CANCER OF THE RECTUM.

By SIR CHARLES GORDON-WATSON, K.B.E., C.M.G., F.R.C.S.

(Consulting Surgeon to St. Bartholomew's Hospital, St. Mark's Hospital for Diseases of the Rectum, and the Metropolitan Hospital; Surgeon to St. Andrew's Hospital.)

ÆTIOLOGY.

In the stomach and large intestine we meet only too frequently with the same type of malignant disease, whereas in the small intestine carcinoma is very rare. The explanation may be that the stomach and large gut are constantly dealing with *solid matter* which *moves on slowly* and the small gut with *fluids quickly passing on*. The surface epithelium of the stomach at one end, and the rectum (the seat of election in the large bowel) at the other, must undergo more active reproduction and be more subject to irritation and mechanical injury than that of the small intestine.

Repeated irritation at some weak spot (ulcer or abrasion) excites a *higher activity* in reproduction and may cause *irregularity* and *diminished differentiation* so that the cells grow abnormally, and given some stimulus as yet unknown, grow independently and form tumours. The hereditary factor in cancer of the large bowel is very strong and it is quite common to find this disease affecting several members of the same family.

In the earliest stage cancer of the rectum is limited to the mucosa and sub-mucosa and takes the form of an epithelial outgrowth. The appearance of these early growths suggests that the carcinoma has arisen from a pre-existing adenoma which starts as a minute hyperplastic nodule. Not infrequently histological evidence is obtained of early malignant change in a tumour which is mainly adenomatous.

Lockhart-Mummery carried out a follow-up of fifty cases of adenoma of the large bowel. In twenty-five of the cases another tumour had developed and in twelve of these malignant tumours subsequently developed. In several of the cases there were repeated recurrences. It is possible that the susceptibility of an adenoma to malignant change depends on its initial histology and Dr. Dukes, by means of microphotography, is carrying out a research on this point.

It sometimes happens that years after removal of a rectal cancer, a second growth appears higher up in the colon or in the blind end of a colostomy, and in these cases evidence of associated adenomas is often obtained. It is also quite common to note one or more small adenomas within the colon when a colostomy is opened which has been performed as a preliminary to excision.

The development of a secondary tumour in the rectum after a local removal of a primary tumour is usually regarded as a recurrence. It seems more likely, however, especially when the site of the two tumours does not correspond, that the inhibition produced by the original tumour in a potentially malignant rectum has been removed with the tumour.

A general diffuse multiple adenomatosis of the colon and rectum may occur as a hereditary disease, running in families transmitted by both sexes and occurring in both. Hæmorrhage often causes a fatal issue and the majority of those who survive this complication die of malignant disease of the bowel. Families so afflicted tend to die out.⁽¹⁾

DIAGNOSIS.

According to some statistics, some twelve per cent. of the cancers in the human body occur in the rectum, and more than half the intestinal cancers occur in this region. The frequency of cancer in this region lays a great responsibility on the practitioner to make the most careful investigation of all cases presenting symptoms in this region.

Long experience as surgeon to a special rectal hospital as well as to a general hospital, enables me to speak on this subject with no little emphasis, and it must be admitted, unhappily, that whereas great advances have been made in the treatment of this disease, and in the knowledge of its development and pathological progress, the percentage of cases in which a diagnosis is not made, until there is little hope of permanent cure, remains far too high.

There are several reasons for this. Too often the patients are at fault, partly through lack of knowledge of the importance of certain symptoms and partly through nervousness and shyness about a rectal examination, which too often causes pain which is quite unnecessary if carried out gently instead of brusquely, and in some instances because of a dread of a diagnosis of malignancy. More often patients who pass blood jump to a diagnosis of hæmorrhoids, and either treat themselves or allow chemists to prescribe for their undiagnosed malady, or worse still, their medical attendant accepts the diagnosis and treats them without examination.

In writing on this subject to the post-graduate world it is as well to be outspoken. In every branch of clinical medicine diagnostic facilities have multiplied in the last quarter of a century, and yet I have to admit that I continue to see far too many hopeless cases *which should and could have* been diagnosed early, and far too often it is not the fault of the patient.

