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Ulcerative Colitis.

An Address introductory to a Discussion on the Subject

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THE morbid condition concerning which I have been invited to open a discussion is known as "ulcerative colitis," to which the prefix "general" or "simple" is frequently applied, and sometimes also the term "sporadic." The designation is sufficiently precise, so far as it expresses the structural changes met with, but is clearly open to the objection that there are several other affections of the large intestine, quite distinct from the one to be considered, to which the name might on anatomical grounds be given with equal propriety. It is a provisional title therefore, and its future retention or rejection will be largely determined by a clearing up of certain points in connexion with the natural history of the disease that will come up for consideration in the course of my remarks. The term "dysentery," it may be observed, is open to the same criticism on the clinical side.

So far as I am aware, attention to the condition was first drawn with any degree of completeness by Dr. Hale White in a paper in the *Guy's Hospital Reports* for 1888, although previously, in 1885, I had exhibited at the Pathological Society a well-marked specimen of the colon showing the characteristic appearances of the disease; and, as having been the first of the kind brought before the Society, it found a place amongst "the chief pathological lesions of more general interest" selected for exhibition at the Jubilee meeting of the Society on October 20, 1896. To Dr. Hale White further belongs, in great measure, the credit of having differentiated the malady from other forms of ulceration of the colon, and it would seem that since the publication of

his paper the name of "ulcerative colitis" has by general usage become attached to the disease. How far the extent of his differentiation has been justified by subsequent knowledge is the chief question at issue, towards the settlement of which it may be hoped this discussion may contribute.

That the affection is one of no great rarity, the result of the appeal to the large general hospitals of London for information on the subject in connexion with the present occasion amply shows. (I would, if I may, take this opportunity of expressing to those gentlemen who at much labour have furnished these reports the cordial thanks of the Society for the valuable information that they have furnished.) Thus, during the twenty-five and a half years, from 1883 to the midsummer of 1908, 80 cases were admitted to St. Thomas's Hospital; during the twenty years previous to 1908 there were taken in at Guy's Hospital 55 cases; and from 1884 to 1908, 42 cases were admitted to the Westminster Hospital. The incidence in successive years shows they are pretty evenly distributed at about the average rate of two or three per annum at each institution. On several occasions the numbers were somewhat larger at all of the three hospitals, but in other years a rise at one place was accompanied by a fall at the other two, so that there was nothing indicative of epidemic occurrence. It should be remembered that epidemics of dysentery have been unknown in Great Britain for more than fifty years, excepting such as have occurred in asylums, and a small outbreak in 1901 among the troops at Aldershot, which was supposed to have been introduced from South Africa. At other of the London hospitals considerably fewer cases were admitted; thus, during the twenty-five years previous to the present only 20 cases are recorded at St. Mary's, all of which were distributed over eleven years of that period; whilst in the records of the London Hospital during the past fifteen years there were only 22 cases in which ulcerative colitis was found post mortem.

From this same mass of well-arranged information may be ascertained with sufficient accuracy the age- and sex-incidence of the disease. By far the greater number of cases occur during early adult and middle life, and whilst a few are met with over 60 years of age, youth appears to be singularly free. Only very occasionally is the disease recorded as arising in children and infants, and it is a question whether it is of the same nature as that set up in older persons. Information on this point from those whose experience is derived from children's hospitals is much to be desired, for although a diarrhœa characterized by the

passage of blood and slime is far from uncommon in infants and children and is frequently fatal, I have never seen post mortem the appearance in the large intestines in any way resembling that which is constant in the disease we are now considering. In passing it may be observed that "all ages, from the nursling to extreme old age, pay their tribute to dysentery. In some of the European epidemics nearly half the attacks, and rather more than half the deaths, have been among children." [1]

Of the total number of 177 cases of all ages reported from the three hospitals mentioned, 89 were males and 88 females. The great preponderance of mucous colitis in the female sex is in striking contrast.

