any doubt as to the success of therapy based upon those biochemical findings—a reduction of the intake of fat to within the limits of the tolerance of the individual child, a freer intake of easily absorbed carbohydrate, and the provision of a daily depot of alkali.

Reduction of the Intake of Fat.

The reduction of the intake of fat need not, as a rule, be very drastic. There is, however, a natural tendency on the part of parents, made anxious by the extreme thinness of the child, to endeavour to improve matters by adding very considerably to the intake of fat. Cream or top milk and cod-liver oil are apt to be given freely, with the result that the trouble is increased and perpetuated. This is especially apt to occur when the fear of tuberculosis has been aroused. The propaganda in favour of a diet rich in fat receives support largely from observations upon the children of the poor, who, in general, are fed on much carbohydrate and little fat. The cost of sugar and starch per calorie is low, of fat high. Among the poor the ill effects upon this disorder of a diet too rich in fat are seldom apparent. Among the better-to-do they may be very evident. The omission of cream and cod-liver oil, the removal from a very rich milk of some part of the cream, the restriction of the intake of eggs and butter, perhaps to three eggs and a quarter of a pound of butter a week, may be necessary in households where the provision of milk, cream, butter, and eggs in large amounts has been considered the first essential for health and strength. Chocolate contains a high proportion of a fat which these children appear to tolerate especially badly, and should be omitted, as should all forms of sweets which are rich in fat. Radiostol or ostelin may perhaps usefully be prescribed to children whose intake of fat is restricted for the time being in this way. With improvement in weight and in colour the restrictions may be gradually removed. It is very evident that we have especially to consider the state of the child at the moment when the meal rich in fat is taken. When tired or pale, after exertion or excitement, or in convalescence from infection—when, as we may imagine, there is a state of glycopenia—fat metabolism may be especially unstable. One observant schoolgirl, having fallen prey to one of her attacks of sickness, wrote home to her mother that it was not the rehearsal for the school play which was responsible for her sad state, nor was it the dripping of which she had partaken freely; “it was eating the dripping after the play.”

The Provision of Carbohydrate.

For children in the state described the provision of a free intake of easily assimilated carbohydrate is very necessary. Moreover, experience shows that if the nervous child is apt at times and in certain states to have a low tolerance for fat, there is, as a rule, a high tolerance as well as a high need for carbohydrate. Only by constant replenishment of the carbohydrate reserves can we prevent that wasteful and imperfect oxidation of the meagre store of body fat which manifests itself in the bout of acidosis with the sudden and extreme loss of weight. The digestion of carbohydrate is usually well accomplished. If we encounter difficulties they are concerned usually not with digestion, but with the dislike for sweet things. The natural desire for sugar, which is part of healthy childhood, is apt to be absent in these infant intellectuals, who may prefer the savoury to the sweet. On the other hand, many constantly make demands for sugar, demands which some parents, influenced by the propaganda against sugar, sternly repress.

Propaganda on health matters is apt to suffer from the disadvantage that in the process of the simplification necessary for popular understanding most of the truth is apt to disappear. A diagrammatic presentment without light and shade, and with no place for the exceptions to the general rule, is all that can be attempted. The child with an inborn tendency to acidosis is, in this respect, the exception, and an indiscriminate propaganda in favour of a diet with much milk and cream, and with little or no sugar, has worked steadily against him.

Meat, fish, green vegetables, and fruit may be given as usual. On one side we must supervise, and may have

to restrict the intake of fat. On the other side we must raise proportionately the intake of sugars and starches. All cereal foods, wholemeal bread, rusks, oatcake, wheat-meal biscuits, sugar, jams, jelly, honey, and golden syrup may be given more freely than usual. Suet pudding consists of so much flour and so little suet that it is permissible. A reasonable amount of barley sugar, maple sugar, sugar candy, or boiled sweets may be given daily at meal-times.

The prescription of glucose in the form of a drink flavoured with fruit juice has been of real service. Glucose has several advantages over cane sugar as a means of replenishing the carbohydrate reserves. It is only about one-half as sweet as cane sugar; it is absorbed very rapidly into the blood stream from the upper alimentary tract, and has not the same tendency to cause a fermentative diarrhoea. Its use, too, seems less likely to be followed by the appearance of urticaria, a troublesome result in some children of the free administration of cane sugar. Given between meals it does not disturb appetite, and has something of the effect of a glass of wine in the resulting improvement in colour and sense of well-being.