Most practitioners are well armed with instruments for inspection of the fauces, nasal sinuses *etc.*, and yet how few provide themselves with a sigmoidoscope, or even an illuminated speculum, in spite of the fact that no rectal or anal complaint can be diagnosed adequately without these implements.

Insufficient emphasis in this branch of surgery is often lacking in the medical curriculum and might be stimulated if examiners in clinical surgery were less inclined to avoid rectal cases to test examinees with.

It is true of the rectum, as it is of the stomach, that growths in the rectal ampulla as distinct from the portals at either end frequently give rise to no very noticeable symptoms until advanced. This fact combined with too frequent neglect of rectal examination and the insensitivity of the rectal mucosa form an unhappy triad which results in some 50 per cent. of rectal carcinomas being denied all hope of permanent cure.

It often happens in my experience that patients with rectal cancers have been given a barium meal with negative results, and this has either not been followed by a barium enema or both have been negative, and yet a diagnosis could easily have been made with the sigmoidoscope.

In other instances the X-rays demonstrate evidence of diverticulosis and fail to show a non-constricting growth. A fallacious diagnosis is then established and much valuable time lost until the true state of affairs becomes pathetically apparent.

Digital examination, if not methodical, may easily miss a small growth within reach of the finger; growths which are just beyond reach may often be felt if the patient is urged to strain down. Bimanual examination may reveal a growth which is beyond reach of the finger, especially when an anæsthetic is given to relax the muscles. It is unfortunate that nearly half the growths which arise in the rectum are in the region of the recto-sigmoidal junction and beyond the reach of the finger, and a sigmoidoscope is required to establish a diagnosis. A sigmoidoscope should be as much a part of the essential equipment of the practitioner as a stethoscope or ophthalmoscope.

The removal of small portions of growth for histological section probably encourages metastasis and is neither necessary nor desirable, and may easily be misleading when an adenoma has developed early malignant change in one part of the tumour only. A knowledge of the histological grade of malignancy will seldom influence treatment, though it may be of considerable value in prognosis. A correct estimate of the grade of malignancy can only be made by histological investigation of the whole tumour as the cells of the growing edge are often less highly differentiated than in the body of the tumour.

At St. Mark's Hospital in the ten years, 1910-20, the radical operability rate of those attending for treatment was only 41 per cent. and in the next ten years the rate improved to 54 per cent. Clinicians can hardly regard these figures as satisfactory, and it is doubtful if they will be improved until more thorough and more systematic examinations are carried out in the general overhaul of patients. In many cities in America and elsewhere, it is customary for many of those who have passed the meridian of life to seek a general overhaul. At the Mayo Clinic totally unsuspected cases of cancer of the rectum have often been discovered in this way. If insurance companies provided facilities for an annual overhaul of their insured many lives might be saved and financial benefit accrue to the companies.

Though the disease is usually met with between the ages of 50 and 70, it is not at all infrequent in young people between 20 and 30, when it advances rapidly and soon passes beyond the range of radical treatment, and this fact emphasizes the necessity for systematic rectal examination in the presence of any rectal symptoms at all ages.

Many attempts have been made to find a reliable serum test for malignancy which would prove of value in the absence of clinical findings. As already indicated this should seldom, if ever, be required in the case of the rectum, though for many regions a reliable test of this nature would be invaluable. Such tests as the Abderhoben, Shaw Mackenzie, Bendien, and many others have not proved free from fallacies. It may be mentioned here that a 75 per cent. positive reaction in rectal cancer is claimed by Dr. H. E. Bacon of Philadelphia⁽²⁾ for the Gruskin

test, which is based on the theoretical assumption that malignant cells are born embryonic and remain embryonic. The protein of normal cells differs from that of embryonic and the specificity of these proteins is manifested by the production of a precipitation with malignant sera when injected intradermally. Antigens are prepared from embryonic cells and a small quantity injected intradermally. A positive reaction is characterized by a slight area of inflammation with pseudopod formation within fifteen minutes. The writer has no experience of the test.