The collective information now laid before the Society enables us also to appreciate what significance the previous history of the patient may have as to the real nature of the subject of our consideration, and among the data therein included is the fact of previous residence in a hot climate, in view of the relation of the malady to tropical dysentery. In this connexion, however, it is to be observed that the disease known as dysentery and presenting the essential clinical, anatomical and bacteriological features of that malady is by no means confined to tropical regions. To quote from the latest and most authoritative account contributed by Dr. Davidson to Allbutt and Rolleston's "System of Medicine" (1907), whilst "endemic dysentery is met with in warm climates only, dysentery, in the fullest sense of the word, is a ubiquitous disease, being met with in every inhabited region of the globe, from the Equator to the Arctic circle." As a predisposing or even a determining cause of sporadic ulcerative colitis previous residence in a hot country has not, therefore, so great an importance as it is sometimes supposed. This is fully borne out by the statistical information before us, for of the 177 cases already referred to only 7 had ever been out of England, and not one of these had previously suffered from dysentery. Of the 28 cases, however, reported from St. Mary's Hospital as many as 9 had been abroad (India, South Africa and Texas), 5 of whom were stated to have had dysentery and 2 typhoid fever. The occupations of the patients seem to exert no influence whatever on the determination of the disease. And almost the same statement may be made with respect to the occurrence of previous illness, a very large proportion of the cases having been well-to-do, well-nourished persons in excellent health. Thirteen of the 42 recorded at Westminster Hospital had suffered from previous intestinal trouble, chiefly of a diarrhœal character that had persisted for years, and chronic constipation was the

[1] Dr. Davidson, Allbutt and Rolleston's "System of Medicine," 2nd ed., ii, pt. 2, p. 487.

preceding state of 3 of this group. Neither at St. Thomas's, Guy's nor St. Mary's Hospital is any reference made to such a condition. That a brother and sister were among the cases and that the father of one patient, and father and sister of another were said to have died of colitis cannot be regarded as other than coincidences, and there does not appear to be any form of prevailing disease in the family of any case sufficient to suggest any influence in bringing about the ulceration of the colon.

It is somewhat remarkable that in the reports before us there is so little evidence of the connexion of sporadic ulcerative colitis with chronic interstitial nephritis or with gout, an association that Dr. Hale White affirms has long been known, for of 23 of his cases of the colon affection "chronic interstitial nephritis was present in 6, and in at least 4 of these the renal change was advanced, and 2 of the 17 whose kidneys were healthy had urate of soda in their joints." Among the cases at St. Thomas's Hospital 5 were stated to have albuminuria, in 2 of which slight chronic nephritis was found post mortem, and 4 of the Westminster Hospital cases were reported as exhibiting albuminuria. With these exceptions no reference is made to the condition of the kidneys. The subject is an interesting one, although it has only engaged intermittent attention since Dr. Dickinson's paper on "Ulceration of the Bowels in Albuminuria," read before the Royal Medical and Chirurgical Society in 1894. So far as our present information goes the association between the two morbid conditions would appear to be of a twofold character. In the one group the ulcerative colitis develops, so to say, by chance in the chronic renal patient, presumably as an infection, runs its usual course, and is most commonly the cause of death; in the other group the ulceration of the mucosa of the colon is a terminal incident in the progress of the kidney affection, such as may develop in other mucous membranes, and if not actually overshadowed by the manifestations of the primary malady is subordinate in importance, death being due to uræmia or some other concomitant of the kidney changes.

The malady under consideration is one that is characterized clinically by well-marked symptoms that occur, on the whole, with such collective constancy as to render the diagnosis in any given case more than probable, the resemblance to conditions other than ulceration of the colon being but slight.

Only sometimes are there any symptoms preliminary to those connected with the intestinal lesion, such as malaise, headache and pain in the back and limbs, which occur in other acute febrile complaints. By

far the most frequently a sudden looseness of the bowels or passage of blood marks the onset of the disease. In the case of two lads aged about 18 who came under my notice the actual colitis was preceded over some months by occasional attacks, lasting a few days each, of partial incontinence of fæces, the motions escaping from the bowel without power of control, although no blood was then observed.

Undoubtedly the disturbances connected with the action of the bowels afford the most constant and characteristic symptoms, and as they are usually the first to appear so do they persist throughout the course of the disease. Although occasionally there may be some constipation at the outset a diarrhœa of varying degrees of severity is soon, if not at once, established. There may be but two or three motions, or as many as a dozen or twenty in the twenty-four hours, but there is never that constant and distressing desire to go to stool which is so marked a feature of tropical dysentery. Nor are short periods of confined bowels interrupting the course of the diarrhœa unknown, a circumstance which I am not aware is ever noticed in the epidemic disorder.

