APPENDICOSTOMY TO PERMIT DIRECT MEDICATION OF THE LOWER ILEUM.

It has been suggested by Ewart⁴¹ that use might be made of this operation to reach the lower portion of the ileum. He proposes it for the surgical treatment of typhoid fever. He was able, both in the cadaver and in the living subject, to pass a catheter through the ileo-caecal valve for some 6 to 8 in., and so to irrigate the bowel. He used a Jacques catheter mounted on a stilette of soft pliable copper, bent at a suitable angle.

I can find no record of this suggestion being put into practice, and how far it is justifiable I do not know. Since the typhoid bacillus is, during the course of enteric fever, present in the mesenteric glands, the spleen and other viscera, it seems unlikely that the most thorough irrigation of the ileum, would do much to lessen the toxæmia. Possibly healing of the ulcers might be hastened, and any tendency to perforation diminished.

CONCLUSION.

The foregoing are the uses to which this operation has been or it has been suggested might be put.

The use of appendicostomy for colitis was preceded by the operations of right inguinal colostomy and caecostomy. Right inguinal colostomy is not easy to perform; it is difficult to close satisfactorily, and places the patient in a most unenviable position. The constant flow of fluid, irritating faeces over the surface of the wound and surrounding skin, soon to become excoriated and sore, is most distressing, requires the constant attention of a nurse, and prolonged sojourn in bed. It is true that by this operation the faecal stream is entirely directed away from the colon, which is thereby given greater rest; but the complete daily evacuation and irrigation possible with appendicostomy seems to be sufficient for the purpose. Cases of colitis have a well-known tendency to relapse, and it is not easy to decide when to close the colostomy wound, for, having once closed it, the opening is not readily re-established. Thus, Hale White and Golding-Bird reported a case of colitis treated by this operation, which relapsed two years after the closure of the colostomy opening. With appendicostomy, however, if, after treatment has been stopped, the opening be allowed to stenose naturally, which it will readily do, it gives no trouble, and can be dilated at a later date with suitable bougies, presence of the mucous membrane preventing complete closure of the fistulous tract. For very similar reasons the operation of caecostomy has, in my opinion, been superseded by appendicostomy. Caecostomy is more difficult to perform and more difficult to close. There is practically always some leakage of faeces, and the result for the patient is unsatisfactory. When done to divert the intestinal contents from the colon the result is imperfect, since the diversion is incomplete.

It is interesting to note that the first use of the appendix for irrigation purposes was the result of an unlooked-for incident. Weir was about to perform a caecostomy, but in opening the abdomen the appendix presented itself so opportunely that he utilized it in the way stated.

I have quoted 20 cases in which the operation of appendicostomy has been performed, 4 of which have come under my personal notice and supervision. Summarized, they are as follows:

For ulcerative chronic colitis	...	...	10
For simple chronic colitis	...	...	6
For protracted constipation	...	...	1
For other abdominal conditions	...	...	3

This does not take into account the cases reported by Curl, for I was unable to determine in how many he performed appendicostomy and in how many caecostomy.

In all the cases the operation was successfully performed, and was of marked benefit to the patient. In the cases of colitis the following results were obtained:

For ulcerative colitis:	
Total cases	...
Cures obtained	...
For simple chronic colitis with and without passage of casts:	
Total cases	...
Cures obtained	...
Much improvement after one month	...
Apparent cure in four weeks with slight tendency to relapse twenty months later	...
Cure after six weeks, no subsequent history	...

Of untoward events following operation I have found no report. In my own experience of the procedure I met with three small misadventures which may be of interest:

1. Stitch suppuration in those cases in which the appendix was opened on the table.
2. Through the carelessness of a nurse a catheter was allowed to slip into the caecum. It was passed per rectum without any discomfort within twelve hours.
3. One patient, whose colon was washed out daily with six pints of boracic acid lotion for seven days, developed signs of poisoning. She complained of severe frontal headache, vomiting, a slow pulse of about 58, and an eruption over the trunk and limbs. The rash consisted of small discrete papules of a light pink tint. On discontinuing the boracic lotion and washing out the colon with sterilized water the symptoms abated, and disappeared in twenty-four hours.

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LEUCOCYTOSIS IN APPENDICITIS.

By GEORGE MITCHELL, M.B., Ch.B., L.M.,

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WHILE acting as house-surgeon in Mr. Riddell's wards in the Aberdeen Royal Infirmary I had the opportunity of examining the blood of a large number of patients suffering from appendicitis. The results of my early observations seemed so valuable that I continued the examinations during the whole year of office.

The behaviour of the leucocytes in most cases gives a sure index both of the intensity of the morbid irritant and of the individual's powers of resistance. Regarded in this light, and considered along with other clinical data, it is of great practical value in many cases. If taken by itself as a pathognomonic sign it would frequently be found to be as misleading as any other individual symptom.

The great drawback to such a method of clinical investigation in urgent cases is the fact that an apparatus and time are necessary; hence it is not so applicable to cases outside hospital practice. Reliable results can, however, be got after a short experience, provided a reasonable amount of care is exercised. On several occasions I have seen the blood of a patient examined by several different men, and the results in most cases were found to be practically similar.

This statement does not apply so accurately to the absolute count as to the differential count. Variations in the result of the absolute count are much more frequently encountered, but I am quite prepared to believe that probably such discrepancies are due to faulty technique.

ABSOLUTE COUNT.