Early Symptoms and Clinical Course.

The protrusion of an epithelial outgrowth into the rectum, if sessile and clear of the anal canal, is unlikely to attract the patient's attention unless and until it is large enough either to cause excessive secretion of mucus or to exude a little blood. If it remains innocent, it is slowly pushed forward by overgrowth and overcrowding of its villi until it becomes pedunculated. It will then assume the rôle of a foreign body and the larger it is and the more pedunculated it becomes, the more disturbance it will cause and the more will the patient strain to expel it. When this occurs the patient will have a frequent desire to evacuate and the result will be mainly mucus which may or may not be blood stained, but often is, and he will rise from stool with a sense of incomplete evacuation. As the stalk elongates the time comes, sooner or later according to the level of attachment, when it will engage and ultimately pass through the sphincters during straining at stool, and in this way gets diagnosed. No doubt in some instances a polypus gets amputated by the sphincters and disappears unrecognized, which is probably why these tumours are common in children and more rare in adults.

The early symptoms of a malignant tumour cannot differ from those of an innocent one, except that the malignant tumour rarely becomes polypoid or rather the polypoid adenoma rarely becomes malignant. If a rectal outgrowth is primarily malignant, or develops malignant change early on, then it will usually remain sessile and spread by an increase in its circumference until the bowel is encircled. Unless and until ulceration occurs or, owing to its situation, constriction arises, symptoms short of excess of mucus or occasional bleeding may be entirely negligible especially in ampullary growths.

Sometimes, however, when there has been no special symptoms to attract attention, a sudden and perhaps severe hæmorrhage may occur as a bolt from the blue and prove a blessing in disguise.

Growths in the region of the recto-sigmoidal junction, though anatomically rectal, arise in a portion of the bowel which is surrounded by peritoneum and give rise to the same symptoms as a carcinoma of the sigmoid. Obstructive symptoms will predominate and may indeed be the first to attract attention.

As a growth advances it infiltrates through the muscular wall and then begins to invade the lymphatics in close proximity, and sooner or later becomes fixed to surrounding structures, the sacrum, levatores ani, prostate or vagina. When penetration occurs the blood supply of the centre of the growth is often obstructed so that ulceration begins, which usually gives rise to a frequent desire to evacuate small quantities of fæcal stained blood, pus and gas. It is in this advanced stage

of the disease, unhappily, that so many cases first seek advice or obtain recognition after perhaps some months of treatment for piles, diarrhoea, colitis, constipation and the like without adequate rectal examination. When in the late stages a growth in the rectum makes contact with, becomes adherent to or invades surrounding structures, the somatic nerves as distinct from the sympathetic are irritated and pain becomes a prominent feature. Even before this happens ulceration and secondary infection will tend to produce much wind and the rectal distension which may follow will excite pain. It cannot be emphasized too often *that pain is a late symptom.*

Rectal growths as they advance tend to surround the lumen of the bowel and gradually to constrict and obstruct it. At the recto-sigmoidal junction, and at the ano-rectal junction, this happens more rapidly than in the wide ampulla. It is only when this stage is reached that constipation alternating with diarrhoea occurs, a syndrome which is emphasized in many books as an aid to diagnosis rather than as a symptom of advanced disease, just as too much prominence used to be given in the past to the symptoms of peritonitis in the diagnosis of a perforated viscus.

The size of a growth is not always a true guide to the length of time it has existed. Occasionally a carcinoma will grow freely in the mucosa and sub-mucosa, as a large projecting growth without much induration or muscular infiltration, a villous type which is favourable for radical cure: in other instances downward spread takes precedence of mucosal and submucosal, and penetration of the muscular coats may occur when a growth is comparatively small. There is a popular idea that ribbon-like motions are indicative of a rectal tumour. It is true that when a rectal cancer surrounds the lumen well-formed motions are seldom passed, but rather give place to broken loose fragmentary stools. The ribbon-like motions may indicate a stricture at the anus, but more often are due to a spastic over-powerful sphincter, which does not dilate freely on defæcation. When a rectal growth invades the anal canal then pain, tenesmus and irritative mucorrhoea become prominent and distress the patient. Sometimes, when ulceration has occurred in an ampullary growth, secondary infection gives rise to an ischio-rectal abscess and considerable pain results until the abscess is drained.