In insulin hypoglycaemia, mental states of excitement, apprehension, and confusion, as well as muscular weakness, are controlled with astonishing rapidity by means of a few lumps of sugar. In these nervous children something of the same sort can be achieved, if less strikingly and in less degree.

The daily prescription of a small dose of alkali is often helpful. It is common to advise the intake daily of a teaspoonful of sodium bicarbonate. If, as is often the case, there is constipation, to the morning dose of glucose there may be added a little Vichy water or other laxative saline.

By dietetic regulation along these lines, and by the free administration of glucose and of a small amount of alkali, good results can sometimes be achieved. Often a very rapid increase in weight, and improvement in colour and energy, follow the subsidence of the state of acidosis. Sometimes the whole character of the child seems to alter for the better, so that ceaseless opposition and resistance, or timidity, or tearfulness disappear. There may be unmistakable improvement in such symptoms as night terrors, asthma, enuresis, train sickness, even stammering, as the general health improves and self-confidence returns. Almost always the more direct symptoms of the acidosis, the tendency to bouts or attacks of vomiting or diarrhoea, or pyrexia, are manifestly controlled. When no such fortunate result occurs, but the symptoms continue unabated, the explanation lies sometimes in the presence of some focal infection, and sometimes in a persistent failure of the management. Encouragement, rest, freedom from infection, and a high intake of sugar—these seem the special needs of the nervous child.

DIAGNOSIS OF CANCER OF THE COLON.

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CANCER occurs more commonly in the colon than in any other part of the alimentary tract, with the exception of the stomach. Colonic cancer is, however, of the less virulent type—that is to say, its rate of growth is comparatively slow, invasion of the lymphatic vessels and glands is relatively late, while remote secondary deposits, such as liver metastases, are, save in advanced and exceptional cases, distinctly rare. *A priori*, therefore, we have here a favourable field for surgical intervention, a fact which carries with it a correspondingly serious responsibility. If we are to meet this responsibility fairly all our resources must be thrown into the effort to detect the cancerous lesion at the earliest moment.

THE DEVELOPMENT OF COLONIC CANCER.

It will perhaps make for clearness of description if we regard cancer of the large intestine as exhibiting, from the clinico-pathological aspect, three distinct phases.

1. *The Pre-cancerous Stage.*

In this stage a lesion is present which is capable of developing, and, if untreated, does ultimately develop, into a cancer. Recent work has shown conclusively that a very strong potentiality for malignant change is inherent in the simple intestinal adenoma. Cancer of the colon is invariably an adeno-carcinoma; its mode of origin in a selected area of bowel is described by Dukes as follows: first, the occurrence of small localized areas of epithelial hyperplasia from which arises a crop of adenomata; next, the formation of an adeno-carcinoma from one of these areas or in the neighbouring epithelium; finally, when the definite transition to carcinoma has been effected in one of these little tumours, a tendency to undergo retrogression in the others, which are, consequently, not prominent in the stage of developed cancer. The best instance of this change is seen in those rather rare cases of multiple adenomata (adenomatosis) which show a marked tendency to malignant transformation. Saint, in a study of the intestinal polypi, found that, in the large bowel, the sigmoid was by far the most frequent site of occurrence, and that the adenoma was by far the most common type of polypus encountered. If we compare Saint's figures with those of others showing the relative incidence of carcinoma in various parts of the colon, we find a remarkable correspondence. Saint's figures are: caecum 8, ascending colon 6, transverse colon 3, descending colon 5, sigmoid colon 20. Thus nearly 50 per cent. occur at the sigmoid. Burgess's figures give 55.3 per cent. and Brown's figures give 53.1 per cent. as the proportion of sigmoid cancers in the large bowel. We cannot help feeling that we may have here an explanation of why cancer occurs so much more frequently in the sigmoid than in any other part of the colon. Unfortunately, in the present state of our knowledge the clinical value of these facts is not very great. Apart from the rectum and lower sigmoid, adenomata have been recognized clinically only under two conditions. (a) In adenomatosis symptoms occur which are distinguishable from those of ulcerative colitis only by the use of the sigmoidoscope. It is useful to remember that this may be the real pathology underlying cases of ulcerative colitis. (b) The single polyp, unless it has undergone ulceration or has attained a considerable size, may first be revealed through the occurrence of an intussusception.

