaluable. The forceps shown in the accompanying Diagram are the actual size of those I find most useful. The bowel being drawn well down, the forefinger being inside and the thumb outside, one blade of a curved forceps. which must have not too blunt a point, is forcibly thrust through from the outside into the interior of the separated bowel, well above the disease. This manipulation is facilitated by the finger already within the bowel. The forceps are then clamped home, about a third of an inch of the whole thickness of the bowel walls being included in each forceps. The portion of bowel which is thus clasped is divided with the scalpel, cutting close against the curve of the forceps.

Through the opening thus made, one blade of another pair of forceps is introduced, seizing a further portion of the bowel, which in its turn is again divided. In this way, by using from six to ten forceps, the whole circumference of the bowel is clamped and divided in sections. At this stage of the operation the surgeon has his choice as to whether he will tie the cut edges included in the forceps, removing the latter, or whether he will leave the forceps *in situ* for forty-eight hours, without attempting to place a ligature beyond them.

Undoubtedly, it is more for the comfort of the patient and for the facility of nursing that the forceps should be removed, and I always tie and remove them, except where the excision has been a high one. In some of these high cases there is considerable mechanical difficulty

in transfixing and securing a good tight knot beyond the forceps, and it will not infrequently happen that the ligature is not properly tightened, and sharp hæmorrhage occurs when the forceps are removed.

Hæmorrhage at this stage of the operation is a troublesome complication, and difficult to deal with, for the vessels which were easily clasped when the bowel was being forcibly drawn down before its division, when divided retract almost beyond reach. In high cases, therefore, I usually leave on the forceps, except in the lower portion of the wound, where they are easily accessible for tying. In using the ligature, each portion should be transfixed behind the forceps, otherwise some of them will be sure to slip. For this transfixion is used a strong rectangular needle with a good large eye (*see* Diagram). In securing the edges of the cut bowel, the operator will appreciate the great advantage of a properly curved forceps over a straight one, there being comparatively little difficulty in getting the ligature over the tips of the forceps. Of course, this transfixion means a double knot.

The part to tie first is that towards the tip of the forceps. The two ends of the ligature are then brought down, and tied towards the handle part of the forceps, the tissues being relaxed by the forceps being partially opened at the moment of tying the knot. One end of the ligature is cut off short.

On completing the operation, I give the rectum a thorough wash-out with two or three jugsful of one in four thousand biniodide lotion. Before applying the dressings, a good look round should be made for any bleeding point. It is an easy affair whilst the patient is under an anæsthetic in the lithotomy position, in a good light, with your assistant present to secure the vessel. It is a very different matter to be turned out in the middle of the night with no table, no assistant, and no light, because the blood is smartly dripping through the dressings.

Of all disagreeables in a surgical practice, nothing comes up to a midnight recurrent hæmorrhage from one of your own operations. It nearly always occurs on a wet night when you are dead tired, the patient is anxious, and the friends alarmed, and there is never any extra fee, a combination of evils which, by proper care, may be avoided by securing everything before the patient is put back to bed.

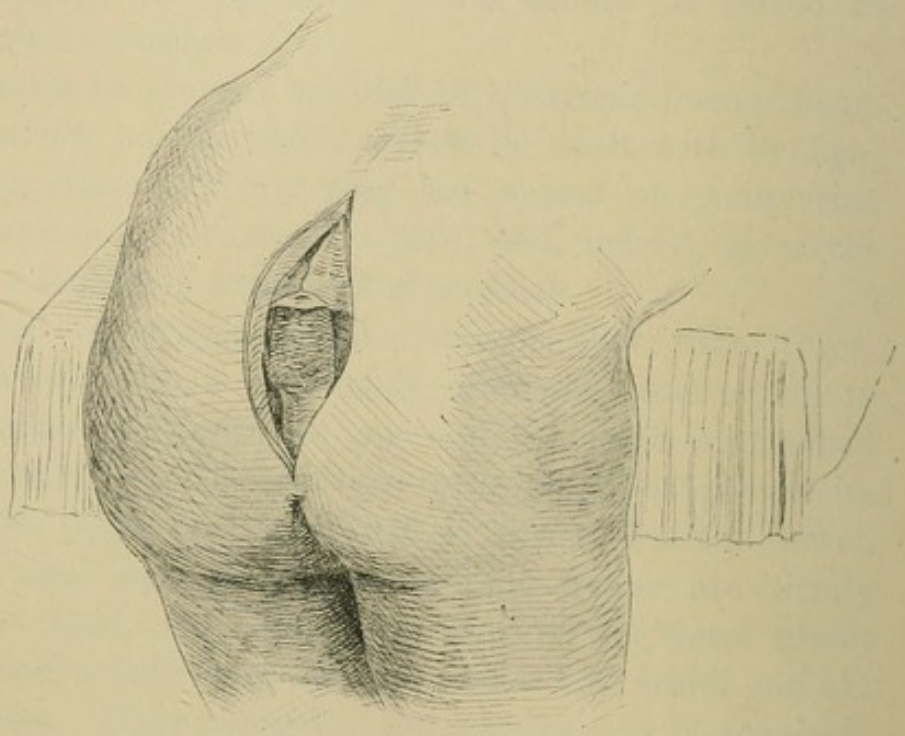
Sometimes there is a little indefinite oozing on the completion of the operation which cannot be traced to any distinct vessel.

In order to prevent the risk of recurrent hæmorrhage, and to arrest oozing which cannot be dealt with by ligature, it is best to firmly plug the wound on completing the operation. It causes no pain, and, indeed, gives the patient a feeling of support and security.

Method of Plugging. — An india-rubber tube three-quarters of an inch in outside diameter, and of six to eight inches in length, to one end of which is attached a stout silk loop to facilitate withdrawal, is passed in, so that its upper end is an inch or two within the bowel. Round this, long strips of cyanide gauze are firmly plugged. Each strip should be cut by the nurse about a yard and a half long, an inch and a half wide, and six thicknesses. Four to eight of these strips may be required. To be effective this plugging must be done very firmly, when it effectively prevents oozing, while, should there by any possibility be serious recurrent hæmorrhage from a vessel, it at once becomes obvious by the blood coming through the tube. Plugging without a tube is always dangerous, for severe hæmorrhage may occur by the blood making its way up the bowel, the plug preventing it being detected.

After the plugging is complete, a muffin pad of cotton wool an inch thick, with a layer of lint on either side, cut to a circle nine inches in diameter, with a small hole through the middle to let through the india-rubber tube,

FIG. 30.



POSITION IN TRANS-SACRAL OPERATION.

To face page 401.

is applied, and any projecting part of which should be cut off flush with the pad, and the whole is kept in position with a T bandage.

Application of the T *Bandage.*—To put this on neatly and comfortably is material. Nothing irritates me more than seeing this untidily done, the bandage looking like the harness on a Connemara car. Patients are quite unable to appreciate the niceties of the most brilliant operation, but they are perfectly cognisant of whether the bandage cuts them, or is comfortable, and value the skill of their surgeon accordingly. The bandage should be of flannel, the waistband being of double thickness, four inches wide, and of sufficient length to go one and a half times round the body just above the hips. It should be put on, drawn tight, and the two ends flatly laid across, and pinned on either side. The two T pieces are then drawn over the dressing between the legs, and pinned eight inches apart to the waist bandage. A T bandage should be pinned, knots and bows being always uncomfortable.

The operation, as just described, is for the removal of the whole circumference of the bowel. Cases, however, will occur in which the disease affects only a small part of the circumference, and in such cases it is not necessary to remove the whole bowel. So far as the operation itself is concerned, it is certainly easier to remove the whole circumference of the bowel than a portion only, but since one of the chief troubles following the operation is contraction of the outlet, and this contraction rarely occurs to an inconvenient extent, unless the whole circumference has been removed, it will be seen that if any considerable portion of the bowel be quite free from disease it may be left with advantage. In these circumstances the operation requires a slight modification of the method just described. In any case, even if the disease be situated in the middle of the posterior wall, the preliminary incision backwards is advantageous, greatly facilitating the operation.

If the diseased tissue be confined to the lateral portion of the bowel on either side, the semicircular incision round the anal margin is made only on the diseased side. A longitudinal cut is now made with the scalpel deeply through the mucous membrane on the middle line of the anterior wall, or, at such a distance from the site of the disease as may seem desirable. The making of this incision is much facilitated by using a very large duck-billed speculum. The strip of diseased bowel which now lies between the posterior incision and the one just made in front can be separated by the finger from its lateral connections, the separation of course commencing from the semi-lunar incision round the anus.

In this way the rectangular flap of bowel in which the disease is situated is detached, except at its upper margin. It is then drawn down, and after being clamped with two or three pairs of curved forceps, is cut off, and the tissues, grasped by the forceps, tied in detail by trans-fixion. It can be readily understood how the steps of this operation must depend upon the portion of bowel in which the disease is situated. If it be in the middle line behind, the disease, or a portion of it, will probably have been split in two by the first incision, in which case a strip of bowel must be removed on either side; or again, if it be on the anterior wall, an incision will have to be made on either side of it.

Any attempt to draw down the cut edge of the bowel and stitch it to the anal margin is perfectly useless. The stitches are sure to give way, and before they do so prevent a free discharge from the wound, by forming spaces in which matter may collect and decompose. Anything that can in the least impede the discharge and cause its collection is a source of danger.

High Trans-Sacral Operation.—If the growth is high up it may not be accessible without removing a portion of the sacrum. The class of case in which such an operation is necessary has already been discussed.

The accompanying diagram shows the position. The patient lying on the belly with the legs lying over the table, an incision is made in the middle line from the last four inches of the sacrum to the coccyx, in many cases to the posterior anal margin. This incision goes right down to the bone. The soft parts are raised in mass on either side, in two thick flaps extending well free of the margins of the sacrum. In this detachment the operator need not bother about the periosteum. He simply uses his knife, held firmly and at an angle, and cuts the tissues away from the bone. The lateral attachments of the soft parts and the ligaments being separated along the lower border of the sacrum on either side by a careful dissection, the sacrum is sawn across at a height of two to three inches, and removed. By care, and not cutting too high, the sacral plexus is safe.

An excellent view is obtained of the lower five or six inches of the rectum, which can be thus removed by a comparatively easy operation. Of course, the plan admits of many modifications. I have, on three or four occasions, succeeded in excising a portion of the bowel including the disease, leaving the lower three or four inches intact, and then made an anastomosis of the cut ends. I have, however, never succeeded in getting primary union, but, on the other hand, union can be obtained, and the bowel restored, by a secondary operation a year or so later (*see* case, page 447), by which time the upper segment will have prolapsed through the artificial anus at the base of the sacrum, and can be, therefore, joined to the lower segment without any tension.

After-Treatment.—After the operation the patient should lie on his side or back. I prefer the former position, as it allows of the part being more easily examined, and any oozing is at once detected. Should the position become irksome, he can be gently turned on his back. There is little pain after the operation, but fifteen drops

of liquor opii sedativus should be given for a couple of nights to keep the bowels confined. After the third day the discharge becomes considerable.

Twenty-four hours after the operation I change the outside pad of cotton wool, but do not disturb the plugging till twenty-four hours later. This will now come away by gentle manipulation without risk of starting bleeding. After the plugging has once been removed it need not be replaced.

In doing these dressings the patient must be drawn gently to the edge of the bed, so that the buttocks project well free of the mattress. A square yard of mackintosh sheeting covered by a clean towel is folded over for a few inches at one edge, and passed well under the patient's buttocks, the opposite free edge of the towel and sheeting falling down to a china receptacle on the floor; in this way a dressing can be done without any wetting of the bed. The T bandage and dressings being removed, the surgeon stands behind the patient with his face towards the feet. Nurse holds a kidney bowl beneath the buttocks with the one hand, and with the other a bowl of hot water convenient to the surgeon, who allows a little water to trickle from a clean sponge over the part, while he gently but thoroughly soaps all over the wound, making a good lather. After washing this off with water, the wound is thoroughly syringed out with a weak biniodide lotion. This dressing should be done night and morning, and the part again covered by a cotton wool pad to protect it and absorb the discharge, the pad being kept in position by a T bandage.

All fluids and secretions are prone very quickly to decompose in this neighbourhood, and the proximity of the peritoneum, and the free supply of absorbents in this part of the body, render the absorption of putrid material peculiarly dangerous.

After a fortnight the wound should be carefully examined every third day for early signs of contraction.

This will inevitably come on sooner or later during the healing process. If neglected it will lead to an intractable stricture, while, if properly treated, it causes but little trouble. The stricture is prevented by using a full-sized bougie during the latter stages of the healing process. I have never found it necessary to commence its use till after a fortnight, and often not until the fourth week. It should then be passed every day, and left in as long as the patient can bear it without much discomfort, generally speaking for an hour a day. If this procedure be adopted, it will be found that, by the time the wound is completely healed at the end of a couple of months, there is no stricture. As a precautionary measure, the patients should for at least a year pass a conical bougie for themselves on alternate evenings. This should be merely passed just in and out, and should not be retained.

The cut end of the bowel quickly forms attachments to the sides of the cavity that remain as the result of the operation, and seems during the process of cicatrization to be drawn considerably downwards, so that if three inches of the bowel have been removed, and the parts are examined six months later, it will not be found that the gut terminates three inches above the external orifice, but at a distance of about one inch from it, and that the lining of the canal for the remainder of the distance is composed of a tissue similar to the ordinary scar tissue found on cutaneous surfaces, but of a softer consistency. This tissue has sometimes a great tendency to contract, thus narrowing considerably the outlet. If, however, the whole circumference of the bowel has not been removed, and a strip of the normal mucous membrane, however narrow, has been left, extending to the anal margin, the tendency to contract is greatly diminished; and for this reason, when the disease affects only a portion of the bowel, it may be well not to remove the whole circumference. For the first ten weeks there is little or no

control over the motions, but this gradually returns as the wound soundly heals.

Removal of Rectal Cancer by Abdominal Section.—When cancer is situated not more than five inches up the bowel, it can best be removed by the trans-sacral operation, but beyond this distance, unless very movable, it cannot be satisfactorily reached. The question arises whether, under these circumstances, it can be dealt with by abdominal section. Provided the bowel is fairly movable, and the growth confined to its walls, this is possible—at least, it is so if the growth is close to the sigmoid. It is more a question of room for manipulation than anything else. Everyone accustomed to intra-pelvic operations knows the difficulty of manipulations deep down at the base of the broad ligaments, but, nevertheless, it might be quite feasible to remove a growth in this situation. The Tredelenburg position greatly facilitates all pelvic operations. I have on two occasions removed a section of bowel for cancer, including the last inch of the sigmoid and the upper two inches of the rectum, both at St. Bartholomew's Hospital, and since the cases are of interest they will be given at some length. For the following notes I am indebted to Mr. J. A. Briggs, my late House Surgeon.

"D. A., aged fifty-nine, admitted into St. Bartholomew's May, 1897. He had no trouble of any kind till a month ago, except that the bowels were open irregularly, and with difficulty during the previous year. A month ago he had sudden pain in the abdomen attended by some vomiting and slight diarrhœa. Since that time the bowels have never been properly opened, there only being a slight slimy discharge.

"On admission the abdomen was greatly distended and tympanitic. Vomiting had become frequent, and he was obviously suffering from complete obstruction.

"On examining from rectum just as high as the tip of the finger could reach, a hard mass could be felt through

the walls of the bowel. The mass appeared to be in the pelvic pouch of peritoneum. It could be pushed up, and apparently was not very fixed. May 5.—Left inguinal colotomy performed. The large intestine was enormously distended to within an inch of the junction of the sigmoid with the rectum. At this point was a tumour in the bowel about the size and shape of a hen's egg. The bowel at the seat of disease still had a short mesentery, and could be moved easily from side to side. The distended sigmoid was drawn into the wound, stitched to the peritoneum and skin and opened. An enormous amount of fluid fæces escaped, to the great relief of the patient. Eleven days after the colotomy the patient, being in good condition, and the abdominal distension completely relieved, Mr. Cripps reopened the wound, detached the bowel, the opening in which was closed by pressure forceps. The wound was enlarged to five inches. Pads being carefully packed round to protect the abdominal cavity, the sigmoid had an elastic band passed round it, just free of the colotomy opening; it was then cut across. About six inches of bowel, including four and a half inches of sigmoid and one and a half of rectum, were dissected out. This sigmoid included the cancerous mass and the colotomy opening. The cut end of the sigmoid was brought down to the cut end of the rectum, and the two joined by an end-to-end anastomosis. On the third day the patient passed flatus per anum. On the sixth day fæcal matter could be felt in the rectum. On the seventh day a teaspoonful of castor-oil and a very gentle wash out produced a good motion, and the patient subsequently made an uninterrupted recovery. He was still alive and well one year later."

The following case was sent to me by Major Robert Bird, I.M.S., Bengal. The patient, Dr. —— was seized with abdominal obstruction in May 1903. A colotomy was performed in Calcutta. At the time of operation

a mass could be felt in the upper part of the rectum. The patient was too ill at the time to justify anything but a simple colotomy above the obstruction. The patient came over to England, and placed himself under my care in July, and was extremely anxious that some attempt should be made to remove the growth. The abdomen was reopened at St. Bartholomew's Hospital in the line of the old colotomy scar, partly detaching the adherent bowel by a five-inch incision. This part of the operation was difficult owing to extensive adhesions. A mass the size of an orange could be felt surrounding the rectum just below the brim of the pelvis. It was quite movable from side to side, but could not be drawn up. There was thirteen inches of bowel between the colotomy opening and upper border of the growth. The bowel was cut across two inches below the colotomy opening. It had been too much damaged in the first part of the operation to save with a view to an anastomosis. The mesentery was seized portion by portion with pressure forceps, transfixed, tied and cut through. The rectum was eventually cut across one inch below the growth. Owing to the depth down in the pelvis the upper cut end of the rectum could not be closed by uniting its peritoneal coats, but was simply transfixed, and tied with three ligatures. The lower end of the sigmoid was then fixed in the old colotomy opening, and the rest of the wound closed. The patient suffered extremely from shock, the pulse rising to 160 on the third day, when for over twelve hours no pulse at all could be counted at the wrist, and the patient was considered moribund. However, he rallied in a marvellous way on the fourth day, and eventually completely recovered, and two years later was reported as still well, and doing his duties in India. The operation was one of extreme difficulty.

CHAPTER XXI.

RECTAL CANCER—TREATMENT BY COLOTOMY.

Colotomy must not be considered in any way as a rival operation to that of excision in cases of rectal cancer. In a large number of instances excision is quite impracticable, and it is in such cases that the question of colotomy arises. The history of inguinal colotomy commences in a suggestion by Littré a hundred and ninety years ago, in the "Memoirs of the Academy of Sciences" of Paris. He merely discusses the advisability of opening the sigmoid flexure by an operation through the abdominal walls as a means of relieving infants born with an imperforate bowel. It would not seem, however, that he ever had an opportunity of carrying out his own suggestion, and the idea slept for over sixty years when Pillore, of Rouen, performed the operation by opening the cæcum on the right side. The accounts of subsequent operations through a long series of years are very meagre.

At the end of the eighteenth century Callisen proposed opening the descending colon by the extra-peritoneal method, but his failure to reach the bowel on the dead subject by this means discouraged further trial. His scheme was subsequently taken up by Amussat, who sixty-five years ago, by successfully performing the operation, first established lumbar colotomy as one of the resources of practical surgery. From that time till recently colotomy was almost invariably performed in the lumbar region.

Some eighteen years ago a revolution set in as regards

this operation, the inguinal method being adopted in England. This alteration was greatly due to the writings of Herbert Allingham and Reeves, and I think I may fairly claim that my papers,* published in the *British Medical Journal* in 1888 and 1889, giving an account of thirty-seven consecutive cases, in some measure helped to set the operation on its proper footing.

The chief advantages of the operation are as follows :— First, it is an absolute security against death from obstruction with all its horrors. Secondly, it affords relief to some of the most troublesome symptoms. Lastly, it retards to some extent the rate of growth of the disease.

Security against Obstruction.—If left to itself, the termination of a case of rectal cancer is very frequently from complete obstruction. Between the time that the stricture becomes first noticeable and its complete occlusion may be a matter of weeks, months, or a year or more. During the whole of this period the patient's mind is in a constant state of anxiety. He feels instinctively what is impending, and is in daily fear of fatal obstruction occurring. With the knowledge that after colotomy he has an effective safety valve, and it is no matter if the rectum does close, comes great mental relief. So far as this point is concerned, patients often ask if the operation may not be delayed till actual obstruction occurs. The answer to this lies in the fact that the operation when done prior to complete occlusion is a comparatively safe one, with a mortality of only four or five per cent. (*see* Table J), while if done after complete obstruction the risk is enormously increased, rising as high as fifty-five per cent.

Relief of Symptoms.—The pain caused by the growth varies greatly, and is more influenced by the position than by any other factor. When the growth is near the anal margin the pain is often intense, whereas,

* "Inguinal versus Lumbar Colotomy, with a record of thirty-seven consecutive cases," by Harrison Cripps, *Brit. Med. Journ.*, April 6, 1889.

when higher up the bowel, there is comparative immunity. Sooner or later the bowel becomes strictured, the symptoms of which are very characteristic, and cause the greatest misery. The sufferer is troubled with constant calls to the closet, and generally believes that he is suffering from diarrhœa, and not infrequently has been told that his disease is chronic dysentery.

What is passed at such times is not a true motion, but rather a grumous mucoid discharge, stained with blood and fæcal colouring matter. This discharge arises from an accumulation of scybalous masses in the dilated bowel above the stricture, and what comes away is merely the overflow from this mass mixed with blood and mucus. As time advances the trouble increases, the anus becomes raw and excoriated, and the patient is perpetually tormented with tenesmus. Purgatives and enemata gradually become useless, and the whole attention is fixed upon getting a proper evacuation. The abdomen becomes swollen and tympanitic, and the patient dies with fæcal vomiting, or occasionally suddenly from perforation of the intestine (Cases 146 and 213.)

Colotomy completely relieves all symptoms arising from a contracted condition of the bowel. The patient is no longer constantly worried by the passage of mucous stools, but instead has generally one good action daily through the colotomy wound. A mass of decomposing fæces is no longer collected above the narrow part, and his freedom from chronic poisoning from this cause is seen at once by an improvement in spirits, restoration of appetite, and often increase of weight.

Its Influence in Retarding the Growth. — For many years my impression was a strong one that the progress of the growth became slower after the bowel was set at rest by colotomy. This view was consistent with the well-known physiological law that disuse of a part is followed by a diminished blood supply and atrophy. What was formerly a mere impression can now be shown

to be a fact, for with accumulated experience I have collected sufficient evidence to show that colotomy adds materially to the length as well as the comfort of life.

In Tables H and I will be seen the relative expectancy of life in cases where no operation has been undertaken, and those in which colotomy has been performed.

It will be seen how the large majority of the unoperated-upon cases died within a year of their first consulting me, the average length of life being only 7.8 months.

While the cases in which colotomy had been performed lived an average of twenty-two months, one of these patients (Case 259) lived eight years and three months after colotomy, dying at the age of eighty-three.

This patient was a single lady, aged seventy-two, under the care of Dr. Fuller, of Curzon Street, London. She had symptoms for eighteen months. There was a mass of cancer four inches from the anus. I performed colotomy on March 1, 1898. On May 24, 1906, Dr. Fuller very kindly wrote to me as follows :—" Miss S., for the last two days, passed very little motion, gradually became unconscious, and died this evening. I should think the case a record for duration of life after colotomy for malignant disease." So far as my personal experience goes it is a record.

The operation of colotomy, although it has advanced in professional estimation, has done so but slowly. It has never been popular, and has generally been reserved for cases of complete obstruction. It has been supposed by some to be a procedure so fraught with danger as only to be justifiable as a last resource, and taking into consideration that it is demanded for malignant disease, it has been argued that the risks are greater than the prospective advantages justify. Others disparage this operation on the supposition that it leaves the patient in a miserable condition, with fæces constantly running away from the opening. These adverse views must be founded on a misconception of the operation by

those who have had but limited opportunities of observation.

The question of colotomy will be further considered under the following headings :—

(1) Risk to life involved.
(2) Condition of the patient after operation.
(3) Method of operating.

Risk to Life Involved.—Colotomy, when performed before there are signs of complete obstruction, is an operation of expediency rather than of necessity. The immediate risk to life, therefore, requires careful consideration.

The following figures throw some light on the subject :

TREVES

(This author in his classical work quotes Erckeleus statistics.)

Date	Recovered	Died	Total	Percentage of Deaths
1884	68 ..	42 ..	110 ..	38
ST. BARTHOLOMEW'S HOSPITAL				
1869 to 1879 (Lumbar) . .	14 ..	32 ..	46 ..	76.1
1879 to 1889 (Lumbar) . .	26 ..	22 ..	48 ..	45.9
1889 to 1905 (Inguinal) . .	269 ..	95 ..	364 ..	20.6
HARRISON CRIPPS (PRIVATE OPERATION). *See* TABLE J.				
1885 to 1905	127 ..	16 ..	143 ..	11.18

The foregoing include all cases of colotomy, whether undertaken as a palliative for rectal cancer, or whether done for complete intestinal obstruction. By far the larger number of deaths occurred after colotomy for complete obstruction. This did not mean that the operation was the cause of death, but merely that it failed to save the life of a dying patient.

The question here being discussed is not the operation on patients dying from complete obstruction, but its performance as a palliative treatment for rectal cancer to prevent the patient ever having obstruction.

To show the death-rate of colotomy when undertaken as a palliative, the following figures abstracted from

Table J may be taken. Altogether I have operated on over three hundred cases by colotomy, but for reasons mentioned the table of my private cases only is given.

	Recovered	Died	Total	Percentage of Deaths
For complete obstruction .	9	11	20	55.0
Before complete obstruction	118	5	123	4.06

The contrast of these figures is very marked, and shows that when the symptoms of complete obstruction with fæcal vomiting have set in, colotomy will save scarcely half the cases; whereas when performed prior to this, the mortality may only amount to 4.06 per cent. when performed by those experienced in abdominal surgery and in proper hygienic surroundings.

In the eleven fatal cases of complete obstruction, fæcal vomiting was present in all, with the usual swollen and tympanitic abdomen. The condition of the patients at the date of operating will be seen set forth in Table K.

The causes of death in the five cases out of 118 when the operation was performed before obstruction were as follows :—

Case 64.—A man, aged seventy-one, died on the eighth day. The patient gradually sank. There was no post-mortem, and there were no symptoms during life of peritonitis.

Case 75.—A lady, aged fifty-five. The patient very fat, and the greatest difficulty was experienced in uniting the bowel to the skin. The stitches gave way on the sixth day, and she died of peritonitis.

Case 191.—A lady, aged sixty-four. There was practically no mesentery, and there was considerable tension on the bowel when stitched. The stitches gave way on the fifth day, and she died a few days later with peritonitis.

Case 272.—A lady, aged sixty-four. Constant vomiting commenced soon after the operation, and she died on the sixth day. Dr. Roche made a post-mortem, and found a piece of small intestine caught down in Douglas's pouch. It was acutely kinked, and it required some force to

pull it out. It was obviously the cause of the vomiting. There was no peritonitis.

Case 330.—A lady, aged fifty. An excision had been performed eight months previously. The disease recurred, and a colotomy was performed. The bowel was opened on the sixth day. There was considerable bleeding at the time from a vessel in the lower angle. Sudden and very violent secondary hæmorrhage occurred four days later, and much blood was lost before effective assistance could be obtained. The patient never rallied from the bleeding. She was in a weak condition before the operation.

Condition of Patient after Colotomy.—The return of strength and gain of flesh is generally well marked after colotomy. This, no doubt, is partly due to the relief from pain, and the quiet nights following the operation, but I think is chiefly due to the patient being no longer in a condition of chronic poisoning from the masses of decomposing fæces above the stricture, for so soon as the bowel is permanently relieved of them, the appetite seems to return, and with it general improvement both in mind and body.

To suppose that a patient after colotomy is in a miserable condition, with fæces constantly running away from the opening, is a delusion. If, as sometimes occurs, the opening is made too small, or allowed unduly to contract, the advantage of the operation is in great measure lost, and constant dribbling occurs from the wound. If, however, care be taken to make the opening valvular and of sufficient size, a motion generally passes but once a day, and there is a fair amount of control over the new anus.

After the operation the amount of discharge from the rectum immediately becomes diminished, and soon loses its feculent character. If, however, the disease be far advanced, there will still be some purulent discharge from the anus, or more commonly from the lower colotomy opening. If after a fortnight or so there is an evil-smell-

ing, dark, gritty discharge from the lower opening, it is a certain sign that some hard, black, scybalous fæcal lumps have collected between the lower opening and the stricture. The removal of them is followed at once by relief. These can be removed by careful syringing and using an oblong scoop made for the purpose, or a narrow lithotomy scoop will serve the purpose. It often takes weeks to get completely rid of these lumps. One or two will each day be found to have regurgitated close to the lower opening, and can be felt with the finger, and removed with the scoop. This manipulation causes peristaltic action of the bowel, and the remaining lumps are driven down far out of reach for the rest of the day, but the next morning one or two more will be found to have come back within reach. Sometimes I have removed thirty or forty of these scybala before the bowel has been eventually cleared.

If later in the case the discharge from the growth itself becomes troublesome by collecting above the stricture, and escaping by the colotomy opening, great relief can be obtained by syringing out the lower opening by means of an india-rubber tube passed gently down from the lower opening. Sometimes, although fluid cannot be washed through from the lower opening to the anus, a stream can be passed in the other direction from the anus to the lower opening. If this can be done it is very effective. A dilute boracic lotion answers well.

The length of time the patients will live after the operation, and the extent to which they will be able to get about, is difficult to forecast, and will in a great measure depend upon the rapidity with which the disease advances. One patient upon whom I operated was able for at least two years to go daily to the City and remain there from ten till five without inconvenience. Another patient, a keen sportsman, two seasons after the operation, was able to do a good day's salmon fishing, wading up to his middle some hours a day. Another patient

(Case 264) lived in fair comfort over eight years. As a rule, however, the patients must be prepared to be satisfied with moderate exercise, but on no account should they be encouraged to stay in bed. It is not the inconvenience of the opening that prevents their getting about, but the disease, for it must be remembered that the malignant disease is still present, and, slowly advancing, undermines the patients' strength, so that, perhaps, a year after the operation they will complain that they feel no better than before its performance. But here, of course, it is not right to compare their condition with what it was a year ago, but rather with what it would have been had no operation been undertaken.

When colotomy is done for simple stricture, the patient soon learns in a marvellous way to manage the opening, and is quite able to take his place in social life.

The additional length of life afforded by colotomy is well seen in Table I. It gives an average of nearly two years after the operation. Some patients live, and in fair comfort too, much longer than this. Case 264.—Dr. Fuller's patient lived more than eight years after I had operated.

With many opportunities of watching cases in which colotomy had been performed, and others where Nature had been allowed to run her course, I have no hesitation in saying that the relief obtained and the suffering avoided are unmistakable, and leave me in no doubt as to the great benefit of the operation.

Time when the Operation should be Performed.—This is a question of some importance. If the disease is causing no trouble, and by only invading a portion of the bowel has not produced any appreciable narrowing, it may be well to wait. On the other hand, should there be any signs of commencing stricture, the operation should be performed without delay. If deferred, not only does the patient lose the advantage of the operation, but it may have eventually to be performed for complete

obstruction under the most dangerous and unfavourable circumstances.

Case 146 shows how the bowel may burst from delay. The patient had noticed symptoms for nine months. Examination under an anæsthetic showed a malignant stricture five inches from the anus. A colotomy was advised, but refused. Five weeks later I was sent for to the patient, who was suffering from complete obstruction. There was fæcal vomiting, with enormous distension. On opening the abdomen for colotomy the peritoneal cavity was full of fetid gas, and the colon enormously distended. The actual hole where the intestine had given way could not be found. On opening the sigmoid several quarts of fluid fæcal matter were let out. The patient rallied for a few days, but gradually sank, dying on the sixth day.

Method of Operating.—The surgeon has his choice of two sites for opening the colon, the one posteriorly in the lumbar region, the other in the inguinal. I have had considerable experience of both methods, and have no hesitation in saying that the abdominal operation in front is vastly superior to the lumbar. Indeed, it is twenty years since I performed the latter.

The following appear to be some of the chief objections to lumbar colotomy :—

First, the space in which the operator has to work, between the lower border of the last rib and the crest of the ilium, is often extremely confined, so that he is, to a great extent, at the mercy of the anatomical accuracy of the course of the bowel, and even a slight deviation involves a difficult operation. Thus, in the search, the subperitoneal fat becomes extensively bruised, and not infrequently the peritoneum inadvertently, or even unknowingly, opened. To this cause many of the deaths from lumbar colotomy are attributable.

Secondly, it is not always easy to identify the bowel in the limited space. The longitudinal bands are some-

times impossible to recognise. From this cause numerous instances are recorded of fatal mistakes. I have twice seen the small intestine stitched to the skin and opened. The duodenum has many times been likewise opened, and even the stomach has been a victim to the same mistake.

Thirdly, in a fat or muscular patient, owing to the depth of the bowel, and its want of mobility, there is a difficulty in fixing it to the skin without undue tension.

Fourthly, and certainly what is the gravest objection of all, is that if the colon happens to take an abnormal course, altogether avoiding the lumbar region, as so well described by Mr. Lockwood,* the attempted operation completely fails. I have been fortunate in not having met with one of these abnormalities, but have been present on three occasions when the most skilful surgeons failed to find the colon, and in which subsequent post-mortem examination proved the bowel to be quite inaccessible from the lumbar wound.

Lastly, the position of the opening behind is inconvenient to the patient for purposes of cleanliness and for the adjustment of pads.

Inguinal colotomy meets all these objections. The space in front is practically unlimited, and thus allows of a thorough exposure of the part by a clean incision without the least damaging of the tissues. There can be no possibility of mistaking the small intestine or other structures for the colon, which from its longitudinal bands clearly marked, its convoluted surface, and its glandulæ epiploicæ, admits of absolute identification. Owing to the mobility of the sigmoid flexure, and the ease with which the skin can be depressed, there is little difficulty in fixing the bowel without undue tension on the stitches.