THE SPREAD OF CANCER OF THE RECTUM.

Careful histological investigation of excised rectums combined with a careful follow-up enables us to interpret the natural progress of rectal cancer in most instances. Histological investigation of a large series of cases has established the fact that only in very rare instances do the cancer cells invade the retro-rectal lymphatics before the growth has penetrated the muscular wall of the bowel.⁽³¹⁾ Once lymphatic invasion has commenced the spread is upwards along the hæmorrhoidal vessels to the inferior mesenterics. Only when these channels are blocked is lateral or downward extension likely to occur. Clinical evidence supports the view that vascular invasion is usually late and occurs either *pari passu* or subsequent to lymphatic spread, but there is not sufficient histological evidence

to confirm this. Undoubtedly it happens sometimes, though rarely, that venous invasion occurs and gives rise to metastasis in the liver when the growth is yet young and the lymphatics unaffected. As the result of prolonged histological investigation it is now possible to predict after removal of a rectum, when the extent of lymphatic spread has been assessed, the chances of a cure or probable length of life in terms of percentages according to both anatomical and histological grading.

The possibility of early and unknown vascular invasion provides the only uncertain factor.

At St. Mark's Hospital cases of rectal cancer have for the last ten years been graded on an anatomical basis.

"A" cases are those which have not penetrated the muscular wall; "B" are those which show evidence of penetration but no evidence of lymphatic invasion; and "C" those which combine penetration with lymphatic spread. As this classification has now been adopted for a considerable time the follow-up of cases shows its value in prognosis. The operative mortality of the "A" cases is negligible and a permanent cure may be expected after radical surgery. Results are less promising both as regards mortality and end results with "B" cases, and much less with "C" cases.

A system of histological grading is also adopted according to the degree of cell differentiation.

Four grades are recognised from a highly differentiated, almost normal epithelial type to an undifferentiated type of anaplastic tumour, happily quite rare. Most cases fall into group 2, a group in which about half the cells are differentiated.

The follow-up of cases graded histologically shows that the degree of malignancy of the tumour profoundly influences end results.

An anatomical and histological examination in the research department at St. Mark's of rectums excised by the perineal method gave the following figures:

Out of 451 cases 16 per cent. were "A" cases, 35 per cent. were "B" cases and 49 per cent. were "C" cases. Of these, 91 per cent. of the "A" cases were alive and well after 5 years, 71 per cent. of the "B" cases and only 17 per cent. of the "C" cases. It is interesting to note that the histological grading falls into line with the anatomical when end results are considered. In a series of 433 cases 100 per cent. of the grade 1 cases (19 in number) i.e., the well differentiated, were alive and well after three years; 67 per cent. of the second grade (252) and 22 per cent. of the third grade (107), and none of the fourth of which there were only four. Of the colloid cases (51) 17 per cent. survived the 3 years. Colloid cases can be cured if operated on early but they grow so rapidly that the opportunities for a radical cure are few.

The following illustrations show the way in which reports are recorded at St. Mark's and it is easy to see how the relationship of grading to prognosis can be affirmed when a considerable number of cases have been followed up for a long enough period.*

*I am indebted to Dr. Cuthbert Dukes for the loan of the blocks, which have already been published in the Annual Report of the British Empire Cancer Campaign (1935).

FIG. 1 is an example of an "A" Case.

Gross Characters. The specimen consisted of the rectum and pelvic colon and measured nineteen inches. A small, oval, protuberant growth, one inch in its long axis, extended one quarter of the way round the upper third of the rectum, being situated on the right lateral quadrant. Its lower edge was three inches above the ano-rectal line and there was thirteen inches of pelvic colon free margin above. A few papillomas were present. There was no gross evidence of extra-rectal spread. The terminal end of the pelvic colon showed several small diverticula.