Recently a young woman was admitted to my wards with an intussusception involving the whole sigmoid, the starting point of which was a polypoid adenoma. A more striking case was that of a man, aged 69, who consulted me for recurrence of a rectal polypus which had been removed by another surgeon two years previously. I removed the growth, together with a portion of the bowel wall. The pathological report on the specimen was as follows: "The tumour is a papillary adenoma. The only sign of malignancy consists of mitoses; but as these are present in numbers the condition appears to be one of very early malignancy." This patient comes regularly for proctoscopic examination, so that should the cancer unfortunately continue to develop it will at least be recognized at a very early stage.

The more frequent use of the sigmoidoscope, especially in elderly patients, should, by revealing these adenomata so common in the sigmoid, enable us to lower considerably the incidence of colonic cancer.

2. *The Latent Stage.*

In this stage cancer is definitely present, but betrays either no sign of its existence or signs so vague and inconspicuous as not to attract the attention even of the patient. The pathological condition present in the silent period is either a cauliflower growth which has not yet begun to bleed or to ulcerate, or a constricting growth, the effects of which are being adequately compensated. This silent phase is, of course, an unfortunate characteristic of the early growing stage of internal cancer in any part of the body, but it is particularly unfortunate here in view of the relatively good prognosis which attends competent surgery in clinically recognizable cases. It is truly remarkable to what extent non-obstructing cancers of the colon can grow without producing definite symptoms, and it is not uncommon for the accidental discovery of a

lump by the patient or by his medical attendant to be the first sign of disease. It is at this stage that the development of anaemia, which is an almost constant feature of cancer of the proximal colon, whether it occurs in youth or in adult life, is of special significance. Flint records the case of a woman who consulted her doctor on account of shortness of breath, when routine examination revealed a lump in her abdomen, which was subsequently proved to be a cancer of the proximal colon. She had suffered neither pain nor irregular action of the bowels, but was extremely anaemic. A precisely similar case occurred in my own practice. An analogous form of secondary anaemia is found also in cancer of the stomach. This common tendency to anaemia in gastric and caecal cancer gives an added significance to the anatomical description of the caecum as a "second stomach."

3. *The Stage of Observable Clinical Manifestations.*

At the outset it is necessary to realize that cancer of the colon takes two main forms with correspondingly distinctive effects. In one these effects are due to the presence in the lumen of the bowel of an ulcerating mass; in the other to the progressive narrowing of the lumen by a constricting process. This distinction is, of course, not always sharply defined, since an ulcerating growth may cause obstruction and a constricting growth may, and often does, exhibit some degree of ulceration. The broad difference nevertheless remains, and it is of the utmost importance that it should be borne in mind.

What are the effects of ulceration? If we visualize, for a moment, the presence of an ulcerating growth in the bowel wall it is clear that not only is the growth itself an irritant which the bowel seeks to expel, but that, as a direct consequence of its presence, new and deleterious elements are added to the intestinal contents. These are: (a) Excess of mucus from the cells of the tumour and from the irritated mucous membrane, a feature of which sometimes leads to the erroneous diagnosis of mucous colitis. According to Ochsenshirt mucus production in large intestine cancer is an indication of differentiation on the part of the growth, and he seeks to establish the postulate that the number of mucus-secreting cells in the carcinoma is inversely proportional to the grade of malignancy. (b) Small quantities of blood, due to traumatism of the ulcer face. (c) Septic material from the surface of the ulcer, which in such an environment cannot long remain free from secondary infection.

The combined result of the presence of an irritating growth and the local accumulation of irritant material is to cause an increase in the functional activity of the bowel—that is, increased frequency of peristalsis resulting in diarrhoea, which is mainly of the mucous type. Brown found diarrhoea in 36 per cent. of his proximal and distal colon groups, but, whereas in the former it was a true diarrhoea, in the latter it was rather tenesmus, attacks of which alternated with periods of obstinate constipation.

When colonic irritability of this kind sets in and persists in a person who has previously led a regular bowel life, the suspicion of cancer must be strongly aroused. This is especially true in very old people, in whom chronic diarrhoea is very frequently due to cancer. I would here advise caution against the dangerous diagnosis of colitis, which I have seen followed—as who has not?—after a regrettably long interval, by a palliative colostomy. Petré records a case of a patient who, after treatment of three years' duration for ulcerative colitis, was found to have cancer of the splenic flexure.