Abnormalities of the colon do not mean failure of

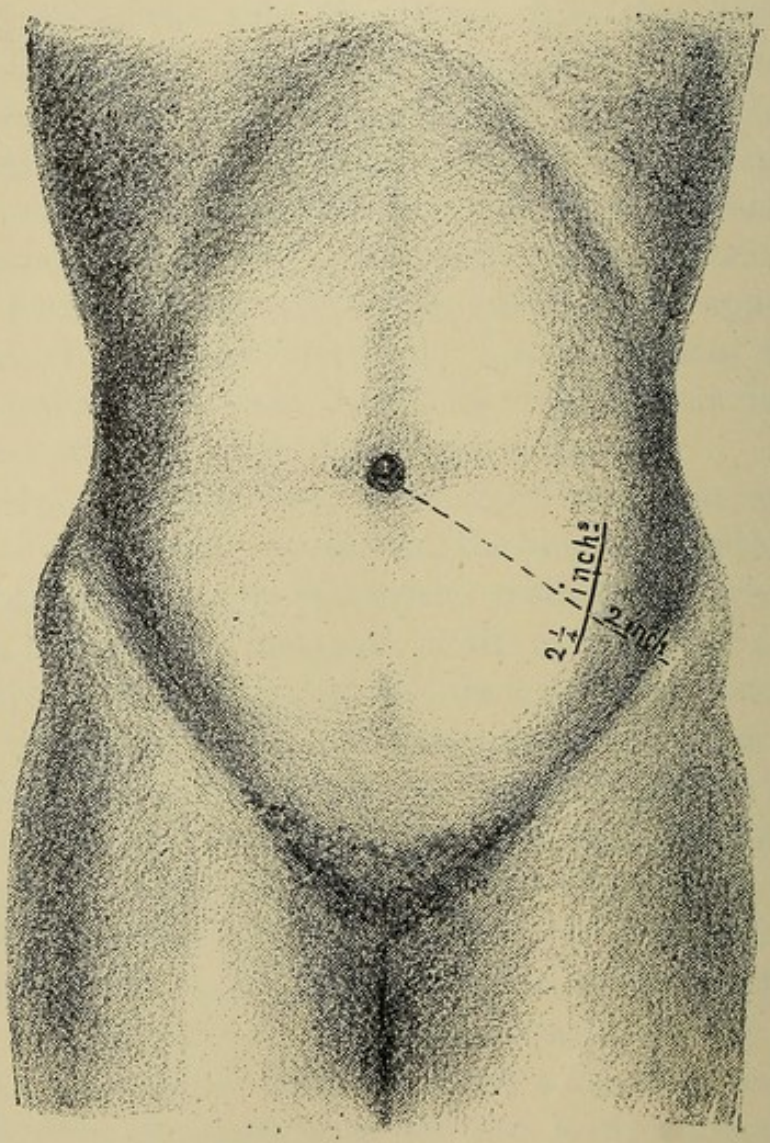
* "Abnormality of the Colon a Cause of Unsuccessful Colotomy," by C. B. Lockwood.

the operation. If the bowel be not in its usual position, it is possible to make a thorough exploration of the abdomen and search for it. I should say that in about five per cent. of cases as seen on the operating table the bowel is not in its normal position. The following is an example of the kind of case in which the bowel is in an abnormal position. On opening the abdomen, I found the small intestine presented, and, on pushing it back, and looking for the colon, it was evident that it was not in its natural position. However, by enlarging the wound, and making a thorough search, it was eventually found passing down the middle line apparently in front of the small intestine. I am confident that it could never have been found by the lumbar incision, and the operation would have been a fiasco.

Besides meeting the chief objections that can be raised to the lumbar operation, the inguinal method has in certain instances an advantage entirely its own. This consists in using the first part of the operation as a means of verifying the diagnosis in obscure cases before the bowel is opened. For instance, an obstruction exists probably high up in the rectum, or there may be a communication between the bowel and the bladder. An examination of the lower part of the rectum has thrown no light as to the site of the lesion. In such a case the surgeon would hesitate at doing a lumbar colotomy, feeling that it might be useless as being below the seat of disease. In inguinal colotomy such a mistake could not occur, for the diagnosis as to the site of obstruction could be made certain before the bowel is actually opened.

Two objections have been especially urged against the inguinal opening: first, that it affords greater facilities for prolapse of the bowel; and, secondly, that it is unsuitable for urgent cases. In answering the first of these, it is not my experience that prolapse is more frequent from the one opening than from the other; moreover, by a little care in drawing down the bowel in the inguinal

FIG. 31.



Shows the line of incision adopted by Harrison Cripps for inguinal colotomy.

An imaginary line is taken from the anterior superior spine to the umbilicus; the incision, 2¼ inches long, crosses this at nearly right angles, at two inches from the anterior spine. One-third of the incision is below and two-thirds above the imaginary line.

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operation protrusion can to a great extent be guarded against. The second objection could only hold good in a certain number of cases, and I believe even in these the danger is more imaginary than real.

Doubtless it would be more prudent, when possible, after stitching the bowel to the skin, to allow a certain interval to take place before opening it, in order to afford the peritoneum time to become sealed off. If the bowel be distended and vomiting present, there is no time for waiting, for the pressure thus caused would certainly burst the bowel away from the stitches. In these cases I at once open the bowel after accurately stitching it to the skin; the wound is immediately swamped by feculent material. A stream of warm water must be kept constantly pouring over the wound for ten minutes or so till the distended bowel has completely relieved itself.

Having discarded lumbar colotomy for rectal cancer, I shall not describe the steps of an operation which I consider obsolete, but will at once proceed to the inguinal operation.

Method of performing Inguinal Colotomy.—The patient has a warm bath the night previous to the operation, the abdomen being thoroughly well cleaned with soap and water, and afterwards covered with a light, antiseptic dressing. This is important, for, since the operation is usually undertaken for cancer of the rectum, the part is liable to become contaminated with the fetid discharge. I make my incision rather higher than most operators. The branches of the epigastric artery are thus avoided, and there is subsequently less pressure on the wound than when lower down. As a guide, I take an imaginary line from the anterior superior spine to the umbilicus; the incision, two inches and a quarter long, crosses this at right angles two inches from the superior spine. Two-thirds of the cut is above and one-third below the imaginary line, as shown in the accompanying sketch (Fig. 31).

In making the incision the skin should be drawn a little inwards, so as to make the opening somewhat valvular. The peritoneum being reached,* it is pinched up by fine forceps, and an opening made sufficient to admit the finger. The intestines being protected by the finger, the peritoneum is divided by scissors to nearly the full length of the cutaneous incision. The colon may now at once show itself, and can easily be recognised by its longitudinal bands, its glandulæ epiploicæ, and by its regular convoluted surface. In about a third of my cases the large intestine presented at once; in the others either the small intestine, omentum, or mesentery first appeared. If any of these latter present, they must be pushed back, and the colon sought for by the finger. Sometimes it can be detected by the hard scybalous masses within it, or it can be traced up after passing the finger into the pelvis, and feeling for it as it crosses the brim. Great care should be taken to prevent any of the small intestine from protruding, otherwise a considerable difficulty may be experienced in returning it into the abdominal cavity without a great deal of handling.

The colon being found, a loop of it is drawn into the wound. In order to avoid the prolapse which is likely to occur if loose folds of the sigmoid flexure remain immediately above the opening, I gently draw out as much loose bowel as will readily come. Two provisional ligatures of No. 1 silk are passed through the longitudinal muscular band opposite the mesenteric attachment. These provisional ligatures, the ends of which are left

* A surgeon of any experience will recognise the peritoneum at once, and inguinal colotomy should only be done by such an operator. The following shows what may happen to the ignorant when they undertake what is beyond them. A surgeon having exposed the peritoneum, was in doubt as to its nature, but considering it to be the bowel, stitched it all round to the skin. On the fourth day great preparations were made for opening the supposed bowel. After a cautious incision, instead of the expected fæces, there popped out a large coil of small intestine!!! It was at this stage that I was requested to see the case, "on account of its rarity" !!!

FIG. 32.

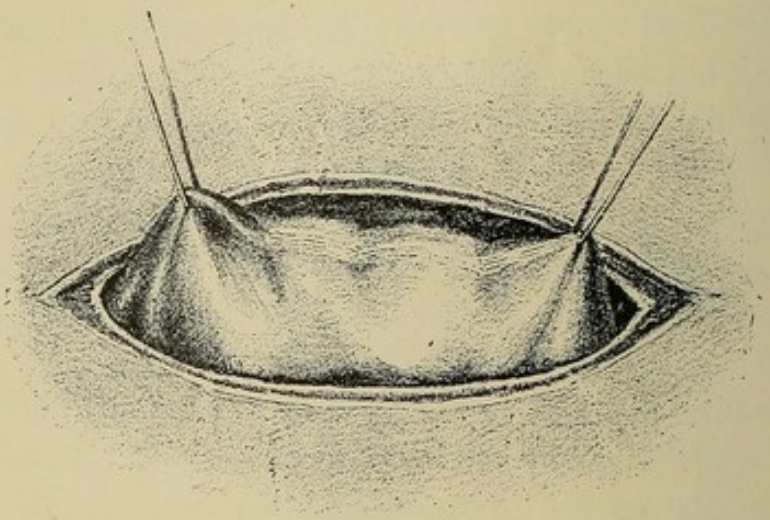


FIG. 33.

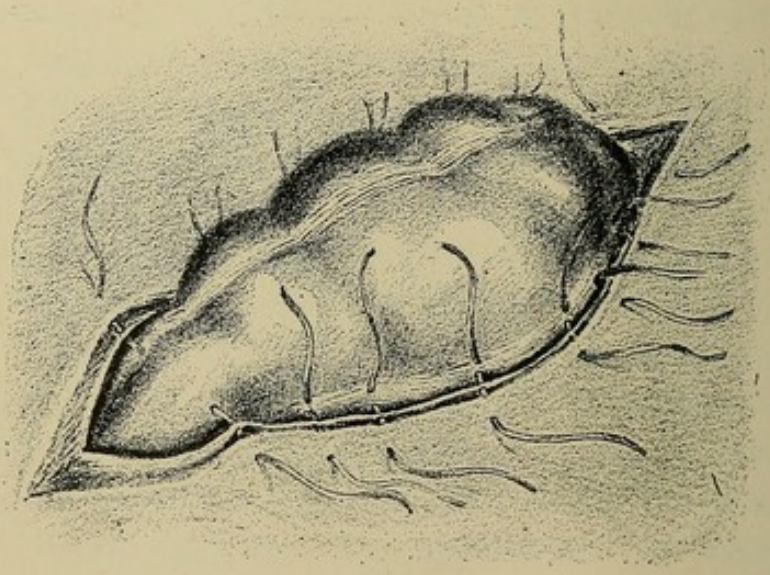


Fig. 32 represents the second stage of the operation for inguinal colotomy. The two silk threads used as guides are seen passed through the external or muscular wall of the bowel.

Fig. 33 shows the position of the bowel when all the sutures have been passed, but not yet tied up. None of the sutures pass deeper than through the muscular coat of the bowel.

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long, help to steady the bowel during its subsequent stitching to the skin, and, moreover, are useful as guides when the bowel is ultimately opened. They should be about two inches apart.

The bowel being drawn out, is fixed to the skin and parietal peritoneum by seven or eight fine sutures on each side, the last suture at each angle going across from one side to the other. The bowel should be so attached as to have two-thirds of its circumference external to the sutures. By turning the bowel slightly over, the lower longitudinal band can be clearly seen, and it is best to pass the sutures for the lower side through this, since it is a strong portion of the gut (*see* Figs. 32 and 33). The upper longitudinal band through which the provisional ligatures have already been passed is seen in the middle line of the wound. The bowel being now turned downwards, the opposite line of sutures are inserted close to its mesenteric attachment. Indeed, more commonly they have to be passed through the inner layer of mesentery itself. No longitudinal band can here be seen. The sutures, of the finest Chinese silk, No. 00, are passed by small, partly curved needles, the needle passing through the skin one-eighth of an inch from the margin, one-third of an inch apart, then through the parietal layer of the peritoneum, and, lastly, partly through the muscular coat of the bowel, care being taken to avoid perforating the mucous membrane. In passing the upper row of stitches through the mesentery, fair-sized blood vessels are seen running into the bowel at right angles. I pass the needle beneath them, using the blunt (eyed) end so as not to prick the veins. These vessels are strong, and form a good support to the sutures. It is easier to pass all the threads before tying them up.

The wound should be most carefully and gently washed; the threads can then be all tied with moderate tightness. If the case is urgent, the bowel may now

be opened; if not, a piece of gutta-percha protective is put over it, a necessary precaution to prevent the granulations adhering to the gauze. The whole is covered with an antiseptic dressing, an additional thick pad being placed over the site of the wound. A broad flannel, many tailed bandage is then wound firmly around the abdomen, so as to insure considerable pressure. This is a most important precaution, for, should vomiting occur, the bowel is likely to burst away from the stitches. I also insist on the nurse sitting by the patient, with directions to press her hand firmly over the wound should sickness occur. When the patient becomes sensible, he can do this for himself. The wound is best dressed on the following day if there has been vomiting, to make sure that nothing has been misplaced.

If all goes well the dressings may be reapplied, and the bowel not opened till the fifth or sixth day. The bowel being insensitive, no anæsthetic is required. It will usually be found covered with a layer of lymph of surprising thickness. The provisional ligatures which have been left in will be found a useful guide, the bowel being opened to the full length between them. The superfluous flaps on either side are trimmed off with scissors to the level of the skin. In doing this one or two vessels require to be tied.

All ligatures may be safely removed by the ninth day, or earlier if there is redness around them. Firm pressure with a pad and bandage will be required for some time later.

The question as to the date when the bowel should be opened is an important one. In urgent cases, as already mentioned, I should not hesitate to open it at once. On the other hand, if there is no vomiting or constitutional symptoms, it may be advantageously left to the sixth day. The patient, however, requires to be very carefully watched. If the abdomen becomes distended with wind, if pain is felt, or, above all, should

vomiting come on, the bowel should be immediately opened.

The wound varies much in different cases in its way of healing. In no inconsiderable proportion the union takes place between the skin and the bowel by first intention. In other instances, after a few days, the bowel, together with the parietal peritoneum to which it has become adherent, falls away from the skin, and sinks below the level of the muscular parietes.

This want of primary union depends on two causes, the one being due to the stitches being too numerous and too tight, so that the skin is too much strangulated, the other to there being too much tension on the bowel. It is interesting to observe the effect that antiseptic protection has on the effused lymph. This is thrown out in a considerable quantity, and quickly covers the exposed bowel and edges of the wound with a thick layer. So long as this is aseptic there is no sign of redness or inflammation at the line of junction, and in a few days it will have so far developed as to effect a permanent union between the bowel and the skin. On the other hand, when an early opening of the bowel necessitates the abandonment of the antiseptic treatment, the lymph already formed melts away. A red line appears at the margin of the skin, and primary union frequently fails. This inflammation can, however, often be entirely prevented by the wound being carefully washed with soap and water night and morning. The fæces themselves seem quite innocuous to the wound. It is only if fæcal matter is allowed to accumulate at the wound margin that harm comes, this fæcal matter being a ready soil for external germ infection.

Often no motion will pass through the new opening for several days. No anxiety need be caused if wind is passed, for there is no obstruction. I have known as long as ten or twelve days elapse without discomfort before any motion has passed. Should no motion

have appeared by the eighth day after opening the bowel, a teaspoonful of castor-oil should be given, and repeated if necessary.

The subsequent inconvenience arising from a colotomy opening varies in different cases. If the opening is too small, or allowed unduly to contract, the advantages of the operation are in a great measure lost, and constant dribbling occurs from the wound. If, however, care be taken to make and maintain the opening of sufficient size, the motion generally passes once a day, and there is a fair amount of control over the new anus.

Different varieties of trusses have been devised for covering the opening, and one made by Messrs. Arnold and Sons is fairly good, but I doubt whether anything answers better than a pad and flannel bandage. A piece of lint three inches square, smeared with simple ointment, should be placed over the opening. Above this a small pad of boracic wool, or one of Gamgee's sponges, may be applied, the whole being covered with a large flat pad of cotton-wool, protected with gutta-percha tissue. The pads may be kept in position by a few turns of a wide flannel bandage, using a perineal strap if necessary.

Complications during the Operation.—Superfluous Bowel.—If the principle is adopted, and it is, I think, the right one, of drawing out as much of the sigmoid as will readily come, there will often be a loop of six to twenty-four inches of the large intestine outside the wound. If the loop is only of moderate amount, say, six or seven inches, it can be safely stitched in the usual way, and opened and cut off at a subsequent date. On the other hand, if the amount is very large, say, one to three feet (*see* Cases 180, 197, 222, 256, 267, 291), it is safer, after accurately stitching the base of the loop to the skin, to cut it off at once. If it is left it will be found impracticable to put on a bandage sufficiently tight over the wound to prevent risk of the stitches giving

way if vomiting occurs. In the case of a large loop the opening through the abdominal walls should be longer than usual, being two and a half inches at least. It must be remembered in these cases, that when the loop is drawn out of the wound, half the available space will be occupied by its mesentery. Care must also be taken that the upper segment of the bowel has more space allotted to it than the lower. If this precaution is not taken, it will be found that when cicatrization takes place, the upper opening will be too small. In addition to stitching the two segments of the bowel into each angle of the wound, they will have to be stitched to the corrugated mesentery that lies between them, which in its turn must also have a stitch or two to fix it to the skin.

Absence of Mesentery.—I have had some six or seven of these cases. They are rare, representing about two per cent. The bowel lies behind the peritoneum, which passes over it with a mere undulation, having no distinct mesentery. Owing to the want of mobility the bowel cannot be drawn properly up to the skin without great tension. When fixed the stitches give way about the fourth day, and the bowel drops back. Two of my fatal cases (Nos. 79, 191) were due to this cause. The stitches gave way on the fifth and sixth day respectively, and both patients died of peritonitis.

I have now an efficient way of meeting this dangerous complication. It consists in dividing freely the outer parietal layer of the peritoneum after it has crossed the bowel. This at once, to a certain extent, sets the bowel free. It can then be raised after a little dissection, and drawn partly out from its peritoneal investment, and sufficiently loosened to be drawn to the skin, or at least to the cut edge of peritoneum in the abdominal incision, and fixed there without undue tension.

Difficulty in finding Bowel.—In about half the cases, on opening the abdominal cavity, a loop of the sigmoid will at once present itself, and can be readily

recognised by its longitudinal bands of muscular fibre. Occasionally these are scarcely marked, being more or less spread out evenly over the surface. Under these circumstances, the sigmoid closely resembles the small intestine. It can, however, be recognised by the glandulæ epiploicæ, and often by hard lumps of scybala inside. If the sigmoid does not present on opening the peritoneum, the small intestine or omentum will do so. After considerable practice, I have learnt "the feel" of the large intestine. It is difficult to describe this, but with a little practice it is possible thus to identify the part wanted, and hook it out with the finger. In the few cases when there was a real difficulty in finding the bowel, it was always lying far out towards the middle line of the belly, and was arrived at by tracing it up from the brim of the pelvis. A surgeon should not attempt to perform colotomy unless he is a sufficiently good anatomist to identify all he may meet with in the abdomen. In one case with which I am familiar, the lower edge of the stomach was mistaken for the sigmoid, stitched, and opened. The small intestine has occasionally been treated in the same way. Nothing should be stitched into the wound unless the operator is absolutely certain of its identity.

Difficulty of finding the Bowel owing to Fat.—This is another complication that may arise, and occurred in Case 151. Here the obstruction was complete. No motion or wind passed for seven days, and there had been vomiting for twenty-four hours. The patient was a heavy man, of some sixteen or seventeen stone. Assisted by Mr. Eccles, I opened the abdomen, and what appeared to be fatty omentum protruded. This was pushed back. Then small intestine, with an enormously thickened fattened mesentery presented. After a long search, nothing like the large intestine could be detected. A piece of gut was then found, which was thought to be the colon, but it proved to be only small intestine

completely wrapt round in omentum. Ultimately, after half-an-hour's search, a mass of fat was opened in the left iliac fossa. At the bottom of this the bowel was at last found. The mass of fat in which it was discovered was four inches thick, and appeared to be completely behind the parietal peritoneum, which had to be opened to expose it. The patient died.

The protruding Coil distended with Fæces.— Sometimes the loop, especially if of any size, may be distended with fæces. This can generally be kneaded gently out of the loop. If this cannot be done, and it is not wished to cut off the superfluous bowel till the advantage of a few days for adhesions to form has been given, the proceeding adopted in Case 197 is efficient. Here a large coil of sigmoid protruded. This was tightly distended with semi-solid fæces. A clean incision was made into the gut, and the whole of its contents squeezed out. The cut was then sewn up, and the loop of empty intestine covered over with protective and a gauze dressing. On the sixth day the dressing was removed, and the bowel, which was quite aseptic, was cut off in the usual way.

Complications after Operation.—Protrusion of Omentum and Small Intestine.— Unless the stitching has been very accurate, and plenty of pressure put over the wound, a violent attack of vomiting or coughing may cause the stitches to give way in parts, and through the opening the small intestine and omentum may protrude. It is to avoid this accident, which is not uncommon, that I pay so much importance to having firm pressure put on the wound after completing the operation, and the great and insuperable objection to passing a glass rod through the mesentery arises from this reason. With a glass rod beneath, the bowel would be badly damaged by the amount of pressure that I consider essential to make matters safe. If there has been violent vomiting or coughing after the operation, it is always

wise to re-dress the wound the day following the operation to make sure that all is safe.

Falling back of Bowel.—This is an accident that may take place any time after the fifth or sixth day, by the stitches cutting out if the operation has not been aseptic. The following cases will illustrate the accident, and indicate the line of treatment.

A lady (Case 59) sent to me by Dr. Hutson, of Barbadoes, had a tight malignant stricture of the rectum. Inguinal colotomy was performed, but there was a little more tension than usual on the stitches. The bowel was opened on the sixth day. The following day, during a fit of coughing, the patient was seized with violent abdominal pain. She quickly became collapsed, and when I saw the patient an hour after the accident, I found her in intense agony, with a pulse scarcely perceptible, extremities cold, and face bathed with clammy sweat. On examining the bowel it was found that during a fit of coughing the entire bowel had torn away, and dropped back into the abdominal cavity. The patient, at the same time, appeared to have had a free action from the open bowel, the whole of which went into the abdomen. With the assistance of Mr. Bruce Clarke, and without an anæsthetic, I slightly dilated the wound, and then thoroughly washed out the abdominal cavity, drawing out the coils of intestine and washing them one by one. The proceeding took some time. The patient, however, almost immediately the washing commenced, stated that she had completely lost her pain. The detached bowel was then again united to the skin. For two or three days the patient's life hung on a thread, the pulse being over 150. On the fourth day, however, she rallied, and from that time made an excellent recovery.

A man of middle age was admitted into St. Bartholomew's Hospital for carcinoma of the rectum. Inguinal colotomy was performed. A glass tube was passed to

keep the bowel up, and only a very few stitches used. The glass tube was withdrawn on the fourth day, and the bowel opened. On the next day, during a fit of coughing, the bowel gave way, and fell back into the abdominal cavity. In the absence of one of my colleagues I saw the case, and found the patient collapsed, and that the bowel had completely disappeared from the abdominal wound, and some semi-fluid fæces oozing out of the aperture. The wound was enlarged, and after some search the detached bowel was found, and again brought to the surface. The abdominal cavity was then well flushed with several gallons of hot water. An opening was made two inches above the pubes, and a drainage tube passed through this into the bottom of the recto-vesical pouch. The washing was then continued, and a large quantity of peasoup-looking water returned through the tube. When the water came back quite clear, the sigmoid was again stitched to the wound. The patient recovered.

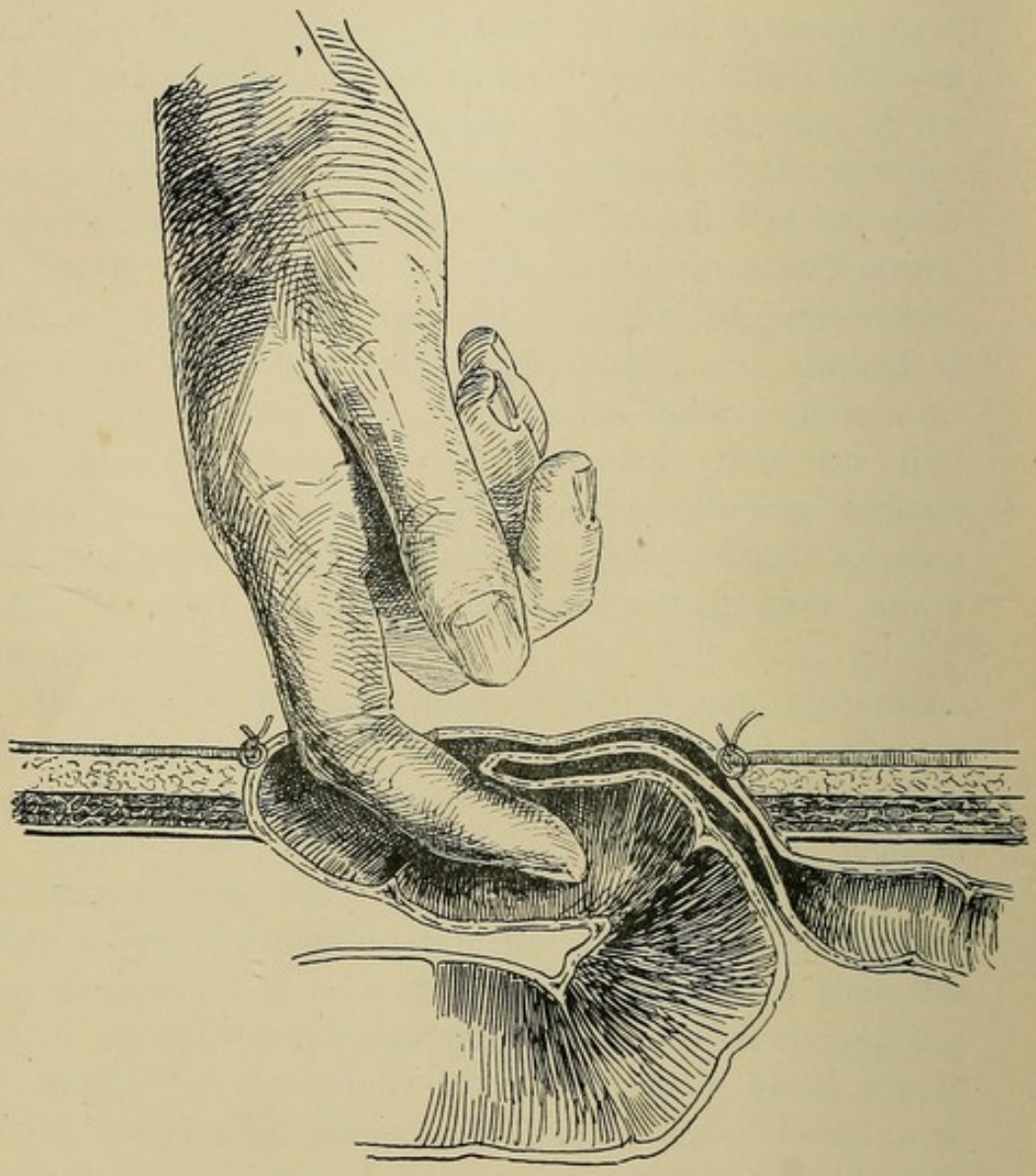
If at the time of opening the bowel the operator is not quite satisfied with the hold of the stitches, he should by means of a circular needle pass a silk gut suture through the whole thickness of the bowel and abdominal wall on either side of the incision. This makes the wound quite secure. Great care must be exercised in doing this not to disturb the existing sutures.

Acute Intestinal Obstruction following Colotomy.—I operated on a man at St. Bartholomew's. All went well, and the artificial anus had united firmly, and was working well. The patient was on the eve of leaving the hospital when he was suddenly seized with sharp griping pains referred to the region of the colotomy opening. An hour later he commenced to vomit. The vomiting continued for three or four hours, when the patient felt something slip in his inside. The vomiting ceased, and the pain suddenly left him. The next day, beyond a little tenderness, he was all right, and left the

hospital. Ten days later he was readmitted in a dying condition. He had been vomiting for two days, and was in a state of complete collapse, dying a few hours after readmission. At the post-mortem the colotomy wound was found firmly united, and there was no sign of peritoneal inflammation. A piece of small intestine over a foot in length was found to have slipped down between the attached portion of the gut and the reflection of the parietal peritoneum in the neighbourhood of the anterior superior spine. The canal thus formed was an inch in length, bounded on one side by the attached bowel, and on the other by the reflected fold of peritoneum. The canal would just admit one finger, and through it had slipped a loop of small intestine which had become strangulated. There can be no doubt that the first attack was due to the small intestine slipping through this canal, from which it afterwards spontaneously released itself. Prompt abdominal section would have saved the patient.

Recurrent Hæmorrhage.—This is not uncommon after inguinal colotomy, and occurs, I should say, more or less in about seven per cent. of the cases. It is liable to follow those cases in which a considerable loop of bowel has been cut off. It must be remembered that when a loop is drawn up into the wound, the corresponding mesentery has been drawn up with it, and that this folded up and compressed mesentery is a regular sponge of vessels, for through it comes the whole blood supply of the bowel. In cutting off such a loop of bowel with its mesentery it should be done in small segments, each bit being first grasped with pressure forceps and then transfixed and tied. In an extensive case fifteen to twenty separate ligatures may be required. The vessels, if thus carefully tied, will probably be all right, but notwithstanding every precaution recurrent bleeding will occasionally take place, and this usually from the lower angle of the wound. It may occur any time within the

FIG. 34.



Illustrating a possible danger in opening the bowel in a case of colotomy

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first three days after opening the bowel; I have not known it later. It is dangerous, often violent and difficult to get at. It was the cause of death in Case 330.

A Danger in Opening the Bowel.—A patient, aged sixty, had colotomy performed. The following day her abdomen was much distended. I therefore decided to make a small opening to give relief to the wind. This was done, a large quantity of gas escaping. Two days later I proceeded to enlarge the wound. In doing this the little opening previously made was enlarged so as to admit the finger, and so make a guide for the scissors. In enlarging the opening I nearly made a serious mistake. I had passed my finger into the bowel, and with one blade of the scissors in the bowel and the other outside, was about to prolong the opening, when it struck me that the bowel seemed thicker than usual, so that instead of using the scissors I cut down cautiously with a knife on to my finger, which I thought was inserted into the bowel opening; I then found that my finger had really passed into the lower opening of the bowel, and this portion of the loop doubled backwards beneath the upper part (*see* Fig. 34), or in other words, that my finger had passed round the spur. Had I cut this with the scissors, both layers of the bowel would have been divided, and, consequently, the peritoneal cavity opened.

CHAPTER XXII

PALLIATIVE TREATMENT

Refused Treatment.—In fifty-five cases operative treatment was advised, but refused. Some few of them were operated upon by some surgeon other than myself. The majority of them, however, refused all operative treatment, though many were suitable for excision, and others might have been much relieved by colotomy. Speaking generally, the percentage of cases that refused operation was larger at an earlier period than at the present time. Twenty years ago there still existed much prejudice against operating for cancer both in the minds of patients and many of the older practitioners—prejudice which improved methods and better results have in great measure now removed. As regards colotomy, too, the inguinal operation, having almost entirely superseded the lumbar, has rendered the operation far less dangerous and more reliable, and although there still exists some dislike to the operation, it is much less than formerly.

Palliative Treatment.—In ninety-seven cases out of 380, or in 25 per cent. of the cases, for one reason or another no operation was advised. If excision be impracticable, and a colotomy unadvisable or declined, something may yet be done to relieve the patient's condition. The diet requires careful attention, and should be of a nourishing description, and taken as far as possible in a concentrated form in order to diminish the amount of fæcal material. If the bowel be very irritable, I have seen much temporary benefit follow a pure milk diet. Mutton

and chicken-broth generally agree better with the patient than beef-tea, while Valentine's meat-juice, well diluted, may be employed with advantage.

So far as medicines are concerned, I know of none that have the slightest direct effect upon cancer.

Chian turpentine I have given a thorough trial, but am sorry to say that in my hands it has not proved of the slightest service. If it agrees with the patient, a dessert-spoonful of cod-liver oil three times daily I have fancied retards the emaciation, while it certainly renders the motions easier. With patients who cannot take the oil, some light mineral acid tonic may be prescribed, such as the nitro-hydrochloric acid (℥x) with a little tincture and syrup of orange-peel twice daily.

Purgative medicines must be avoided, for they may set up a violent diarrhœa difficult to control; while if administered for symptoms of obstruction they are positively dangerous. I have seen at least one death after colotomy which was chiefly due to violent purging setting in after operation, caused by the large doses of medicine previously administered.

There is no objection to the patient taking, if necessary, some mild laxative, such as a small quantity of Friedrichshalle water, or a small dose of liquorice powder; but the constipation is most commonly mechanical, and due to a difficulty in passing motions through a narrow gut, and should therefore be treated by careful oil-and-water injections.

Wind, often a troublesome symptom, may be relieved by charcoal or by bismuth and turpentine. Of the former, a teaspoonful spread on bread-and-butter may be tried two or three times a day; while the latter may be prescribed thus:

Olei terebinthinæ, ℥xv
Liq. bismuthi, ʒss
Mucilag. acaciæ, ʒij
Aquæ carui, ℥j

two or three times daily.

If the nights are restless, a single dose of opium, varying from ten to twenty drops of liquor opii sedativus, is valuable, but I have the greatest dislike to the frequent administration of opium both day and night in increasing doses. The craving for the drug becomes such that the patient will magnify his sufferings to any extent in order to obtain a frequent dose.

The mental depression and utter demoralisation thus produced causes far more misery to the patient and distress to the friends than the physical suffering it is supposed to relieve. Employed in an indiscriminate manner, I consider opium as one of the greatest curses to which suffering humanity can be subjected.

Patients in a position to do so should be encouraged to take a fair amount of exercise, unless they notice that such a course clearly aggravates the symptoms. The venous circulation being so much assisted by movement in the surrounding parts probably explains why pain and discomfort is often less after a day of moderate exercise than one in which the patient has lain completely at rest. If, however, the disease implicates or protrudes from the anus, exercise can scarcely be borne from the irritation it produces.

Local Treatment.—This is important. The parts must be kept scrupulously clean, great care being taken to prevent the collection of acrid discharges about the anus. The part should be frequently washed with soap and water, and thoroughly dried with a soft towel.

If there be any fungoid projections, they can be kept dry and comparatively sweet by being dusted over with boracic acid powder. A small pad of absorbent cotton-wool kept in position by a T bandage prevents the linen from being soiled.

The diarrhœa and tenesmus, so troublesome a symptom in the later stages, are often due to the retention of fæcal material above the disease, its presence producing conges-

tion and irritability of the ulcerated part. In these cases great comfort and relief follows the use of a good oil-and-water enema every night; it clears the bowel above the disease, and thus removes a potent source of irritation. To be of use this must be done very thoroughly. I often find, unless special instructions be given, that the injection is merely passed into the anus, dilating the rectum below the disease without removing the matter above. To be effective, a Higginson syringe should be attached to the half of a No. 12 soft catheter, with an eye near the point. The catheter should then be gently passed up the bowel beyond the disease. After the bowel has been cleaned in this way, an injection to be retained of an ounce of warm thin starch, to which ten drops of liquor opii sedativus have been added, is very soothing. This must be injected through a soft catheter by a little india-rubber syringe made to hold the necessary amount.

Linear Proctotomy and Scraping Away the Growth.—It was suggested by Kelsey in one of his able papers* that instead of colotomy a free posterior proctotomy, so as to divide the strictured bowel, might be performed. In rare cases, when the obstruction is close to the anus, the operation might be right, and in the single case† in which I have seen it performed, some temporary benefit followed. But should the disease be at the usual height the difficulty of dealing with any hæmorrhage from the rotten tissue would be an element of considerable danger, while the relief could only be but temporary.

Sometimes, when the disease recurs, it very rapidly forms a large cauliflower mass about the anus, giving rise to a putrid discharge, and great difficulty in keeping the patient sweet and clean. In several of these cases great

* *New York Med. Journ.*, June 1880.

† Lucas Ward Register vol. viii. p. 300.

benefit has followed through the thorough scraping away all the soft sprouting material with a Volkmann's spoon. If this be done rapidly, and quite down to the hard base, although the hæmorrhage is pretty free, it can be quickly controlled by direct pressure.

CHAPTER XXIII

SELECTED ILLUSTRATIVE CASES OF CANCER

It would be out of the question to record in detail all the cases operated upon. Moreover, in Table A will be found a brief note of most cases of interest. I propose, however, to give the details of a few selected cases so as to draw a more realistic picture of the course of the disease than can be afforded by the abstract symptoms described in an earlier portion of this work.