A dissection was made of the extra-mural lymphatic system and seventeen glands removed for section.

Microscopic Structure. The tumour is an adeno-carcinoma. Histological malignancy Grade 2.

Methods of Spread. (1) *By direct continuity.* The tumour had spread into the submucosa and circular muscle coat only. There was no peri-rectal spread.

(2) *Venous spread.* The superior hæmorrhoidal vessels were not thrombosed and their terminal branches were normal in their histology.

(3) *Lymphatic spread.* No metastases were present in any of the lymphatic glands (17 examined). The situation of the glands found and examined are shewn on the diagram as clear circles.

Classification. This is an "A" Case.

FIG. 2 is an example of a "C" Case.

Gross Characters. The specimen consisted of the rectum and pelvic colon and measured sixteen inches. An ulcerating growth, two inches in diameter, extended two thirds round the ampulla of the rectum, being situated on the posterior, left lateral and anterior quadrants. The lower edge was two and a half inches above the ano-rectal line and there were nine inches free margin above. No papillomas were present but a few superficial ulcers were found on the mucus membrane just below the lower edge of the growth. There was gross evidence of extra-rectal spread. A dissection was made of the extra-mural lymphatics and eighteen glands removed for section.

Microscopic Structure. The structure was an adeno-carcinoma. Histological malignancy Grade 2.

Methods of Spread. (1) *Direct continuity.* The growth had spread by direct continuity into the extra-rectal tissues.

(2) *Vascular spread.* The superior hæmorrhoidal vessels were not thrombosed but the peri-vascular lymphatics were found permeated with carcinoma at a point one inch above the growth and several of the smaller veins showed a thickening of the intima.

(3) *Lymphatic spread.* Metastases were present in three glands accompanying the superior hæmorrhoidal vessels but the upper hæmorrhoidal glands were free from deposits. Glands showing metastases are represented by block circles.

Classification. This is a "C 1" Case.

(NOTE: A "C 2" Case is one whose nodes show secondary deposits above the level of ligature of the superior hæmorrhoidal artery).

TREATMENT.

Before a decision can be arrived at as to the best form of treatment in any particular case, the extent and situation of the growth, the degree of fixation or evidence of any obstruction, the presence or absence of metastasis, the age and general condition of the patient are all points which have to be considered together. Much discrimination is often required to decide whether the case is suitable for radical treatment, or can only be assisted by palliative measures. It often happens that patients, when first seen, are suffering from toxæmia, due to partial obstruction, and perhaps secondary anæmia from loss of blood, and in many instances associated disease of heart, lungs or kidney complicates the situation. In such instances a long period of pre-operative preparation will sometimes change the picture, so that radical measures become reasonably possible. In some cases when a colostomy has been performed for a fixed growth, regarded as inoperable, after a period of time fixation diminishes owing to relief of inflammatory changes around the growth and the local condition improves to such an extent that a radical excision becomes feasible.

Pre-operative treatment is of considerable importance before a major radical operation. It is not only necessary to get the large bowel clear, but it is essential to raise the general resistance of the patient, often with the help of blood transfusion. A non-residue diet, which is mainly carbohydrate, and a liberal supply of fluid with glucose, are an essential part of the preparation.

Radical Cure.

In the great majority of cases the choice of a radical operation lies between a perineal excision and a combined abdominal and perineal operation leaving a permanent colostomy. A preliminary colostomy is carried out a fortnight or so prior to the perineal operation. Some surgeons also like to perform the combined operation in two stages because the colostomy favours decompression and detoxication and renders the patient more fit for an extensive operation.

The Combined Operation. The combined operation may be an abdomino-perineal or a perineo-abdominal and both operations are equally radical. Whichever method is used, the mortality is considerably higher than for the perineal, a mortality which varies with the skill and experience of the operator. For many years the abdomino-perineal method as practised by Ernest Miles has led the field, but in recent years the perineo-abdominal introduced by Grey Turner, Gordon-Taylor and others has been strongly advocated by Gabriel. It may be claimed for the latter method that less time is spent on the abdominal portion and that shock is thereby reduced and also that the dissection from the perineum is more detailed.