Except perhaps at the very commencement of the illness, or in the course of any intervening period of constipation, the motions are fluid, dark from abundant bile-derived pigments, singularly fetid, though scarcely of the putrid odour so common in tropical dysentery, and containing much or little blood, altered or almost pure, and a variable excess of mucus. It may be noted that the presence of blood in the stools is not to be taken as absolutely indicative of ulceration, although this is most likely, since a hæmorrhage from the mucosa may occur from the hyperæmia of inflammation before the actual destruction of tissue takes place. As regards the blood that is voided I do not know that it offers any distinctive feature either in quantity or in extent of admixture with the other constituents of the motion from what is observed in tropical dysentery, but very seldom does the stool consist of blood and mucus only, as is so common in the epidemic malady, and still less is it constantly composed of only a small pellet of clear or blood-stained mucus passed with agonizing straining and tenesmus which is so distinguishing a manifestation of the latter disease. The records before us, however, show that now and then undoubted ulceration of the bowel may exist and yet no appreciable blood appears in the dejecta, a circumstance that is not infrequently to be noted with similar lesions in other parts of the alimentary canal. Fragments and shreds of slough cast off from the bowels are sometimes recognizable and pus occasionally.

Associated with the diarrhœa is pain, but, as so commonly happens

in regard to the sensory symptoms of abdominal disease, and forms one of the strangest of the as yet unexplained phenomena of these affections, the constancy of the association is most uncertain. Without doubt pain, often very severe and of a paroxysmal griping character, is the more usual, but equally cases are described in which there is little more than a scarcely appreciable discomfort. When present it is but slightly affected by the taking of food, but is apt to be induced and intensified by the action of the bowels. Whilst generally diffused over the front of the abdomen the pain is sometimes distinctly perceived along the course of the colon, and in this respect may be accompanied by tenderness. It has, I think, hitherto been generally supposed that tenesmus, which is such a distressing, prominent and distinguishing feature of tropical dysentery, is altogether wanting in these cases of sporadic ulceration of the colon, but the information which has been collected for us shows that this is not so, the symptoms having been noticed at several of the hospitals in more than one case—indeed, a priori, tenesmus might have been expected to occur, since the anatomical changes, even to involving the anus, are identical with those of the dysentery of hot climates. It may be remarked, however, that Dr. Gemmell, in his classical account of asylum epidemics, says "tenesmus may or may not be present and is often slight." Except that the symptom is less frequent in the sporadic affection it does not seem that any distinction can be drawn.

Among the other symptoms presented by the sufferer from this complaint, none are of sufficient constancy as to be of diagnostic value, nor with the information before us does it seem that any individually contribute much towards prognosis, however significant they may be in combination. Nor is the severity or otherwise of the symptoms generally to be regarded as an index of the extent of the intestinal lesion. Thus vomiting is of most uncertain occurrence, sometimes very severe at the outset of the disease, oftener only slight, and oftenest of all is absent throughout; an associated nausea has been noticed. It seems that the administration of enemata sometimes determines the sickness or intensifies it if present. "Hiccough," says Dr. S. Phillips,[1] "occurs in the case of ulcerative colitis so frequently that it is almost to be regarded as a symptom of the disease, and its severity, frequency and persistency for many days or weeks constitutes in itself a very dangerous condition." I cannot say that this is in accord with my own experience, nor, except as a terminal symptom in two cases at St. Thomas's, do I find any reference to it in the records I have had the opportunity of seeing; but

[1] *Brit. Med. Journ.*, 1907, i, p. 1355.

it may be that ignorance of the occurrence of this symptom has caused a less careful observation of its frequency. All conditions of the tongue have been noted, from the clean and normal to one that is dry, cracked and glazed. Parotitis and parotid bubo have also been noticed more than once. The abdomen may be normal in contour, distended or retracted, and intestinal peristalsis is sometimes visible.

Equally variable is the general condition of the patient, for although in all cases he is obviously ill and often gravely so, it is not very uncommon for the appetite to be good and the nutrition to be well maintained, though some loss of weight, even to emaciation, is the rule. Many exhibit a febrile state from the first and throughout the illness, others manifest pyrexial exacerbations in the course of the complaint, whilst in many there is no rise of temperature at any time. The curve is frequently of the intermittent type and may reach 104° F., although a lower maximum, 102° F. or 103° F., is more usual.

Profuse sweating occasionally happens, and due to this and to the diarrhœa thirst may be complained of. Anæmia from loss of blood or the severity of the illness may be so profound as to suggest that it is of a pernicious type, but although, as would seem from the report on the patients at St. Thomas's, this state may exist when the hæmorrhage was not marked, in other cases the blood is normal. The leucocytosis, regarded by Dr. S. Phillips as so frequent as to be a feature of the disease, does not seem to have been so prominent to other observers—indeed, at St. Thomas's among the recorded estimations there were as many with a normal or low white cell count as with a high.