There are other less direct but equally characteristic effects of the ulcerative process, and of these the most important is anaemia, which is especially characteristic of cancer in the proximal colon. So characteristic is it that the development of a severe secondary anaemia for which there is no obvious cause should direct attention towards the possibility of caecal cancer. There are two curious facts about this anaemia—one that it can, and does, occur without visible loss of blood, even in the absence of occult blood; the other, that it is not such a menace from the operative standpoint as might be expected, and is, in fact, no insuperable barrier to a successful resection. While

there has been a great deal of speculation as to its cause, there can be little doubt that it is largely due to constantly recurring loss of blood in small quantities from the growth, heightened by absorption of toxic material from the involved bowel. It has been shown that there is a definite relationship between the size of the tumour and the degree of anaemia, and it has been pointed out (by Alvarez) that caecal cancers are bathed in the most highly infective fluid to be found anywhere in the body—a fluid full of organisms, which, when injected into animals, produces severe anaemia. The intensity and constancy of this anaemia in carcinoma of the proximal colon may not unreasonably be correlated with the considerable absorptive powers of this part of the large intestine. Flint suggests, as a possible explanation, that urobilin may be normally absorbed from this region, and is altered in some way when disease starts here, so that it cannot take its proper part in the formation of haemoglobin. Whatever the explanation, the anaemia remains as a striking clinical fact.

In the case of an obstructing lesion the course of events is as follows. The narrowing of the lumen at the site of the growth tends to delay the faecal stream, but for a time compensation is effected by the hypertrophy of the bowel above the lesion. As the constriction advances, hypertrophy increases and the more vigorous peristalsis thereby induced results in colicky pains. These pains are attended by rumblings of flatus or borborygmi, and they are made worse by purgatives. Owing to the fact that they are often set in motion by the taking of food, they are frequently ascribed to dyspepsia. One of my patients had dieted herself to the verge of starvation for three months for an "indigestion" which was really due to cancer of the transverse colon. After a time, to the hypertrophy is added dilatation, which most markedly affects the caecum; and during attacks of pain visible or palpable peristalsis may be noted, which, when present, is pathognomonic of obstruction. If the ileo-caecal valve is incompetent the lower coils of ileum are affected by the hypertrophy and dilatation producing the characteristic "ladder pattern." Curiously enough, the patient can often locate accurately the site of the obstruction. As a result of stagnation in the dilated bowel the stools are usually very offensive, and intermittent attacks of diarrhoea are prone to occur. Sooner or later this obstruction becomes acute, being not infrequently precipitated by a purgative—the actual cause being congestion and oedema at the site of the stricture, the impaction of a hard faecal mass or foreign body in the narrow lumen, or, in the case of the mobile segments—sigmoid or transverse colon—to the occurrence of volvulus or intussusception.

Situation of the Growth.

So far we have considered in a general way the effects produced by the two types of growth which occur in the colon. Let us now see how the clinical picture is affected by the situation of the growth.

In the *proximal* colon the growth is usually of the fungating cauliflower type, and forms a definite mass. This mass is situated most frequently at the caeco-colic junction, and because of its bulk and its accessible situation is palpable at a moderately early stage. Ulceration, with its attendant train of symptoms—irritability and anaemia—soon occurs. Obstruction in this segment of the colon is rare, owing partly to the nature of the growth, partly to the fluidity of the intestinal contents, and in part also to the wider calibre of the tube. Alvarez found the diameter of the colon to vary (in Roentgenograms) from 6.5 cm. in the caecum to 2.5 cm. in the sigmoid. Brown found a palpable swelling in 68 per cent. of his proximal colon cases, and in only four cases did carcinoma of the proximal colon cause symptoms of obstruction, in two of which the obstruction was acute.

In the *distal* colon tumour is not often felt (Brown found it in 24 per cent. of his distal colon cases), and practically never in tumours of the splenic flexure, because of its fixed high position under the ribs. Some degree of obstruction is very frequent, owing to the encircling form of growth, the solid contents, and the diminished colon diameter. When the splenic flexure is involved obstruction occurs in practically 100 per cent. of cases.

In the *transverse* colon the growth may be of either type, but in the left end of the transverse colon the sclerosing form predominates, and in this segment, therefore, obstruction is common. A tumour, when present, is characterized by its extreme mobility. Owing to the juxtaposition of the stomach and great omentum, gastric complications are not unusual and the symptoms may be mainly of the dyspeptic type.