Time alone will shew whether there is much to choose between the two or whether the more recent operation will supplant the older one. Indications at present point to a somewhat lower operative mortality for the perineo-abdominal operation and in the writer's experience favour a two-stage method, which he first employed as far back as 1920.

Perineal Excision. When a rectal growth has not yet penetrated through the muscular wall or has but recently invaded the peri-rectal tissues and there is a good range of mobility, i.e., in the "A" or "B" cases, and when the growth is situated below or does not extend much beyond the peritoneal reflection, the prospects of a permanent cure with a perineal excision are excellent, as shewn by the statistics quoted above, and it is difficult to believe in the absence of upward

lymphatic spread that any gain can accrue from a more extensive and more dangerous combined operation. When, on the other hand, the border line has been reached in the low lying growth between inoperable and just operable fixation, and there is every likelihood of advancing lymphatic spread, the most extensive radical procedure by one or other combined method is indicated if operation is at all justified. Well balanced judgment based on long experience is required to arrive at a correct decision.

The end results of all forms of excision in the "C" cases are disappointing (*vide supra*), and it is often not easy to decide whether to offer a patient the long odds against a permanent cure with a risk of a fatal issue at operation and at the same time to submit him to a long and painful post-operative treatment, or to offer the alternative of palliative colostomy with its inevitable termination. The decision will often depend not merely on the local and general condition of the patient, but on his mental make up, his age, circumstances, environment and domestic responsibilities.

Conservative Resection. Professor Grey Turner, under the title of "Conservative resection," has revived and modified the Kraske type of operation in carefully selected cases which are neither too high nor too low.

The operation consists of a segmental resection from behind with anastomosis. Without doubt some early cases can be cured in this way and Turner has published some excellent results. It is however often difficult to decide before operation whether a case is entirely suitable for the method, and this is the crux of the situation.

Ultimate success or failure must depend largely on the judgment and experience of the assessor. The operation is by no means easy and tension at the anastomotic line must be carefully avoided if a fistula is to be prevented.

The Abdomino-Anal Operation. A combined operation which commences with a laparotomy and mobilization of the rectum and sigmoid, and is concluded by drawing down the affected area through the sphincters and suturing the severed proximal end to the anus, was often practised in pre-war days. It was given up by most surgeons because of the dangers resulting from defective blood supply of the proximal end.

Recently in this country this type of operation has been advocated by Rayner of Manchester. If the technique has been perfected so that the operation is thoroughly radical, and at the same time a good functioning anus can be secured without serious risk of interference with its blood supply, then this operation will once again come into favour.

Radium Treatment.

More than thirty years ago, in association with Dr. Finzi, I employed radium 'en masse' inserted into the lumen for some inoperable cases of rectal cancer, and in one instance with an excellent and permanently good result. Recently I have returned to this method (modified) in cases considered unsuitable for interstitial irradiation.

Some ten years ago I began to use radium and radon interstitially combined with the surgery of access and during the past ten years have dealt with over 150 cases by varying methods.⁽⁴⁾ In a few instances when surgery has been contra-indicated or refused, I have treated early operable cases with excellent initial

results. Unfortunately, recurrences are far too common and radical surgery is ultimately called for. Two cases have remained permanently well after radium and without colostomy, both over seven years. Prolonged experience mainly with inoperable cases has shown that the action of radium on adeno-carcinoma of the bowel is too variable, and the technique to secure uniform distribution often too difficult to justify its use, except when surgery is contraindicated on grounds of general health or resolutely refused by the patient.

Nevertheless, some lives have been saved by radium, in cases regarded as inoperable, which were otherwise doomed, and six patients with inoperable growths have been shown by the author at the Royal Society of Medicine⁽⁶⁾, who were, after radium treatment, alive and well and free from signs of disease, at intervals ranging from $7\frac{1}{4}$ to $4\frac{1}{2}$ years. Although these six cases represent a small percentage of the total treated, they do show that it is possible, though difficult, to effect an apparent cure in this way. In early cases of squamous carcinoma of the anus radium probably holds the field. These cases can often be cured without mutilation and a colostomy avoided. In late cases radical surgery with the diathermy knife should be performed.