M. M., aged sixty-one, was kindly sent to me by my friend Mr. Doran. She was very thin and emaciated, and for some time had been unable to follow her occupation as a laundress. For more than a year she had suffered discomfort in the rectum, and had lost blood from time to time, a muco-purulent discharge being persistent. During the last few months the pain had greatly increased, her nights were sleepless, and she was tormented with a constant desire to go to stool. She suffered from alternate attacks of diarrhœa and constipation, and could not retain her fæces when liquid. On examination with the finger, commencing just within the anus and extending upwards a couple of inches, an ulcerated mass of cancer was felt. This did not completely surround the bowel, a small portion of the anterior wall being free. The operation was performed in the manner already described. The patient made a quick recovery, leaving the hospital in five weeks, free from all pain, with some control over her motions, and her general health greatly improved.

She subquently came to my out-patient room once in every fortnight, on which occasions the bowel was carefully examined. All seemed well for the first three months. She then complained of a slight irritation of the part. Upon examination, at a spot on the strip of the mucous membrane that had been left, the membrane looked rather more vascular than normal, and seemed to be slightly raised above the surrounding level. Incautiously, something was said about a further operation being necessary, and the patient, a nervous woman, ceased to attend for six weeks. She then attended again, frightened by passing blood with her motions. I found at the spot that had previously looked suspicious a beautifully round papillary growth, about the size of a large pea. It projected into the rectal cavity and felt soft, but, when taken between the finger and the thumb, could be felt to have somewhat of a hard base. The little growth, including its base, was seized by a pair of vulsellum forceps, drawn down, and cut off with scissors. The wound healed quickly. The patient remained perfectly well for fourteen months; at that time she felt no pain, but her attention was again drawn to the part by a little blood in her motions. I found that the blood proceeded from a minute speck of red granulation-looking material, certainly not larger than a millet-seed, which projected through a tiny hole in the cicatrix that was left by the second operation. By placing the thumb in the vagina and the forefinger in the rectum, a little tumour, less than a quarter of an inch in diameter, could be distinctly felt in the recto-vaginal septum. The mucous membrane of the vagina was freely movable over the nodule, which was firmly connected with the cicatrix on the rectal surface. This tumour was removed, and the woman called at my house every six months during the next three years. I examined her carefully on each occasion. There was no sign of any further recurrence. She gained flesh, had no pain, and had perfect control over her motions, except when fluid.

The only trouble she complained of was occasionally some prolapse of the bowel. Upon my last seeing the patient about four years after the operation, she was quite well and promised to call and see me if at any time she had further symptoms.

A. G., aged 54, a small emaciated woman, with a dark complexion. She had six children living, in good health, and has lost none. The father and mother died at advanced ages; there was no family history of tumours or phthisis. The patient had good health until two years ago, but has always been subject to constipation, for which she has taken castor oil in considerable quantities. Two years ago she began to suffer from pain and a feeling of weight in the rectum. Eighteen months ago she first noticed a discharge of blood and mucus from the bowel. During the past year she had lost flesh rapidly, having formerly been very stout. She had been for some months in a London hospital, but obtained no relief. Her sufferings were very great; she had lost control over the sphincter, the fæces escaping without her knowledge. Upon examination, the parts were found to be very tender, with a growth extending almost to the margin of the anus, about which the skin was œdematous and excoriated. A considerable mass of disease occupied the lower three inches of the bowel, taking the form of a large irregular ulceration with a hard base and fungating margins. At one point the disease extended somewhat higher than three inches. The recto-vaginal septum was implicated, but the mucous membrane on the vaginal aspect appeared sound.

Considering the length of time that the disease had existed, and the extent to which it had encroached on the anterior wall of the rectum, it did not seem a very favourable case for operation. The patient, however, was exceedingly anxious to have an attempt made to remove it, having been recommended to consult me for that purpose by my friend Mr. Macready. The operation was

performed in the usual manner. There was no difficulty in detaching the bowel from its posterior and lateral connections, but it required some time and caution to dissect through the recto-vaginal septum; this was done by keeping as near as possible to the mucous lining of the vagina; but even at the time there appeared a suspicion that the disease at this part had not been thoroughly removed. Whilst detaching the upper anterior part of the rectum, the peritoneal membrane was distinctly seen. The diseased bowel being brought down, was cut off a little more than three inches from the anus. Upon detaching the portion, a small coil of intestine was seen in the upper part of the wound, but it was not known at what period of the operation the peritoneal membrane had been opened. The knuckle of bowel was gently pressed up by the finger, and disappeared. The wound was treated in the ordinary way, without any dressing or sutures, and kept thoroughly free from all discharge by frequent syringing with warm carbolic lotion.

The patient never had a symptom of peritonitis, recovered quickly, and left the hospital at the end of the month free from all pain, and much stronger and more comfortable than she had been for a long time; she had no pain on passing her motions, over which she had a fair amount of control. She appeared well and comfortable for three months; she then complained of some irritation about the part, and upon examination a soft fungating nodule could be felt springing from the anterior wall of the rectum. She suffered little pain. A month later the disease had greatly increased, forming a considerable fungoid mass, blocking up the lower end of the rectum, causing some difficulty in passing her motions. It did not seem advisable to make any further attempt by a cutting operation; but, acting as other surgeons have done in these circumstances, as far as I could with the finger-nail and a blunt gouge, I scraped away the cauliflower growth down to its hard base. There was not much

bleeding during this proceeding, and it gave her great relief, and she was enabled to pass her motions with comparative ease. The growth rapidly returned, the patient dying a few months later.

Miss D., a single lady, living partly in London and partly in the country, had always enjoyed good health until towards the end of 1879. She then for the first time noticed a slight amount of blood in the motions, and suffered considerable pain at times. She was treated for some time as suffering from piles, but grew worse, the pain increasing, and there was a profuse discharge of matter. In July 1880 she consulted Dr. Matthews Duncan, who, recognising the nature of her illness, kindly advised her to consult me.

At this time she had lost flesh considerably, and had a sallow complexion. The pain had become much worse lately, and she was tormented with a frequent desire to pass a motion, which generally resulted in some blood-stained discharge. Upon examination, the anus outside appeared normal, but a hardness could be felt in the left ischio-rectal fossa, and pressure on this spot was painful.

By drawing the sides of the anus apart, a small portion of growth could be seen protruding from the bowel on the left side. Upon introducing the finger into the anus, there was found to be a hard mass occupying the left side of the rectum, and apparently filling the ischio-rectal fossa.

On the surface of the tumour, towards the rectum, was a deep crater-like depression; the growth at the margin of the depression was somewhat raised above the mucous membrane. The upper border of the growth was two and a half inches from the anus, and it occupied about one half the circumference of the bowel.

July 28, 1880.—The patient being put in the lithotomy position, and ether being administered by Mr. Mills, with the assistance of Mr. Butlin I performed the following operation: I divided the bowel back to the coccyx, keeping

a little to the right of the middle line. I then made a semicircular incision, just at the junction of the mucous membrane with the skin round the left side, to half an inch beyond the middle line of the anterior surface of the bowel. As usual in these cases, the separation of the bowel and tumour from the ischio-rectal fossa was easily accomplished by the finger assisted by a few snips with the scissors. Careful dissection was required to separate the anterior surface of the bowel from the posterior wall of the vagina. After carrying this dissection well across the middle line, I divided the bowel with scissors by longitudinal incision three inches in length. By this means a portion of the rectum involving two-thirds of its circumference, in which was included the morbid growth, was isolated from all its connections, forming a flap connected only by its upper border. The mass was then forcibly drawn downwards, and cut off. The portion thus removed was rectangular in shape, three inches long. When spread out, there was from a quarter to half an inch of the healthy mucous membrane all round the growth. The disease itself had extended into the ischio-rectal fossa to the depth of three-fourths of an inch. The growth towards the bowel was deeply ulcerated in the centre. At the margins the growth appeared to be insinuating itself between the muscular and mucous coats, lifting up the latter, so as to form a ring-like elevation. From the lower border were two fungating masses. Beneath the microscope the specimen proved to be a beautiful example of adenoid cancer. The patient convalesced without a single bad symptom, her only trouble being her inability to pass water for ten days. By August 18 she was sufficiently convalescent to go to Bournemouth, but had only slight control over the motions.

The following notes complete the case:

Oct. 30, 1880.—The wound has perfectly healed, and she has little or no trouble as regards retention. There

is no sign of any return of the disease, but there is a tendency to contraction of the anal orifice. She was at once advised to pass a full-sized bougie daily.

April 1882.—I examined the patient, and there was no sign of any return of the disease. The part all feels perfectly supple and normal, and there is scarcely any contraction, and she feels perfectly strong and well, and has become quite stout.

Sept. 26, 1883, I received the following letter (three years after the operation):

"My dear Sir,—I am very thankful to say, in reply to your inquiry, that I am still perfectly free from any appearance of disease. There is no pain whatever in any part, and no weakness. Indeed, nothing at all that I could in any way complain of. The contraction is not sufficient to necessitate the use of the instrument you furnished me with, and I have discontinued its use for nearly a twelvemonth. My general health is as good as ever."

May 1900. There has never been any return, and the patient is still in perfect health, and the bowel gives no trouble at all.

A patient, a woman aged fifty, was kindly placed under my care at the hospital by Dr. Griffith. I am indebted for the following notes to Mr. Balgarnie, her dresser.

The woman was admitted on Dec. 15, 1885. She dates her present illness from the spring, when she first noticed pain in the lower part of the back, and soon afterwards pain during defæcation. The character of her motions gradually altered, becoming smaller in size, and at times flattened, and generally tinged with blood. The frequency of her stools increased, at first to three or four times a day, but latterly much more often. She has been getting thinner, and at times has much severe pain, which she describes as like "labour pains."

The patient on admission looked weak and anæmic, with a feeble pulse. She had nearly constant pain, and was much distressed by a troublesome diarrhœa, having to go to stool as often as ten or twelve times in the night. The act of defæcation was very painful, and nearly always attended by loss of blood. On examination, the anus appeared healthy, and on introducing the finger the mucous membrane for about three inches felt smooth and natural. The finger then came in contact with a mass feeling not unlike an enlarged cervix uteri. Around this was a cul-de-sac, deeper posteriorly than anteriorly. The mass itself was hard and nodular. The opening through it would only admit the tip of the finger, and the bowel at the constricted point was firmly fixed to the surrounding structures.

The patient, not wishing then to stay in the hospital, left, but was re-admitted on Feb. 1. She had become weaker, and her symptoms had increased since her discharge. The mass also had grown considerably, and could now be felt to be within an inch and a half of the anus. On Feb. 8, 1886, the case being considered unsuitable for excision, I performed colotomy. The wound united by first intention. No motion passed through it for a week. During the next six weeks a certain amount of fæces passed through the rectum as well as through the wound. This gradually ceased, and when she was discharged in March everything passed through the artificial anus. She improved very much whilst in the hospital, and was comparatively free from pain.

April 1887.—The patient is not only alive, but wonderfully improved; and, notwithstanding that the local growth has made some advance, her general health and strength is far better than it was a year ago. She is no longer troubled with diarrhœa, but has one good motion daily through the artificial anus, and she has been able to attend as usual during the year to her domestic duties. The artificial anus readily admits the forefinger, and

the mucous membrane is exactly level with the skin. There is no sign of cicatricial tissue round the orifice, which is perfectly soft and dilatable. The patient knows when she is going to pass a motion, which she has the power of controlling, there being no involuntary escape. In fact, the patient herself says she is no more troubled with the artificial anus than when the opening was in the natural situation. The patient was shown at the Medical Society.

A lady, sixty-two, was brought to me by Dr. Rushworth, of Hampstead, in Feb. 1898. For about a year she had been much troubled with irritability of the bowels, often requiring to go to the closet ten or twelve times a day, but mostly only a little blood-stained mucus was passed. An examination showed at the height of four inches, and involving the whole circumference of the bowel for two inches, a mass of adenoid cancer, ulcerated in the centre, with hard heaped-up edges. Assisted by Dr. Rushworth, on Feb. 16, 1898, I sawed across the sacrum two and a half inches above its junction with the coccyx. This gave an excellent view of the disease, and enabled the whole of the growth to be removed by taking out completely about three inches of the bowel. It was adherent to the peritoneum, which had to be opened but was closed again with sutures. About three and a half inches of healthy bowel intervened between the cut section and the anus. The two cut ends could not be drawn together, so the upper end was fixed to the upper angle of the wound. The patient recovered without mishap. A year later, on examination, there was no sign of recurrence; the anus was at the lower part of the sacrum about four inches behind its normal position. Just below that, but somewhat contracted up, was the entrance to the lower segment of the bowel that had been left. One finger in this and one in the anus met and showed the bowel quite healthy. She had no control. I promised her if there was no return of the disease in another year from this, an attempt should be

made to restore the bowel by joining the cut segments. In August 1902, again assisted by Dr. Rushworth, I carefully dissected out the two ends. These, which previously could not be brought together, now came easily in contact without tension, and an end to end anastomosis was made. The parts completely healed. She is now, 1906, in good health, passes all the motions through the natural anus, and *has perfect* control, and there is no sign of recurrence.

TABLE A

A RECORD OF 445 CONSECUTIVE CASES OF RECTAL CANCER IN THE PRIVATE PRACTICE OF THE AUTHOR

EXPLANATION OF TABLE

THIS Table of 445 cases is arranged in chronological order, and includes, with perhaps a few accidental omissions, all examples of rectal cancer that have come under my observation in private practice. It was the original intention to have included in the Table the hospital cases as well, which would have largely increased this number. It was found, however, that as the cases extended over so long a period (over thirty years) it was impossible to follow out the subsequent histories of the hospital patients, except in a limited number. I have, however, always kept a record of my private cases, including the names of the medical practitioners who sent me the patients, and to whom I am indebted for their subsequent histories. My general impression is that there would have been very little difference in the relative figures had the hospital series been included. In most of the cases the name of the medical attendant is given, as a means of identification and for correction if necessary.

TABLE A

A RECORD OF 445 CONSECUTIVE CASES OF RECTAL CANCER IN THE PRIVATE PRACTICE OF THE AUTHOR

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
1	1878	Sir James Paget	M.	65	1 year	3 inches	Excision	Recovery	Recurred	Recurred in 12 months; second operation; patient died 3½ years after first operation.
2	1880	Dr. Matthews Duncan	F.	48	6 months	1 inch	Excision	Recovery	Well 22 years	Alive and well, with good control 22 years after operation; disease on left wall two inches in diameter; ulcerated hard friable edges; microscope: adenoid cancer.
3	1881 Mar.	Dr. Smith (Keyworth)	F.	50	3 months	High up	Palliative	—	—	Lived 4 months.
4	1881 Apr.	Dr. Fletcher	M.	56	14 months	5 inches	Palliative	—	—	Lived 6 months.
5	1881 Oct.	Dr. Forbes (Rock-Ferry)	M.	14	2 months	3 inches	Palliative	—	—	Lived 3 months; grew most rapidly; death 3 months later.
6	1882	Dr. Parsons (Bridgwater)	M.	44	10 months	4 inches	Palliative	—	—	Died within year; obstruction and implication of glands.
7	1882 Feb.	Dr. Gimson (Witham)	M.	50	Uncertain	Pelvis blocked up	Palliative	—	—	Lived 8 months; death from obstruction.

8	1882 July		M.	33	2 years	Extensive	Palliative	—	—	Lived 5 months.
9	1882 Nov.	Dr. Ransom (Bowden)	F.	65	18 months	2 inches	Palliative	—	—	Lived 10 months.
10	1883 May	Dr. Dousett (Hastings)	F.	61	Not stated	2½ inches	Refused	—	—	
11	1883 Dec.	Dr. Wyatt	M.	66	Nearly 4 years	5 inches	Palliative	—	—	Disease advanced very slowly.
12	1884 Mar.	Dr. Gimson	M.	35	3 months	High up	Refused	—	—	Lived 9 months.
13	1884 July	Alban Doran	F.	45	14 months	High up	Palliative	—	—	Death, 10 months
14	1884 Aug.	Dr. Smith (Keyworth)	F.	46	3 years	4 inches	Palliative	—	—	Death, 13 months.
15	1884 Nov.	Mr. Lomax	M.	69	8 months	3 inches	Palliative	—	—	Disease at first mistaken for fibrous stricture.
16	1884 Dec.	—	F.	45	5 months	—	Refused	—	—	
17	1884 Dec.	Dr. Stokes (Highbury)	M.	70	2 years	5 inches	Colotomy	Recovery	—	Lived 7 months. (Lumbar.)
18	1885 June	Sir Andrew Clark	F.	46	Not stated	3 inches	Excision	Recovery	Recurred	Recurrence 1 year; death, 18 months.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
19	1885 June	Dr. Crabbe	M.	69	No symptom	High up	Palliative	—	—	Patient had no symptoms of any kind till a week before my examination; had then a sudden and profuse hæmorrhage; a large amount of disease but no stricture. Disease made very little advance up to the time of death 3 years later.
20	1885 July	Dr. Allen Sturge	M.	62	8 months	Prostate involved	Palliative	—	—	Lived 6 months.
21	1885 July	Sir Spencer Wells	M.	55	8 months	3½ inches	Excision	Recovery	Recurred	Growth two inches diameter on anterior wall; death from recurrence 2 years.
22	1885 Aug.	Dr. Bingley	M.	73	1 year	3 inches	Palliative	—	—	Lived 8 months.
23	1886 Jan.	Dr. Stanley Smith	F.	40	8 months	3 inches	Excision	Recovery	Well 26 years	Patient was operated upon in 1885 by Mr. Henry Smith; recurred in 6 months. Examination under ether showed a hard circular growth the size of half a crown, deeply ulcerated, at five inches from anus on the anterior wall.

										The bowel was movable, and the growth could be drawn down to within three inches of the anus, and after a posterior proctotomy a good view could be obtained. I removed this growth; peritoneum not opened. Five months later symptoms still present. Examination showed a recurrence at the old site 1¼ in. in diameter and very hard; third operation. The disease was again excised with a good half-inch margin; the whole thickness of the bowel removed, including peritoneal coat, the peritoneal opening being closed with fine silk. Microscope: typical adenoid cancer. Patient has never had further recurrence; has remained quite well; has perfect control, and no trouble. (1912.)
24	1886 Jan.	Dr. Swindell (Finchley)	M.	35	10 months	3 inches	Colotomy	Recovery	—	Lived 8 months; disease completely blocked up pelvis. Colotomy done for complete obstruction. (Lumbar.)
25	1886 Mar.	Dr. Batten (Gloucester)	M.	70	Doubtful	6 inches	Palliative	—	—	Lived 1½ years; disease high up, and only discovered after a second examination under anæsthetics. Death from secondary deposits in brain.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
26	1886 Apr.	Dr. Walters (Reigate)	M.	60	9 months	6 inches	Palliative	—	—	Lived 10 months; examination without anæsthetic. Nothing could be felt. Examination month later under ether showed ring of cancer six inches up the bowel.
27	1886 May	Sir Andrew Clark	F.	50	2½ years	2 inches	Palliative	—	—	
28	1886 June	Dr. Foreman (Bournemouth)	M.	59	1 year	High up	Colotomy	Recovery	—	Lived 8 months. (Lumbar.)
29	1886 July	Dr. Lattey (Kensington)	F.	49	9 months	Around anus	Palliative	—	—	
30	1886 Oct.	Dr. Wade (Chislehurst)	M.	60	2 years	High up	Colotomy	Recovery	—	Lived 19 months; great relief; able to go to his office daily till within 6 months of his death. (Lumbar.)
31	1886 Nov.	Dr. Geo. Hastings	M.	61	18 months	2 inches	Excision later Colotomy	—	Recurred	Recurred in 4 months; subsequent colotomy.
32	1886 Nov.	Dr. Bryan Jones (Epsom)	M.	47	14 months	2½ inches	Palliative	—	—	Died of obstruction in 2 months.

33	1886 Dec.	Harrison Cripps	F.	70	Not stated	High up	Colotomy	Recovery	—	Lived 2 years.
34	1887 Mar.	—	F.	50	14 months	4 inches	Palliative	—	—	Lived 4 months. This patient had very slight symptoms, and till the growth was detected had never felt ill.
35	1887 Apr.	Sir W. Whitla (Belfast)	F.	49	8 months	4 inches	Excision	Recovery	Well 22 years	Operation at Belfast, assisted by Sir A. Bowlby. The disease was very extensive, commencing three inches from anus and extending upwards to five inches. Operation severe. Peritoneum being exposed for two inches, it was not opened, the bowel being stripped off it. The patient unfortunately neglected herself, and a year later there was a considerable stricture. I advised that this should be dilated by bougies ; this not done. Two years later had a colotomy performed by Sir Alfred Cooper, who kindly sent me a letter received from this patient, January 1906, from which I give the following extract : "I am still about, and very much so. I am able to walk three or four miles without fatigue, and to all appearance am perfectly well, 19 years since the operation."

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
36	1887 May	Not stated	F.	30	5 months	4½ inches	Colotomy	Recovery	—	
37	1887 July	Dr. Kimpster	F.	71	9 months	3½ inches	Palliative	—	—	
38	1887 Oct.	Dr. Foreman (Stoke Newington)	M.	48	2 years	1½ inches	Colotomy	Recovery	—	
39	1887 Oct.	Harrison Cripps	F.	48	10 months	4 inches	Colotomy	Recovery	—	Lived 3 years.
40	1887 Nov.	Dr. Kinneir	F.	39	—	3 inches	Excision	Not stated	—	
41	1887 Nov.	Harrison Cripps	F.	37	8 months	2 inches	Excision	Recovery	Well 5 years	Two inches of the vaginal septum removed. When last seen had gained two stone in weight; cicatrix soft and healthy; fair control.
42	1887 Dec.	Dr. James Andrews	M.	76	6 months	2 inches	Excision	Death	—	Patient did well for 14 days; then became restless and wandering at nights; gradually became weaker; death on 22nd day; wound remained healthy.

43	1887 Dec.	Dr. Godson	F.	50	15 months	4 inches	Colotomy	Recovery	—	Lived 6 months.
44	1887 Dec.	Dr. Moore (Blackheath)	M.	67	2 years	1½ inches	Refused	Recovery	—	Lived 7 months.
45	1888 Jan.	Dr. F. O. Smith	M.	55	19 months	1 inch	Colotomy	Recovery	—	Lived 18 months. Spread upwards from anus.
46	1888 Jan.	Dr. Edlin	M.	43	8 months	4 inches	Colotomy	Recovery	—	Lived 2 years
47	1888 Jan.	Dr. M. Duncan	F.	51	9 months	4 inches	Palliative	—	—	
48	1888 Feb.	Dr. Laurie	M.	65	Not stated	High up	Colotomy	Recovery	—	Lived over 2 years.
49	1888 Mar.	Sir L. Brunton	F.	51	2 years	High up	Palliative	—	—	
50	1888 May	Dr. Fletcher (Camden Road)	M.	41	4 months	2 inches	Excision	Recovery	Well 16 years	The growth involved the posterior half of the rectum and was two inches in length. The mucous membrane was intact over it, with the exception of an area in the centre, the size of a shilling, which was ulcerated. The posterior two-thirds of the rectum excised. Microscope: adenoid cancer. I examined the case 16 years after operation; good control; no sign

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
										of recurrence. He used a bougie once a week for the first 5 years.
51	1888 June	Dr. Gillibrand	F.	43	10 months	4 inches	Colotomy	Recovery	—	Lived 2½ years, for two of which was able to do her household duties and go to church on Sundays. She gradually became weaker, but never had any pain after the colotomy.
52	1888 Aug.	Dr. Scott (Bournemouth)	M.	54	6 months	2½ inches	Excision Colotomy	Recovery	Recurred	In 4 months a slight recurrence. Advised to have it again removed. Preferred a cancer curer, who treated it with electrolysis, which seemed to irritate and make it grow more rapidly; colotomy performed for obstruction.
53	1888 Sept.	Dr. Innes (Hertford)	M.	60	2 years	2 inches	Refused	—	—	
54	1888 Nov.	Dr. Hastings	M.	18	4 months	High up	Colotomy	Recovery	—	Lived 10 months. The mother of this patient died of rectal cancer 5 years after the death of her son.
55	1888 Nov.	Sir Spencer Wells	M.	73	2 years	1 inch	Palliative	—	—	Lived 4 months.

56	1889 Mar.	Dr. Goodchild	F.	54	8 months	High up	Colotomy	Recovery	—	Lived 2 years. Fixed ring of cancer junction of rectum with sigmoid, diagnosed by abdominal section. Colotomy; disease eventually extended into bladder.
57	1889 Apr.	Dr. Ball	F.	45	9 months	3 inches	Colotomy	Recovery		Dr. Ball wrote two years after the operation: "Patient can do all her household work and walk five or six miles without fatigue, and practically her health is as good as it ever was." Lived 4 years.
58	1889 June	Dr. Hastings	F.	50	A few months	4 inches	Colotomy	Recovery	—	Lived 18 months.
59	1889 June	Dr. Hutson (Barbados)	F.	52	8 months	3½ inches	Colotomy	Recovery	—	A short mesentery. Intestine fell back on fifth day. Fæces extensively extravasated into the peritoneal cavity. Washed out thoroughly and bowel re-stitched to the wound. A drainage tube was used. Recovered without a bad symptom. Lived 3 years. Dr. Hutson wrote: "July 1892.—I thought you would like to hear about your patient, who lived just over 3 years. She got on very well for 2½ years, enjoying life in her quiet way, going to church, visiting friends, &c., and was very grateful for the operation."

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
60	1889 July	Dr. De la Cour	F.	60	2 years	3½ inches	Colotomy	Recovery	—	Lived a few months.
61	1889 Aug.	Mr. Lawrence	F.	65	1 year	5 inches	Colotomy	Recovery	—	Lived 2 years and 3 months.
62	1889 Sept.	Dr. Foster	F.	60	2 years	4 inches	Colotomy	Recovery	—	Lived 7 months. Colotomy for complete obstruction.
63	1889 Sept.	Dr. Cubitt (Stroud)	M.	63	1 year	3 inches	Colotomy	Recovery	—	Lived 18 months. Dr. Cubitt wrote: "The operation procured him a most easy prolongation of life. He had absolutely no pain; no nausea or vomiting; no intestinal trouble till within a few weeks of the end. He may be said to have enjoyed life: eating, sleeping and drinking, and doing his work as parish priest. I send these notes to complete a record of successful surgical work."
64	1889 Oct.	Dr. Kingston Barton	M.	71	8 months	High up	Colotomy	Death	—	Death on 8th day.

65	1889 Oct.	Dr. Reynolds	F.	67	4 months	1½ inches	Excision Colotomy	Recovery	Recurred	Recurrence 7 months. Colotomy; lived 6 months.
66	1889 Nov.	Mr. Meredith	F.	54	Not stated	High up	Palliative	—	—	In this case the rectum was subsequently excised in America.
67	1889 Nov.	Dr. Elliott (Snaresbrook)	M.	68	4 months	1 inch	Colotomy	Recovery	—	Lived 3 months. Ulcerated into bladder. Died of sudden hæmorrhage from bladder.
68	1890 Jan.	Dr. Terry (Newport Pagnell)	M.	67	9 months	Anal margin	Colotomy	Recovery	—	Lived 13 months. Colotomy for complete obstruction.
69	1890 Feb.	Mr. Christopher Heath	M.	59	8 months	2 inches	Refused	—	—	
70	1890 Feb.	Mr. Boyce Barrow	F.	63	9 months	4 inches	Palliative	—	—	
71	1890 Mar.	Sir L. Brunton	M.	40	18 months	3½ inches	Palliative	—	—	Lived 5 months.
72	1890 May	Dr. Perry (Folkestone)	F.	40	1 year	3½ inches	Refused	—	—	
73	1890 May	Dr. Willis	M.	68	13 months	3 inches	Refused	—	—	
74	1890 May	Harrison Cripps	M.	62	1 year	3½ inches	Colotomy	Recovery	—	Lived 13 months.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
75	1890 May	Dr. Ironside	F.	50	8 months	4 inches	Excision	Recovery	Well 12 years	Dr. Ironside wrote as follows, July 1902: "The patient is perfectly well, and there is no sign of recurrence."
76	1890 June	Harrison Cripps	M	55	14 months	Whole of pelvis	Palliative	—	—	Lived 4 months.
77	1890 June	Dr. Horsford (Melford)	M.	75	11 months	3 inches	Refused	—	—	
78	1890 Aug.	Dr. Gimson	F.	37	8 months	3½ inches	Colotomy	Recovery	—	Lived 6 months. Obstruction and general dissemination over abdominal cavity.
79	1890 Aug.	Dr. Wilkes Harrison Cripps	F.	55	6 months	High up	Colotomy	Death	—	Obstruction practically complete. The greatest difficulty in uniting bowel to skin. The patient very fat; stitches gave way; death sixth day.
80	1890 Aug.	Dr. Fowler (Epping)	M.	35	18 months	3 inches	Colotomy	Death	—	Complete obstruction 12 days, with fæcal vomiting, which continued till death, 24 hours after operation.

81	1890 Sept.	Harrison Cripps	M.	63	Not stated	1½ inches	Palliative	—	—	Lived 4 months.
82	1890 Sept.	Dr. Goddard (Highbury)	F.	40	8 months	4 inches	Colotomy	Recovery	—	Lived 13 months.
83	1890 Nov.	Dr. Whitling	M.	60	8 months	1½ inches	Palliative	—	—	Lived 3 months. Prostate involved.
84	1891	Dr. Adams	M.	70	1 year	1½ inches	Palliative	—	—	Lived 2 months.
85	1891 Feb.	Dr. Roe (Ellesmere)	M.	59	1 year	4 inches	Colotomy	Recovery	—	Dr. Roe wrote as follows: "The patient lived 2½ years. He had very little pain, which I attribute to the bowels acting freely; towards the end urine came through colotomy opening."
86	1891 Feb.	Dr. Windle (Southall)	M.	45	9 months	3 inches	Palliative	—	—	
87	1891 Feb.	Sir A. Clark	M.	60	18 months	1 inch	Colotomy	Recovery	—	Lived 1 year.
88	1891 Mar.	Dr. Bell	M.	64	10 months	5 inches	Colotomy	Recovery	—	Lived 2 years.
89	1891 Mar.	Dr. Brodie (Wickham Market)	M.	45	1 year	4 inches	Colotomy	Recovery	—	Lived 4½ years. Dr. Brodie stated that the patient had no pain and lived in comparative comfort, the opening acting well and giving no trouble.

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								Immediate.	Secondary.	
90	1891 May	Dr. Pope (Tring)	M.	60	6 months	3½ inches	Colotomy	Recovery	—	
91	1891 May	Dr. Tyrrell (Malvern)	M.	39	5 months	4 inches	Colotomy	Recovery	—	Lived 7 months.
92	1891 June	Dr. Bows (Herne Bay)	F.	65	9 months	3½ inches	Palliative	—	—	Lived 6 months.
93	1891 July	Dr. Wyatt	M.	54	10 months	3 inches		—	—	
94	1891 July	Sir A. Clark	M.	65	9 months	1½ inches	Refused	—	—	Lived 8 months.
95	1891 Aug.	Dr. Toller	F.	50	2 years	2 inches	Palliative	—	—	Lived 5 months.
96	1891 Aug.	Dr. Dunn	M.	48	1 year	3 inches	Palliative	—	—	
97		Harrison Cripps	M.	64	7 months	4 inches	Colotomy	Recovery	—	Lived 2 years 1 month.
98	1891 Sept.	Dr. Morrison	M.	61	9 months	3½ inches	Colotomy	Recovery	—	Lived 2 years 2 months. Patient had locomotor ataxy; was able to attend to business daily for

										2 years, the opening giving little trouble. He had a sudden attack of abdominal pain and died in 3 days.
99	1891 Sept.	Harrison Cripps	M.	68	4 months	3 inches	Palliative	—	—	Lived 6 months.
100	1891 Oct.	Dr. Scott (Ealing)	F.	73	18 months	4 inches	Palliative	—	—	Lived 2 months.
101	1891 Oct.	Harrison Cripps	F.	40	13 months	High up	Colotomy	Recovery	—	Lived 15 months.
102		Mr. Johnson	F.	61	1½ years	4 inches	Palliative	—	—	Lived 4 months.
103	1891 Oct.	Mr. Webb	M.	60	15 months	3 inches	Palliative	—	—	Lived 7 months.
104	1891 Nov.	Dr. Kane (Kingston)	F.	68	14 months	High up	Colotomy	Recovery	—	Lived 2 years 5 months.
105	1891 Dec.	Dr. Joseph Kidd	M.	58	10 months	3 inches	Palliative	—	—	Lived 6 months.
106	1892 Jan.	Dr. Boulton	M.	60	1 year	2 inches	Colotomy	Recovery	—	
107	1892	Dr. Kane Dr. Toller (Ilfracombe)	M.	59	6 months	2 inches	Excision	Recovery	Well 17 years	Disease 1½ inches on posterior wall, ulcerated in centre ; hard edges ; very freely excised. Dr. Toller writes, May 1912 : "The patient

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
										has left here but I know was alive and well in 1909."
108	1892 Mar.	Dr. Champneys	F.	31	9 months	2 inches	Palliative	—	—	Lived 8 months.
109	1892 Mar.	Dr. A. Bright	F.	64	3 years	High up	Colotomy	Recovery	—	Lived 9 months.
110	1892 May	Dr. Lycett Burd	M.	60	A few weeks	3½ inches	Excision	Recovery	Recurred	Recurred ; death in 7 months.
111	1892 May	Dr. Shone	M.	70	9 months	3 inches	Palliative	—	—	Lived 4 months.
112	1892 May	Dr. Green (Portsmouth)	M.	64	1 year	4 inches	Palliative	—	—	Lived 3 years. Died from cancer of liver.
113	1892 May	Dr. Humphrey (Cheltenham)	M.	43	9 months	3 inches	Refused	—	—	Lived 5 months.
114	1892 Aug.	Sir Russell Reynolds	M.	58	18 months	3 inches	Refused	—	—	
115	1892 Aug.	Dr. Ludwig	M.	57	1 year	2½ inches	Palliative	—	—	

116	1892 Aug.	Dr. Stott	M.	54	5 months	3 inches	Refused	—	—	
117	1892 Oct.	Dr. Kane	M.	20	Not stated	4 inches	Colotomy	Recovery	—	Lived over 2 years. Operation for complete obstruction 10 days.
118	1892 Nov.	Harrison Cripps	M.	62	15 months	½-inch	Refused	—	—	
119	1892 Nov.	Dr. Lewis (Hamilton Terrace)	F.	60	6 months	2 inches	Excision Colotomy	Recovery	Recurred	Recurred in 10 months. Complete obstruction; colotomy; lived 1 year 6 months.
120	1892 Nov.	Dr. Garrard	M.	70	8 months	4½ inches	Colotomy	Recovery	—	Lived 1 year.
121	1892 Nov.	Dr. Liddon Mr. Maidlow (Ilminster)	F.	60	6 months	3 inches	Excision	Recovery	Well 19 years	Assisted by Sir A. Bowlby I removed the lower three inches of the posterior two-thirds of the rectum. Microscope: adenoid cancer. The patient died in 1911 of heart trouble. I saw her within 4 months of her death. The parts were soft and supple, she had perfect control and no trouble of any kind. A bougie was used for four years subsequent to operation.
122	1892 Nov.	Dr. Beckett	M.	53	8 months	4½ inches	Refused	—	—	

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								Immediate.	Secondary.	
123	1892 Dec.	Sir James Paget	M.	54	6 months	3 inches	Refused	—	—	Patient, a wealthy man, refused operation on the ground of expense ! ! The disease was a circular patch on posterior wall.
124	1892 Dec.	Mr. D'Arcy Power	M.	68	8 months	3½ inches	Colotomy	Recovery	—	Lived 3 years ; had very little trouble till the end ; went out to Jamaica and back on business during the second year.
125	1892 Dec.	Dr. Gimson	M.	58	9 months	1½ inches	Palliative	—	—	Lived 10 months.
126	1893 Jan.	Dr. Alexander	F.	54	1 year	4 inches	Colotomy	Recovery	—	Lived over 2 years. Dr. Alexander, writing 18 months after the operation, says : "The patient is much improved in general health by the colotomy. I attribute this to the better appetite and to the comfort of the bowels, acting at regular intervals, whereas before there was constant diarrhœa."
127	1893 Jan.	Harrison Cripps	F.	48	2 years	½-inch	Palliative	—	—	Lived 5 months. In addition to cancer of the rectum this patient

										had cancer of the breasts and disseminated nodules all over the skin.
128	1893 Feb.	Sir Thomas Barlow	M.	48	6 months	5 inches	Colotomy	Recovery	—	Lived over 3 years. Two years after the colotomy Sir Thomas Barlow wrote: "The case is most satisfactory; the patient can walk eight or ten miles, and does his clerical work on Sundays."
129	1893 Feb.	Dr. Thompson (Sevenoaks)	M.	45	1 year	2 inches	Excision	Recovery	Recurred	Patient died with recurrence after 13 months.
130	1893 Feb.	Dr. Bear	F.	56	8 months	3 inches	Excision Colotomy	Recovery	Recurred	Recurred in 8 months.
131	1893 Feb.	Harrison Cripps	M.	70	1½ years	High up	Colotomy	—	—	
132	1893 Feb.	Dr. Percival (Northampton)	M.	57	8 months	2 inches	Excision	Recovery	Recurred	Patient lived 13 months.
133	1893 Feb.	Dr. Lowe	M.	58	14 months	3 inches	Excision	Recovery	Recurred	Patient lived 3 years. The disease had invaded the prostate, in which position it recurred.
134	1893 Mar.	Dr. Reynolds	F.	48	1 year	1½ inches	Excision Colotomy	Recovery	Recurred	Recurred in 15 months; colotomy; patient lived 2½ years.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
135	1893 May	Dr. Wilkes	F.	65	14 months	5 inches	Palliative	—	—	Lived 11 months.
136	1893 May	Dr. Fulcher	F.	45	Not stated	3 inches	Colotomy	Death	—	The patient had had complete obstruction for 11 days, with fæcal vomiting; death on 4th day; abdomen full of secondary deposits.
137	1893 May	Dr. Hobday	M.	43	18 months	2 inches	Palliative	—	—	Lived 5 months.
138	1893 June	Dr. Thompson	M.	70	18 months	3½ inches	Colotomy	Recovery	—	Lived 5 months. The disease was very advanced, causing obstruction.
139	1893 June	Harrison Cripps	F.	55	15 months	4 inches	Palliative	—	—	Lived 4 months.
140	1893 July	Dr. Randwick	M.	61	9 months	Junction of sigmoid with rectum	Colotomy	Recovery	—	Transverse colotomy.
141	1893 Aug.	Dr. Steggall	F.	60	Over a year	4 inches	Refused	—	—	Lived 7 months.