A review of the records shows the greatest variety in the duration of the symptoms, from one that was fatal in three days from the onset, mentioned by Dr. Hale White, to others that have lasted continuously for upwards of two years, or with intermissions of more or less complete health for ten or even eighteen years. The malady from this aspect appears to be separable into groups—those which may be termed acute, continuing for the most part for six or eight weeks, and others of a more chronic character where the symptoms may extend over years, broken by acute outbreaks to which the termination may ultimately be due. The intervals during which the manifestations of the disease subside may be marked only by a long-continued anæmia, or by an easily induced diarrhœa, or there may be no evidence of ill-health, and then after months a relapse may occur, again to pass off and perhaps again to recur. The liability to relapse is undoubted, and in this resembles also the tropical affection, and hence considerable hesitation must be expressed as to the future of any case that may seemingly be cured.

The majority of cases run their course to death or recovery uncomplicated by association with other forms of disease, which are of accidental occurrence when present. The malady is a distinctly marked out one, and, so to say, self-contained. At the same time it is recognized that ulceration of the colon, with the general features, both clinical and anatomical, of the specific affections, is liable to develop as a terminal event in other morbid states, one of which—chronic interstitial nephritis—has already been referred to. The records from Guy's give some interesting figures in this connexion, including fifteen cases of the renal disease, three of infective endocarditis, and nine of septic infection from the female pelvic organs, as well as single instances of glanders, pneumonia, morbis cordis, &c.

Incidental to the ulceration peritonitis may be set up consequent upon perforation of the gut, though in view of the extensive nature of the lesions it is remarkable that this complication is not of more frequent occurrence. It has been noticed by several observers that the peritonitis sometimes gives singularly little evidence of its existence during life. A liability to embolism in the pulmonary vessels and elsewhere has also been noticed.

Hepatic abscess is certainly a rare event in connexion with ulcerative colitis, only one case being recorded at St. Thomas's and one at Guy's, and none at Westminster Hospital. The two cases at St. Mary's in which this was found had suffered from dysentery in South Africa. A like infrequency of association of liver abscess with the epidemic dysentery of temperate climates and of asylums is well known. Even when there is reason to suppose that the ulceration of the intestine has been severe in any case and recovery subsequently follows, there seems to be but little liability to obstruction of the bowels from the cicatrization.

Sporadic ulcerative colitis in its outlook is most grave. Of the 80 cases at St. Thomas's, where special care was taken to exclude from the record all but those that strictly conformed to the condition understood by the term, 40 died, whilst at Guy's 40 of the 55 similarly selected cases were fatal; at Westminster Hospital a somewhat lower rate ruled, 19 dying of the 42 cases admitted. The mortality is about equal in the two sexes, and no special liability to death or recovery seems to be conferred by any age. These figures exhibit a distinctly higher percentage of fatal cases than obtains in tropical dysentery. Quoting from Dr. Davidson's article (loc. cit.), the mortality at Hong Kong in 1902 was 37 per cent. and 34 per cent. at Selangor, whilst the case mortality in six epidemics in France and Germany ranged from

9 per cent. to 14·9 per cent., and in different epidemics in Japan it varied from 16·5 per cent. to 30 per cent. In considering these statistics, however, it should be remembered, as Dr. Davidson observes, that the cases in the military and jail hospitals probably included a number so mild that recovery would follow from rest and dieting only. But after making allowances for this the preponderant death-rate of the sporadic cases is striking. But although the expectation of death is so high, recovery may follow even when the disease has run a comparatively acute and severe course; an interesting example of this nature was brought before the Harveian Society by Dr. H. Caley in 1893.[1] This circumstance makes the prognosis very uncertain in any individual case, but the severity of the hæmorrhage and of the diarrhœa, the presence of tympanites and extreme prostration and the typhoid state are manifestly ominous. Exhaustion is the most frequent immediate cause of death, brought about by the diarrhœa or by hæmorrhage, or by both, and more rarely by peritonitis; pneumonia and purpura have been observed as terminal fatal indications.

Such are the clinical phenomena presented in varying degrees by the subjects of ulcerative colitis. In the course of the account I have indicated those features which should suffice to distinguish the disease at the bedside from such specific intestinal ulceration as is determined by the typhoid or tubercle bacilli, by syphilis or actinomycosis, from ulcers consequent upon hæmorrhage into the mucosa, and from the ulceration of new growths of the bowel, or from like lesions caused by the bursting of an abscess into the gut. In such affections the intestinal symptoms, definite as they may be, are in the majority of cases quite subordinate to those of a general character, or to local manifestations elsewhere, and even when considerable in exceptional cases are markedly distinct if only in the nature of the diarrhœa and of the stools. On such an occasion as this I need not further formulate a differential diagnosis. I have also drawn attention to those differences, partial though they be and mainly differences of degree rather than of kind, that would seem to exist between these sporadic cases and those of epidemic occurrence. It would be most helpful were it possible to have the views of observers who are conversant with the manifestations of tropical dysentery, and have also had experience of these isolated cases, who would thus be in a position to estimate at their real value such differences as exist and at the same time to appreciate to the full the resemblances.