The general principle may therefore be stated, with due allowance for occasional departures from type, that in cancer of the left colon obstruction is the rule; in cancer of the right colon obstruction is the exception. Burgess's figures are 87 per cent. and 13 per cent. respectively. This marked difference in clinical behaviour is all the more noteworthy in view of the embryological distinction between the two segments. The right colon, as far as the splenic flexure, is developed from the primitive midgut in continuity with the small intestine, which it resembles in the fluidity of its contents, the absorptive power of its mucous membrane, and in the presence of a retarding mechanism (caeco-colic sphincter and antiperistalsis). The fluid contents make obstruction difficult even in the presence of large and sclerosing growths, while the characteristic anaemia is no doubt partly dependent upon its absorptive function. The left colon is developed from the primitive hindgut, and as the process of absorption is complete with the final loss of water in the transverse colon, it must be regarded mainly as an excreting organ. In view, therefore, of the fact that these two segments of the colon have different origins and different functions, it is not greatly to be marvelled at that they react differently to the carcinomatous process.

THE DIAGNOSIS OF COLONIC CANCER.

By what methods of examination shall we seek to establish the diagnosis of colonic cancer?

1. A careful anamnesis—with particular attention to the onset and persistence of a definite change in the patient's bowel habits from regular to irregular. According to the nature of the growth and the segment of the colon involved, the clinical picture will develop along the lines of an ulcerative or stenotic lesion. It must be remembered that loss of weight and energy occur only in advanced cases.

2. Physical examination. Among the signs or symptoms noted will be anaemia, visible or palpable peristalsis, local distension of the caecum, and in certain cases a palpable tumour. In experienced hands the ordinary stethoscope will often give information of value by demonstrating the gurgling of gas through a narrow opening. The ability of the patient to localize, in many cases, the site of the obstruction should be remembered. A rectal examination may reveal a recto-sigmoid growth when the patient strains, or ballooning of the rectum in the case of growths situated at a higher level. Bimanual examination, aided, if necessary, by a general anaesthetic, often gives information of value.

3. Examination of the stools for visible and occult blood, pus, mucus, and fragments of tumour tissue. In the case of occult blood repeated examinations should be made, a persistently positive finding being strong presumptive evidence of cancer. Hurst states that he has never seen a growth of the stomach or colon where occult blood was not present. Petré found a positive Weber reaction in the faeces of 35 out of 44 cases examined, and emphasizes the value of a persistently positive Weber reaction in uncertain cases.

As the result of a complete general clinical examination the diagnosis of the site and nature of the growth may be fairly clear. In many cases, however, this is not so, and we must call upon two additional diagnostic aids—the sigmoidoscope and the Roentgen ray. For growth in the lower half of the sigmoid the sigmoidoscope is, in skilled hands, an instrument of the very greatest value, and no one should consider himself competent to handle those cases properly until he has made himself proficient in its use. It not only demonstrates a cancer when present here, but it enables us to recognize the characteristic lesions of ulcerative colitis, to identify papillomata and adenomata,

and, if necessary, to remove portions of tissue for examination. If we bear in mind the important fact that 50 to 55 per cent. of colonic cancers occur in the sigmoid the value of the sigmoidoscope should be readily appreciated.

For those numerous cases where ordinary clinical methods, even when aided by the sigmoidoscope, still leave us in doubt, we have an invaluable ally in the Roentgen ray, which is now justly considered to be the most valuable method of examination in colon conditions. In recent years the opaque meal as a method of colon examination has been almost completely superseded by the opaque enema. In many cases the meal has failed to show a cancer which operation subsequently revealed; this has resulted in negative findings being regarded as a snare and a delusion, with inevitable reaction upon the harassed radiologist. There was also the real danger of precipitating an attack of complete obstruction in stenotic lesions, through the inability of the bowel to rid itself of the barium. Since this happened in one of my cases I have ceased to order opaque meals for patients with suspected colonic cancer. Nowadays, however, with the more frequent use of the opaque enema, the whole picture has been completely changed, and we have at our disposal an agency which makes possible an accurate diagnosis in almost 90 per cent. of cases.