142	1893 Sept.	Dr. Buller	M.	70	8 months	5 inches	Refused	—	—	Lived 1 month. Died with fæcal vomiting and other signs of complete obstruction.
143	1893 Sept.	Dr. Wade (Chislehurst)	M.	60	15 months	2½ inches	Excision Colotomy	Recovery	Recurred	Lived 4 years. Sacrum partly removed ; recurred in 18 months ; colotomy. Patient remained in active work as a surveyor till within 3 months of his death.
144	1893 Oct.	Dr. Turner (Annesley)	M.	53	14 months	4½ inches	Excision	Recovery	—	Lived 16 months ; died with secondary deposits in liver ; no local recurrence.
145	1893 Oct.	Dr. Turner	M.	48	10 months	5 inches	Colotomy	Recovery	—	Lived 2 years 8 months.
146	1893 Nov.	Dr. Broadbent	M.	65	9 months	5 inches	Colotomy (complete obstruction)	Death	—	Had seen patient five weeks previously and urged a colotomy, which was refused. On seeing this patient the second time, abdomen enormously distended ; complete obstruction 13 days ; fæcal vomiting. On opening the abdomen a large amount of fetid gas escaped ; the actual perforation could not be found. Death on 6th day.
147	1893 Nov.	Dr. Macdonald	M.	64	1 year	2 inches	Excision	Recovery	—	The last 3½ in. of the rectum completely removed ; subsequent history not traced.

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								Immediate.	Secondary.	
148	1893 Nov.	Dr. Carless	M.	54	6 months	4 inches	Excision	Recovery	Well 5 years	Died suddenly of heart disease 5 yrs. after operation; no recurrence.
149	1893 Dec.	Sir Lauder Brunton	F.	60	6 months	3½ inches	Excision	Death	—	The disease extended very high; peritoneal cavity extensively opened; death on 4th day, probably from peritonitis; no post-mortem.
150	1894 Jan.	Dr. Swift	M.	69	9 months	4 inches	Refused	—	—	
151	1894 Jan.	Mr. Christopher Heath	M.	70	18 months	1 inch	Colotomy	Death	—	Obstruction complete 7 days; operation very difficult, owing to enormous fatness of patient, taking over an hour; death in 24 hours.
152	1894 Feb.	Dr. Chambers	F.	69	2 years	3 inches	Palliative	—	—	Lived 3 months.
153	1894 Feb.	Dr. Juckes (Horsham)	M	71	18 months	4½ inches	Palliative	—	—	Lived 7 months.
154	1894 Feb.	Harrison Cripps	M.	62	9 months	3½ inches	Colotomy	Recovery	—	Lived nearly 3 years.

155	1894 Feb.	Dr. Carless (Devonshire)	M.	38	8 months	2 inches	Excision	Recovery	Not stated	
156	1894 Feb.	Dr. Irving	M.	42	1 year	5½ inches	Colotomy	Recovery	—	
157	1894 Mar.	Dr. Lang	M.	60	2 years	3 inches	Palliative	—	—	Lived 4 months.
158	1894 Mar.	Dr. Connor	M.	60	14 months	1 inch	Excision	Recovery	Recurred	Death in 11 months.
159	1894 Apr.	Dr. Maurice (Reading)	M.	62	18 months	4 inches	Colotomy	Recovery	—	Advised an excision, but curiously enough for some reason refused, and requested a colotomy. Dr. Maurice writes: "Our patient lived 3 years after the colotomy. He suffered very little, and till the last few months scarcely looked ill."
160	1894 May	Dr. Jones King			Not known	3 inches	Refused	—	—	
161	1894 May	Dr. Hoyland	F.	68	4 months	3 inches	Refused	—	—	
162	1894 May	Dr. Baines (Toronto)	M.	40	2 years	2 inches	Colotomy	Recovery	—	Over 2 years. The patient's father called 2 years after the operation, saying "his son enjoyed excellent health, and attended to business daily."

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								Immediate.	Secondary.	
163	1894 June	Dr. Kane	M.		14 months	5 inches	Palliative	—	—	11 months.
164		Mr. Browne	M.	52	1 year	4 inches	Colotomy	Recovery	—	Lived 2 years.
165		Dr. Parsons	F.	61	2 years	3 inches	Palliative	—	—	Lived 7 months.
166		Harrison Cripps	F.	50	4 months	2 inches	Palliative	—	—	Lived 5 months. Patient very fat and confirmed dipsomaniac.
167	1894 July	Dr. Philpots	M.	40	5 months	4 inches	Excision Colotomy	Recovery	Recurred	Lived 18 months. Unfortunately the patient neglected the bougie, and 6 months after the operation he had complete obstruction. Colotomy performed, and death took place 1 year later.
168	1894	Harrison Cripps	M.	45	Not stated	6 inches	Palliative	—	—	Lived 4 months.
169	1894 Aug.	Dr. Musson (Clitheroe)	M.	50	6 months	4 inches	Colotomy	Recovery	—	Lived 2 years. Patient lived in comparative comfort. A year after the operation he was able to enjoy salmon fishing and spent his days wading.

170	1894 Aug.	Dr. Roberts (Deal)	M.	52	2 months	4 inches	Colotomy	Recovery	—	Died with large secondary deposits in the liver 6 months after colotomy.
171	1894 Aug.	Dr. Tanner	M.	47	18 months	3½ inches	Palliative	—	—	
172	1894 Aug.	Dr. Adams	M.	70	2 years	3 inches	Palliative	—	—	Lived 3 months.
173	1894 Aug.	Dr. Saunders	M.	50	9 months	4½ inches	Palliative	—	—	
174	1894 Sept.	Harrison Cripps	F.	50	Not stated	4 inches	Excision	Not stated	—	
175	1894 Oct.	Dr. Ludwig	M.	42	1 year	3 inches	Colotomy	Recovery	—	Lived 15 months.
176	1894 Oct.	Dr. Eden	M.	64	9 months	High up	Palliative	—	—	Lived 20 months.
177	1894 Oct.	—	M.	56	Not stated	1 inch	Palliative	—	—	Lived 4 months.
178	1894 Oct.	Dr. Cropley (Northampton)	M.	51	12 months	2 inches	Colotomy	Recovery	—	Lived 13 months.
179	1894 Oct.	Dr. Jones (Sutherland Crescent)	M.	71	10 months	3½ inches	Palliative	—	—	Lived 8 months.

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								Immediate.	Secondary.	
180	1894 Dec.	Dr. Miller	M.	60	8 months	3 inches	Colotomy	Recovery	—	Lived 22 months; 18 inches of sigmoid removed at the colotomy operation.
181	1895 Jan.	Dr. Miller	F.	73	Not stated	High up	Colotomy	—	—	Lived 27 months. Dr. Miller states that the colotomy opening acted well and gave little trouble.
182	1895	Dr. Telfer	F.	65	7 months	3½ inches	Palliative	—	—	Lived 7 months.
183	1895 Feb.	Dr. Hearnden	F.	60	14 months	High up	Palliative	—	—	Colotomy ultimately performed by another surgeon.
184	1895 Mar.	Dr. Buchanan (Coleford)	F.	50	5 months	5 inches	Colotomy	Recovery	—	Lived 2 years 9 months.
185	1895 Mar.	Dr. Campbell	M.	40	18 months	4 inches	Palliative	—	—	Lived 24 hours. This patient had complete obstruction for 10 days. Saw the patient when too late for any operation.
186	1895 Apr.	Dr. Martin	M.	50	Not stated	3 inches	Palliative	—	—	
187	1895 Apr.	Dr. Hewer	F.	30	Not stated	High up	Colotomy	Recovery	—	Complete obstruction; fæcal vomiting; lived 8 months.

188	1895 May	Mr. Lawson Tait	F.	44	6 months	3 inches	Excision	Recovery	Well 1 year	Unable to trace this patient, but was well a year after operation. Six weeks previous to my excision Mr. Lawson Tait had done a lumbar colotomy. The disease was anterior, but there was no obstruction. About 4½ inches of the bowel removed.
189	1895 May	Mr. Jones (Manchester)	M.	47	13 months	3 inches	Excision Colotomy	Recovery	Recurred	Portion of sacrum removed; recurred in 6 months; a colotomy; patient lived 10 months.
190	1895 May	Dr. Aldous (Plymouth)	M.	65	24 months	4½ inches	Excision Colotomy	Recovery	Recurred	Lived 2 years 3 months. Portion of sacrum removed; recurred in 6 months; colotomy; 12 inches of sigmoid removed. Patient lived in fair comfort for 19 months.
191		Dr. Wishaw	F.	64	9 months	High up	Colotomy	Death	—	There was practically no mesentery; stitches very tight, and gave way; death 5th day.
192	1895	Dr. Lowe (Burton)	M.	42	6 months	3 inches	Excision	Recovery	Well 17 years	The disease commenced at three inches and surrounded the bowel for three inches, producing much stricture. The coccyx was removed, and the disease, adenoid cancer, very thoroughly excised. In January 1906, I examined the bowel. At two inches from the anus was a slight contraction, but

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								Immediate.	Secondary.	
										No. 9 bougie passed easily. There was no sign of any disease, all the parts being soft and supple and moved freely on the surrounding parts. Has very good control, except in diarrhœa ; continued his work as a general medical practitioner ever since the operation, and writes in April 1912 saying he still remains in good health without any local trouble.
193	1895	Dr. Brodie	M.	70	1 year	High up	Palliative	—	—	Lived 7 months.
194	1895 July	Dr. Robinson (Norwich)	F.	38	18 months	4 inches	Excision	—	Well 16 years	The disease was high and the operation difficult. After removing the disease a dense hard band like an infected lymphatic could be felt running up into the pelvis outside rectal wall behind. Its section, however, looked like fibrous tissue only ; growth, adenoid cancer ; microscope. November 1905, saw patient to-day ; parts quite supple ; fair control ; no sign of

										recurrence. Used bougie for 5 years. On April 1912 patient writes that she still continues well but if bowels loose has not complete control.
195	1895 Aug.	Dr. Murphy	M.	40	3 years	4½ inches	Colotomy	Recovery	—	
196		Dr. Lucas (Newark)	M.	40	3 months	2 inches	Excision	Recovery	Well 5 years	Owing to Dr. Lucas's decease have been unable to obtain authentic further history.
197		Dr. Spilsbury	M.	52	Not stated	4½ inches	Colotomy	Recovery	—	The sigmoid made a loop twelve inches long outside the wound. It was tightly distended with fæces. This was let out by an incision and then the cut temporarily sewn up.
198	1895 Sept.	Dr. Thompson	F.	50	Not stated	4 inches	Refused	—	—	
199	1895 Sept.	Dr. Corbould	M.	55	8 months	5½ inches	Palliative	—	—	
200	1895 Sept.	Harrison Cripps	M.	60	Not stated	High up	Palliative	—	—	Lived 4 months.
201	1895 Sept.	Dr. Brumell (Morpeth)	M.	42	12 months	4 inches	Colotomy	Recovery	—	Lived 8 months. At the colotomy a lot of disseminated growths about peritoneum.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
202	1895 Sept.	Dr. Ford-Anderson	M.	75	5 months	1 inch	Colotomy	Death	—	Complete obstruction for 13 days; fæcal vomiting; belly enormously distended; death 48 hours.
203	1895 Sept.	Not stated	F.	60	12 months	3 inches	Excision	Recovery	Well 1 year	Subsequent history not traced.
204	1895 Nov.	Dr. Kidd	F.	49	14 months	4½ inches	Refused	—	—	
205	1895 Nov.	Dr. Hind (Jersey)	M.	75	9 months	3 inches	Colotomy	Recovery	—	Lived in fair comfort 15 months.
206	1895 Nov.	Dr. Swindell	F.	82	1 year	2 inches	Palliative	—	—	Lived 7 months.
207	1895 Nov.	Dr. Baird	M.	60	Not stated	4 inches	Palliative	—	—	
208	1896 Jan.	Dr. Belby	F.	51	9 months	1 inch	Palliative	—	—	Lived 9 months.
209	1896	Dr. Champneys	F.	42	8 months	4 inches	Colotomy	—	—	Patient five months pregnant. Obstruction complete; colotomy; four months later delivered of healthy baby. Mother died 4 days after labour.

210	1896	Sir W. Roberts	M.	50	10 months	3½ inches	Palliative	Recovery	—	Lived 2 months.
211	1896 Feb.	Dr. Woodfield	M.	56	18 months	4½ inches	Refused	—	—	
212	1896 Feb.	Dr. Scott	F.	35	14 months	5 inches	Colotomy	Recovery	—	
213	1896 Mar.	Dr. Davies	M.	48	19 months	4 inches	Colotomy	Death	—	Complete obstruction. Two months previously the patient had been urged by Mr. Jones, of Manchester, to have colotomy, but, on the advice of another medical man, refused. When I saw him, obstruction complete 14 days; enormously distended, and in great pain. On opening the abdomen for colotomy found the bowel had burst with fæcal extravasation. Abdomen washed out and drained; only lived 48 hours.
214	1896 Mar.	Sir Lauder Brunton	M.	—	1 year	5 inches	Palliative	—	—	Lived 4 months.
215	1896 Mar.	Dr. Knowles (Maidstone)	F.	60	14 months	4 inches	Colotomy	Recovery	—	Lived 4 months. Operation difficult; bowel bound down by secondary deposits between. Nodules all over peritoneum; death from perforation.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
216	1896 Apr.	Dr. Hardy	M.	47	2 years	2½ inches	Excision	Recovery	—	Patient died 4 months after the operation from a sudden violent hæmorrhage from rectum. No local recurrence, wound sound; nothing to show where the bleeding came from; possibly some disease higher up.
217	1896 Apr.	Harrison Cripps	F.	82	1½ years	High up	Colotomy	Recovery	—	Lived 4 years. This patient had nearly complete obstruction; recovered remarkably well from the colotomy, and lived in comfort 4 years. Death took place quite suddenly from syncope; an hour before she was in good health.
218	1896 Apr.	Dr. Hutchinson (Birmingham)	M.	61	6 months	3 inches	Excision	Recovery	Well 16 years	This case was seen in consultation with Mr. Jordan Lloyd. The disease was high, and there was some doubt whether it could be removed. The end of sacrum removed; five inches of the bowel taken away, the peritoneum being freely opened. The operation was difficult, but patient did well. Microscope showed adenoid can-

										cer. Patient writes in May 1912 that he is now in excellent health, and is quite comfortable about the rectum.
219	1896 Apr.	Dr. Miller (Forest Gate)	M.	70	Not mentioned	3 inches	Palliative	—	—	Lived 4 months.
220	1896 Apr.	Dr. Adams (E.C.)	M.	55	18 months	High up	Palliative	—	—	Lived 6 months.
221	1896 May	Dr. Prosser	M.	60	18 months	4 inches	Refused	—	—	Lived 7 months.
222	1896 May	Dr. Watt Black	F.	51	12 months	4 inches	Colotomy Excision	Recovery	No recurrence 3½ years	Lived 3½ years. At the colotomy the sigmoid was remarkably long and movable. Before stitching the bowel two feet of it was excised. Excision performed a month later. She died at Rio 3½ years later without local recurrence.
223	1896 May	Dr. Hallowes	M.	65	Not stated	High up	Refused	—	—	Lived 3 months.
224	1896 May	Mr. Reid	F.	68	10 months	4 inches	Colotomy	—	—	Nearly complete obstruction.
225	1896 June	Dr. Parsons	F.	74	Not stated	3½ inches	Palliative	—	—	

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
226	1896 June	Dr. Rowel	M.	58	9 months	4½ inches	Colotomy	Recovery	—	Lived 2 years.
227	1896 June	Harrison Cripps	F.	61	Not stated	High up	Palliative	—	—	Lived 7 months.
228	1896 July	Dr. Applebe (Winchester)	M.	65	9 months	High up	Refused	—	—	
229	1896 July	Dr. Holland	M.	60	18 months	4 inches	Palliative	—	—	
230	1896 July	Dr. Stanley Smith	M.	55	11 months	3 inches	Colotomy	Recovery	—	Lived 5 months.
231	1896 Nov.	Not stated	M.	60	18 months	1 inch	Refused	—	—	
232	1896 Nov.	Dr. Lowsley	M.	60	1 year	High up	Colotomy	Death 5th day	—	Complete obstruction 12 days; fæcal vomiting and hiccup; sigmoid stitched to the skin and opened; large washing basin of fluid fæces evacuated. Patient never recovered from his desperate condition, and died on 5th day.

233	1896 Dec.	Dr. Shaw (Cambridge)	M.	63	4 months	4 inches	Excision	Recovery	Recurred	Lived 11 months. The disease was very adherent, and the operation not a satisfactory one.
234	1896 Dec.	Harrison Cripps	M.	62	Not stated	2½ inches	Excision	Recovery	—	Posterior two-thirds of the bowel removed, 4½ inches in length.
235	1897 Jan.	Dr. Jamison	M.	30	3 months	2½ inches	Excision	Recovery	Well 15 years	On the anterior wall at a distance of 2½ inches was a hard indurated ulcer the size of a five-shilling-piece. In the subrectal tissue a little way from the growth was a gland the size of a nut. Both growth and gland very freely removed. I recently operated on this patient for acute appendicitis. The rectum was quite normal. Patient has never had any recurrence; is quite well, with good control.
236	1897 Jan.	Harrison Cripps	M.	70	Not stated	5 inches	Colotomy	—	—	Lived 3 months. The patient had a rodent ulcer of six years' stand-on the face.
237	1897 Feb.	Dr. Batten (Gloucester)	M.	55	Not stated	High up	Colotomy	Recovery	—	Lived nearly 2 years. Sigmoid very redundant ; 12 inches removed.
238	1897 Feb.	Dr. Wigmore	F.	70	Over a year	3 inches	Colotomy	Recovery	—	Ten inches of sigmoid removed.
239	1897 Mar.	Dr. Miller	M.	77	18 months	Not stated	Colotomy	Death	—	Operation done for complete obstruction ; death on 3rd day.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
240	1897 Mar.	Dr. Shaw	M.	62	Not stated	High up	Colotomy	Recovery	—	Living and in fair health 3½ years later.
241	1897 Mar.	Dr. Hastings	M.	71	8 months	5 inches	Colotomy	Recovery	—	Lived 10 months.
242	1897 Apr.	Dr. Budd	M.	56	16 months	3½ inches	Excision	Recovery	Recurred	The removal was not satisfactory at the operation, the disease having spread into the surrounding tissue. The patient, however, who was a medical man, was anxious an attempt should be made. Death in 10 months.
243	1897 Apr.	Dr. Paradise	M.		1 year	4 inches	Colotomy	Recovery	—	Lived 26 months.
244	1897 Apr.	Not stated	F.	65	10 months	3 inches	Refused	—	—	
245	1897 May	Dr. Lee (Thame)	M.	54	15 months	4 inches	Colotomy	Recovery	—	Lived 19 months.
246	1897 May	Dr. Hargreaves	F.	65	Not stated	4½ inches	Colotomy	Recovery	—	

247	1897 May	Harrison Cripps	M.	75	14 months	High up	Palliative	—	—	Lived 1 year.
248	1897 June	Dr. Sadlier	F.	64	1 year	3 inches	Colotomy	Recovery	—	Lived 5 months. Dr. Sadlier writes that "she had no pain after the colotomy."
249	1897 June	Mr. Wells	F.	48	10 months	High up	Palliative	—	—	
250	1897 July	Dr. Trechmann	M.	60	11 months	3 inches	Palliative	—	—	
251	1897 July	Dr. Miller	M.	49	10 months	4½ inches	Colotomy	Recovery	—	Lived 18 months.
252	1897 Aug.	Dr. Saunders	F.	60	Not stated	High up	Colotomy	Recovery	—	Lived 2 years (?)
253	1897 Sept.	Harrison Cripps	M.	51	2 years	4 inches	Palliative	—	—	Lived 4 months.
254	1897 Sept.	Dr. Bedford	F.	70	Not stated	High up	Palliative	—	—	Lived 7 months.
255	1897 Sept.	Sir Thomas Barlow	M.	67	9 months	4 inches	Excision	Recovery	Well 13 years	Disease situated 4 in. up the bowel. At first examination finger could not pass beyond it. At a second examination under ether, Sir Thomas Smith and Mr. A. Willett being present, the finger, with some difficulty, was passed beyond. The bowel was fairly

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
										movable ; there was much stricture, which would only admit the forefinger. There being some divergence of opinion as to the possibility of operating, the patient decided to have it done. Assisted by Mr. Lockwood, after removing 1½ inches of the sacrum, five inches of the bowel were excised. Microscope : adenoid cancer. The section was only just free of the disease. Patient did well. For 2 years there was a great tendency for the part to contract, but was kept open by the daily use of a bougie. This patient had to use a bougie for some 2 years, but afterwards contraction ceased and he had good control up to the time of his death, which occurred in 1910 from aortic trouble. There was never any return of the disease.
256	1897 Sept.	Dr. Fletcher	M.	70	Not stated	4 inches	Colotomy	Death	—	Obstruction complete 9 days ; fæcal vomiting for 2 days ; abdomen

										enormously distended and tympanitic. On opening the abdomen a loop of large intestine three feet long and distended to three inches in diameter protruded ; the whole of this excised. Patient died on 8th day.
257		Harrison Cripps	M.	30	1 year	4 inches	Colotomy	Recovery	—	Lived in fair comfort for 3 years.
258		Dr. Hawes	M.	60	8 months	5 inches	Colotomy	Recovery	—	Much tension on bowel when stitched. On 5th day after a violent cough the stitches gave way. Along the upper line some small intestines protruded. Washed and re-stitched ; six days later, after coughing, union again gave way, a large mass of omentum protruding. This being much bruised and soiled with motion, was tied and cut off. The protruding coils of small intestine washed and restitched. Eight silk gut sutures were passed, going through the whole thickness of the abdominal walls and including the cut edge of the omentum. After this the patient did well, and lived over 2 years.
259	1897 Dec.	Not stated	F.	60	14 months	2 inches	Refused	—	—	

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary	
260	1897 Dec.	Dr. Plumbe	M.	65	15 months	High up	Colotomy	Recovery	—	Complete obstruction 8 days. Lived 1 year 7 months ; opened at once.
261	1898 Jan.	Dr. Knowles	M.	61	Not stated	2 inches	Colotomy	Recovery	—	Complete obstruction 14 days. Lived 1 year.
262	1898 Feb.	Dr. E. Smith	M.	74	2 years	3 inches	Colotomy	Recovery	—	Complete obstruction 9 days. Opened at once ; lived 18 months.
263	1898 Feb.	Dr. Rushworth	F.	62	14 months	4 inches	Excision	Recovery	Well 13 years	Sacrum sawn across high up ; four inches of bowel excised ; last three inches of the bowel and anus left intact. Peritoneum opened. Ends of cut bowel could not be drawn together ; upper end brought out and fixed in upper part of wound. Two years later a careful examination showed no recurrence, but the upper end of bowel prolapsing about three inches. The two ends were then freed from the surrounding tissue and joined together by an end to end anastomosis. The result was excellent. The ends united without stricture, and she

										regained perfect control. 1911.—Still quite well, no sign of recurrence.
264	1898 Mar.	Dr. McLagan Dr. Fuller	F.	74	18 months	3½ inches	Colotomy	Recovery	—	Lived 8¼ years. Dr. Fuller writes, under date of May 24, 1906: "Miss S. passed very little motion the last 2 days; gradually became unconscious, and died this evening. I should think the case almost a record in life duration after inguinal colotomy for malignant disease."
265	1898 Apr.	Dr. Batten	M.	68	Not stated	High up	Colotomy	Recovery	—	Lived 2 years.
266	1898 May	Dr. Taylor	F.	40	18 months	2 inches	Excision	Recovery	Well for 6 years	Sacrum cut across. Patient did well for 3 weeks, when she had a sudden discharge of urine from upper part of wound. For the next fortnight about half the whole urine came away by the wound. No opening could be found after repeated examination. It then gradually ceased, and a month later she passed all her water the natural way. Had no trouble for 7 years, when she died with symptoms of some intra-abdominal trouble, possibly cancerous.

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								Immediate.	Secondary.	
267	1898 July	Dr. —— (Swan Creek, Australia)	M.	45	18 months	4 inches	Colotomy	Recovery	—	Fourteen inches of sigmoid removed; ends accidentally reversed, so that motion passed through lower opening.
268	1898 July	Harrison Cripps	F.	54	Not stated	2 inches	Excision	Recovery	Well 13 years	Well in 1912.
269	1898 July	Dr. Kinneir	F.	71	Not stated	4 inches	Colotomy	Death	—	Complete obstruction for 10 days; fæcal vomiting for 3 days; enormous distension. A large washing basin of fluid fæces let out. Death 24 hours.
270	1898 Sept.	Mr. Bird	F.	40	2 years	1 inch	Palliative	—	—	
271	1898 Aug.	Harrison Cripps	M.	45	15 months	2 inches	Refused	—	—	
272	1898 Sept.	Dr. Roche	F.	64	18 months	3 inches	Colotomy	Death	—	Obstruction considerable, but not complete. Much small intestine protruded at the operation. Constant vomiting continued after the operation, and she died on the 6th day. Dr. Roche kindly made

										a p.m. and found a piece of small intestine, apparently caught down in Douglas's pouch, kinked; it required a considerable effort to pull it out. It was obviously the cause of the vomiting; no peritonitis.
273	1898 Nov.	Dr. Connor	M.	53	Not stated	3 inches	Refused	—	—	An operation was subsequently performed by another surgeon, who, failing to find the sigmoid, opened the cæcum.
274	1898 Nov.	Dr. Carr	M.	61	14 months	2½ inches	Refused	—	—	
275	1898 Dec.	Dr. Boutflower	M.	49	9 months	3 inches	Excision Colotomy	Recovery	Recurred	4½ inches of the bowel excised. Recurrence 10 months; colotomy. Lived 18 months.
276		Harrison Cripps	M.	71	Not stated	High up	Palliative	—	—	
277		Mr. Ball	M.	50	6 months	6 inches	Palliative	—	—	Symptoms suggested malignant stricture of rectum. Careful examination by myself and Sir F. Treves failed to touch any growth. At a subsequent examination under ether a malignant stricture could be clearly felt at nearly 6 inches up.

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278	1899 Jan.	Dr. Taylor	F.	55	2 years	3 inches	Palliative	—	—	Lived 4 months.
279	1899 Jan.	Dr. Collins	M.	64	Not stated	2 inches	Excision	Recovery	—	The operation was not a satisfactory one, the section being very near the growth, and probably some disease left. Subsequent history not followed.
280	1899 Jan.	Dr. Ford Anderson	F.	81	2 years	2 inches	Colotomy	Recovery	—	Obstruction nearly complete. The old lady lived nearly 3 years in comfort and never had any pain.
281	1899 Jan.	Mr. Davis	M.	48	8 months	4 inches	Colotomy	Recovery	—	
282	1899 Feb.	Harrison Cripps	M.	60	8 months	5 inches	Colotomy	Recovery	—	Lived 15 months.
283	1899 Feb.	—	M.	70	1 year	3 inches	Palliative	—	—	
284	1899 Mar.	Dr. Ford Anderson	M.	70	14 months	5 inches	Colotomy	Recovery	—	Lived 22 months. From the fourth to seventh day after the operation patient suffered from constant delirium and was rapidly

										going down hill. After being got out of bed and seated in a chair the delirium almost at once disappeared.
285	1899 Mar.	Dr. Paterson	F.	45	8 months	4½ inches	Excision	Recovery	Recurred	Recurred after 2 years. Died a year later.
286	1899 Apr.	Harrison Cripps	M.	63	8 months	2 inches	Excision	Recovery	Recurred	Recurred in 8 months.
287	1899 Apr.	Not stated	M.	71	18 months	4 inches	Palliative	—	—	Death 4 months.
288	1899 Apr.	Dr. Williamson	M.	64	10 months	3 inches	Excision Colotomy	Recovery	Recurred	Disease returned in 9 months. Colotomy; death 1 year 9 months later.
289	1899 May	Dr. T. Griffiths	F.	53	5 months	1½ inches	Excision	Recovery	Well 13 years	A circular ulcerated patch 1½ inches in diameter on posterior wall. Patient writes May 1912 saying she is quite well and has no trouble with the bowel.
290	1899 May	Mr. Percival (Northampton)	M.	58	7 months	2 inches	Excision	Recovery	Well 13 years	Alive 13 years. In this case the disease was confined to the left half of the rectum, commencing at 2 in. and measured 1½ in. wide by 2 long, deeply ulcerated. Mr. Percival writes, under date of April 1912: "I am pleased to say Mr. T. is quite well and has good control."

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291	1899 May	Dr. Gimson	M.	70	3 months	High up	Colotomy	Recovery	—	Very long sigmoid, two feet being removed at time of operation. Lived over 2 years.
292	1899 May	Harrison Cripps	F.	40	2 years	3 inches	Excision	Recovery	Recurred	The disease commenced at three inches and involved two inches of the bowel. The bowel was excised after removing a portion of the sacrum. The disease recurred in 4 months, and she died a few months later.
293	1899 May	Dr. Taylor	F.	50	18 months	High up	Palliative	—	—	Lived 5 months.
294	1899 Aug.	Dr. Bott	M.	47	1 year	4 inches	Colotomy	Recovery	—	Lived 18 months.
295	1899 Aug.	Not stated	M.	70	14 months	High up	Refused	—	—	
296	1899 Sept.	Harrison Cripps	M.	54	Not stated	3 inches	Refused	—	—	
297	1899 Sept.	Mr. Allingham	F.	48	Not stated	Anus	—	—	—	This patient was operated upon two years previously by Mr. Alling-

										ham. A very small local recurrence, which was again removed.
298	1899 Nov.	Dr. Dingle	M.	38	18 months	2½ inches	Refused	—	—	
299	1899 Nov.	Harrison Cripps	M.	70	10 months	2 inches	Excision	Recovery	Well 3 years	The disease commenced at 2 inches and extended upwards about 3 inches. Sacrum sawn through and bowel excised, the anus being left. Patient was free from recurrence 3 years after operation, but died a year later. Cause of death not stated.
300	1899 Dec.	Dr. Beadles	F.	60	18 months	4 inches	Colotomy	Recovery	—	Obstruction complete with vomiting. Patient lived 26 months after the colotomy.
301	1899 Dec.	Dr. Evans (Goring)	M.	61	4 months	1½ inches	Excision	Recovery	Well 12 years	This was a patch of adenoid cancer 1½ inches in diameter. Ulcerated on surface with hard crater-like edges. Excised with a free margin. Dr. Evans writes, under date April 1912: "Mr. S. is most robust; attends to business, and takes the chair at political meetings."
302	1900 Jan.	Dr. Reynolds	F.	50	6 months	1 inch	Refused	—	—	This patient had had a polypus removed six years previously, now an area of cancer two inches in diameter.

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								Immediate.	Secondary.	
303	1900 Jan.	Mr. Christopher Heath	M.	62	8 months	High up	Not stated	—	—	
304	1900 Jan.	Dr. Maclean	M.	63	2 years	4 inches	Colotomy	Recovery	—	This patient nearly died of recurrent hæmorrhage. Bowel opened on ninth day, a considerable amount of superfluous bowel being removed. Forty-eight hours later a violent hæmorrhage from both the wound and the rectum, 40 to 50 $\bar{3}$ being lost. The source of the blood was doubtful, but was arrested by transfixing deeply, the mesenteric stump showing in the wound. Patient lived 15 months.
305	1900 Mar.	Dr. Atkin	M.	60	10 months	2 inches	Excision Colotomy	Recovery	Recurred	The disease was very adherent, and the excision not satisfactory. Recurred in 8 months; a colotomy, after which the patient lived 9 months
306	1900 Mar.	Dr. Curgenven	M.	38	16 months	5 inches	Colotomy	Recovery	—	Dr. Curgenven writes: "This patient lived in comfort for 19 months, and derived great benefit from the operation."