The post-mortem appearances which are met with in ulcerative

[1] *Lancet*, 1893, i, p. 795.

colitis and that clearly underlie the symptoms of the malady are as constant as they are characteristic. They are essentially referable to the intestines, and in a minor degree to the peritoneum and liver, though, of course, they may be supplemented by changes due to previous or co-existent disease in other organs that are only accidentally associated with the affection of the colon which is our present concern.

The condition observed is one of intense inflammation of the mucosa proceeding to ulceration, but the area of distribution of these states and their degree of intensity vary from an involvement of the entire gut from cæcum to anus, occasionally even extending into the ileum, with a complete destruction of the mucous membrane over large areas, to merely a few discrete ulcers in the lower part of the bowel with indications of a simple catarrh of the inner coat. Between these extreme conditions it is impossible to draw a dividing line; all grades of change are to be met with. No doubt the mildest cases in respect both to symptoms and structural alterations have long been recognized and described as catarrhal colitis, but the difference in degree in all aspects between such cases and those exhibiting the grave conditions connected with what we are describing as ulcerative colitis are sufficient, at any rate for the present, to warrant our regarding the latter as a distinct disease.

If the examination of the bowel be made sufficiently early in the course of the attack, whether this be after death or by the sigmoidoscope, or by operation wound during life, the mucous membrane will be seen to be swollen, soft and pulpy, of a deeply congested appearance, restricted perhaps to certain regions, or diffused more or less throughout the length of the large intestine. Exceptions to this description are met with, for Dr. Sidney Phillips, in an account of cases that came under his notice,[1] says that "the noticeable feature in one case was the dryness of the colon; it was desiccated and fragile rather than sodden, and in another in which operation exposed the colon during life its dry, pale condition afforded a great contrast to that of the glistening moist small intestine." Such appearances, however, I take to be most unusual, and I find no record of anything similar among the reports before us.

In exceptional cases nothing beyond this state of extreme inflammation is to be found, and so far as can be judged the characteristic symptoms may be present with a severe colitis only, but in the vast majority of cases some amount of ulceration is to be seen, whether this be only in the nature of a few minute points or definite ulcers involving the whole thickness of the mucosa. It is this latter condition, of course,

[1] *Brit. Med. Journ.*, 1907, i, p. 1355.

which justifies the name, and when existent to an extreme degree undoubtedly offers a most characteristic appearance. Over large tracts scarcely a shred of mucous membrane is to be seen, the muscular coat being wholly exposed, whilst here and there may be left patches of the membrane of varying size, some of which, being partially loosened, hang into the lumen of the bowel like polypi, or it may be that bridge-like processes, formed by undermining of the membrane, traverse the colon from side to side; or, again, the destruction of tissue may be limited to a few spots and of a size from a few lines across to 1 in. or more, with fairly clearly defined edges or with shaggy borders that overlap the underlying muscle. It is clearly by the coalescence of these individual ulcers that the large areas of necrosis of the mucosa are formed, though this is mainly effected in a molecular manner, since sloughs are but seldom to be seen. According to the extent of the mischief intervening portions of the bowel may be almost or quite healthy in appearance, and all stages of the process, from a simple colitis to a widespread destruction, may be visible in the same specimen. Although the entire length of the colon may be more or less ulcerated there are certain regions that are preferentially implicated, these being the cæcum, descending colon, sigmoid flexure and rectum, sometimes even involving the anus, but now and then each of these situations may escape and the transverse colon, which is oftenest free, may suffer; occasionally also the disease may invade the appendix and sometimes the small intestines. The information that has been collected for us fully bears out these statements in respect to the structural features of the malady, and further enables us to say that perforation of the bowel arises in about a fifth of the fatal cases. Sometimes this perforation is multiple and may constitute a rent in the wall of considerable size, but the extremely friable and, indeed, rotten state of the structures readily permits of post-mortem tearing. Very frequently the intestine is much thickened and hypertrophied, and the bowel very considerably dilated, a condition that has been commonly regarded as indicative of lengthy duration; but certain observations recorded from the Westminster Hospital show that this inference is not always valid, since the thickening was noted in certain of the acute cases and as wanting in some of the chronic. A very few times has pus been observed. From the appearances presented by the condition which has been described it has generally been supposed that the destruction commenced in the submucosa, and that the solitary follicles were not primarily concerned. From what we hear from Guy's Hospital, however, it appears that in five cases these structures " were involved in such a way

as to suggest that the ulceration had started in them." In passing, it may be remarked that true follicular ulceration, which is on the whole more frequent in children than in adults, presents a wholly different picture, both clinically and post mortem, to that we are now considering.