The examination must, of course, be carefully and skillfully performed if sources of error are to be excluded, and the findings must be checked by a second or even a third examination. If stenosis is marked, the enema may be completely arrested at the site of obstruction, thus affording conclusive evidence of blockage. If the enema passes the obstruction the characteristic filling defect with dilatation of the bowel proximal to the growth will be seen. Local spasm may be almost indistinguishable from organic narrowing, but if Carman's directions be followed—that is, administering the enema at considerable gravity pressure in conjunction with antispasmodics and forcible filling of the spastic segment by manual palpation—it is usually possible to make a differentiation. In a similar manner it is possible, with care and patience, to exclude the pseudo-filling defect caused by gas or extra-colonic lesions. Forty-one of Petré's cases were radiographed, and in 30 of these the opaque enema gave a correct diagnosis; in 4 the appearances were doubtful, and in 7 they were negative. Of the 7 cases 4 could undergo radical operation. It is obvious, therefore, that a negative result must still be received with a certain amount of scepticism, even on repeated examination. In the best hands there is still a small residue of cases in which the x rays fail to reveal a growth which is actually present, but with improvement in technique and increase in the capacity for skilled interpretation these cases are becoming very few, and it may truthfully be stated that the opaque enema holds its place as the most reliable method of locating cancer in the colon. It cannot, however, be too strongly emphasized that radiography is only a part, albeit an important part, of the method of investigation. The findings must never be read alone, but only in conjunction with a careful clinical history and a complete physical and laboratory examination. If this is always done there will be very few cases in which we shall be forced to the crude expedient of the exploratory laparotomy, although this, our last line of defence, is one which we are perfectly justified in employing when, after exhaustion of our methods of clinical diagnosis, a reasonable doubt still remains.

DIAGNOSTIC DIFFICULTIES.

1. The ulcerating type of growth may be confused with inflammatory conditions of the colon which cause bleeding and the discharge of mucus and pus—for example, colitis (mucous and ulcerative), polyposis, etc. It is in these cases that the sigmoidoscope helps by revealing the actual lesion in the pelvic colon. In ulcerative colitis the rigid bowel wall will give the typical x-ray appearance of a straight tube devoid of haustration—the “ribbon-like” colon. It must, of course, be remembered that polyposis is rare, while cancer is common, and we should be very slow to make a diagnosis of ulcerative colitis of recent onset in an elderly person.

2. It is often difficult to distinguish between cancer of the pelvic colon and diverticulitis. In the latter, apart from clinical evidence of an inflammatory origin, bleeding practically never occurs, and the radiographic appearances are conclusive; these are: rounded, annular, or crescentic shadows projecting beyond the general line of the lumen of the bowel, and, after evacuation of the enema, parallel rows of opaque spots, due to retention of barium in the diverticula, are seen. Again, it should not be forgotten that cancer and diverticulitis may co-exist.

3. Cases with tumour in the right iliac fossa are to be distinguished from early actinomycosis, hyperplastic tuberculosis, and appendicitis. In actinomycosis there is a loss of weight and anaemia, but it generally runs a febrile course. The palpable mass is less definite in outline, and a radiogram may help to show its extra-colonic nature. In actinomycosis, however, as in hyperplastic tuberculosis, unless the clinical diagnosis is reasonably clear, we cannot expect much help from the Roentgen ray, and it is just in this type of case that we are often compelled to resort to operative exploration. Even at operation we may be unable to exclude cancer as the cause of the mass, and it is just here that the individual judgement of the surgeon, based upon his knowledge of what Moynihan calls the “pathology of the living,” is of inestimable value in enabling him to recognize the true nature of the case. In appendicitis the short history and local evidence of inflammation should suffice to make the distinction. Strange though it may appear, the reverse mistake of treating a cancer as appendicitis is more likely to be made, the final post-operative diagnosis becoming painfully obvious as the sinus refuses to close and the mass increases in size—a clinical picture also seen occasionally in cases of actinomycosis.

4. Cancer of the transverse colon may be mistaken for chronic intussusception, owing to the existence of a movable tumour. An opaque enema will settle the diagnosis, the appearance after the evacuation of the enema in a case of intussusception being particularly striking. Here again one should bear in mind that a growth may be the cause of the intussusception.

In this paper I have dealt with the diagnosis of cancer of the colon before the onset of acute obstruction. At this stage it is possible to carry out a planned operation for the removal of the growth with the infected lymphatic area, at a mortality rate of about 10 per cent., and of the cases that recover about 25 per cent. are alive at the end of five years. When obstruction has supervened the operative mortality is about 35 per cent., and in many cases only a palliative operation is possible. Unfortunately the obstruction figures are still painfully high. Burgess in a total of 485 cases found acute obstruction in 173 (36.6 per cent.); Brown in 171 cases found it in 43 (25.7 per cent.); and Petré in 50 cases found it in 21 (42 per cent.). In Brown's series the mortality was 30 per cent. for palliative operations alone.

The importance of making the diagnosis in the pre-cancerous stage is but too painfully obvious, and the rate of diminution of the acute obstruction figures will be the best evidence of the success of our efforts.

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