307	1900 May	Not stated	M.	40	1 year	High up	Palliative	—	—	
308	1900 May	Dr. Thomas	M.	50	16 months	2½ inches	Palliative	—	—	
309	1900 May	Dr. Bull	M.	70	18 months	3 inches	Colotomy	Recovery	—	Lived 17 months. Bowel could not be drawn up till the external layer of the mesosigmoid was divided : it then came up readily.
310	1900 May	Harrison Cripps	M.	60	11 months	High up	Colotomy	Recovery	—	Did well after the operation. Died from hæmorrhage from the growth 2 months later.
311	1900 May	Harrison Cripps	M.	34	Not stated	4 inches	Colotomy	Recovery	—	
312	1900 May	C.F. (of Carlisle)	F.	60	2 years	4½ inches	Excision	Recovery	Well 5 years	This growth had a wide indurated pedicle ; it was freely removed, cutting out an area of the bowel two inches in diameter, including the peritoneum. This patient was still quite well in 1905.
313	1900 June	Dr. Scott (Bournemouth)	F.	50	10 months	3½ inches	Excision	Recovery	Well 12 years	Well 12 years. The growth was in the form of a ring surrounding the bowel at 3½ inches ; stricture would only admit finger-tip. Growth, including whole thickness of bowel, excised and ends

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								Immediate.	Secondary.	
										joined. Dr. Scott writes, under date April 1912: "Patient remains in excellent health; has much increased in weight."
314	1900 July	Dr. Blake	M.	81	1 year	2½ inches	Excision	Recovery	—	Anterior half of the bowel for four inches removed. Made a good recovery. Death in 1½ years, without local recurrence.
315	1900 Aug.	Mr. Heaton	M.	60	2 years	2½ inches	Refused	—	—	
316	1900 Aug.	Harrison Cripps	M.	60	18 months	—	Palliative	—	—	This patient had colotomy performed by another surgeon 15 months previously for complete obstruction.
317	1900 Aug.	Dr. Rattray	M.	40	18 months	2 inches	Colotomy	Death	—	Complete obstruction for 10 days with great distension and fæcal vomiting. Death in 24 hours.
318	1900 Aug.	Dr. Chittingdon	M.	72	Advanced	2 inches	Colotomy	Recovery	—	Patient lived 17 months.

319	1900 Nov.	Dr. Queenall	F.	60	2 years	Pelvis blocked	Refused	—	—	
320	1900 Nov.	Dr. Stokes	M.	21	6 months	3 inches	Excision	Recovery	Well 6 years	The growth on left and anterior wall occupied an area of 1½ inches diameter; whole thickness of rectal wall excised. Dr. Stokes writes, January 1906: "There has been no recurrence."
321	1900 Nov.	Dr. Miller (Forest Gate)	F.	29	12 months	3½ inches	Colotomy	Recovery	—	
322	1900 Nov.	Not stated	M.	51	15 months	Pelvis blocked	Refused	—	—	
323	1900 Dec.	Dr. Stanley Smith	M.	67	8 months	5½ inches	Excision	Recovery	Recurred	Lower third of sacrum removed. Recurrence in 8 months; death in few months.
324	1901	Harrison Cripps	M.	30	7 months	3½ inches	Palliative	—	—	
325	1901 Jan.	Harrison Cripps	M.	42	5 months	1 inch	Excision	Recovery	Well 5 years	Growth involving an area the size of a florin on posterior wall close to the anus.
326	1901 Jan.	Dr. Morrison	M.	40	1 year	2 inches	Excision	Recovery	—	Sacrum sawn across and a good view obtained, four inches of bowel being removed. A strip of mucous membrane left in front. Died suddenly a year later from accident; no recurrence.

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								Immediate.	Secondary.	
327	1901 Mar.	Dr. Elliot	M.	72	10 months	2½ inches	Excision	Recovery	Well 3 years	Alive 3 years. Growth covered an area about two inches in diameter; bowel moved freely. Dr. Elliott writes, May 1906: "The patient never had any local trouble nor sign of recurrence up to the date of his death, 3 years later, suddenly, from cerebral hæmorrhage."
328	1901 May	Dr. Williams	F.	73	9 months	Pelvis blocked	Refused	—	—	
329	1901 May	Dr. Lambert	M.	55	14 months	3½ inches	Excision	Recovery	Recurred	High up; sacrum divided. Died 4 years later with recurrence which showed itself 2 years after the excision.
330	1901 May	Dr. Champneys	F.	50	8 months	4 inches	Excision Colotomy	Recurred Death	—	A ring of disease 1¼ inches wide surrounding the bowel, at a distance of four inches from anus. Sacrum divided; recurred in 8 months. Colotomy; did well till the tenth day, when she had a sudden and violent bleeding from the colo-

											tomy wound from which she never rallied.
331	1901 May	Harrison Cripps	F.	48	18 months	Pelvis blocked	Colotomy	Recovery	—		Lived 18 months.
332	1901 Aug.	Dr. Court	F.	50	1 year	4 inches	Colotomy	Recovery	—		Lived in comfort and without pain 15 months. I had operated on this patient's mother 8 years previously, performing colotomy for complete obstruction.
333	1901 Nov.	Mr. Walter Jessop	F.	53	5 months	½ inch	Excision	Recovery	Well 11 years		The disease commenced at anal margin, ulcerated with indurated raised border. It involved two-thirds of the circumference of the bowel and extended upwards a couple of inches from the anus. April 1912.—Perfectly well, no sign of recurrence; control perfect.
334	1901 Dec.	Dr. Forbes	F.	60	14 months	4 inches	Excision	Death	—		Patient a drinker. Peritoneum opened at operation; did well till 10th day. Acute cellulitis then set in, spread rapidly. Death 3 days later.
335	1902 Jan.	Dr. Horsford	F.	40	18 months	High up	Colotomy	Recovery	—		
336	1902 Jan.	Mr. Sinclair	F.	35	8 months	5 inches	Excision	Recovery	Well 9 years		A ring of adenoid cancer at 5 inches, producing tight stricture. Bowel

Number	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
										could be invaginated and growth pulled down to within an inch of the anus. Excised and cut ends joined. Mr. Sinclair writes: "General health good; no stricture; no secondary deposits. There was a curious soft nodule at anal edge which I removed some time ago."
337	1902 Jan.	Dr. Penruddock	M.	70	14 months	3½ inches	Excision Colotomy	Recovery	—	Recurrence 11 months after excision; colotomy.
338	1902 Feb.	Mr. Paterson	M.	44	Not stated	1½ inches	Excision	Recovery	—	
339	1902 Feb.	Dr. Favil	M.	50	18 months	Pelvis blocked	Colotomy	Recovery	—	Lived 2 years.
340	1902 Feb.	Harrison Cripps	M.	54	10 months	4 inches	Colotomy	Recovery	—	Lived over 2 years.
341	1902 Apr.	Not stated	M.	60	18 months	High up	Colotomy	Recovery	—	
342	1902 Apr.	Dr. Leonard	F	40	12 months	5 inches	Colotomy	Recovery	—	

343	1902 June	Not stated	M.	40	15 months	4½ inches	Palliative	—	—	
344	1902 June	Dr. Morgan	M.	44	Not stated	High up	Palliative	—	—	Death 8 months.
345	1902 July	Dr. Adams (Martock)	F.	60	10 months	4½ inches	Refused	—	—	Death 7 months.
346	1902 July	Dr. Weakley	F.	50	12 months	2½ inches	Excision	Recovery	Well 4 years	No recurrence, 4 years ; very adherent to vaginal wall, but dissected off without opening vagina.
347	1902 Aug.	Harrison Cripps	F.	64	8 months	2½ inches	Excision	Recovery	Well 4 years	No recurrence 3½ years. Tip of sacrum removed with coccyx. Peritoneum extensively opened.
348	1902 Aug.	Harrison Cripps	M.	58	5 months	3 inches	Excision	Recovery	Recurred	Recurred in 1 year ; second operation ; recurred again 1 year later.
349		Mr. Sinclair	M.	24	6 months	4 inches	Excision	Recovery	Well 8 years	A ring of growth at 3¼ inches up. Mr. Sinclair writes, March 1906 : "Patient in good health ; no sign of recurrence." Well 1911.
350	1902 Nov.	Dr. Weakley	F.	44	8 months	1 inch	Excision	Recovery	Well 3½ years	Commencing just within anus and extending upwards about 3 inches; two-thirds of the circumference of the bowel only removed. February 1906.—No sign of recurrence ; has excellent control.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
351	1902 Dec.	Mr. Jessop	M.	58	18 months	5 inches	Refused	—	—	
352	1902 Dec.	Dr. Moore (Blackheath)	M.	40	Not stated	3 inches	Excision	Recovery	Well 9 years	Small nodule of adenoid cancer 1 inch diameter. Dr. Moore writes, March 1906: "Patient quite well; no return of the growth." April 1912.—Patient still well.
353	1903 Mar.	Dr. Seccombe	M.	57	3 months	1 inch	Refused	—	—	Deeply ulcerated growth 1½ inches diameter, just within the anus.
354	1903 Apr.	Dr. Miller	M.	70	8 months	4 inches	Palliative	—	—	
355	1903 Apr.	Mr. Gay	M.	58	10 months	3 inches	Refused	—	—	
356	1903 May	Not stated	M.	42	6 months	4 inches	Refused	—	—	
357	1903 July	Dr. Bell	F.	48	18 months	5 inches	Colotomy	Recovery	—	Lived 13 months. Dr. Bell writes: "Was greatly relieved and benefited by the operation."
358	1903 July	Harrison Cripps	M.	54	7 months	4 inches	Refused	—	—	

359	1903 July	Dr. Richards	M.	47	Not stated	4½ inches	Refused	—	—	
360	1903 Aug.	Dr. Crombie	F.	65	1 year	Pelvis blocked	Colotomy	Recovery	—	The abdomen greatly distended with ascitic fluid—many quarts. Upper line of stitches gave way on seventh day, some small intestine protruding. A few hours later the bowel was carefully re-stitched, and the patient had no further trouble. Dr. Crombie writes: "The patient eventually fell into the hands of a cancer-curer, who gave some powders, the action of which was so powerful that they produced violent purging, collapse and death."
361	1903 Aug.	—	F.	60	18 months	Pelvis blocked	Palliative	—	—	
362	1904 July	Dr. Lewis Jones	F.	48	16 months	4 inches	Refused	—	—	
363	1904 Aug.	—	M.	35	15 months	4 inches	Palliative	—	—	
364	1904 Aug.	Dr. A. Smith	F.	60	2 years	Pelvis blocked	Refused	—	—	Complete obstruction for 10 days. Operation refused on the ground of expense!

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
365	1904	Dr. Everley Taylor	F.	55	8 months	4 inches	Excision	Recovery	Well 3 years	Disease rather firmly fixed. Sacrum divided and peritoneum extensively opened.
366	1904 Aug.	Dr. Palgrave	M.	53	14 months	3½ inches	Colotomy	Recovery	—	Lived 13 months.
367	1904 Dec.	Harrison Cripps	M.	38	8 months	3 inches	Colotomy	Recovery	—	
368	1905 Jan.	—	M.	62	1 year	5 inches	Colotomy	Recovery	—	Patient died 1 year later.
369	1905 Jan.	Dr. Knott	M.	68	13 months	2 inches	Refused	—	—	A small mass of adenoid cancer on anterior wall close to the anus.
370	1905 Feb.	Harrison Cripps	M.	47	17 months	4 inches	Palliative	—	—	Death 5 months.
371	1905 Mar.	Dr. Crosse	M.	61	2 years	Pelvis blocked	Colotomy	Recovery	—	Still alive.
372	1905 Mar.	Dr. Ball	M.	58	7 months	4 inches	Refused	—	—	
373	1905	Dr. Gregory	M.	48	Not stated	3 inches	Refused	—	—	Advised excision.

374	1905 May	Sir T. Smith	M.	52	13 months	5 inches	Excision	Recovery	Recurred	Recurred in 8 months; second operation, 1906.
375	1905 May	Harrison Cripps	M.	62	15 months	4½ inches	Palliative	—	—	
376	1905 June	Sir W. Whitla	F.	75	8 months	3½ inches	Excision	Death	—	Posterior two-thirds of the bowel removed to a height of 4 in. Did well till 8th day, when she died almost suddenly.
377	1905 July	Dr. Beadles	M.	70	18 months	Pelvis blocked	Palliative	—	—	Lived 4 months.
378	1905 July	Dr. Atkins	M.	46	Not stated	5 inches	Palliative	—	—	
379	1905 Nov.	W. L. Cripps	M.	70	8 months	3½ inches	Excision	Recovery	—	A patch of growth 1¾ inches diameter on left side of bowel 3½ inches from anus, very freely removed. No recurrence 6 months.
380	1905 Nov.	Dr. Holderness	F.	30	9 months	3 inches	Refused	—	—	A ring of adenoid cancer 1¼ inches wide surrounding the bowel at three inches, freely movable.
381	1906 Jan.	Dr. Cooper	M.		6 months	5 inches	Colotomy advised	—	—	Operated upon by another surgeon.
382	1906 Feb.	Dr. Newton	F.	45	Not stated	4 inches	Excision advised	—	—	

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
383	1906 Feb.	Dr. Morrison	M.		18 months	2 inches	Excision advised	—	—	
384	1906 May	Dr. Beadle	M.	48	1 year	1½ inches	Excision advised	—	—	
385	1906 May	Dr. Barlow	M.	60	4 years	6 inches	Colotomy advised	—	—	
386	1906 May	Mr. Brook	M.	42	1 year	3 inches	Excision	Recovery	Recurred	Recurred in 1 year. Second operation. Recurred 6 months.
387	1906 May	Dr. Gresswell	M.	48	8 months	High up	Colotomy advised	—	—	
388	1906 June	Dr. Weakley	F.	63	10 months	Colon	Excision Intra-abdominal	Recovery	Well 6 years	A mass of cancer the size of a duck's egg was excised with 1 inch of healthy colon on each side. Dr. Weakley writes, May 1912: "The patient is quite well. Has no pain or trouble with her bowels and has got quite fat. A most successful case."
389	1906 July	Dr. Sydenham (Walsall)	M.	58	1 year	Upper rectum and sigmoid	Excision intra abdominal	Death	—	This patient had had a colotomy done three months previously for complete obstruction by another

										surgeon. I operated therefore by abdominal section through the middle line, removing ten inches of bowel including the growth from the colotomy opening downwards. It was thought better to postpone an anastomosis for a secondary operation, so the lower cut section was closed. The patient died suddenly on the 3rd day.
390	1906 Nov.	Dr. French	M.	64	Not stated	Upper rectum	Abdominal excision advised	—	—	
391	1906 Nov.	Dr. Withers	M.	54	10 months	4 inches	Excision	Recovery	Recurred	Recurred in 9 months.
392	1907 May	Dr. Blandford (Norton)	F.	60	1 year	2 inches	Excision	Recovery	Well 5 years	Dr. Blandford writes May 1912: "Patient has had no return."
393	1907 May	Harrison Cripps	F.	55	4 months	2½ inches	Refused	—	—	
394	1907 May	Dr. McDonald (Ireland)	M.	75	6 months	2½ inches	Excision	Recovery	Recurred	Recurred within one year.
395	1907 June	Dr. Kerr	M.	65	Not stated	4 inches	Refused	—	—	

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
396	1907 July	Dr. Sayers	M.	60	Not stated	High up	Refused	—	—	
397	1907 July	Dr. Millar	M.	55	over 1 year	7 inches	Excision	Recovery	Well 5 years	Patient writes, May 1912: "I have enjoyed excellent health since the operation 5 years ago, and have gained much in weight and never had the slightest recurrence of the old symptoms." In this case the whole bowel could be easily drawn down and the growth, which occupied only one-third the circumference of the bowel was excised, the edges being united.
398	1907 July	Mr. Ball	F.	54	—	6 inches	Excision by abdomen advised	—	—.	
399	1907 Nov.	Dr. Purves (Lincoln)	M.	38	—	Upper part of rectum and sigmoid	Excision by abdominal section	Death	—	Death on 3rd day.
400	1907 Dec.	Dr. Wilson	M.	—	18 months	Upper rectum	Palliative	—	—	

401	1907 Dec.	Dr. Tinker	M.	—	—	4 inches	Palliative	—	—	
402	1908 Jan.	Dr. Dryland	M.	42	14 months	5 inches	Excision advised	—	—	
403	1908 Feb.	Dr. Adams	M.	83	—	4 inches	Colotomy	Recovery	—	This patient, with a large mass of immovable cancer had complete obstruction for 18 days, with fæcal vomiting for 7 days. He made an excellent recovery from the colotomy and lived nearly a year.
404	1908 Mar.	Sir. T. Barlow	M.	66	4 months	Upper rectum	Colotomy	Recovery	—	Lived 4 months.
405	1908 May	Dr. Collins	F.	57	Not stated	3 inches	Excision	Recovery	Well 4 years	This was a complete ring of growth, and removed by the sacral route. In 8 months there was a small recurrence at the lower part; this was very freely removed and the patient has since remained well.
406	1908 June	Dr. Thomas	F.	68	18 months	3 inches	Refused	—	—	
407	1908 June	Harrison Cripps	M.	45	1 year	3½ inches	Excision	Recovery	Recurred	Recurred in 6 months.
408	1908 July	Dr. Earle	M.	48	15 months	5 inches	Palliative	—	—	

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
409	1908 July	Dr. Lister	F.	—	10 months	High up	Palliative	—	—	
410	1908 Nov.	Dr. Doering (America)	M.	56	—	4 inches	Palliative	—	—	
411	1908 Nov.	Dr. Caley (Stansfield)	M.	54	8 months	Sigmoid	Excision abdominal section	Recovery	Well 3½ years.	Abdominal section. Middle line. After separating adhesions, a large swelling apparently in the sigmoid and the size of a fist, was brought well up into the wound and excised with two inches of bowel on each side. An end to end anastomosis was performed without tension. The growth was typical cancer, and the bowel tightly stretched on the part. The patient writes, March 1912: "Am in perfect health and can work all day on my farm."
412	1908 Dec.	Dr. Habgood	F.	64	6 months	2 inches	Excision	Recovery	Recurred	Recurred in 6 months.
413	1909 Jan.	—	F.	68	—	—	Palliative	—	—	

414	1909 Jan.	—	M.	43	—	—	Palliative	—	—	
415	1909 Jan.	Dr. Corban	M.	50	Some months	4 inches	Excision	Recovery	Well 3½ years	Four inches of bowel excised by sacral route ; lower section of bowel four inches from anus, ends could not be joined. Two years later the upper part had so prolapsed as to show that the ends could now be brought together easily.
416	1909 Feb.	Dr. ——— (Brighton)	M.	68	2 years	3 inches	Refused	—	—	
417	1909 June	Dr. Mitchell (Guildford)	F.	55	4 months	1½ inches	Excision	Recovery	Well 3 years	Dr. Mitchell writes, May 1912: "Patient is quite well without recurrence."
418	1909 June	Dr. Marriott	M.	76	2 years	Mass in pelvis	Colotomy	Recovery	Lived about 1 year.	
419	1909 June	Dr. Ash	M.	77	3 years	3 inches	Palliative	—	—	
420	1909 June	Dr. Stokes	F.	37	—	2 to 6 inches	Colotomy advised	—	—	
421	1909 June	Dr. Brook	M.	38	1 year	1 inch	Palliative	—	—	
422	1909 July	Dr. Gardner	F.	57	5 months	2 inches	Excision	Recovery	Well 3 years	Lower 3½ inches of rectum removed.

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
423	1909 July	Dr. Williams	M.	63	—	—	Palliative	—	—	
424	1910 Jan.	Dr. Blackman	M.	70	15 months	6 inches	Colotomy advised	—	—	
425	1910 Jan.	Dr. H. White	M.	50	18 months	3 inches	Palliative	—	—	
426	1910 Feb.	Harrison Cripps	M.	60	—	4 inches	Palliative	—	—	
427	1910 Mar.	Dr. Wilson	F.	58	8 months	3½ inches	Excision	Recovery	Well 2 years	
428	1910 May	Dr. Heckley	F.	61	—	2 inches	Excision	Recovery	Well 2 years	A small growth the size of a five shilling piece.
429	1910 July	Dr. Grose	F.	38	8 months	Upper rectum and sigmoid	Excision abdominal section	Death	—	A difficult operation, six inches of bowel being removed. Ends could not be joined ; upper end brought out and attached to angle of wound. Lower end closed by invertion. At time of operation there was an abscess cavity in contact with the diseased intestines.

										Death on 4th day. The patient, who was very feeble, never seemed to rally from the operation.
430	1910 July	Dr. Cook	M.	79	6 months	6 inches	Colotomy	Recovery	—	Lived over 1 year in comfort
431	1910 Nov.	Dr. Ash	F.	73	—	4 inches	Palliative	--	—	
432	1910 Nov.	Dr. Grimmer	M.	51	—	2 inches	—	—	—	This case was very suitable for excision but refused operation on account of expense ! !
433	1910 Dec.	Harrison Cripps	F.	48	—	—	Palliative	—	—	
434	1911 Feb.	Dr. Hillstead	F.	65	10 months	4 inches	Excision	Recovery	Recurred 7 months	This was a very extensive operation by the sacral route. The peritoneum was opened and the bowel drawn well down. Then two small hard glands in the mesenteric attachment. The disease recurred in 7 months.
435	1911 Feb.	Dr. Robertson	M.	64	9 months	3 inches	Excision	Death	—	The patient did extremely well till the 23rd day, and was practically convalescent. On nurse taking him a cup of tea at 7 A.M. he said he had had an excellent night and felt very well and partly sitting up to take the tea-cup, he suddenly

Number.	Date.	Medical Attendant.	Sex.	Age.	Duration of Symptoms.	Height of Disease from Anus.	Treatment.	Result.		Remarks.
								Immediate.	Secondary.	
										fell back and died without a sign or struggle of any kind.
436	1911 Feb.	Dr. Paterson	M.	66	1½ years	High up	Palliative	—	—	
437	1911 Feb.	Harrison Cripps	M.	64	6 months	4 inches	Excision	Recovery	Well 1 year	Growth about 1½ inches diameter. The whole bowel could easily be invaginated. The growth well in view was excised, the whole thickness of the bowel being removed. Wound united with sutures and a bougie used after the first three weeks. When last seen there was no contraction.
438	1911 Feb.	Dr. Thompson	M.	54	7 months	3 inches	Colotomy	Recovery	—	
439	1911 Feb.	Dr. Grose	M.	63	8 months	Extensive	Colotomy	Recovery	—	
440	1911 Mar.	Dr. Robinson	M.	63	6 years	3 inches	Colotomy	Recovery	—	Six years ago on account of hæmorrhage he was examined, and small well pedunculated polypus was found, the head the size of a nut. It gave him little trouble

										and no operation. The symptoms remained quiescent till 6 months ago, when they rapidly developed.
441	1911 Apr.	Dr. Townsend	F.	71	2 years	Lower rectum	Palliative	—	—	
442	1911 May	Dr. Eddleston	M.	60	—	Sigmoid	Excision abdominal section	Recovery	Well 1 year	Sigmoid partly resected. Dr. Eddleston writes May 1912: "I have heard from the patient, who is now quite well."
443	1911 June	Dr. Cade	M.	70	1 year	3 inches	Excision	Recovery	Recurred	In 8 months a small recurrence in lower part of wound. Advised an immediate removal, which I understand was done by another surgeon.
444	1911 July	Harrison Cripps	M.	64	6 months	5 inches	Colotomy	Recovery	—	I had operated on this patient 16 years previously for fistula in anus. The cancer was now very extensive with much stricture.
445	—	Dr. Byass	F.	54	3 months	4 inches	Colotomy advised	—	—	

TABLE B

SHOWING NUMBER OF CASES AT EACH PERIOD OF LIFE

Under 20 years	3
Between 20 and 30 years	3
„ 30 „ 40 „	25
„ 40 „ 50 „	87
„ 50 „ 60 „	109
„ 60 „ 70 „	141
„ 70 „ 80 „	61
Over 80 years	5
Not stated	11
Total	445

TABLE C

SHOWING SEX OF PATIENTS

Males	293
Females	152
Total	445

TABLE D

SHOWING METHODS OF TREATMENT ADVISED

Palliative	115
Operations	330

Advice refused or operation by other surgeons . 73 cases

Colotomy performed in	151 cases
Excision in	107 „
Total operated upon	258 „

TABLE E

SHOWING THE MORTALITY FROM EXCISION OF THE RECTUM AND SUBSEQUENT HISTORY OF THOSE WHO RECOVERED

Died	8
Recovered	100
Total	108

SUBSEQUENT HISTORY OF THE 100 CASES OF RECOVERY

Died from various causes without local recurrence	6
Disease recurred	40
Remained well (cured) after 3 years	42
Remaining well under 3 years	5
Subsequent history not ascertained	7
Total	100

Five of these cases were operated upon by the abdominal route. Of these two died.

TABLE F

SHOWING THE LENGTH OF TIME AFTER EXCISION AT WHICH PATIENTS WERE ALIVE WITHOUT RECURRENCE

Over 1 year, number alive	5
,, 3 years, ,,	7
,, 4 ,, ,,	3
,, 5 ,, ,,	7
,, 6 ,, ,,	3
,, 8 ,, ,,	1
,, 9 ,, ,,	2
,, 10 ,, ,,	1
,, 11 ,, ,,	2
,, 12 ,, ,,	3
,, 13 ,, ,,	3
,, 15 ,, ,,	1
,, 16 ,, ,,	3
,, 17 ,, ,,	2
,, 19 ,, ,,	1
,, 22 ,, ,,	2
,, 26 ,, ,,	1
	47

Some details of these successful cases will be found in Table A under the following numbers: 2, 23, 35, 41, 50, 75, 107, 121, 148, 192, 194, 196, 203, 218, 222, 235, 255, 263, 266, 268, 289, 290, 299, 301, 312, 313, 320, 325, 327, 333, 336, 346, 347, 349, 350, 388, 392, 397, 405, 411, 415, 417, 422, 428.

TABLE G

SHOWING IN 38 CASES THE DATES AT WHICH RECURRENCE WAS NOTICED

Under 6 months, number of cases	9
Between 6 and 9 months, number of cases . .	14
„ 9 „ 12 „ „ . . .	7
„ 12 „ 18 „ „ . . .	4
„ 18 „ 24 „ „ . . .	3
After 24 months	1
Total	38

TABLE H

SHOWING THE LENGTH OF LIFE AFTER THE PATIENT WAS FIRST SEEN WHEN NO OPERATION WAS PERFORMED IN 71 CASES IN WHICH THE DATE OF DEATH WAS ASCERTAINED

Lived less than 3 months, number of cases	8
„ between 3 and 6 months, number of cases	25
„ „ 6 „ 9 „ „	23
„ „ 9 „ 12 „ „	8
„ „ 12 „ 18 „ „	3
„ 18 „ 36 „ „	4
Total	71

Average length of life, 7·8 months.

TABLE I

COMPARISON WITH TABLE H, SHOWING DURATION OF LIFE AFTER COLOTOMY IN 97 ASCERTAINED CASES

Lived less than 6 months, number of cases	10
„ between 6 and 12 months, number of cases	11
„ „ 12 „ 18 „ „	19
„ „ 18 „ 24 „ „	18
„ „ 24 „ 30 „ „	20
„ „ 30 „ 36 „ „	5
„ over 3 years, number of cases	10
„ 4 „ „	3
„ „ 8 „ „	1
Total	97

Average of life after colotomy, 22 months.

TABLE J

SHOWING THE RELATIVE RATE OF MORTALITY FROM COLOTOMY WHEN PERFORMED AFTER AND BEFORE COMPLETE OBSTRUCTION IN 151 CASES

After complete obstruction, number of cases	21
Before „ „	130

	Recovered	Died
After complete obstruction	10	11
Before „ „	125	5
Total	135	16

OPENING ADDRESS ON THE SURGICAL TREATMENT OF RECTAL CANCER

Delivered at the Meeting of the British Medical Association, Liverpool, 1912

By Harrison Cripps, F.R.C.S.,

Consulting Surgeon to St. Bartholomew's Hospital.

As time is limited, it is unnecessary to enter at length into the history of the treatment of rectal cancer. The operation is comparatively modern and, for practical purposes, may be considered as first established by Lisfranc in his paper on the subject read before the Académie de Médicine in the middle of last century, while later the many successful operations of Dieffenbach, of Leipzig, and more recently the works of Marchant and Kraske on the Continent, and of Kelsey, Tuttle, and others in America, have all done much to improve the operation. British surgery, too, claims many names who have helped to establish the operation on its present basis. The first planned operation for excision of the rectum in this country was performed by Sir James Paget in 1878, and the specimen is now in St. Bartholomew's Hospital. Doubtless many of you will remember the paper read at Leeds at the meeting of this Association by one of the most eminent surgeons in the North, the late Mr. Jessop, who introduced the subject for a surgical discussion in 1889. Lately Mr. Swinford Edwards opened a discussion on rectal cancer in an interesting paper at the Royal Society of Medicine, to which Sir Frederic Eve and Mr. Miles

and others added much valuable information, while the recent works of Mr. Lockhart Mummery and Mr. Handley have helped to elucidate this difficult subject. We must not forget the name of the late Mr. Herbert Allingham. Inguinal colotomy, now one of the most valuable operations, was never performed in this country until he helped, together with myself, to introduce it as an aid in the treatment of rectal cancer. The value of this operation can be estimated by the fact that it has entirely superseded the lumbar operation.

Pathology.—I do not propose to encroach upon the time allowed by discussing at length the pathology of rectal cancer (except in so far as it bears directly on surgical treatment). [Details will be found in an earlier chapter of this work.] From this point of view it is so important that it is impossible to neglect it. Out of many hundreds of cases under my observation, with the rarest exceptions, the growth has always been of one type, namely, adenoid or tubular cancer. This consists of an enormous hypertrophy of the columnar glands of the mucous membrane—that is, of Lieberkühn's follicles. In some instances the growth consists of perfectly developed gland tissue, both the individual epithelial cells, the retiform tissue, and the general arrangement being as clearly defined as in the normal mucous membrane (Plates V, VIII, and X). The slower the growth the more perfect the development; the more rapid the growth, especially in a recurrence, the more vague and embryonic is the appearance (Plates IX and X), yet its general plan, as a glandular structure, can always be recognised. Taking the physical appearances of these growths, although all adenoid in structure, they present at the two ends of the scale most marked differences, both in their appearance and clinical behaviour. The extreme on the one side is the papillomatous or villous growth, with its beautifully formed tree-like arrangement (Plate V) growing free and unrestricted into the lumen of the bowel, increasing slowly

in the course of years, not invading the submucous tissue, the lymphatics or glands, and never becoming disseminated about the body or threatening life, except, perhaps, from hæmorrhage or obstruction. It is not malignant; this type of growth has a well-marked pedicle, sometimes short, sometimes many inches in length. It exhausts its activity in growing a mulberry-like head. This head is neither fragile nor hard, but has, as near as possible, the consistency of normal mucous membrane. It projects like a well-grown forest tree into the cavity of the bowel (Plate XIV, *a*). At the other end of the scale is the common form of flat growth, which, though starting in the surface mucous membrane, instead of growing upwards and free, extends horizontally and downwards, first into the submucous tissue, then into and between the muscular coats, through these into the peritoneal coat, and ultimately spreading into and destroying every tissue and structure in its line of progress (Plate XIV, *b*). In these cases the glands become infected, and it ultimately disseminates itself into the interior organs, and more especially the liver, and, to a certainty, destroys life with greater or less rapidity—a growth essentially malignant.

If a section be taken of one of these papillomatous growths through the centre of the stalk and head it shows a beautiful structure under a low magnifying power (Plate V). There is a central stalk of fibrous tissue forming the trunk of the tree. This trunk soon commences to bifurcate, sending off main branches, which again, after many times subdividing, ultimately expand into a delicate retiform tissue. On the surface of this expanded retiform tissue is set a layer of large cylindrical epithelial cells. No matter how intricate the branches and their subdivisions, the ultimate surface is covered uniformly and continuously by this epithelial layer (Plates VI and X). The constant folding of the leaves upon each other and the juxtaposition of neighbouring branches makes the structure difficult to follow, owing to the intricate pattern

produced. The structure is, however, really most simple. The leaves, though in contact with each other, do not seem to coalesce (Plate XI), always showing the same principle, namely, fibrous stalks expanding into the retiform tissue, forming a supporting framework for the layer of columnar epithelial cells. A fair comparison for one of these growths under a low power would be that afforded by a section through the head of an ordinary artichoke. It is only when growing free, with a stalk into the lumen of the gut, uninterfered with by the structures of the body, and with a clear space in which to develop, that this tree-like structure is attained. It only increases to a limited size, leads its own life, and does not interfere with the structures or life of its host. Now what is the difference in structure between these innocent pedunculated growths and the worst forms of malignant cancer ? Except in position in which they grow, there is none. The innocent tumour appears to start from the apex of Lieberkühn's follicles and to grow upwards by branches. The malignant disease appears to start at the base of the follicles and to grow downwards by roots. In all malignant tumours that are fairly slow growing, at the edges can be seen exactly the same structure as in the papillomata, but the microscopic appearance is more complex. This is due to its growth by roots, for here it has to insinuate itself into and between the pre-existing normal structures of the intestinal coats (Plates IV and XIV). It does this very irregularly, spreading along the lines of least resistance, first into the submucous tissue, then here and there growing through the muscular layers, again to spread horizontally in the intermuscular spaces (Plate VIII). It ultimately perforates all the coats, incorporating and absorbing every tissue in its line of progress. Some resist more than others, but its progress is irresistible and only stayed by the death of the patient. Owing to this growth into the normal tissues, much of the normal tissue, as yet undestroyed, may be seen lying

in and between the spreading adenoid growth, giving a most haphazard and ragged appearance to the section, so that only here and there can portions of the growth be detected amidst the normal tissues hypertrophied by irritation or necrosed by pressure. The view I have always advocated is that there is no difference in structure between the innocent papilloma and malignant disease, though more embryonic in one case than in the other, and I have published the history of some clinical cases showing how the one form of growth may pass into the other.*

The world of plant life is full of similar phenomena, the power to grow in either direction, upward towards the sky or downwards into the earth, as can be seen in a cutting from a plant. Cut off a growing shoot of a tree and stick it a few inches into a suitable soil, and in a short time it will take root, sending branches both upwards to light and downwards to moisture in the earth. These downward branches we call roots; histologically the root and the branch are the same structure, an epithelial surface spread upon a retiform or fibrous support. If such a section were taken of the roots of a plant and the ground in which they were growing, it would be most difficult to follow the continuity of the roots, for a great part of the section would not be plant at all, but the various structures appertaining to the ground into which it was extending. This is exactly what is seen in rectal cancer. The new growth can be clearly recognised here and there, but the section will be largely made up of layers of fibrous and muscular tissue which is no part of the growth, but merely the normal or damaged structures into which it was extending. At an early stage this can be clearly made out, though the normal tissues become necrosed and absorbed in process of time. I must not dwell here on the nature of the irritant that causes the epithelium of the intestine to construct this mass of adenoid tissue which we call cancer in the rectum. I

* St. Bartholomew's Hospital Reports, vol. xxiii.

would venture, however, to call to mind some specimens of gall tumour formation in oak and rose trees which I brought before the Pathological Society of London, and published in the thirty-fifth volume of their "Transactions." These tumours were formed by the host—that is, the tree—and consisted of normal hypertrophied leaf structure, exactly as the cancerous tumour of the rectum is formed by the glandular epithelium of the follicles. In the oak and rose tree no amount of mechanical irritation will produce a gall. Similarly, there is no evidence that mechanical irritation will produce a cancer in the rectum. We know that in the oak the growth is due to a definite specific irritation, namely, the minute egg of the *Sineps quercus folii*, and the gall tumour forms a vegetable mass around it, to be eaten by the young Sineps when it is hatched. I have little doubt that science will in time discover a definite specific organism—that is, an infection from without the body—that produces these tumours in the rectum.

After this slight digression, whatever may be the exciting cause of the rectal tumour, let us get back to the way the growth in the rectum extends and spreads. It has already been stated that, should it develop from a pedicle free in the lumen of the bowel, it is not malignant, and need not now concern us. On the other hand, if it grows downwards between the muscular coats of the bowel, it is invariably malignant, gradually destroying and absorbing all the tissues in its path, ultimately infecting the glands and distant organs.

If a section is placed under the microscope and growth is seen between the muscular fibres in the rectal wall, such growth is, in my experience, invariably malignant (Plates VIII and XIV).