Inasmuch as a large number of patients suffering from ulcerative colitis recover, it is clear that repair of the intestinal lesions must take place, but the records from the hospitals go to show that even in fatal cases no inconsiderable proportion manifest evidence of cicatrization of the ulcers.

Unless peritonitis has resulted from perforation, the serous membrane gives little indication of change beyond perhaps some adhesions in the more chronic cases, and only occasionally are the mesenteric glands swollen.

The liver shows some liability towards fatty change, which was recorded in eight of the thirty-two post mortems made on adult patients who died of ulcerative colitis at St. Thomas's Hospital, and the same has been remarked by observers elsewhere.

It is apparent that this description of the morbid appearances is in complete accord with that of tropical as it is also of so-called "asylum dysentery," and thus sporadic ulcerative colitis is anatomically indistinguishable from epidemic dysentery. It is also interesting to observe that the structural changes closely correspond to those found in swine fever, as was shown to the Pathological Society of London in 1895 by the late Mr. Leopold Hudson.

The prima facie resemblance of sporadic ulcerative colitis to epidemic dysentery at once points to the infective nature of the disease, and raises the question of the specificity of the causal organism. It would, I presume, be generally accepted that some type of the *Bacillus dysenteriæ*, whether the Shiga, Flexner or other, stands in this relation to the tropical disease, whatever may be the influence of the amœba, although Dr. Hale White considers "that at present it is difficult to establish the claim of any disease to be dysentery on bacteriological grounds only."[1] Similarly also the work of Dr. Mott and others, particularly Dr. Eyre,[2] has demonstrated the same microbe as being tolerably constant in the evacuations and scrapings from the surfaces of the intestinal ulcers in the acute asylum dysentery, provided that the material be examined fresh, but that in chronic cases of the same malady the "*Bacillus dysenteriæ*, if present, is so outnumbered by *Bacillus coli* and other intestinal

[1] Allbutt and Rolleston's "System of Medicine," 2nd ed., 1907, iii, p. 826.

[2] *Brit. Med. Journ.*, 1904, i, p. 1002.

saprophytes as to render its isolation a matter of extreme difficulty" (Dr. Eyre, loc. cit.). Moreover, the blood-serum of some of these acute cases possesses a specific agglutinative action when tested against *Bacillus dysenteriæ* isolated from the stools of other similar cases, and also against other strains of *Bacillus dysenteriæ* isolated from cases of dysentery in tropical countries" (*ibid.*).

If we now turn to bacteriological evidence connected with sporadic ulcerative colitis we find far greater contradiction than obtains in respect to either the tropical or the asylum variety of dysentery. To take an illustration of this, Dr. Sidney Phillips, in the course of the discussion on a typical fatal case of the sporadic form which he brought before this Section of the Royal Society of Medicine in February last, explicitly affirmed that "competent pathologists" had examined his case, as also others of the same disease which had been under his care, and had not found the Shiga bacillus. In contrast to this Dr. Saundby records[1] an undoubted case of ulcerative colitis—which, however, recovered—in which Shiga's bacillus was found by Dr. Hewetson, who carried out the investigation, though the agglutination test was not performed. Unfortunately, the information that has been collected for the present occasion does not afford much assistance towards the settlement of the question, though, so far as it goes, it is adverse to microbic identity of the sporadic and epidemic diseases. In four of the cases at St. Thomas's, Shiga's bacillus was searched for in vain; "in three cases there was no agglutination-reaction with this bacillus; in one case it was agglutinated at once (dilution 1 : 100); and in one case a dilution of 1 : 20 produced good diffuse clumping in one hour, 1 : 50 gave slight clumping in one hour, and 1 : 100 gave no reaction." At Guy's the blood of one patient was examined for the agglutination-reaction with Shiga's bacillus with negative result. Clearly the numbers are too few to draw definite conclusions from. As bearing on this point, Dr. Davidson (loc. cit.) states that in several instances of dysentery occurring as a terminal disease in adults the subjects of chronic Bright's disease, cirrhosis of the liver, or chronic heart disease, the *Bacillus dysenteriæ* was obtained in cultures.