Deep X-rays.

A number of cases have been treated by deep X-rays with a 220 voltage and some with X-rays and radium combined. No appreciable benefit has been observed. In the near future it will be possible at St. Bartholomew's to employ a million volt apparatus and it remains to be seen whether any additional benefit will accrue.

Some surgeons have employed and claimed some success with the new low voltage apparatus.

Palliative Treatment.

When a patient is distressed with a constant desire to go to stool, and worried with the frequent evacuation of small quantities of blood-stained mucus and faecal debris by night as well as by day; when he cannot urinate or pass flatus without the risk of faecal leakage, life becomes a burden. To such a one a colostomy, well-fashioned, well placed and well washed-out daily, comes as a boon and a blessing.

When a growth has advanced so far that radical procedure is no longer feasible, a colostomy should be advised without waiting for indications of the onset of obstruction in the higher growths, and with a total disregard for the amount of inconvenience or otherwise arising from the lower ones which only rarely obstruct.

Not only the amelioration of distressing symptoms, but also the relief of toxæmia, produce a striking change in the general well-being of the patient. The appetite improves, sleep is restored, the complexion returns and the patient gains weight. These changes, provided that colostomy is not delayed until it becomes imperative, are often so marked that a doubt will sometimes arise in the minds of those in charge of the case with regard to the diagnosis. In many instances these patients derive so much benefit, following a period of distress, that life is prolonged far beyond the period of reasonable expectation (which, without the aid of colostomy, varies according to the stage at which relief is sought, from a few months to about two years) and may even extend, as I have often experienced, beyond a five year period.

It is, however, essential that a good spur should be secured for the colostomy and that the patient or his nurse should be thoroughly well versed in the technique of the daily wash-out and the general management of the colostomy. When the rectum is put out of action, faecal matter no longer irritates the growth and the pelvic floor is at rest. There is a corresponding diminution in the blood supply of the part, and the growth may not only cease to be active, but even shrink and it is only when, often after many years of quiescence, cancer cells have reached the liver or the spine, that the patient goes slowly downhill. In one instance only in nearly forty years of practice have I observed complete retrogression of an advanced growth after colostomy, and in this case copper injections were also employed. I have never seen any marked benefit accrue from deep X-ray therapy in these advanced cases, though a few have been apparently cured with the help of radium as stated above.

In a certain number of cases when the growth becomes fixed to the parietes, pain becomes a distressing feature. Relief with drugs is often only temporary. Extensive fulguration sometimes helps, but may be followed by serious secondary hæmorrhage.

Recently we have in several instances secured either relief or complete freedom from pain with a spinal injection of absolute alcohol. The patient is placed face downwards on the table with a pillow under the pubes so that the shoulders are lower than the site of injection. A lumbar puncture is made between the 4th and 5th spines and when the cerebro-spinal fluid flows to the top of the cannula, absolute alcohol (0.9 c.c.) is slowly injected. The patient is kept in this position for ten minutes. The skin around the anus, over the ischio-rectal fossæ, and up to the lower half of the sacrum becomes anæsthetic and in most instances rectal pain is abolished. No untoward symptoms have followed, though a warning must be given as to sexual function. A repetition of the injection may be required after a few months.

- (1) Dukes, C., *Cancer Review*, 1930, v, 720.
- (2) Bacon, H. E., *The Journal—Lancet*, 1935, iv, 498.
- (3) Dukes, C., and Gordon-Watson, C., *Brit. Journ. Surg.*, 1930, vxii, 69.
- (4) Gordon-Watson, Sir C., *Surg. Gynec. & Obstet.*, 1931, liv, 307.
- (5) Gordon-Watson Sir C., *Proc. Roy. Soc. Med.*, 1935, xxviii, 1521.

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