Rectal cancer is essentially local in its early stage, and the method of its extension has an important bearing on the question of operation. When once started, it spreads at first by continuity, more so horizontally than in depth. This appears due to there being less resistance between

the layers of muscle than there is in the muscles themselves. In this way several square inches of the surface of the bowel are affected, while the whole thickness of the growth may for some time be less than half an inch. However, it eventually perforates into and through the muscular coats, and invades the tissues outside. Owing presumably to the interruption of the blood-supply by the pressure of the increasing growth, the mucous membrane over it soon falls into a necrotic state and ulcerates, the greatest depth of the ulceration being in the older part of the growth. After ulceration is established, the disease advances along the bowel by a hard everted edge (Plate VI), which generally ends very abruptly in sound mucous membrane. Lymphatic and glandular infection, in my experience, is quite a late stage of the disease, and thus affords the most hopeful prospect in operative treatment.

I must dwell a little longer upon this method of spreading. I do this on account of the recent researches of so eminent a pathologist as Mr. Sampson Handley. It will be remembered that Mr. Handley published two years ago in the *British Medical Journal* a paper with drawings taken from sections stained with muci-carmine, the object being to show how rectal cancer spreads along the submucous lymphatics for several inches or even feet beyond the original site without producing any tumour or hardness by which it could be detected. He further pointed out that it was in this spreading along the lymphatics parallel to the bowel that the explanation of recurrence was to be found, and from this he drew the inference that, for successful surgery, not only should the disease be removed, but long lengths of the bowel, amounting to inches or feet, should be cut away. I believe this view to be erroneous as bearing on the surgical treatment of rectal cancer. I have carefully studied his drawings, and cannot accept the view that, because cells in the lymphatics, feet away from the primary growth, stain

a certain colour with muci-carmine, this is, as he states, a conclusive proof of cancerous invasion in a clinical sense. I have spent too many years in the histological study of rectal cancer to place the same reliance that Mr. Handley does on the significance of such stained cells, or that they invariably indicate cancerous infection. Before this dogma can be established, countless test experiments and methods of staining, both in normal and diseased tissues, must be undertaken and corroborated by clinical experience. Clinical experience is entirely opposed to the deduction that such an early dissemination of rectal cancer along the submucous lymphatics is common or even usual. That recurrence unfortunately takes place in a large number of cases is true ; but let us consider how this growth would manifest itself if Mr. Handley's view was correct. He endeavours to show that the lymphatics are infected for many inches beyond the apparent margin of disease. If this were so, it would be merely a question of time before the whole of the infected area became thickened and hardened with the usual manifestations of adenoid cancerous growth. Then by the time that this had developed, the disease would be still spreading ahead, and if the patient lived long enough, many feet, or even the whole intestinal tract would become involved. It would also show the uselessness of removing the growth locally with only an area of an inch or less of apparently sound margin ; in fact, it would make any reasonable local removal quite hopeless ; but both the conditions just mentioned are inconsistent with clinical facts in the great majority of cases.

It will be found that recurrence seldom takes place except at the extreme edge of the cut margin, and even this is exceptional, for in most cases recurrence is not in the remaining part of the bowel, but in the connective tissue and structures lying immediately external to the part removed. I have over and over again seen the recurrence in the neighbourhood of the ischio-rectal fossæ

and skin near the anus, while the bowel itself at the cut margin and along the whole of its course upwards remained entirely free from any visible infection up to the time of the patient's death. I have always regarded an inch or so as a fair margin, and, when I have been able to secure this, can scarcely recall a case of recurrence in the cut margin itself. Again, if these widespread disseminations were usual, how would the many successful cases of removal be accounted for ? In my own practice I know of dozens of cases which remained perfectly well up to three to twenty-five years after removal where less than an inch of margin had been allowed. Lastly, amongst the most successful cases are those operations in which 2 or 3 inches of diseased bowel, with perhaps only a half-inch margin allowed, have been cleanly cut out, and an end-to-end anastomosis performed. Every surgeon may not be familiar with these cases in the rectum, but few can be without experience of the successful result that often follows an intra-abdominal section of a limited annular growth of the large intestine with an immediate end-to-end anastomosis. If the doctrine of the universal spread of cancer along long areas of the submucous tissue were generally accepted, I believe infinite harm would be done to operative surgery, for in every such case a grave increase of the danger of the operation would be entailed such as would be quite unnecessary and unjustifiable, and those brilliant cases of anastomosis made impossible, for you cannot join together in the rectum the ends if inches of the gut have been removed, and I believe that an operation, now invaluable in properly selected cases, would soon fall into discredit if such wholesale removals became the fashion in deference to an unproved pathological theory.

Diagnosis of rectal cancer can be made certain only by a digital examination, and a surgeon should never commit himself to an absolute opinion unless the hard surface can be actually touched with the finger. If within

6 inches this can be easily accomplished, and, under an anæsthetic, with gentleness and care in avoiding the rectal folds, the disease can often be touched considerably higher.

The utmost gentleness must be used in examining rectal cancer, and the temptation to thrust a finger through it resisted. The bowel at the seat of disease is very rotten, and will at times tear and split like wet paper. I have twice seen death follow from acute septic peritonitis after a simple digital examination of rectal cancer; in each case the bowel had split into the peritoneal cavity. I have known two similar mishaps after dilating malignant strictures with bougies. As regards the sigmoidoscope I have found it in my practice of little use, being at times positively misleading. Cancer can never be diagnosed to a certainty by sight alone; touch only, by indicating hardness and friability, has to be ultimately relied upon.

Operations

Selection of Cases.—The selection of cases suitable for operation is a matter of utmost importance. To regard all, or even a majority, as suitable for operation will certainly bring excision into disrepute. Unless there is a fair and reasonable prospect of removing the whole disease it is better to leave it alone. For, if it is found impossible to remove all the disease, that which remains seems stimulated to increased vigour and grows more rapidly than if it had been left alone. Naturally operators will differ much in what they consider suitable cases. For my own part, I have not felt justified in recommending excision in more than one-third of the cases coming under my observation. I do not regard age as of much importance, and have operated at all ages between 15 and 80, and have been much struck how quite old people will stand well a moderate operation on the rectum.

The following are a few of the chief points that have guided me in the selection of cases:

1. That there should be no obvious dissemination in the liver or other internal organs.

2. With the finger, under an anæsthetic, one should be able to define the upward edge of the growth if the operation is contemplated by the sacral route, or be able to push it upwards for an abdominal section.

3. That the growth should not be fixed or firmly incorporated with neighbouring parts, but that there should be some degree of mobility of that part of the rectum in which it is situated upon the surrounding tissues.

If the rectum is once firmly fixed, its removal will not mean the removal of the disease. The rigidity of the bowel shows that the growth has extended beyond its walls, and that it has no definite limits. Where I have attempted a removal under these circumstances, there has invariably been a local recurrence within a few weeks, and the operation has been worse than useless. In cases where the rectum is firmly fixed, relief can only be afforded by timely colotomy. If there is any real question as to the possibility of removal, the surgeon will probably give the patient the benefit of the doubt.

Colotomy.—If excision is impossible, colotomy is a most valuable palliative. It is in no sense a rival operation to excision, but invaluable in a certain class of cases where excision is out of the question. In the large number of the cases in which excision is impossible, any treatment that materially palliates the symptoms is worthy of consideration. In colotomy we have a means which not only robs the disease of its worst symptoms, but acts as a permanent safety-valve against obstruction, while at the same time, by removing the constant irritation of the growth and putting the rectum at rest, it appears to diminish the activity of the disease, and indirectly prolongs life, as shown in Tables H and I. The suffering and misery of cancer are not so much caused by the disease itself, which is comparatively painless, as by the stricture which so frequently accompanies it. The constant desire

to go to stool, the feeling of inefficient relief, and the dread of impending complete stoppage, are all due to the stricture rather than to the disease itself. What the patient passes is never a proper evacuation, but merely what dribbles through the stricture from a distended bowel above, analogous to what occurs with the urine from a distended bladder. The condition of the patient is generally markedly improved by colotomy, and the remainder of life rendered comparatively painless and tranquil. To suppose that, after the operation, the patient has motions constantly running from the side, is quite contrary to my experience. If the opening is made in the proper way and size, and care taken to keep the patient somewhat constipated, there is remarkably little trouble from this cause. By a mild aperient a good motion can be obtained on alternate days and a well-adjusted pad keeps the part clean and comfortable. Although in a few cases, generally through the opening being too small, colotomy fails to give all the benefit expected, in the majority of cases it affords most decided relief. In cases in which stricture has become marked, and which are hopeless for excision, the sooner a colotomy is performed the better. If done at this stage, there is very little danger in the operation, and the patient gets the full benefit. If delayed, half the advantage of the operation is lost, and when performed after complete obstruction it fails to prolong life in 50 per cent. of the cases. The effect of colotomy on the length of life will be seen in Tables H and I.

Excision.—There are practically only two ways of getting at rectal cancer, the first from below, including the sacral and perineal route; the second from above, known as the abdominal operation. Possibly in exceptional circumstances there may be a combination of the two methods. There is no sort of rivalry between the two. Cancer in the middle and lower rectum can only be got at from below and not from above, while the disease in the upper rectum and sigmoid can only be reached from above.

As shown in Table A an overwhelming percentage of cases are situated within 6 inches of the anus, and therefore can mostly be dealt with from below, probably not 10 per cent. originating above this height.*

Sacral and Perineal Route.—In all operative surgery success depends on having a good view of what you are doing. Operations on rectal cancer have to be planned therefore to fulfil this condition.

For cases in which the upper border of the disease is not more than 4 inches from the anus, the lithotomy position is the best. A posterior division and dissection of the rectum up to or along the side of the coccyx, or removal of this bone if necessary, will be found to give all the room required, and it is better to remove each side of the rectum separately. If the patch of disease is limited, only involving a portion of the circumference, it is a great advantage to remove the growth with a moderate margin free of disease, and not the whole circumference of the bowel. Ever so narrow a strip of healthy mucous membrane greatly facilitates the after treatment in the prevention of stricture, and some of my cases treated in this way remained permanently free from recurrence, and have had no trouble from stricture.† Hæmorrhage will give little trouble if, in making the transverse cut across the bowel above the limits of the growth, small consecutive portions of the bowel are seized with curved forceps (shown), and each bit transfixed with a right-angled needle and tied with strong silk above the grip. If the growth is more than 4 inches from the anus, it can be better removed by sawing across the lower part of the sacrum, 2 or 3 inches being removed. For this operation the position should be the prone one, with the thighs bent at a right angle, and hanging over the end of the table, the knees resting on a chair. If, in this operation,

* See also Mr. Ernest Miles, "Statistics," *British Medical Journal*, November 23, 1912.

† See letter by Mr. Swinford Edwards, *ibid.*

the lower part of the rectum is free from growth, it should be left, the diseased portion being cleanly excised. It may be possible in exceptional cases at once to unite the cut edges of the bowel end to end, but owing to the tension on the part, I have never yet succeeded in getting primary union in the lower rectum. On the other hand, I have had some very satisfactory cases of secondary joining. It seems advisable to defer this secondary anastomosis for a year or so, after which date a recurrence is unlikely. It will be found too, after this period, that the upper segment has become considerably prolapsed, protruding 2 or 3 inches, and, the end of the bowel being comparatively mobile, the two ends can then be carefully dissected out and united with little or no tension, and the superficial parts united over them.

One of the cases covered by Table A is an example of a thoroughly successful secondary anastomosis.

This patient was a lady under the care of Dr. Rushworth, of Hampstead. In 1898 the sacrum was sawn across high up, and 4 inches of the bowel excised, the section being about $\frac{1}{2}$-inch clear of the growth on either side, the last 3 or 4 inches of the bowel, including the anus, being left intact. The peritoneum was opened; the ends of the cut bowel could not be drawn together, so the upper segment was fixed in the upper angle of the wound. Two years later there was no recurrence, but the upper bowel had prolapsed quite 3 inches. The two ends were then freed from the surrounding tissue, and were easily joined together. The result was most satisfactory. The patient regained complete control, and has remained quite well for thirteen years.

Such a case seems a fair answer to Mr. Handley's teaching that as much as possible of the bowel should be removed. If this had been done the subsequent joining with complete control would have been impossible.

If the growth is situated high up, and takes the form of

a limited patch on the anterior or lateral wall, I have found the following an excellent operation for removing it:

The patient being placed in the prone position, a 6-inch incision is made in the middle line, commencing at the lower third of the sacrum and carried down to the tip of the coccyx. The soft parts being reflected, the lower 2 inches or so of the sacrum are sawn across and removed with the coccyx, the tip of the latter bone being left. The posterior part of the rectum thus exposed is opened by a clean incision in the middle line. A strong thread is passed through either side of the divided bowel. The edges being thus held asunder, an excellent view is obtained of the growth, and enables it to be carefully and completely removed. The divided posterior wall of the rectum is again accurately united with sutures, and the soft parts brought together over it.

A $\frac{1}{2}$-inch rubber tube is passed per anum well up to the resected portion and tied in. This prevents the rectum above the sphincters becoming distended with gas and discharge, and enables the interior of the bowel to be syringed out with boracic lotion two or three times a day. The tube can be retained to the ninth or tenth day, by which time the wound will have united.

Contraction at the site of excision must be looked for, and treated if necessary by bougies.

The advantage of this operation is that the mechanism of levatores ani and the sphincters is left intact.

In operating for rectal cancer a full-sized sound in the bladder is of the greatest assistance when dissecting the bowel off the prostate and base of the bladder. In these cases, if the disease is at all high up, the peritoneum will almost certainly be opened, but this does not seem much to increase the danger. When the peritoneum is thus opened, a fair-sized flat sponge, tied to a piece of strong silk, should at once be introduced into the opening, to keep

up the intestines and prevent them being soiled during the rest of the operation. When all is complete the opened peritoneum can be closed with fine sutures, all the sutures being passed before removing the sponge.

I have on three occasions opened the base of the bladder and in all succeeded in closing the opening. In one of these the primary stitching held all right; in the others urine came into the wound in a few days. In both these cases nearly all the water was at first thus passed. It gradually, however, got less, and in one case permanently ceased in the fourth week and the other in about two months.

At one operation on a woman I think a ureter was wounded; anyhow, water came through the upper part of the wound on the sixth day, and continued to do so for nearly a month, when it gradually ceased. I do not think it was the bladder, for, on testing this by injection, it held the water all right, none of the injection coming out of the wound.

I am not able to see the advantage of doing a preliminary colotomy before excision. If it is on the ground of preventing the wound being soiled by fæcal matter, this is a false hypothesis, for fæces appear quite innocuous in any wound if the part is kept clean. The operation, too, is premature if it is intended to correct a stricture that may never occur.

After-dressings require care, for there is a tendency for all retained secretions to decompose rapidly in this situation. Night and morning the patient is brought to the side of the bed, the part washed well with soap and water, and gently syringed out with some mild antiseptic, and lightly packed with gauze. It is generally desirable to keep the patient in bed from six to eight weeks. It is necessary to watch carefully during the healing for any sign of contraction. This begins to show itself in about three weeks to a month after the operation, or even later. If not treated immediately by a full-sized bougie passed

daily and retained for a while, it will end in a most intractable stricture. The bougie may have to be used even for a year or two, but the time comes sooner or later when the tendency to contract disappears. Until it does so the bougie must be employed. In some cases the control in after-years is weak, but fortunately in most cases it is extremely good—in fact, nearly normal; and I think this control depends as much as anything on never allowing any degree of stricture to form.

Abdominal Section.—If the disease is beyond the reach of the finger it can only be excised by abdominal section, and the higher it is out of the pelvis the easier and more successful is the operation. As to whether it can be removed or not may not be clear till after the opening of the abdomen, and such an exploration is more than justifiable. If, after excising the portion of the intestine the cut ends can be brought together without tension, no doubt an end-to-end anastomosis is the right procedure. On the other hand, if the ends can only be approximated with tension, it would be highly dangerous to trust to their union. It would be better in these circumstances either to bring both ends out of the wound, or, if the lower end could not be brought up, to close it by inversion, bringing the upper end only out of the wound. It still might be possible to unite the ends by a secondary operation after the lapse of time had produced some prolapse of the upper segment, and thus union made possible without tension. The cases I have operated upon by abdominal section have been comparatively few and the mortality was far higher than in the cases operated on from below. But it must be remembered that these were mostly severe cases. The result in those that survived was excellent, and I have had no case of recurrence (*see* Table A). Seeing, therefore, that the disease, if left alone, is invariably fatal, and what good results may follow, it is well worth a patient's while to run a considerable risk on the chance of a permanent benefit.

Recurrence.—When this takes place it generally does so in the tissue lying external to the excised portion or in the glands and lymphatics lying in the sacral neighbourhood. Occasionally the recurrence takes place in the cut edges of the bowel itself. When it occurs in the glands or tissues external to the bowel, probably nothing further can be done; but if the recurrence is in the cut margin a second or even third removal may end in ultimate success. Case 23 in Table A is an example. A lady under the care of Dr. Stanley Smith had a growth removed. It reappeared in six weeks and was excised. It again recurred some months later, and was removed for the third time. The final removal was twenty-five years ago, and the patient is still alive and has never had any further recurrence.

To summarise the deductions to be drawn from the Tables appended, the following appear to be some of the chief points:

1. That cancer of the rectum may occur at any period of life, but chiefly after middle age.
2. The disease is twice as frequent in men as in women.
3. The importance of an early diagnosis, for two-thirds of the cases were discovered too late to admit of excision.
4. That when removal was practicable nearly 40 per cent. of the cases were curable.
5. That if recurrence takes place, it almost invariably shows itself within twelve months, and is very rare after two years.
6. That colotomy prolongs life.

CHAPTER XXIV

THE PASSAGE OF AIR AND FÆCAL MATTER WITH THE URINE*

In 1887 I had to deal with two cases in which the most prominent symptom consisted in the passage of air and fæcal matter with the urine. Having had no previous experience of this terrible complication, I did not at first clearly comprehend its significance, and was unable to express a correct opinion as to the cause of the fistula or the course that the disease would run. I must confess to have been strongly under the impression that such communications were generally the result of maglinant disease. In this, however, I now acknowledge to have been mistaken. The result of further research into the subject shows indisputably that entero-vesical fistulæ are far more commonly the result of inflammatory mischief than due to perforation from cancerous growth. The prognosis and hope of benefit by treatment is thus more favourable than could have been anticipated.

The condition is an uncommon one, and it is probably on this account that so little is known concerning it. It is proposed in this paper, by collecting isolated records of the disease distributed through medical literature, together with a few cases coming under my observation since the last edition of this paper was published, to see what further light can be thrown on its nature and treatment.

The cases collected in the Appendix are sixty-eight in number. Of course, it is not professed that they

* Monograph, published in 1888, by Harrison Cripps. Revised 1907.

represent all that have been recorded. Nevertheless, I believe they include the majority of those sprinkled through the English and American literature up to 1888. In utilising these cases, one cannot but feel a debt of gratitude to those who have taken the trouble so carefully to record their experience. These records extend over nearly two centuries, from the time when old Anthony Fothergill thought "the disease might be cured by a course of Bristol water and ass's milk," to the cases successfully treated by colotomy, published by Mr. Bryant.

A list of references is also given to cases published in journals, &c., inaccessible in London, which may be useful to those who care to carry their researches further at some future date.

Pathology.—When air and fæcal matter escape together from the urinary passage, there can be no doubt that a communication exists somewhere between the bladder and intestine. If air alone escapes, the question may arise as to whether it entered the bladder through some fistulous communication with the bowel, or if it might possibly be due to some morbid condition of the urine.

In answer to this, so far as I am aware there is no case on record in which gas has arisen from decomposition of the urine in the bladder. It, therefore, may be safely assumed that the passage of air with the urine is positive evidence of a communication existing, either directly or indirectly, between the bladder and the bowel. The causes of such entero-vesical fistulæ arrange themselves under three headings: (1) Traumatism; (2) Cancer; (3) Inflammation.

Of the sixty-three cases collected, the following table shows the relative proportion due to each cause:

Traumatic . .	2	Inflammatory . .	48
Cancerous . . .	9	Doubtful . . .	9

Traumatism.—There are only two cases in the table

which can be attributed to injury. In one of these an immense slough formed after a severe labour lasting four days, with the result of an extensive communication being established between the rectum, vagina, and bladder. In the second case, the patient was impaled on a stake, causing a wound of the bladder through the rectum, resulting in a permanent fistula. These two cases require no comment, the nature of the lesion being sufficiently obvious.

Cancer.—In nine cases only could the communication be traced to this cause, and in four of these the specimens were museum ones, so that in all probability the relative number of cases due to cancer given in the table is higher than it should be; for, owing to cancer being necessarily fatal, a larger proportion of such specimens find their way into museums than is the case when the cause is inflammation.

I must confess to considerable surprise that such a small number of cases proved to be of cancerous origin, since by the light of my own experience alone, before investigating the subject, I anticipated that the majority of such fistulæ would prove to be malignant, for at that time, two out of the only three cases of the disorder coming under my observation were so. Of the five cases I have since seen, in three the cause was certainly inflammatory and in the other two, doubtful.

Considering how common is malignant disease of the rectum in the neighbourhood of the bladder, it is a matter of some wonder that it so seldom terminates in perforation. It appears that cancer, although causing destruction of the old tissue, rapidly produces fungoid granulations which have a tendency to block up any cavity formed by slough or ulceration. Even in cases where cancer has been the primary mischief, the actual perforation of the bladder seems to have resulted just as often from the bursting of a secondary abscess as from the direct extension of the growth itself.

Inflammation.—Forty-eight cases, or over 70 per cent., originated in some form of inflammatory mischief, including simple ulceration. In two of these cases, stone in the bladder was supposed to have been the cause of the fistula; but this appears to be very doubtful, the more likely explanation being that the stone was the effect rather than the cause. For in other cases of stone it was conclusively shown that the calculus was merely a phosphatic deposit round an inspissated fæcal mass.

Cases of inflammatory origin arrange themselves for analysis as follows:

Abscess . . .	18	Ulcer	4
Stricture . . .	8	Stone	2

Exact nature not described, 16.

Abscess.—In eighteen cases, either from evidence in life or from post-mortem examination, absolute proof was obtained that the fistulæ were the direct result of an abscess bursting both into the bladder and into the bowel, while, in many of the unclassified cases, there is a strong suspicion that the trouble arose in this way.

It is rather foreign to the purpose of this monograph to discuss the cause of these abscesses. Some of them appear to have followed after confinements, and were, no doubt, originally formed in the pelvic tissue; but probably the majority of them resulted from inflammation set up by accidental perforation of the bowel by fragments of bone or other foreign bodies. Some of these abscesses appear to have existed for a considerable time before bursting. It is worthy of remark that they may extend and burst into the bowel at a considerable distance from their site of formation. Thus, in three cases, the abscesses were secondary to a stricture in the lower part of the rectum, but, instead of bursting back into the rectum, they had extended upwards, and opened both into the ileum and cæcum. Abscesses originating higher up are limited in their extent by a localised peritonitis,

so that the walls of the cavity may be bounded by the bladder on one side, and coils of matted intestine on the other, the abscess being circumscribed and shut off from the general peritoneal cavity by firm adhesions. Occasionally these abscesses burst into the bowel in more than one place, and thus the double communication of the bladder, both with the large and small intestine, is accounted for.

Stricture.—In eight cases the fistula was secondary to fibrous stricture. In some of these, the strictured portion of the bowel was firmly adherent to the bladder, and the communication was found to lie between the interior of the strictured portion of the bowel and the bladder. In other instances the intestine above the narrowed part was much dilated, and the fistula appeared as if the result of an ulceration commencing in the dilated pouch and perforating into the bladder, the viscera having previously become adherent.

Ulceration.—In three cases only is the communication described as caused by a simple ulcer, though in many a tubercular origin may be suspected. In each of these the bowel was adherent to the fundus of the bladder at a single spot, through which the perforation had occurred. It is not clear as to whether the ulceration of the intestine was the primary condition, the base of the ulcer first becoming adherent to, and subsequently perforating, the bladder; or, whether there might have been an old adhesion between the viscera which had subsequently ulcerated. In one* case the ulceration seems to have resulted from an abscess originating in a diverticulum of the bladder. It is certain, however, in the great majority of instances, that the initial lesion is rather intestinal than vesical.

Symptoms.—By careful inquiry it is often found that for some time prior to the actual appearance of air and fæces in the urine, the patient has been suffering from bowel trouble. There is often a history that, for

* Case 44.

many months past, alternating constipation and diarrhœa has been complained of, the latter gradually becoming the more prominent, so that from three or four to a dozen or more stools a day occur. It is not true fæcal matter that is passed on these occasions, the discharge sometimes being a glairy mucus; but more commonly it is dark, somewhat resembling coffee-grounds, being a mixture of fæcal *débris*, pus, mucus, and blood. There is often tenesmus, and a fixed pain in the lower part of the back. Such symptoms almost certainly point to a stricture, either malignant or of a fibrous nature.

In other cases the premonitory symptoms may have been of a different nature. They may have commenced by severe abdominal pain, possibly accompanied by a rigor, while a quick pulse and raised temperature suggest an inflammatory disturbance. At first, general peritonitis might be suspected, but after a time the pain becomes localised, a particular part of the abdomen or pelvis being hard and tender on pressure. Sudden relief from pain may follow a discharge of pus from the rectum or bladder. With such symptoms there will be no difficulty in diagnosing an abdominal or pelvic abscess, which has burst both into the bladder and intestine. In other cases, again, the premonitory symptoms have been very obscure, but nevertheless suggesting some form of intestinal disorder. For some time prior to actual perforation, symptoms referable to irritation of the bladder develop. These, for some weeks or months, are often very slight, the patient merely complaining of an increased desire to micturate. It is at this time that the symptoms somewhat resemble, and may be mistaken for, stone in the bladder. Soudell, in reporting one of these cases more than a century ago, says that "the physician in attendance said he was as well assured that there was a stone in the bladder as if he saw it in his hand." The post-mortem, however, showed the physician in error, for there was no calculus.

A time comes, generally somewhat suddenly, when the urinary symptoms become greatly aggravated; micturition is very frequent, the water scalds, and there is much spasmodic pain, suggesting the onset of an acute cystitis. About this time the patient is often horrified by finding that air is passed through the urethra, and escapes, with either a bubbling or explosive sound, on passing water. Sometimes the air is intimately mixed with the urine, making it frothy—a condition graphically described, by a writer in the last century, "like liquor from a cock when the cask is almost empty." Then follows, in a few days or weeks, the appearance of fæcal matter in the urine. At first this is but small in quantity, forming a fine sediment easily mistaken for the deposit of simple cystitis; but the amount is soon increased, the urine becoming stained, and having a thick muddy appearance. As time advances, not only is the water thick, but solid, or semi-solid; fæcal material passes with it, blocking the urethra. The patient's condition is now a terrible one, and the downward progress becomes rapid. "The form and figure of manhood depart, the demeanour is no longer erect, and the dejected behaviour of the visage betrays the latent disquietude within. Each day is a task of painful and sickening discipline, existence being a burden." *

The pain in these cases varies very much, sometimes it is intense; indeed, in one of my cases the patient had unendurable agony from the time the fæcal material appeared in any quantity, till relieved by operation. I do not know that I have ever witnessed more acute suffering than was endured by this patient. That his case was not exceptional in this respect is shown by the records of similar miseries in many of the cases appended. Indeed, one poor fellow, a medical man, could endure his sufferings no longer, terminating his own life. On the other hand, singularly enough, large quantities of fæcal matter may be passed for months with scarcely any pain at all, as in

* Dr. Hingeston. Case 10. † Case 20.

the last three cases I have recorded. Retention of urine, owing to the constant blocking of the urethra by fæcal matter, is common, and in one case ended* in a fatal extravasation. The frequent use of a catheter from this cause is often required, but its passage soon becomes extremely painful from ulceration of the urethra.

It is a curious feature that often, although fæcal matter will pass freely from the rectum to the bladder, the urine does not generally pass into the bowel. This must be due to the opening being valvular. Occasionally, after a while the bladder appears to become more tolerant, and the pain less.† The pain sometimes is aggravated by special articles of diet. In one of my own cases the patient was most intolerant of any form of alcohol, a tablespoonful of brandy or half a glass of wine being invariably followed by intense spasmodic pain in the bladder. It may be observed that a similar susceptibility in this respect is noted in another case.

The coma and delirium which frequently accompany the closing scene of the malady appears not unlikely to be of toxic origin, and may be due to the absorption of decomposing urine passed into the intestine. Although it is true, as already mentioned, that in some cases no urine escapes into the bowel, in others it certainly does so to a large extent. Healthy urine is known to produce little inconvenience when passed directly from the bladder into the rectum, but the conditions must be very different when putrid urine finds its way in any quantity into the colon or small intestine.

Prognosis.—The prognosis is most unfavourable. In such cases as are due to cancer a fatal termination is inevitable, but it seems clear that death is greatly accelerated by the perforation into the bladder.

In the cases due to inflammation, if untreated by operation the mortality is very high. Of thirty cases in which the life-history is given, and in which there was

* Case 21. † Case 30.

no surgical interference, twenty-two died, giving a fatality of 73 per cent. In the majority of instances the patients only lived a year or two after the occurrence of the fistula, but in many the period was only to be reckoned by months. In one or two cases, however, life was prolonged for several years.

McWhinnie's patient, a medical man, was a remarkable instance in point. But here, for the first nine years gas only escaped, and that at long intervals. The urine remained clear of sediment, and there were no signs of cystitis, so that it may be safely assumed that the aperture was so small and in such a position as not to admit of the passage of fæces. During this time the patient suffered but little inconvenience. When the nature of the opening subsequently changed and fæcal material passed into the bladder, the symptoms became far graver. From some cause the opening seemed again to have contracted, so that air alone passed, and the patient remained in comparative comfort for years.

In a small percentage of cases a spontaneous cure has been effected. In these fortunate instances the symptoms of perforation have been of short duration, and the condition is probably the result of abscess. In these circumstances, it is quite possible that the contraction of the abscess cavity with the consolidation of the surrounding parts may lead to closure of the communication; but unless this closure takes place within a few weeks the opening is almost certainly permanent.

Diagnosis.—The passage of air from the urethra generally for some time precedes that of fæcal matter. At first, the air is often so slight in quantity, and being only occasionally passed, the patient himself has some doubt as to its occurrence. The best means of ascertaining the fact is to allow the patient to pass water while sitting in a hip-bath. By this means, if air passes it can be demonstrated beyond the possibility of doubt.

When fæcal matter comes away in any quantity

there is no difficulty in recognising it; but when small in amount, and perhaps mixed with the products of cystitis, it is not so easily identified. In these circumstances the microscope becomes a valuable aid. If the urine be allowed to settle in a corked bottle turned upside down, and a little of the deposit from the cork examined on a glass slide under a low power, minute particles of excremental material can be readily seen. In one of my cases, although to the naked eye the urine was only slightly cloudy, with the microscope starch granules, minute portions of fibrous tissue, and bits of vegetable hyaline membrane were readily observed.

When the fact of communication has been established, two important questions arise for solution: first, as to the cause of the perforation, whether arising from malignant disease or inflammation, secondly, as to the portion of the bowel implicated.

The question of whether the fistula is the result of inflammation or of cancer, is a matter of vital moment in considering the prognosis. In some cases it is doubtless impossible to determine this with certainty. Nevertheless, by careful inquiry into the history and consideration of the general sequence of events, together with close attention to objective symptoms, an accurate diagnosis will be generally possible.

When the communication has resulted from abscess there is often a history pointing so clearly to that cause as to admit of no doubt. Take, for instance, the two following cases:

A patient,* aged fifty years, after walking for some time, had constant pain in the right iliac region. One day, after a long walk, she had a great desire to urinate and noticed for the first time that her water had an unnatural colour and an unpleasant odour. This condition continued for a few days, when there occurred a

* Case 45.

sudden gush from the bladder of a very offensive mixture of pus and urine, accompanied by great pain and straining. After this free discharge, the old pain in the iliac region ceased and never recurred, but fæces appeared in the urine.

A young healthy married lady * was suddenly attacked with symptoms resembling acute peritonitis, there being persistent vomiting, constipation, and high fever. When the more severe symptoms subsided, she was seized with irritation of the bladder. This occurred at the end of the third week of the symptoms. At this time an abscess burst into the bowel, as indicated by a large quantity of pus at stool, with sudden relief of the abdominal pain. Four days later fæces appeared in the urine.

If the trouble be situated in the lower part of the rectum, the nature of the disorder can be ascertained by digital examination. Occasionally, in difficult cases, some light might be thrown by careful observation of the material passed both by the rectum and the urethra. Broken portions of malignant growth may be thus detected. The value of such an examination was very clearly proved in one of my own cases.† Here we were in grave doubt as to the nature of the disorder. An examination under an anæsthetic failed to throw further light on the subject, but on the following day the nurse observed in the fæcal material passed by the rectum two fleshy masses, which had doubtlessly been broken off at the previous examination. One of these was the size of a pea, the other as large as the end of the finger. On examining these under the microscope, they proved to be portions of typical adenoid cancer.

If cancer of the bowel has so far advanced as to produce perforation of the bladder, it is likely that there will be general symptoms suggestive of the disorder. The gradual loss of strength and flesh for some time previously, and

* Case 23. † Case 53.

the insidious onset of the symptoms without the patient remembering any definite attack of pain and trouble suggestive of inflammation, is suspicious. Then, again, the nature of the motions may be of some assistance in forming an opinion. Although frequent actions described as chronic diarrhœa are a feature in stricture of the bowel, whether arising from fibroid inflammatory thickening or malignant disease, their character differs somewhat in the two disorders. In cancer, the muco-purulent discharge is often dark and coffee-coloured from blood-staining, which is not generally the case in fibrous stricture. Again, in malignant disease it is not uncommon to have considerable lumps of dark coagulated blood discharged from the bowel, a feature rarely observed in simple stricture.

Lastly, it must be remembered that, in the absence of any definite symptoms pointing to cancer on the one hand, or inflammation on the other, the latter is by far the commoner of the two disorders.

Situation of Fistula.—It is of the utmost importance, if possible, to ascertain in what portion of the intestine the opening is situated, for upon this point the whole question of treatment by colotomy hinges. The communication may be situated in the rectum, in the colon, in the small intestine, and in the small intestine and colon.

In sixty-three cases the following Table shows the relative frequency of fistula in each situation:

Rectum . . .	25	Small intestine . .	12
Colon . . .	15	Colon and small intestine	5

Unascertained, 6.

The rectum was found to be the portion of bowel implicated in nearly half the cases, and generally the opening was in the middle portion, though, occasionally, higher up. When malignant disease or fibrous stricture of the rectum can be felt, it will be a fair inference that the fistula is

in the neighbourhood of the disease; but it cannot be positively asserted that is so.

In no less than three instances,* where the primary disease was in the rectum, an abscess had extended high up beyond the limits of the pelvis, and then burst into the ileum, cæcum, and bladder.

The colon was involved in fifteen cases. In four of these the actual point of communication was not stated; while in eleven—that is, in every case where it could be ascertained—communication proved to be with the sigmoid flexure. In eleven cases the communication was with the small intestine alone, while in five it was both with the colon and the small intestine. From these statistics two facts of great importance are established: the one, that communications with the large are about twice as common as those with the small bowel; the other, that in all the cases of communication with the large intestine the opening existed either between the rectum and the bladder, or between the sigmoid flexure and the bladder; so that every one of them would have been relieved by a left lumbar colotomy. The practical importance of this cannot be overrated, for it gives a decided answer to the question, On which side shall colotomy be performed? Indeed, there is not a single case amongst the whole number in which there would have been any advantage in opening the right rather than the left colon. The small intestine alone was involved in twelve cases only, while in five cases there was a double communication in both the large and small bowel.