When such opposite results are obtained by experts under conditions that from a clinical point of view would appear to be the same, it is not for me to venture on an opinion, and my duty at the moment ends with placing the facts before you so far as they are known. At the same time, however, in the condition of uncertainty in which the subject for the time being stands, there arises to my mind that question which so frequently

[1] *Brit. Med. Journ.*, 1906, i, p. 1325.

presents itself in connexion with investigations of this character: Are we not apt in the search for a specific causal organism to overlook somewhat the contributory part played by the individual's own tissues? a factor in bringing about the result which even should be reckoned with when the actual infection is clearly ascertained. Surely there must be something more than the invasion of the microbe concerned when we find the specific *Bacillus dysenteriæ* responsible, on the one hand, for the severe and fatal malady which we call tropical dysentery, and is also "found in almost all children who suffer from diarrhœal diseases, in many of whom the symptoms are mild and transient, and clinically almost of no consequence. Moreover, this diarrhœal affection does not present the appearance of an epidemic disease."[1] The same organism has also been found as a terminal affection in children the subject of wasting disease,[2] and, further, the *Bacillus dysenteriæ* has been met with in healthy children (Dr. Flexner, loc. cit.). So wide a range of distribution of the organism coupled with such differences in clinical manifestations suggest most forcibly that the tissues of the individual, by their degrees of vulnerability or otherwise, are to be reckoned with in assigning the entire causal antecedents to the resulting morbid state.

This same consideration finds support from another point of view. It is well known that the administration of certain salts of mercury, even by other channels than *per oram*, is likely, when in excess, to set up an ulceration of the intestine, and especially of the colon, leading to symptoms closely resembling those of dysentery. It is generally accepted that the poison is eliminated, at least in part, by the intestinal mucosa, and thus leads to colitis and ulceration. Of the excretory functions of the alimentary canal we know as yet but little, but that such functions exist is undoubted, and analogy would suggest that modifications and perversions of the metabolic changes underlying the normal processes would be associated with alteration in the resisting power of the tissues to pathogenetic organisms, even if the toxic agent be not one originating in the course of the abnormal nutritive changes. It may thus be that the *Bacillus coli* on occasion excites an ulcerative colitis, being enabled to do so by the very condition of the tissues it infects, or that the nature of the contents of the bowels determine a virulence on the part of the microbe that it does not ordinarily possess. To conclude, however, that the causal organism may be of the *Bacillus coli* type, as would follow from the observations of some competent

[1] Dr. Flexner: Allbutt and Rolleston's "System of Medicine," 2nd ed., 1907, ii, pt. 2, p. 501.
[2] Dr. Howland's "Studies from the Rockefeller Institute," 1904, ii.

observers, is not to carry the question far, since, apart from the fact that the same organism has always, I believe, been found in association with Shiga's bacillus, it is well known that, like that other inhabitant of our bodies the pneumococcus, its range of power of doing injury is extremely wide, from being a harmless parasite to one that becomes responsible for toxæmias of a most virulent and fatal character. It is therefore a matter of extreme difficulty to affirm with certainty what is the precise cause of the malady we term ulcerative colitis, and so long as this side of the natural history of the disease remains incomplete we are unable to speak with certainty as to its specificity. What, it may be asked, are the criteria by which any given symptom-complex is to be regarded as a separate and distinct disease? In the case we are considering there is an identity in the structural features of the sporadic and epidemic maladies, together with a clinical resemblance, that is strikingly close, leaving only the question of cause to be considered. If the bacillus and the bacillus only be looked upon as the essential antecedent without any reference to the possible, if not probable, co-operation of two or more organisms being concerned in the result, then we must say at present that the two maladies are not the same. But if it be admitted that under modifications of its environment the harmless *Bacillus coli* of the intestines may assume a virulent and destructive character, or that the resisting power of the tissues is so depraved as to allow of the development of such changes as are characteristic of these several forms of dysentery, we approach a step further towards regarding the two conditions as essentially the same. When facts are wanting the judicious suspend a final judgment, though each observer will, from his own way of looking at an unsettled question, seek to explain the phenomena observed, and group them according to his own interpretation, and so long as this is conditioned by what is known or generally accepted this is both legitimate and desirable. As fresh data are ascertained these provisional views are confirmed or discarded, and new hypotheses are set up, in their turn to be accepted or rejected.

Lastly, there remains to be referred to the methods of treatment, which at present, having regard to the high mortality of the disease and the long-continued ill-health of many who do not actually succumb, must be looked upon as far from satisfactory. It has been towards controlling the two prominent symptoms, diarrhœa and hæmorrhage, that efforts have been mainly directed, but whatever success may have attended these efforts in individual cases, a consideration of the extensive and serious intestinal lesions that underlie these manifestations gives

but little ground for anticipating any frequency of cure by these methods only. Numberless have been the drugs, astringents, antiseptics, and sedatives that have been administered by the mouth with little or no assured benefit; frequently repeated small doses of calomel or grey powder combined with opium are certainly most to be recommended, and recovery has no doubt followed such a line of treatment. Ipecacuanha does not seem to have been as useful as it has been found to be in certain cases of tropical dysentery, nor have salines proved as beneficial, although here and there cases may be pointed to as justifying their use. Much greater success was reported by Dr. Gemmell as having followed full doses of quinine in the epidemic disease in asylums. With a view to treating the local condition of the bowel, and so lead to abatement of the diarrhœa and bleeding, rectal injections have been extensively employed—some, small in bulk, such as starch and opium, or tincture of hamamelis, or more recently adrenalin; others, larger in quantity and slowly introduced, with the object of bringing the drug in contact with as large a surface as possible of the inflamed bowel. Boracic acid in saturated or dilute solutions has been employed either alone or preparatory to the injection of some other medicament, such as nitrate of silver, a dram or a dram and a half of which to three pints of warm water was advocated by Sir Stephen Mackenzie so long ago as 1882.[1] Solutions of the perchloride or of the pernitrate of iron have been used in the same way, and lately large enemata of a 1 per cent. solution of argyrol have been highly extolled. Excellent as these measures may have been in intention their frequent failure to effect any improvement has prevented their being regarded as other than very uncertain remedies. As a means, however, of bringing applications of this character more effectively to the ulcerative surface—and what is of equal, if not of greater, importance to divert the intestinal contents with their irritant and toxic ingredients—the cæcum or ascending colon have been opened and an artificial anus established. Such procedure permits a very satisfactory irrigation of the colon from above by antiseptic solutions, such as permanganate of potash (1 in 10,000), boracic acid, creolin, &c. Scattered throughout the medical journals are accounts of cases thus treated most successfully, but although offering the prospect of considerable benefit it cannot be said that the records are sufficiently numerous to allow us to estimate its exact value as a therapeutic measure. More recently appendicostomy has been recommended as doing away with the undoubted objections to colotomy, and as affording an equally

[1] *Pro. Med. Soc. Lond.*, 1884, vi, p. 159.

convenient means for irrigation, although it obviously does not prevent the passage of the bowel contents over the ulcerative surface, which appears to be very desirable to avoid.

The growing knowledge of the bacteriology of the complaint has suggested fresh lines for the pursuance of treatment, but until that knowledge has been more precise such courses must be tentative. To this end both antidysenteric serum and coli vaccine have been tried, and, as I can testify from experience of the latter, with marked benefit. It is not, however, until a larger body of evidence on this point is available that any conclusions can be drawn; the few cases hitherto recorded are quite insufficient to base any opinion on. It need scarcely be added that the lately introduced preparations of lactic acid ferments have found their advocates as remedies for this particular affection.

Whatever plan or combination of plans may be adopted it is obvious that the greatest attention must be paid to the general treatment of the patient. Complete rest and warmth are essential, and where pain is considerable fomentations or other forms of hot application are matters of routine; vomiting may be allayed by hydrocyanic acid in an effervescing draught repeated every few hours, by minim doses of tincture of iodine or other recognized measures, and for the hiccough opium is to be regarded as most efficacious.

Since the appetite is often good and the digestive capability of the upper parts of the canal often appear but slightly if at all impaired, a small quantity of digestible solid food is to my mind preferable to a wholly slop diet, and that as much food as can be well borne is desirable is evident when the exhausting nature of the malady is remembered. Anæmia and other complications require their appropriate treatment, and strychnine, alcohol or other stimulants will most probably be required.

The CHAIRMAN (Sir Lauder Brunton) said the Section had listened with the utmost pleasure to a very full and clear paper, admirably adapted to the needs of the Section. The subject was one which interested them all; it was difficult to treat, and so was wearisome alike to patient and to the doctor, and therefore any addition to our knowledge would be welcome.

Mr. G. H. MAKINS, C.B., said his experience of the surgery of the condition was neither very extensive nor highly satisfactory to relate at that early period of the discussion, but, in answer to the President's invitation, such as that experience had been he was glad to give it. His