The question arises if, in any individual case, a diagnosis can be made as to whether the communication is with the large or small intestine. With our present knowledge, absolute certainty is unattainable.

A careful digital examination of the rectum should always be made, and a complete examination in this part is greatly facilitated by an anæsthetic. I have on

* Cases 10, 42, 47.

several occasions, on first examining patients for rectal cancer, failed to reach the disease with my finger; but yet, when the same patient has been placed in lithotomy position under an anæsthetic, the lower border of the growth has been easily felt. Such an examination should be bimanual, the right forefinger being in the rectum while the left hand is employed in pressing the viscera downwards above the pubes. If, after such an examination, the disease can be discovered in the rectum, it is probable that the fistula is in the immediate neighbourhood; but, as already mentioned, there are occasional exceptions in this respect.*

A method of examination which might be tried, is to pass a catheter into the bladder, and then give an enema of milk in the rectum. If the milk finds its way into the bladder, it affords substantial evidence that the opening is in the large intestine. The opposite plan, of injecting milk into the bladder, might also be tried. This last test would doubtless afford satisfactory evidence of the communication being with the large intestine, if the milk at once appeared through the rectum. On the other hand, its failure to appear would not necessarily mean that there was no communication, for the opening may be, and often is, valvular, only allowing a passage from the bowel to the bladder.

Help is sometimes afforded in the diagnosis by the character of the fæcal material, and the circumstance in which it is passed from the bladder. If ill-digested material is passed from the bladder, while at the same time the rectal motions contain no undigested matter, the fistula will probably communicate with the small intestine. In one instance, the matter passed by the urethra was so little digested as to enable the doctor to say exactly what the patient had been eating.

On the other hand, when the communication is with the rectum or sigmoid flexure, fragments of perfectly

* Cases 10, 42, 47.

formed fæces are passed in the urine, with the most distinct fæcal odour and appearance. In some cases it is noted that the amount of material finding its way into the bladder is greatly influenced by the state of the bowels. When the patient is constipated, the urine becomes free; on the other hand, a relaxation of the bowels is followed by a flow of soft fæces into the bladder.

In each of the four cases* in which this symptom was present, the communication proved to be with the large intestine, three times the opening being in the sigmoid flexure, and once in the rectum.

Treatment.—This is best considered under the headings—Operative and Palliative.

Operative.—So recently as 1862 McWhinnie,† whose views may be taken as a fair sample of the surgery of the time, wrote: "We cannot for a moment retain the idea that surgical interference will be of any avail in cases of this description."

It is a matter of no small congratulation, as marking the progress of surgery, that five-and-twenty years later Mr. Bryant and others are recording cases in which the greatest relief has been afforded by operative interference.

When, from the history of a case, the fistula appears to have followed immediately upon the bursting of an internal abscess, it would be right to defer operative treatment for a while on the possibility of the opening spontaneously closing. On the other hand, when the previous history points to malignant disease or stricture of the bowel the sooner operative treatment is undertaken in suitable cases the better. In such cases there is no hope of the opening closing by itself, while, by delay, the patient, from the terrible nature of his trouble, becomes so rapidly run down in health and strength as to render recovery doubtful.

Three methods of operative treatment would seem to be theoretically possible:

* Cases 8, 21, 33, 36. † Case 26.

(1) Colotomy, in order to divert the fæcal material from the bladder.

(2) Supra-pubic cystotomy, with the view of allowing a free drainage of the putrid contents of the bladder, and with the possible chance of being able to close the fistula by an intra-vesical operation.

(3) An abdominal section, in the hope of separating the intestine from the bladder, and closing the communication.

Colotomy.—In this operation we have an easy and effective plan of cutting off the fæces from the bladder, and thus indefinitely prolonging life. The condition of patients after colotomy is far more comfortable than is generally supposed. Indeed, if care be taken to make the opening valvular, and of moderate size, the patient has surprisingly little trouble in managing the artificial anus. As a rule, patients will have but one motion a day, and they have plenty of warning when this is coming, and they soon acquire the art of control. Doubtless, in some cases the mere shutting off the fæces above the fistula would enable it to close, so that it is quite possible that after a time the colotomy opening might itself be closed by operation. The effect of colotomy on the condition of the bladder is most satisfactory, the urine again becoming clear, and the symptoms of cystitis disappearing. The chief question, however, before performing colotomy is one of diagnosis; for obviously, if the communication be with the small intestine or cæcum the operation will be worse than useless. Fortunately, by a careful observation of the symptoms already referred to, it is generally possible to make a diagnosis as to whether the communication is or is not with the small intestine. Having decided upon the propriety of colotomy, a further question would arise as to what part of the bowel should be opened: the choice lies between an inguinal and transverse colotomy.

It must not be expected that the urine will at

once become clear on the performance of colotomy. No amount of care in doing the operation will at first prevent a certain proportion of fæces passing into the bowel below the opening; but if the bowel has been well drawn up and freely opened, the fæces will nearly always, in the course of a few weeks, all pass through the artificial opening. This appears to be brought about by a slight prolapse of the upper part of the bowel being gradually acquired, which is sufficient to steer all the fæces clear of the lower opening. Cases 57 and 58 are instances in which I performed inguinal colotomy over ten years ago, and in both diseases the bladder trouble was cured, the patients being now in good health, the colotomy opening giving scarcely any trouble.

Supra-pubic Cystotomy.—I am not aware that the operation of opening the bladder in these cases has ever been performed, or even suggested. Indeed, it is only during the last few years, chiefly owing to the enterprise of Sir Henry Thompson, that it has been demonstrated how intra-vesical operations can be performed through the supra-pubic incision.

If in a case of entero-vesical fistula the symptoms pointed strongly to the communication being with the small intestine, an attempt to close the opening by an operation within the bladder would, under certain circumstances, be justifiable. I do not think such a proceeding would be the least likely to succeed if there were symptoms of malignant disease or stricture. On the other hand, if the fistula followed the bursting of an abscess, so that the bowel itself was healthy, there might be a fair prospect of success. If, after opening the bladder, it was found impracticable to close the fistula, at least a free drain would be established, thus avoiding the constant painful catheterism often necessitated by the impaction of fæces in the urethra.

An abdominal section with the view of separating the intestine from the adherent bladder, and sewing up the openings, is possible; but after examining museum speci-

mens, and reading the accounts of post-mortem examinations, I fear the operation in many cases would be impracticable. The original inflammatory trouble that has produced the fistula, has often so firmly matted the intestinal coils to each other, and to the abdominal parietes, that even after death the point of communication could not be found amongst the mass of dense adherent tissue. There can be no doubt, however, that the right practice to pursue would be to perform an exploratory laparotomy on the chance of being able to separate the organs and sew up the opening. In the event of this being found impracticable, the operation might be completed by a colotomy, the exploratory incision being used for that purpose.

Palliative Treatment.—If the patient has refused colotomy, or been advised that no operative interference is likely to be of avail, it remains to consider what can be done to make his condition more tolerable. A simple dietary, consisting almost exclusively of milk, appears in some cases to have afforded considerable relief, and certainly a trial should be given to it. In some instances, it has been noted that particular articles of food materially aggravate the distress. In one of my own cases it was very remarkable how quickly alcohol, in almost any form, aggravated the condition, an acute burning or smarting pain being complained of after taking a teaspoonful of brandy or half a glass of wine. A similar susceptibility in this respect is mentioned in another case. The position of the patient has at times a marked influence on the amount of fæcal matter passed into the bladder. In one case, for example, whilst in the recumbent position the patient suffered but little, scarcely any matter passing into the bladder, though when in the erect position considerable quantities did so.

In another patient, it was noticed that the quantity was small as he lay on the left side, but was increased when in the opposite position. It is often noted that the sufferer's condition varies a good deal according to

the state of the bowels. When these are confined, but little matter enters the bladder, and the patient is in comparative comfort, while, when the bowels are relaxed, the symptoms are greatly aggravated, the urine being loaded with fluid fæces. As a rule, therefore, an effort should be made to keep the bowels confined. A milk diet helps much in this respect, while a nightly dose of solid opium tends in the same direction. If the bowels will not act of themselves, a copious injection of warm water, two or three times a week, appears to act better than a purgative.

The daily washing out of the bladder with warm water sometimes affords much temporary relief. A soft india-rubber catheter should be employed. Occasionally, the frequent use of the catheter becomes absolutely necessary, owing to retention of urine and the blocking of the urethra with fæces. A case * of fatal extravasation is recorded from the want of timely relief to an obstructed urethra. The passage of the catheter may be very painful from ulceration of the urethra. Some diminution of pain is obtained by the use of cocaine ointment for lubricating the instrument. Twenty grains to the ounce of lanoline is a useful prescription. The question of administration of opium to the extent of keeping a patient under its influence, is the same here as in any other painful disorder. I am averse myself to its frequent administration in large doses, the mental suffering thus induced being often far more intense than the physical pain it is intended to relieve. A moderate dose at night, with the object of confining the bowels and inducing sleep, would doubtless be beneficial, while a morphia suppository, containing from a sixth to half a grain, combined with double the quantity of cocaine, may be useful for relieving local pain. An injection of twenty minims of liquor opii sedativus in an ounce of thin starch may be tried, and sometimes gives more relief than a simple suppository.

* Case 21.

COLLECTION OF CASES.

1.—*Communication between Rectum and Bladder.* (*Excrementis alvi per penem ejectis.*)

By Wagnerus.

("Miscellanea Curiosa," 1685, p. 159.)

(*Translation.*)

A parson suffering from vesical calculus had for some days much pain around the pubes, when at length his fæces, having not room enough to pass per anum, began to creep out of the penis with violent pain. This condition lasted for six months. In the meanwhile he was kept alive by broth and putticults; but, if by chance he swallowed the interior of apples, he suffered the most acute pain after defæcation. At length, entirely exhausted by suffering, he paid a debt to Nature, in the fiftieth year of his age.

2.—*Communication between Intestine and Bladder.*

By James Hill.

("Medical and Philosophical Reports," 1784, vol. ii. p. 194.)

A middle-aged lady, in the spring of 1749, became affected with obstinate costiveness. On one occasion, in May, in spite of all the assistance she could obtain, she had no passage either of stool or urine for eight days. During this time she was affected with the most excruciating pain, and her belly swelled to a surprising degree, although she laboured under an almost constant vomiting. After this she discharged some urine, but it was mixed

with a considerable quantity of fæces. She then had a stool, and the swelling of her belly fell considerably. After this she lived about three months. During this time she never passed a drop of urine without a mixture of fæces. Another circumstance which deserves to be remarked in the case, is that no sooner did any flatulences move in her stomach or bowels, but they made their way to the bladder. There they have remained till a convenient opportunity, when they have always discharged with a very great noise. Her belly began to swell, and increased slowly till she died, which was in the middle of August. At this time it was greatly distorted. Permission to open the body was refused.

3.—*Communication between Intestine and Bladder.*

By Anthony Fothergill (Physician at Northampton).

("Medical and Philosophical Commentaries," 1784, vol. ii. p. 194.)

The patient had for some time suffered from chronic diarrhœa and great flatulence, but his principal complaint was difficulty with the urine, with which he had been severely afflicted for some months. He was unable to empty his bladder without painful efforts, occasioned by wind collecting in the urethra, which produced an audible whizzing noise. He continued to linger for two months. Ten days before his death the discharge of wind by the urethra increased much, and was attended by constant pains and tenesmus. Purulent matter and real alvine fæces accompanied his urine.

The author goes on to say: In young subjects the disease might in some instances, though never without great difficulty, be cured by a course of ass's milk and of Bristol water, together with a course of wild balsamic injections. In old age, though the disease is incurable, yet it is of consequence to the practitioner, as well as to the patient and his friends, that a right judgment should be formed of its nature and probable event. This end,

however, can only be obtained from such singular cases being faithfully recorded when they occur.

4.—*Communication between Colon and Bladder (Inflammatory).*

By Stephen Soudell.

("Memoirs of Medical Society of London," 1792, p. 497.)

In January 1780, a gentleman aged sixty, who had previously enjoyed good health, began to complain of flatulences and pains in the bowel, with stools more frequent and loose than usual. During the months of February and March he took many doses of rhubarb, and also testaceous, cretaceous, astringent, aromatic, and tonic medicines, but without benefit. In April a new complaint intervened, which was an inclination to make water more frequently than usual, and he now complained also of pains in the hips, and at times in the penis and testicles. The urine was now generally turbid when first made, and after standing for some time deposited a mucous or purulent sediment, at first white, but after some time of a brownish colour. In May wind came, sometimes together with the urine, and some caraway seeds, and seeds and coats of currants, were discovered. The physician who attended was, he said, as well assured there was a stone in the bladder as if he saw it in his hand; but as there was now an alarming disease of the bladder itself, and there was no room to hope for a cure if the stone was extracted it was concluded to administer only palliative medicines. The patient gradually declined in flesh and strength, and died at the end of August. The purging continued more or less during the whole illness; the stools which he voided were like the grounds of beer.

Post-mortem.—On opening the body a portion of the colon was found strongly adhering to the fundus of the bladder, between both of which there was a communication large enough to admit of one or more fingers. There was no sign whatever of any stone or calculus.

5.—*Communication between Rectum and Bladder (Inflammatory).*

By J. Johnstone.

("Memoirs of Medical Society," London, 1792, p. 536.)

Mr. A. had for many years suffered the most excruciating pains from gravel and stone in the bladder, and received no relief, but rather aggravation of pain, from the use of the late celebrated lithotriptic. Some years passed in this torture, when at length, on searching his stools, he found pieces of gravel voided with them. I saw some of these pieces, and was perfectly convinced from their appearance that they had come from the bladder, and forced their passage through it and the rectum. The bay tincture was daily injected in oily clysters, to quiet the pain, till the pieces of gravel came away in the stools, and he has ever since been free from pain which had tormented him for so long a time. The wound through which they passed has perfectly healed, for he is now a very healthy and vigorous old man.

6.—*Communication between Rectum and Bladder.*

By Dr. Johnson, of Worcester.

("Memoirs of Medical Society," London, 1792, p. 542.)

Mr. Wylde, keeper to Lord Foley, aged sixty-three years, consulted me four years ago for a prophylactic method to prevent the consequences of being severely bit by a mad dog, and the method having happily succeeded, I learnt from him that he had many years before been subject to a diarrhœa, which continued to waste his strength in a slow and gradual manner. In 1772 it grew worse, and with very particular circumstances. Besides near twenty motions to stool every day, he often distinctly perceived wind, and for a fortnight or three weeks before his death he made no urine at all, and it probably came away by stool. An ulcer in the rectum, the cause of the

diarrhœa, had probably perforated the bladder, and he died in August 1772."

7.—*Communication between Ileum and Bladder (Inflammatory).*

By Dr. Milford.

("Memoirs of Medical Society," London, 1792, p. 600.)

John Leer, aged sixty-two, in July 1788 complained of borborygmus. He had lost flesh considerably, attended with debility, and he had a cadaverous appearance in his countenance; the appetite was bad, attended with sickness after taking food, particularly fluids. He had frequent loose stools of a frothy white appearance. The urine was natural. These symptoms had commenced about six months previously. On August 10, after an attack of costiveness, he passed fæces with his urine. From this time he frequently brought off liquid fæces by the urinary passage, and at other times air mixed with the urine, causing it to bubble like liquor from a cock when the cask is almost empty. He grew weaker, and in September sunk into the arms of death without a groan.

Post-mortem.—On opening the abdomen a portion of the ileum was seen firmly adherent to the fundus of the bladder. On dividing the inosculation a passage was discovered from the intestine, through which the excrement might freely pass. The intestinal canal was rather obstructed by its thickened coats at the diseased part. There was also much inflammation of the whole of the intestines.

8.—*Communication between Sigmoid Flexure and Bladder (Inflammatory).*

By Salmon.

(*Lancet*, 1832, vol. i. p. 881.)

Mrs. B., aged fifty-nine, on March 17, 1831, gave the following history: For some years she had irregularity in the bowels, being generally more relaxed than constipated. For the last two years she had frequent attacks

of purging, sometimes going to stool twenty times a day. For some months the bladder had been very irritable and micturition frequent, and some motion had been noticed in the water after an attack of purging. When seen by Salmon the stools did not always come the wrong way, but depended on the looseness of the bowels, the quantity increasing or diminishing according as the bowels were relaxed or confined. She was treated by small doses of opium at night and an enema every morning, with a diet of milk and rice. With this treatment she was much more comfortable. Nothing could be felt by the rectum.

Through June and July she suffered intensely, and her strength evidently declined. She died at the end of August, after a most miserable state of suffering.

Post-mortem.—Body much emaciated. The peritoneum covering the recti was found closely adherent to the sigmoid flexure of the colon. The rectum was healthy. Immediately above the sigmoid flexure the colon was distended above a tight stricture. This stricture was circular in form and an inch in length. The bowel was firmly adherent to the peritoneum in front and the fundus of the bladder behind, and there was a communication between the bladder and the adherent bowel.

9.—*Communication between Rectum and Bladder.*

By James Rolph.

(*Lancet*, 1837, vol. i. p. 370.)

Mary Shaw, aged nineteen, had a severe labour lasting four days. On the fifth day an immense slough came away. On being examined some time afterwards it was found that there was a large communication between the rectum, vagina, and neck of the bladder, owing to the sloughing of the tissue.

She was told that nothing could be done for her, and was sent home to pass the rest of her days in a condition *lachrymabile dictu.*

10.—*Communication between Colon, Ileum and Bladder (Inflammatory).*

By Dr. Hingeston.

("Guy's Hospital Reports," 1841, p. 400.)

Until May 1835 a gentleman, aged fifty-nine, had enjoyed good health. At that time he had a fall, and from that date his health began to decline.

In April 1837 he had painful micturition for some weeks. This got better, and reappeared in January 1838, when for the first time fæces appeared in the urine. He gradually became worse. Soluble fæces streamed away from the urethra with urine and gusts of wind. He lingered on till the spring of 1841. "The form and figure of manhood departed, the demeanour was no longer erect, and the dejected behaviour of the visage betrayed the latent disquietude within. Each day was a task of painful and sickening discipline, existence being a burden."

Post-mortem.—The colon was enormously distended. There was some recent peritonitis, and the intestines were also involved in a mass of old adhesions. The sigmoid flexure of the colon, the ileum, and the cæcum were all adherent to the fundus of the bladder. There was a very tight stricture, about two inches in length, situated about three inches from the anus. Immediately above the stricture the coats were riddled with ulcerations and fistulæ leading into a channel between the bladder and the intestines.

This channel was an abscess cavity situated beneath the reflection of the peritoneum between the bladder and the bowel. It opened in front into the bladder, above into the colon, and through the colon into the ileum. The opening into the bladder was covered by some valve-like granulations.

11.—*Communication between the Ileum and Bladder (Inflammatory).*

By W. C. Worthington.

(*Med. Chir. Trans.*, London, 1844, p. 462.)

Mary Fletcher, aged sixty-five, four years previously commenced to suffer from obscure abdominal pains. Two years ago, bladder symptoms developed. These gradually increased, whilst her health continued to give way, and stone in the bladder was suspected. On her admission into the Lowestoft Infirmary, she was much emaciated and distressed; her chief symptoms were frequent and painful micturition, bloody urine, which was ropy and highly offensive, and occasionally contained fragments of extraneous matter.

A diagnosis of malignant disease was made, and she died a few weeks later.

Post-mortem.—The ileum proved to be the seat of a disease which seemed to have originated in stricture. On opening the bladder, it was found to be partly filled with fæculent matter, and also to contain portions of undigested food, such as currants, seeds, and other vegetable matter. At its fundus was discovered an opening communicating with the adherent ileum large enough to admit the point of the finger.

12.—*Communication between the Sigmoid Flexure and the Bladder (Inflammatory).*

By J. Cruveilhier.

("Traite d'Anatomie Pathologique Générale," 1852, tome ii. p. 533.)

Fistulous passage between the sigmoid flexure and the bladder occurring in an old woman. The walls of the bladder were entirely wanting, corresponding to this adhesion.

13.—*Communication between the Sigmoid Flexure and the Bladder (Inflammatory).*

By J. B. Curling.

(*Medical Times and Gazette*, 1852, p. 615.)

February 1852.—R. S., chief engineer on a Dublin steamer, had complete obstruction of the bowels for several days. He had enjoyed good health till two years ago, when he became subject to constipation, with pains in the abdomen. For the last four months he experienced uneasiness in passing water. His present attack commenced a week ago with pains, vomiting, and constipation, and fæcal matter was observed in the urine.

The urine was dark, and passed with much pain. Nothing could be felt in the rectum. Colotomy was performed, and gave exit to a large quantity of fæces. By the twelfth day motions had entirely ceased to pass by the bladder, only a little wind escaping occasionally from the urethra. Patient completely recovered from the operation, and died five months later.

There was no post-mortem, but Mr. Curling remarks that he had no doubt there was a simple stricture of the sigmoid flexure, and ulceration of the bowel above, which had become adherent to the fundus of the bladder, at which spot ulceration had established a communication.

14.—*Communication between Bladder and Jejunum (Inflammatory).*

By Mr. Moore.

(*Lancet*, 1853, vol. i. p. 384.)

A man, aged sixty-four, was admitted into the Middlesex Hospital, December 1852. He was much emaciated, and had a cachectic appearance. He passed urine every hour, the fluid being thick, ammoniacal, and very offensive. An evacuation per anum took place each time he micturated. He attributed his illness to a heavy blow over

the belly twenty years ago. He had, however, only been ill for six weeks previous to admission.

Three weeks after admission the spasmodic action of the rectum and bladder became more severe, the urine being muddy and mixed with blood. The last fourteen days of his life he lived on brandy and soda, with a little milk. He suffered intensely, the pulse was never below 120, and he died in a comatose condition.

Post-mortem.—Body much emaciated. The jejunum was firmly adherent to the bladder, and between the two there was a communication large enough to admit a No. 12 catheter. The foramen was round, with thick puckered edges, and resembled a fever ulcer ; the bladder walls were greatly thickened. Mr. Moore remarks that possibly the adhesion was the result of the old accident, and had existed for a long time, but that an attack of recent inflammation (consequent on fever) had speedily been followed by a destructive ulceration of the imperfectly organised parts.

15.—*Communication between Rectum and Bladder.*

By Mr. Moore.

(*Lancet*, 1853, vol. i. p. 385.)

The patient was in the Middlesex Hospital, under the care of Mr. Shaw.

There was a communication between the rectum and the bladder, the result of an abscess which had burst into both cavities.

16.—*Communication between Bladder, Sigmoid Flexure and Ileum (Malignant).*

By W. Adams.

(*Lancet*, 1855, vol. i. p. 343.)

A woman, aged fifty-four, came under observation in January. She had had good health till two years before, when she began to suffer from dyspepsia and general

malaise, and during the last year had emaciated rapidly. The bowels acted with fair regularity, and the motion was always more or less fluid. There was no marked change in her condition till February 10, when the urine suddenly became thick and very offensive, depositing slimy matter mixed with shreds of slough of a whitish colour. Air also passed by the urethra.

Post-mortem.—Body extremely emaciated. The bladder was united by its fundus to the ileum in front, and to the colon behind. There was an irregular cavity the size of an orange, bounded by the anterior wall of the ileum in front, and the posterior wall of the colon behind, and communicating with the bladder by an opening admitting two fingers. In the upper and inner walls of the cavity were the orifices of the colon, surrounded by a free but irregular edge of mucous membrane. The lower orifice was much narrower, admitting with difficulty the point of the finger.

Beneath the mucous membrane of the ileum in the front wall of the cavity was a crescentic mass the size of half a walnut. In the posterior wall were three similar masses of induration, between which the bowel was much broken down by disease.

17.—*Communication between Sigmoid Flexure and Bladder (Inflammatory).*

By G. A. Malcolm.

(*Dublin Hospital Gazette*, 1856, p. 94.)

The patient had suffered from cystitis for three years, and there had been a gaseous escape from the urethra on almost every occasion during micturition. The specimen was shown at the Belfast Pathological Society. The mucous membrane of the bladder presented several ulcerated spots, and a fistulous communication between the sigmoid flexure and bladder. The fistula was valvular at the vesical end, and hence, while it permitted the escape of gas from the intestine into the bladder, it prevented

any risk of extravasation of urine. The intestinal extremity presented a wide aperture with sloughy edges. This portion of the colon was bound close to the wall of the bladder by firm old adhesions. In the apex of both lungs were numerous small cavities surrounded by tubercular granulations.

18.—*Communication between Rectum and Bladder (Inflammatory).*

By J. T. Banks.

(*Dublin Hospital Gazette*, 1856, p. 209.)

A man, aged twenty-five, suffered in India from dysenteric diarrhœa. The evacuations were numerous, occurring at least twelve times a day. They were bloody muco-purulent, and accompanied by severe tenesmus. The symptoms continued more or less for two years, when he was invalided home. After landing from the ship he had great pain in passing urine, which came away only in drops. A few days later fæcal matter appeared in the urine, and resembled in all respects that passed by the bowel. Air also passed by the urethra. Six months later he was admitted into the Whitworth Hospital. He was extremely emaciated. The bowels were evacuated ten to sixteen times in twenty-four hours, the motion being of a dysenteric character. Fæces also always passed with the urine. He lived, however, for nearly two years in a miserable condition, his life ultimately terminating by rigors and vomiting.

Post-mortem.—The upper part of the rectum was dilated, but the middle portion so tightly strictured that the catheter would not pass through it. This part was tightly bound by old adhesions to the bladder. On opening the bladder it was found inflamed and deeply ulcerated, and there was a hole posterior to the ureters through which a large-sized catheter could be passed into the bowel.

19.—*Communication between Intestine and Bladder (Inflammatory).*

By H. Thorp.

(*Dublin Hospital Gazette*, 1858, p. 101.)

1858.—A woman, aged forty-five, the mother of three children, suddenly experienced an incapacity to empty her bladder. On passing a catheter a blast of air with a whizzing sound escaped, together with frothy urine. For several days there was a recurrence of these symptoms, and the catheter had to be employed. The bladder appeared to be resonant.

The patient gradually regained the power of emptying the bladder, but continued to be troubled with the constant desire to make water during the four years she was subsequently under observation. No fæcal material could be seen in the urine with the naked eye.

20.—*Communication between Rectum and Bladder (Inflammatory).*

By Charles Hawkins.

(*Med. Chir. Trans.*, London, 1858, p. 441.)

In July 1857 the patient was seen by Mr. Hawkins and Sir B. Brodie. He gave the following history :

"In February 1855 I first discovered a substance, about two inches in length, which I have passed with my water, and which proved to be fæcal matter.

"Although I was passing it every day it gave me no pain or inconvenience. During the next year (1856) I ceased to pass any of the substance, but early in this year symptoms of disease of the bladder appeared, and continued with great severity."

A stone was now detected, and crushed. After a third crushing he had retention of urine all one night, but was suddenly relieved by the water passing from the rectum. No hole could be detected on examination. For some months fæcal matter passed by the penis, and urine by the rectum.

Four months later he wrote: "I am free from pain, and better than I have been for years. I pass my water freely, and wash out the bladder every night. I have twice discovered some fæces in the urine, but at other times it has been quite clear."

The stone was phosphatic.

21.—*Communication between Sigmoid Flexure and Bladder (Inflammatory).*

By Sydney Jones.

(*Path. Soc. Trans.*, London, vol. x. p. 131.)

A gentleman, aged sixty-four, began to pass fæces in his urine a year previously, his notice being directed to it by the passage of straw-like bodies through the urethra. More matter passed when his bowels were relaxed than when his bowels were costive. Flatus also passed by the urethra. He had frequent difficulty in micturition, the matter getting impacted in the urethra; and death ultimately took place from stoppage and extravasation of urine.

Post-mortem.—Three inches of sigmoid flexure were found contracted, and its mucous membrane thrown into a number of transverse folds. Among these folds were a number of false diverticula of unequal length. The bottom of one of these was ulcerated, and caused a communication between the bowel and bladder. In the bladder was a calculus the size of a horse-bean, consisting of fæcal matter covered with nitrate of ammonia and phosphates.

22.—*Communication between Colon (?) and Bladder.*

By Mr. Canton.

(*Lancet*, 1861, vol. i. p. 361.)

A man, aged thirty-three, stated that he had caught cold, and had had inflammation of the bowels. Three weeks later he had some difficulty in micturition, and upon

drawing off the urine by the catheter pus came away with it. From that time till his admission into the hospital fæcal matter was frequently found in the urine. On his admission to the hospital the bowels were relaxed, the evacuations being of a dysenteric character. Dr. Wiltshire considered the communication to be probably with the colon. From the appearance and colour of the fæcal matter it seemed as if it passed from the small intestine, but on the other hand it possessed a strong fæcal odour. When he lay down he passed urine of a natural character, but when he rose for micturition wind and fæculent matter passed with the urine. He had no disease of the lungs, but suffered from profuse sweating. During his stay in the hospital he became very emaciated.

23.—*Communication between Intestine (Small ?) and Bladder (Inflammatory).*

By G. Gibb.

(*Lancet*, 1861, vol. i. p. 384.)

A young married lady, the mother of one child, was suffering from chronic diarrhœa in November 1852. She was then suddenly attacked by acute peritonitis and persistent vomiting. The bowels became constipated, and the fever high. When the more severe symptoms subsided, she was seized with irritability of the bladder and a desire to empty it every few minutes. This occurred at the end of the third week of the symptoms. An abscess now burst into the bowel, as indicated by the passage of a large quantity of pus at stool, with sudden relief to the abdominal pain.

Four days after the bursting of the abscess the urine was found mixed with fæculent matter, and possessed an unmistakably fæcal odour. The colour was that of the contents of the small bowel. The fæces were always mixed with the urine, and were not seen in solid particles; no flatus was ever observed.

After a time fæculent material became less and less, and finally disappeared. Her health improved, and she gained flesh and strength. Her recovery appeared to be complete and permanent. Dr. Gibbs states that he had no doubt that the communication was with the small intestine.

24.—*Communication between Small Intestine and Bladder (Inflammatory).*

By Edward Wells (Reading).

(*Brit. Med. Journ.*, 1861, vol. ii. p. 658.)

A harness-maker, a stout man, aged fifty-nine, had suffered from mucous diarrhœa. He complained of great pain in the abdomen and bladder. His urine was loaded with lithates, and scalded him in its passage. A month later micturition caused great pain, flatus was passed at the same time, and fæcal matter detected in the urine. He had frequent vomiting, and died greatly emaciated.

Post-mortem.—The small intestines were bound by strong adhesions to the peritoneum behind the pubes, and also in a firm mass to the posterior surface of the bladder. On separating the adhesions, an abscess was found communicating both with the bladder and the small intestine. The remainder of the abdominal viscera was healthy.

25.—*Communication between Rectum and Bladder (Malignant).*

By. W. Price.

(*Brit. Med. Journ.*, 1863, vol. i. p. 419.)

A gentleman, aged fifty-four, of a hypochondriacal temperament, had, for a series of years, subjected himself to using the strongest purgatives, and employed large injections of water and gruel. His diet consisted solely of milk, eggs, and broths, to the exclusion of solids. He first complained of pain in the left iliac fossa. After a few weeks the pain became aggravated, and he lost flesh

perceptibly. When seen by Mr. Price, he was in intense agony, unable to pass urine, but after a warm bath he passed through the urethra 3 oz. of fæculent fluid. Two days later the discharge increased, and the irritability of the bladder was well-nigh unbearable. The quantity of fæculent discharge in the urine was about 12 oz. in the twenty-four hours. In it were found grape-skins, orange pulp, and other extraneous bodies. Nothing passed per anum till the eleventh day of the attack, when a small evacuation occurred at intervals. By degrees the purulent discharge diminished, and the constitutional irritation subsided greatly.

The patient continued from this date till his death, thirteen weeks later, comparatively free from pain, save at the time when he was emptying the bladder.

Post-mortem.—Peritoneal inflammation of the lower half of the large intestine, with some purulent effusion into the abdominal cavity. There was rigid adhesion between the rectum and bladder. Scirrhous deposit existed in the coats of the rectum, and stricture in the middle third. Immediately above the stricture was an ulcerated opening, the size of a horse-bean, communicating with the bladder.

26.—*Communication between Intestine and Bladder (Inflammatory).*

By McWhinnie.

(*Medical Times and Gazette*, 1863, vol. i. p. 28.)

"Mr. C., an old attached medical friend and country practitioner, informed me, whilst driving in his neighbourhood, of air passed through the urethra during and after micturition. Feeling himself otherwise quite well, it gave him little concern, and he did not attach the importance to the symptom which evidently belonged to it. The passage of flatus had suddenly attracted his attention a short time previously. No pain or inconvenience had preceded it. Without causing unnecessary alarm, I recommended him to abstain from over-exertion, to take

ample food, and keep the large intestine free by gentle aperients and enemata. By following this advice he remained comparatively comfortable for nine years, the water was always clear, and he had no pain of any kind. He performed his professional duties; I often accompanied him for a day's shooting without any allusion to the infirmity. In the winter of 1849 the case assumed a more serious aspect. A partridge bone had passed by the urethra, and, besides air, there was occasional fæcal matter, causing an impediment to the urine. At this time he was seen in consultation by Sir B. Brodie, Mr. Stanley, and Dr. Roupell. Although intestinal matter passed freely into the urethra, no urine passed into the bowel. Sir Benjamin Brodie remarked he had perceived the same thing in another case. Nothing wrong could be discovered by the rectum or by palpation of the abdomen. Soon after this he had an attack of abdominal obstruction, which, however, gave way to treatment. From this period the case took a more favourable turn. The aperture between the two viscera became so far diminished that fæcal matter ceased to make its way into the bladder, and remained comparatively comfortable for many years, troubled, however, at intervals by attacks of bowel obstruction, due, we imagined, to stricture. Air still passed into the bladder. These attacks of obstruction confined him to bed, and were followed by twenty or thirty evacuations. Between the attacks he was fairly well, and continued his professional work.

"On August 23, 1862, after a long drive, he was seized with an attack of obstruction. The distension rapidly became extreme, and on the 28th he had great difficulty in breathing, became black in the face, and apparently died asphyxiated."

McWhinnie thinks, from the extraordinary and rapid distension of the abdomen, the bowel may have given way above the stricture, causing peritonitis; or, possibly, the perforation might have been produced by a long tube

introduced for the purpose of relieving the obstruction. He also adds, "We cannot for a moment entertain the idea that surgical interference could be of any avail in cases of this description."

27.—*Communication between the Bladder and Ileum (Inflammatory).*

By F. Bainbridge.

(*Medical Times and Gazette*, 1863, vol. i. p. 397.)

February 24, 1851.—Mrs. L., aged forty-three, had for three years previously occasionally suffered from disordered urine.

On February 24, 1851, she complained of aching about the loins, deep-seated pain on pressure over the pubes, and scalding pains both before and after micturition. The urine, which was thick, contained bits of food, such as potato, meats, and seeds. So evident were the portions of food, that it was possible to tell what the patient had dined off—boiled beef and brown bread. The urine was slightly acid.

Twelve years ago she suffered from a large abscess, the opening of which between the umbilicus and pubes had remained patent for two years.

January 1853.—Since the last date the patient has suffered much, and for some months has had a discharging abscess nearly in the site of the old one. From this abscess bile and fæcal matter were discharged. The urine contained the same ingredients as when first examined. She suffered intensely, and died in May, from sheer exhaustion.

Post-mortem, May 1853.—Body greatly emaciated. The parietal peritoneum was adherent to the intestines, which were matted together. There was a ring-like opening between the ileum and the front portion of the bladder.

28.—*Communication between the Rectum and Bladder.*

By F. Bainbridge.

(*Medical Times and Gazette*, 1863, vol. i. p. 398.)

Dr. Bainbridge was sent for to see M.C., aged fifty-six. He found him straining over the chamber-vessel, and with great difficulty passing pipe-like pieces of yellow fæcal matter through the urethra. This condition appeared to have come on suddenly, but he had been in ill-health for some time, and had had inflammation of the bowels a few years before. He died five weeks later from the rapid onset of acute peritonitis. There was no post-mortem, but Mr. Bainbridge, from the fæces appearing identical in colour and consistency with that passing from the anus, considered that the communication was probably with the rectum.

29.—*Communication between Cæcum, Ileum, and Bladder (Inflammatory).*

By H. Goode.

(*Brit. Med. Journ.*, 1864, p. 488.)

A man, aged forty-three, was in robust health till September 1862. He then experienced pain on the left side between the umbilicus and pubes. The pain continued, and the bladder became irritable, but the urine remained normal.

During the next two months the urine gradually became loaded with mucus and floating white flakes, but no albumen. Wind now began to pass by the urethra, succeeded in a few days by fæcal matter exactly resembling the loose fæces passed at the same time by the bowel. No urine passed by the anus, and the fæces were usually of a solid consistency. The urine was now highly albuminous, and contained a large quantity of pus. The pus gradually diminished in quantity. On January 13, he noticed in the morning that he passed a quantity of orange pulp that he had eaten during the night. On the 20th, after much pain,

he passed a small sharp triangular fragment of plum-stone. He noticed at various times the passage of articles of food by the urethra, such as chopped mint, fragments of strawberries, &c. These fragments had a fæcal odour, but there was never observed any of the excretion formed peculiarly in the large intestine. Towards September 1863 he so far recovered as to be able to walk with vigour, and had gained much weight; but at this time he was seized with a rigor, followed by the signs of peritonitis, death taking place in a few days.

Post-mortem.—The coils of intestine below the level of the umbilicus were observed to be firmly agglutinated by old adhesions. There was no recent lymph. The cæcum and adjacent part of the ileum were adherent to the bladder. Behind the bladder in the pelvis was a firm mass, six or seven inches in diameter, which on removal proved to be a large abscess with indurated walls an inch thick. The abscess was united to the bladder on its front, and above to the lower surface of the cæcum and adjacent portion of the ileum. It communicated with both by apertures big enough to admit the finger; in the lower part the abscess opened into the bladder by a very small aperture between the ureters. The wall of the abscess was firmly united to the rectum, where it lay against it, but did not communicate with it.

30.—*Communication between Ileum and Bladder (Inflammatory).*

By J. Morgan.

(*Med. Chir. Trans.*, London, 1865, p. 39.)

G. B., aged sixty, spent many years in a tropical climate, but never had severe dysentery. In March 1862, after some pain, a tumour appeared in the left iliac fossa. It was hard, lobulated, and tender to the touch, and gradually increased to the size of an ostrich egg. Up to this time he had not suffered in general health. In April 1863 he was

much alarmed one day by the passage of wind through the urethra, followed by intense pain in the bladder, and a few hours later he began to pass fæculent matter with the urine. The size of the tumour was not diminished. The quantity of fæces passed per anum gradually became less, while that passed by the urethra increased, and for the last three months nearly all the motion came through the bladder.

In the middle of August a profuse discharge of fæces occurred, being far more than could have accumulated by the ingesta, and the tumour became greatly reduced in size; he gradually sank, dying comatose early in October.

Post-mortem.—On opening the body all trace of the tumour had disappeared. Six inches of the lower part of the ileum was greatly distended; it was adherent to the abdominal parietes, and to the upper surface of the pubes. On laying it open an ulcer the size of a sixpence, with ragged edges, was found communicating directly with the cavity of the bladder. The opening was close to the ileo-cæcal valve. During life the disease was supposed to be malignant. Great comfort was derived by syringing out the bladder with tepid water, and it was remarked how soon the viscus became reconciled to the transmission of fæces, which, though at first causing great agony and severe inflammation, was afterwards passed with but slight distress.

31.—*Communication between the Sigmoid Flexure and Bladder (Inflammatory).*

By T. Holmes.

(*Med. Chir. Trans.*, London, vol. xlix. p. 65.)

J. B., aged fifty-one, had suffered from bowel obstruction for four years. Three months ago bladder trouble first commenced. It was preceded by pain referred to the pelvis. Then flatus, and lastly fæces passed from the urethra. He had great pain and distress, and was losing flesh rapidly.

Some urine passed per anum. Examination of the rectum and bladder revealed nothing.

Colotomy was performed, after which the motions passed entirely by the artificial anus; his urine became quite natural, and his general health perfect. He continued well for fifteen months, when fæces again made their appearance in the urine, and in a few weeks all the motion was passed by the penis. He emaciated rapidly, and died in a few weeks.

Post-mortem.—On opening the bladder a large irregular hole was seen communicating with the sigmoid flexure, the gut being adherent to the fundus of the bladder. There was no appearance of malignant disease, but the parts around were greatly thickened, as if from the effects of ordinary inflammation. The cæcum was also closely adherent to the bladder, and there was a similar communication between it and the bladder as existed between the bladder and the sigmoid flexure.

Mr. Holmes regarded the holes as the result of simple ulceration, commencing in the intestine.

32.—*Communication between Intestine and Bladder.*

By M. Warren.

(Warren's "Surgical Observations," 1867, p. 242.)

A man, aged thirty-five, for over a month stated that he had passed no urine, but only a white milky fluid per anum. He further stated that three times a day he was in the habit of going to the closet, and discharging by the rectum a large quantity of fluid, followed by a solid motion.

Nothing could be felt by the rectum. He stated that he had suffered for two years from inflammation of the bladder, with ulceration, ending in perforation. The patient was excessively pale and emaciated, and he had the appearance of a man whose case would terminate fatally.

33.—*Communication between Colon and Bladder (Inflammatory).*

By Root.

(*Boston Medical and Surgical Journal*, 1867–8, p. 14.)

The patient, a medical man, in 1840 began to suffer more or less pain in micturition, and occasionally passed small quantities of gas in his urine. This at first was supposed to be due to some urinary decomposition, but soon afterwards he passed strawberry-seeds through the urethra, thus demonstrating the existence of a vesico-intestinal communication. Upon rectal examination, one point was found which was thought to be the fistula, and closed with silver sutures. Still the difficulty continued, becoming more and more aggravated, fæcal matter passing by the urethra in considerable quantities, with intense suffering. The rectum was carefully and repeatedly explored by many of the most eminent surgeons in the country, and by one and another of them other points were pared and united, upon the supposition that they were the openings. It is worthy of remark, however, that at no time was an instrument ever known to be carried through one of the supposed openings into the bladder. He was extremely intolerant of examination, and would never allow a sound to be introduced into the bladder or even take an anæsthetic. In spite of all treatment the malady persisted, varying much at different times. Sometimes so frequent and large were the discharges from the bladder as to deprive him of all rest by night and day; and at other times, especially when the bowels were constipated, he would have seasons of comparative comfort. At last, after twenty-six years of such suffering as seldom falls to the lot of a human being, while labouring under a violent exacerbation of the disease, he committed suicide.

Post-mortem.—Well-organised adhesions of the lower portion of the colon to the fundus of the bladder, and in the centre of it a smooth circular opening of communica-

tion between the two cavities as large as a large goose-quill. The bladder was much contracted, and its mucous coat thickened and indurated. There was no sign of any other communication between the intestine and bladder.

34.—*Communication between Sigmoid Flexure and Bladder (Inflammatory).*

By Maunder.

(*Brit. Med. Journ.*, 1869, vol. i. p. 211.)

J. F., a man aged fifty-nine, suffered from diarrhœa for some months.

On admission to the London Hospital he was greatly emaciated, and experienced intolerable pain, especially in micturition. The symptoms pointed to communication between the bladder and the bowel.

Colotomy was performed, and afforded him the greatest possible relief. The patient died calmly, six weeks subsequently, of exhaustion consequent on previous suffering.

Post-mortem.—A large simple ulcer was found at the lower part of the sigmoid flexure, and in the centre of it a small perforation communicating with the interior of the bladder.

35.—*Communication between Rectum and Bladder (Inflammatory).*

By Fayrer.

("Indian Annals of Medical Science," 1870, p. 21.)

Conductor H., aged forty-four, was returning home one night, but owing to the darkness missed his way and slipped down the hillside, alighting on a stake, which entered the rectum, penetrating the bladder. Through fear that if he moved he would fall down a precipice, he remained where he fell till daylight.

During the next six months he suffered much from his bladder, having great pain during micturition. At this time it was noted that when he micturated in the standing

position urine flowed from the anus. A friable calculus formed in the bladder and was removed, but he died a few days after the operation.

Post-mortem.—An opening was found between the rectum and bladder, behind the prostate, the parts about being adherent, indurated, and thickened.

36.—*Communication between Rectum and Bladder (Colotomy). (Inflammatory.)*

By T. Bryant.

(*Clin. Soc. Trans.*, vol. v. p. 129.)

R. R., aged forty-nine, was admitted into Guy's Hospital, July 1870. He stated that he was quite well till January 1867, when he noticed that wind passed through the penis after micturition. It passed without pain, and he had no other symptom of disease. In March fæces appeared in the urine when the bowels were relaxed, but not otherwise.

When admitted the urine was very fœtid, and contained solid fæces. The bladder was irritable, and micturition painful. Ulceration could be detected by the finger in the rectum at the base of the bladder, but it had not a cancerous feel.

July 5.—Colotomy.

August 15.—He feels very well; the urine is quite clear, can be passed with ease, and without pain.

May 1872.—He reports himself as follows: "I feel almost as strong as ever; I eat, drink, and sleep well, and am quite free from pain. Some water, however, still passes from the bladder into the bowel."

37.—*Communication between Rectum and Bladder (Inflammatory).*

By Thomas Bryant.

(*Clin. Soc. Trans.*, London, vol. v. p. 127.)

Mr. T., aged sixty-four, was seen in August 1869 by Mr. Bryant. He stated that he was healthy till three months

previously, when he had an attack of diarrhœa and tenesmus, with the passage of blood-stained mucus. The symptoms improved. Six weeks later he noticed wind passed from the penis, and soon afterwards solid fæces appeared in the urine. This, from its solid nature, clearly came from the large intestine. Micturition was difficult and painful. The rectum was carefully explored, and no disease could be detected. The bowels were still loose, the motions being never well formed.

Colotomy was performed, and fæces flowed freely from the artificial anus in a few hours. The rectum was washed out with water. The following day the urine was clear and passed readily.

Three weeks later the bowels were acting readily through the artificial anus. The urine passed naturally, but when the bladder was fully distended some found its way into the rectum.

October.—The patient had gained flesh, and felt well. Once a day a little urine passes per anum; otherwise it flows freely, and is quite natural.

A year later the patient was still well, the urine being natural and clear, though a little occasionally passed by the anus. No sign of disease could be made out beyond the evidence of the recto-vesical fistula.

38.—*Communication between Large and Small Intestine and Bladder (Inflammatory).*

By T. Bryant.

("Proceedings of Med. Chir. Soc.," Lond. 1871, p. 17.)

A man, aged forty-nine, had been in good health for two years before admission to Guy's. At that time he was seized with violent purging, and passed a quantity of blood. From that date he passed, at uncertain intervals, mucus and blood with his motions. Seven months ago he felt pain about the hypogastrium and about the anus. Six

weeks later he noticed wind and a small quantity of blood, and fæces passed with his urine.

On his being admitted into Guy's he suffered with difficulty in defæcation and frequent desire. The urine was loaded with fæculent deposit, and was passed with much pain. An examination by the rectum suggested a possible stricture high up.

Colotomy was performed, which gave immediate relief, and in two days the urine became clear and was passed without pain. All went well for two months, when abdominal pain recurred with some constitutional disturbance. Five days later the symptoms were relieved by a rush of fæces into the bladder. The fæces were thin and evidently from the small intestine. From this time the man gradually sank, and died a few weeks later.

Post-mortem.—An abscess at the base of the bladder was found communicating with the large intestine, small intestine, and bladder.

39.—*Communication between Rectum and Bladder (Inflammatory).*

By Erskine Mason.

("Medical Record," New York, vol. ix. p. 20.)

The patient, a man aged twenty-seven, had enjoyed excellent health until April 1871, when one night he was seized with pain in the bowels, the whole abdomen becoming tender and swollen.

This attack of sickness lasted nine weeks, during which time the patient became very much emaciated. He then resumed his occupation as clerk, and continued at it till October 1871, when he ceased on account of chills and fever.

In March 1872 he began to have constant pain over the region of his bladder, attended with diarrhœa, loss of appetite and strength. Not long after this the patient passed wind through the urethra, and shortly after fæces.

Dr. Mason saw him in March: he was then in a deplorable condition, passing more or less fæcal matter

through the urethra, and at times unable to void urine at all. Urine would also pass per rectum. Colotomy was advised, but owing to temporary improvement and business matters it was postponed, and he left the hospital. In May, Dr. Mason was sent for to see him, and found him writhing with pain, and unable to pass a drop of water, the bladder being evidently filled with fæcal matter. Colotomy was performed, and he did well for a fortnight, when he was seized with his old attack of chills and fever. He never rallied, and died a week later.

From the moment the colon was opened fæcal matter ceased to be passed in the urine.

Post-mortem.—The intestines were found bound down in the pelvic cavity. There was an opening the size of the index-finger between the rectum and bladder. The bladder itself was thickened, and its mucous membrane destroyed by ulceration. There was an abscess in the prostate. All other organs were healthy with the exception of the lungs, the apices of which were the seat of deposits.

40.—*Communication between Sigmoid Flexure and Bladder (Malignant).*

By B. W. Richardson.

(*Dublin Journ. Med. Science*, 1873, p. 1.)

A gentleman, aged seventy-six, suffered thirteen years from periodical fæcal accumulations, the result of some narrowing of the descending colon. To the touch the fæculent mass felt globular, the size of a large orange. Each collection, by the use of mild laxatives and enemata, gradually broke up, and temporary relief followed. Each lodgment took about three months to form. In the summer of 1871 the pain in the left iliac region had become constant, and in August a tender tumour appeared, projecting above the brim of the pelvis. When the finger was passed high up the rectum it was imagined that the lower part of the tumour could at times be distinguished. Early in September micturition became frequent and difficult, often requiring the catheter. The urine, however,

was free from sediment, and there was no albumen. A little later wind in considerable quantity was expelled from the urethra, and found to contain the following ingredients: "undigested striated muscular fibres, partly digested ditto, hyaline tubes composed of sarcolemma, starch grains, mucous corpuscles, and feathery-looking bodies." Morphia suppositories gave much relief. During October and November the urine contained much fæces, great drowsiness came on, and he died a few days later.

Post-mortem.—A cancerous mass was found implicating the sigmoid flexure, the colon above being narrowed and hypertrophied; the tumour was adherent to the upper part of the bladder. There was a narrow channel leading from the bowel through the adherent mass into the bladder.

41.—*Communication between Ileum and Bladder (Inflammatory).*

By Dr. Jennings (Dublin).

(*Brit. Med. Journ.*, 1874, vol. i. p. 519.)

A specimen was shown at the Dublin Pathological Society, in which the ileum communicated with a cavity in the pelvis, into which fæces and urine passed.

The abscess had formed twenty years previously, after the birth of her only child.

42.—*Communication between the Colon, the Ileum and the Bladder (Malignant).*

By Dr. Skene.

(*American Journal of Obstetrics*, vol. xii. p. 740.)

A lady, fifty years old, was attacked with pelvic cellulitis. Her disease progressed, and she had an attack of obstruction which nearly cost her her life. Five months later fæcal matter began to pass through the bladder; she died a few months later of complete obstruction of the bowels.

Post-mortem.—The rectum was found to be obstructed by a cancerous mass. Both the ileum and colon were

adherent to the bladder, and opened into it. The openings were oblique and valve-like, which accounted for the fact that, when during life water was injected into the bladder, it did not find its way into the bowel.

43.—*Communication between Large Intestine (?) and Bladder (Inflammatory).*

By T. Bryant.

(*Medical Times and Gazette*, 1875, vol. i. p. 87.)

M. B., a single woman, aged fifty-five, was admitted into Guy's with an abscess in the left groin. She had had pain in the groin and bearing-down for a year. For six months of this time she had what was called gastric fever, which kept her in bed six weeks.

Whilst getting better of this she was seized with severe pain in the abdomen. Within a few days of this, her urine became thick and scalded her, and she passed much blood with it. On admission into the hospital she passed wind by the urethra, and the urine was loaded with pus and fæculent matter. About this time an abscess appeared in her left groin which was opened. Nothing could be felt by the rectum. A few days later it was found that urine had passed by the rectum. A month later it was noted that fæces ceased to appear in the urine. Five weeks later she left the hospital; she was greatly improved and was gaining flesh, no water passed by the rectum, and the urine was perfectly natural.

44.—*Communication between Rectum and Bladder (Inflammatory).*

By W. R. Williams.

(*Lancet*, 1881, vol. ii. p. 588.)

A man, aged seventy-nine (?). His illness commenced a year and a half ago by difficulty in making water, and for the last year he has had frequent micturition night and day. An examination of the bowel showed nothing but

enlarged prostate. The urine was alkaline, and of a yellowish red colour, depositing a large amount of flocculent sediment, consisting of leucocytes and a few crystals of triple phosphate. It contained albumen to the extent of one-eighth.

June 29.—Bowels very loose, and the appetite failing. Much tenesmus, and from his worn and cachectic appearance he was supposed to be the subject of malignant disease.

July 5.—He continues to suffer great pain. Vomiting has commenced, and the patient is greatly exhausted, and the motions of a urinous odour. The vomiting continued, and he died four days later.

Post-mortem.—The body emaciated, the peritoneum was normal, and the bladder viewed *in situ* appeared healthy. On opening the bladder a mass of black doughy material was found, weighing an ounce and a quarter; microscopically, it consisted chiefly of cellular material. On each side of the base of the bladder were several small hernial protrusions of the mucous membrane between the muscular fibres. At a point an inch and a half above the orifice of the left ureter one of these pouches opened into the middle of the rectum. The prostate was enlarged. The author considered the communication as probably the result of an abscess starting in one of the vesical sacculations, and remarks that this small lesion is another instance of the astounding discrepancy occasionally revealed between the symptoms as observed during life and the lesions actually exposed at the post-mortem examination.

45.—*Communication between Rectum and Bladder (Inflammatory).*

By W. Goodell.

(*Philadelphia Medical Times*, 1883, p. 514.)

Mrs. R., aged fifty, mother of five children, for four years prior to November 1881 had been troubled by the

occasional passage of small calculi, but her health was good with the exception of a constant pain in the right iliac region.

After a long walk in November 1881, she had a great desire to urinate, and then noticed for the first time that her water had an unnatural colour and very unpleasant odour. This condition continued for a few days, when there occurred a sudden gush from the bladder of a very offensive mixture of pus and urine, accompanied by great pain and straining. After this free discharge the old pain in the iliac region ceased and never returned. After eating prunes the skins came from the bladder, as did other articles of food. She was daily troubled with a painful discharge of gas through the urethra. She became greatly emaciated. Half a pint of carmine-coloured water injected into the rectum was immediately drawn off from the bladder. A calculus, consisting of a fæcal mass with a thin calcareous deposit, was found and removed. After this she rapidly improved, and got quite well of her bladder trouble.

Dr. Goodell considered, from the fact that the food passed from the bladder in a semi-digested state, that there was a strong probability that there was a second opening between the bladder and the small intestine.

46.—*Communication between Small Intestine and Bladder (Inflammatory).*

By J. C. Morris.

(*Philadelphia Medical Times*, 1883, p. 515.)

Case in which, after a pelvic abscess, communication between the small intestine and bladder was discovered.

47.—*Communication between the Ileum, Cæcum, and Bladder (Inflammatory).*

By C. A. Ballance.

(*Lancet*, 1883, vol. i. p. 411.)

A navy lieutenant, aged twenty-seven, had for some time been the subject of "chronic dysentery." Eighteen

months previously the flatus commenced to pass per urethram, and continued to do so for three months before any fæcal matter was observed to pass by the same channel. He was greatly emaciated, and experienced great pain about the neck of the bladder. Right colotomy was performed, and death occurred suddenly on the tenth day.

Post-mortem.—There was a tight stricture of the rectum, above which three apertures led into a fæcal abscess above the bladder. The abscess also opened freely into the bladder, and by small apertures into the ileum and cæcum.

48.—*Communication between Large Intestine and Bladder (Inflammatory).*

By Dr. W. Goodell.

(*Philadelphia Medical Times*, 1883, p. 514.)

A woman for four years had suffered much from vesical tenesmus. She often passed wind by the urethra, and seeds of raspberries, tomatoes, and pears by the same channel. At one time she voided much of her urine by the rectum.

Two stones were found in the bladder, and after their removal all symptoms of fistulous communication cleared up and the patient got well.

49.—*Communication between Small Intestine (?) and Bladder (Inflammatory).*

By W. H. Parist.

(*Philadelphia Medical Times*, 1883, p. 515.)

A case resulting from an attempt at abortion and consequent cellulitis. After long-continued pelvic symptoms food commenced to pass through the bladder. The food which was thus passed was incompletely digested.

50.—*Communication between the upper part of the Rectum or Sigmoid Flexure and the Bladder.*

By Dumesnil.

(*Revue de Chirurgie*, 1884, p. 241.)

F. M., aged twenty-five, had had a difficult confinement, having been three days in labour. She kept her bed for four months. She had much pelvic pain, but there was no evidence of an abscess bursting. On recovery she had slight symptoms of stricture of the bowel. These were much aggravated by a second confinement later on. For the last year, in addition to symptoms of intestinal stricture, she has had bladder trouble, which consisted first in the passage of air, but latterly of fæcal material by the urethra. Occasionally little hardened nodules of fæces the size of a haricot-bean pass by the urethra.

It could not be made out that urine ever passed by the anus. Examination, both by the rectum and vagina, were negative. She suffered greatly, and was emaciating rapidly. Dumesnil performed colotomy, with result of completely arresting the passage of fæces through the bladder.

The patient, however, died six weeks after from erysipelas. No post-mortem.

51.—*Communication between Small Intestine and Bladder (Inflammatory).*

By J. Croft.

(*Lancet*, 1885, vol. i. p. 1164.)

February 4, 1885.—J. R., aged sixty, was admitted into St. Thomas's Hospital, with the history that he had been healthy until six weeks previously. He then, for the first time, felt pain on micturition. A fortnight later the urine became thick with sediment and of a port-wine colour. He passes water very frequently, and had rapidly lost flesh. The urine is acid; no albumen; it has a thick,

yellowish-brown colour, and deposits a copious sediment. Under the microscope it shows pus and vegetable fibres. He emaciated very rapidly, became delirious, and died on February 27.

Post-mortem.—Signs of general peritonitis were present. A fistulous communication was found between the bladder and the ileum, both parts being firmly adherent. In the portion of the ileum examined typical tubercular ulcers were found. There was also tubercular disease of the lungs.

52.—*Communication between the Large Intestine and Bladder (Malignant).*

By Author.

A gentleman, aged fifty, was sent to me by my friend and colleague, Dr. Norman Moore. For some few months he had had some uneasiness, scarcely amounting to pain, in the neighbourhood of the rectum. He once or twice passed a little blood, but nothing of any importance. Careful examination of the rectum showed nothing abnormal, and nothing could be found to account for the hæmorrhage or pain. Some simple treatment was suggested, and the patient advised to take a long holiday, as he complained of overwork. The patient called again three months later. He stated that the uneasiness about the bowel was better, but nevertheless he did not feel particularly strong, and complained that during the last few weeks he had had some irritability about the bladder, requiring to pass water more frequently than usual. The urine was acid. I again examined the bowel, and at the same time sounded the bladder for stone. Nothing abnormal could be found in either. The patient was again seen three months later (February). He still thought the bowel was less uneasy than when he first called six months previously. The water, he stated, varied. For several days he would have no trouble, then for a day or two

slight irritability. The water was clear, with an acid reaction. He complained that his general health was not improved, and he soon got tired, and his appetite was capricious, while he had undoubtedly lost flesh. Upon examining the rectum after an injection, I fancied I could feel some unnatural hardness high up the bowel. The bowel itself, so far as the finger could reach, was certainly healthy, but the hardness referred to seemed as if in some structure external to the gut.

March.—The patient sent for me in a state of great anxiety, on account of his having passed some flatus through the penis. A few days later, the symptoms continuing, in order to verify the fact I made him pass water while sitting in a hip-bath, and in this way was able to demonstrate beyond all doubt, by the passage of bubbles, that air actually escaped in considerable quantity from the penis.

April.—During the last week or two the bladder has been very irritable, and he is constantly disturbed at night. The water has still an acid reaction, but is thick, and deposits a fine brown sediment. Towards the end of the month he almost suddenly commenced to pass fæces in a large quantity by the penis. He suffered acute pain, the water occasionally stopping from the blocking up of the passage. Much of the fæcal material was intimately mixed with the urine, which passed like pea-soup, with a good deal of fæcal matter of a putty-like consistency. During this time the bowels were irregular. Some days he was rather constipated, in others having diarrhœa. He was wasting rapidly, his sufferings being very acute. At this time a thorough examination was made under an anæsthetic, Sir James Paget and Dr. Norman Moore being present. The hardness referred to was distinctly felt up the bowel, and appeared like the lower border of a tumour situated somewhere in the pelvis. Milk injected through a catheter into the bladder was retained, and did not pass into the rectum.

During the next few days the catheter had frequently to be used, and some temporary relief was obtained by washing out the bowel through a long india-rubber tube, but nothing afforded any substantial relief to his acute suffering. Colotomy was proposed and accepted as a probable means of diverting the fæces from the bladder. In May I performed the usual operation of colotomy, assisted by Mr. Bowlby. On the fourth day after the operation the urine was almost free from fæcal material, and the irritability of the bowel much diminished. Day by day he grew slightly weaker, but the colotomy wound did well, and all the fæces passed through it. On the day following the operation he passed a small quantity of blood by the rectum, and with it two gelatinous fleshy-looking lumps the size of small walnuts. Sections from these under the microscope showed beautiful specimens of adenoid cancer. The bits must undoubtedly have been broken off during the manipulation of placing him in the proper position for colotomy on a hard pillow.

The patient gradually sank, and died the end of the first week in June. From the third day of the colotomy all fæces were passed by the wound, and he was almost entirely free from the agonising pain he had previously suffered. No post-mortem could be obtained.

53.—*Communication between Intestine and Bladder (Inflammatory).*

By Author.

The following case I attended with Dr. J. S. Salter, of Tolleshunt d'Arcy, to whom I am indebted for the particulars.

"The patient, a married lady sixty-nine years of age, without family, had enjoyed pretty good health till two years ago. At this time she began to be attacked by abdominal pains, accompanied by diarrhœa, with mucous

and sanguineous discharge at times. A year ago she was much alarmed by a sudden passage of blood from the bladder. It followed sudden pain, and the blood continued in small quantities for a day or two, and some currant-seeds were discovered in the urine. After this fæcal matter in very minute quantities intermittently passed from the bladder. Sometimes there was none for a week, once the period was a fortnight, but never longer. There is always more or less pain, reduced sometimes to mere discomfort, in the region of the bladder. At present there is no cystitis. Lately the general health has improved, and after several months' confinement to bed she now sits up. There is no suspicion of malignancy, though she has lately drawn my attention to a growing tumour on the right breast."

54.—*Communication between Intestine and Bladder (Inflammatory).*

By Author.

Mr. M., aged fifty, consulted me in May 1893; considered that he had always been a healthy man and does not remember any serious illness. Five years ago he was not well for a week, but did not lie up, nor has he any recollection of anything giving way or of seeing pus in the urine. A few days after this he noticed some wind pass with the urine just at the end of micturition. This condition of things has remained ever since. For the last two years has frequently found fæcal matter in the urine. Sometimes it has been as much as a teaspoonful of fæculent sediment. Occasionally little oblong masses half an inch long and as thick as a ball-room pencil have been passed. After taking strawberries or figs he has often noticed seeds in the water. He feels very well, and never has any pain or discomfort. Examination of the abdomen revealed nothing, nor did careful examination of the rectum and

bladder show anything. I advised against any operation unless he had some pain or trouble. I saw the patient again in 1901; he was still in good health and no pain, but the symptoms continued.

55.—*Communication between Sigmoid and Bladder (Inflammatory).*

By Author.

Dr. Sawdon asked me to see a patient of his in Hull. The patient had been suffering from complete intestinal obstruction for some days with fæcal vomiting. The patient stated that three years previously he had an attack of severe pain in the lower part of the belly. A week later this was followed by the passage of air and fæces through the urethra; this continued for a year. Then no fæcal matter passed, but only a little wind from time to time. Since the fæcal matter stopped passing he has had very little or no discomfort but the present illness, which started twelve days ago. He is very stout, weighing eighteen stone. The patient was so desperately ill from complete obstruction, that all that could be done was an inguinal colotomy. On opening the abdomen for this purpose I found the obstruction was due to a mass of inflammatory adhesions between the sigmoid and the bladder. The patient died in a few hours notwithstanding the relief afforded by the colotomy. Otherwise I think it would have been practicable at a subsequent period to have resected the portion of bowel involved.

56.—*Communication between Rectum and Bladder (Malignant).*

By Author.

A gentleman (middle aged), sent to me by Dr. Jolly, of Peterborough, in January 1895, had first noticed air passing from the penis four months previously. Some days nothing would pass except urine. On others air

would come together with a considerable quantity of fæculent material. He has had no pain, and the bladder is only slightly irritable, and he can hold his water all night. For the last two months has passed blood-stained mucus three or four times a day from the rectum. The patient looked ill and emaciated. At a distance of five inches from the anus at the back of the bladder an irregular induration could be felt. The mucous membrane was intact over it. The trouble was probably malignant.

57.—*Communication between Sigmoid and Bladder (Inflammatory).*

By Author.

A gentleman, fifty-four years of age, was sent to me by Dr. Low, of Kensington, in 1891. Two years previously he was seized whilst serving in India with what he called "an attack of fever." Soon after this he noticed great irritability of the bladder, but passed no air or fæces. Since then he has had several "slight febrile attacks," and four months ago noticed for the first time air passing in the water with considerable spluttering. This has continued almost daily since, and the bladder is very irritable. All I could feel was some hardness deep down in the pelvis, but could feel nothing abnormal by the rectum. I lost sight of the patient till 1896, when I was sent for to see him on account of complete abdominal obstruction. Assisted by Mr. Bruce Clarke, I performed inguinal colotomy. On passing my finger down into the pelvis everything was very adherent, but I could make out a lump the size of a duck's egg apparently fixing the upper part of the rectum to the colon. The lump was very hard and gave me the idea of being malignant. The disease, however, must have been inflammatory. After the colotomy, the bladder irritation ceased and he regained health and strength. The colotomy opening was per-

manent but gave him remarkably little trouble. Seven years after the operation he wrote to me saying, "With the exception of the colotomy opening, which gives me very little trouble, I am able to fulfil all the duties of an arduous appointment. I feel in perfect health, as you will see when I tell you that yesterday I tricycled eighteen miles without any fatigue." This patient still remains perfectly well (1906).

58.—*Communication between the Sigmoid and Bladder (Inflammatory).*

By Author.

A gentleman, aged forty-eight, sent to me by Dr. Weakley, of Forest Gate. He had good health till two years ago, and since that time he had had several attacks of abdominal colic. After the first attack he noticed air passing at the end of making water. This has occurred from time to time ever since. Latterly besides the air there has always been some fæcal matter in the urine. During the last three months he has had three distinct attacks of abdominal obstruction with distension and vomiting. These attacks were relieved by a greatly increased quantity of fæcal material from the bladder. He has lost flesh, but between the attacks feels well. Examination of the abdomen revealed nothing. Per rectum high up there was an indefinite hardness behind the bladder. On getting the patient to pass water before me he passed about six ounces of slightly yellowish-looking water with a small quantity of fæcal sediment in it. After passing this water he gave himself a squeeze and passed out with a splutter a considerable amount of gas. He has no pain except when the symptoms of obstruction appear. There was little doubt that the communication was low down in the large intestine, for when the motion in the rectum was light and pasty in colour so was the material passed through the bladder. On the other hand, when the motions were firm and dark

in the rectum so also were dark and firm pigments passed per urethram. On opening the abdomen with the usual colotomy incision and passing the fingers down into the pelvis there was a considerable mass on the left side. At the brim of the pelvis, firmly adherent to the bladder, the upper part of the rectum seemed involved in the centre of the mass. The disease was apparently inflammatory and not malignant. It was so deep and fixed in the pelvis that removal was not practicable, and the operation was completed by a colotomy. After the operation no more fæcal matter passed by the rectum and his general health greatly improved. Three years later I attended the patient for suppurating tubercular testicles. He had no further trouble with fæces in the bladder.

59.—*Communication between Rectum and Bladder (Malignant).*

(St. Bartholomew's Hospital Museum. Specimen 2071.)

A malignant growth, starting from the rectum, has made its way into the bladder. A free communication exists between the bladder and the rectum.

The disease was of two years' duration, and proved fatal from repeated hæmorrhages.

60.—*Communication between Rectum and Bladder (Malignant).*

By J. F. Goodhart.

(Royal College of Surgeons. Specimen 2583.)

From a patient who for some six or seven months before death occasionally passed flatus through the penis. At the post-mortem a malignant growth between the bladder and rectum was found with a perforation between them.

61.—*Communication between Rectum and Bladder.*

By Hunter.

(Royal College of Surgeons, London. Specimen 2584.)

A case of communication between rectum and bladder from malignant disease. No history given.

62.—*Communication between Bladder and Rectum (Malignant).*

By Sir W. Blizzard.

(Royal College of Surgeons, London. Specimen 2585.)

A wide communication between bladder and rectum, the result of malignant disease.

63.—*Communication between Sigmoid Flexure and Bladder (Inflammatory).*

(Fort Pitt Museum, Chatham. Specimen 1766.)

A large abscess cavity, situated outside the bladder, in contact with its upper and back part. The sac communicated with the bladder by two openings, situated to the inner side of the right ureter. The sigmoid flexure adhered to the sac, and communicated with it by a large irregular opening. A small irregular piece of bone is seen in the abscess cavity.

64.—*Communication between Rectum and Bladder (Inflammatory).*

(St. Bartholomew's Hospital Museum. Specimen No. 2056.)

Portion of a rectum; its coats are greatly thickened, indurated, and consolidated with each other and with surrounding parts. Just above the anus there are numerous ulcerated apertures, which are the openings of short fistulous canals. One of these canals extends into the cavity of the bladder.

65.—*Communication between Rectum and Bladder.*

By Henry James.

(St. Bartholomew's Hospital Museum. Specimen 2056.)

The surface of the rectum, about eight inches from the anus, is extensively and deeply ulcerated; and at one part the ulceration has spread through the thickened and indurated tissue, connecting the bladder and the rectum so as to form a wide communication between them. The patient, a man aged eighty-five, died with asthma. He had not complained of any affection of the rectum or bladder till a week before his death, when he first noticed that air occasionally passed through the urethra. During the last week of his life both air and fæces passed with his urine, the latter in small masses, about the size of peas.

66.—*Communication between Rectum and Bladder.*

By Howship.

(Royal College of Surgeons, London. Specimen 2589.)

A case of communication between the rectum and bladder. No history.

67.—*Communication between Rectum and Bladder (Inflammatory).*

(Fort Pitt Museum, Chatham. Specimen No. 1767.)

Sac of a large abscess, situated on the left side, between the bladder and rectum, communicating with former by an opening capable of admitting a common quill above and between the entrance of the ureters. The surface of the rectum is very irregular and much ulcerated, and communicates with the sac by five large openings, the consequence of dysentery of four months' standing.

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