Accurate information is got from studying both the absolute and the differential counts. In practically all cases of appendicitis and of acute abdominal or pelvic inflammation going on to pus formation or necrosis there is an increase in the number of leucocytes; and, speaking generally, it may be laid down that the greater the increase the more severe the nature of the lesion and the graver the prognosis. The great exception to this is to be found in severe cases of very sudden onset, especially in an individual whose powers of resistance are very slight. The reaction of the leucocytes depends mostly on the severity of the morbid condition and on the resisting powers of the individual.

In gangrenous and suppurative appendicitis, and in other acute suppurative abdominal conditions, the absolute

count is generally over 20,000, but cases in urgent need of operation with an absolute count of considerably under 20,000 are so numerous that one feels rather sceptical of the old rule to regard cases with a leucocyte count above 20,000 as indicative of pus formation or necrosis, and those under 20,000 as catarrhal.

It is of more service to know the rate at which the leucocytosis is increasing than to know the actual number of leucocytes per cubic millimetre in a given case. An increasing leucocytosis means that the individual is attempting to battle with the toxins eliminated from the morbid area, while if the leucocyte count rises above that indicating pus formation or gangrene, and keeps on rising rapidly, it shows that virulent poison is being freely circulated in the system, which may gain the upper hand at any moment if operation is not resorted to. Cases of acute appendicular abscess are quite common with a leucocytosis of 15,000 to 17,000. As a rule, one meets with a higher leucocytosis in gangrenous appendicitis than in abscess formation.

Most cases of gangrenous appendicitis ending in recovery have as a rule a high absolute count, many of them from 30,000 to 40,000, but, on the other hand, the leucocyte count may be as low as 15,000.

I think it is generally accepted that cases in which the general symptoms are severe and the absolute count low frequently die. I can recall two cases of perforated gangrenous appendicitis with diffuse general peritonitis, both of which had a leucocyte count of 12,000. The symptoms were extreme in both, and the patients died within twelve hours after operation.

In cases with very sudden onset, accompanied by a severe amount of shock, there may be little or no increase in the number of leucocytes; but if the individual reacts from the shock the leucocytes become increased and rise above normal, while if the reaction fails the leucocytes do not rise.

The variation in the leucocyte count is of great service in forming a correct opinion as to when operation should be performed in cases of appendicular abscess or pelvic abscess from other cause.

It would appear that if the leucocytosis is not increasing to any appreciable extent in cases in which there are clinical signs of abscess formation, it is safe to conclude that the abscess is becoming "walled off" by adhesions, and so operation can be safely postponed till the abscess has been thoroughly shut off from the general peritoneal cavity. The size of the leucocytes varies very much in different cases and in the same case at different times, but such variation is said to be of comparatively little significance. A low count means one of three conditions:

1. A mild case.
2. A very severe case.
3. An abscess thoroughly walled off (Cabot).

DIFFERENTIAL COUNT.

While very valuable information can be obtained from the absolute count, that obtained from the differential count is even more reliable. The most important changes in the differential count are the great increase in the percentage of polynuclear cells and the diminution in the percentage of lymphocytes and eosinophiles.

Most authorities agree that the average percentage of polynuclear cells in the healthy subject varies from 65 to 72 per cent. (62 to 70 per cent., Cabot). In acute inflammation the percentage of polynuclear cells is always found to be increased.

In the cases of acute appendicitis going on to gangrene or pus formation that came under my observation the percentage of polynuclear cells varied from 79 to 90 per cent., and was generally higher in cases of gangrene than in those of abscess formation. It was also found to be higher in those presenting evidences of severe toxæmia. The highest count was 90.5 per cent. in a case of gangrenous appendicitis with general peritonitis, followed by death.

The ratio between the increase in the absolute number of leucocytes and the increased percentage of polynuclear cells in the greater number of my counts was about 1,000 to 1.5 per cent.—that is to say, taking the normal number of leucocytes to be 10,000 per c.mm. and the percentage of polynuclear cells as 72 per cent., then for every 1,000 of increase in the absolute count there was a corresponding increase of 1.5 per cent. in the polynuclear cells. All cases

that ended in recovery after operation had shown a marked increase both in the total number of leucocytes and in the percentage of polynuclear cells (before operation), while the two cases suffering from perforated gangrenous appendicitis with general peritonitis, already referred to, had 88 per cent. and 90.5 per cent. of polynuclear cells respectively, with only 12,000 of an absolute count in both cases. I had the opportunity of examining the blood only in these two fatal cases, but the results of these point to the fact that in severe cases a low absolute count is frequently got, while the percentage of polynuclear cells is generally high.

TEMPERATURE AND LEUCOCYTOSIS.

The relation of temperature to leucocytosis does not seem to give reliable information, as cases are seen with grave clinical symptoms and high blood counts with little or no temperature; but, on the other hand, there are many cases showing an increase in the number of white cells accompanied by pyrexia, which, like the number of leucocytes, varies very rapidly, according to conditions existing at the site of the pathological lesion. An illustration of this is afforded by the following case of appendicular abscess with retention after operation. The blood was examined immediately before operation and daily after operation:

On admission:			
Absolute count ...	...	...	19,500.
Differential:			
Polynuclears ...	...	...	84.5 per cent.
Lymphocytes...	...	...	13.4 "
Eosinophiles ...	...	...	0.3 "
Mast cells ...	...	...	—
Large hyaline ...	...	...	1.5 "
Temperature 102.6°.			
First day after operation:			
Absolute count ...	...	...	19,000
Polynuclears ...	...	...	78 per cent.
Lymphocytes...	...	...	20.5 "
Eosinophiles ...	...	...	0.5 "
Mast cells ...	...	...	—
Large hyaline ...	...	...	1 "
Temperature, 100.4°.			
Free discharge of pus.			
Second day after operation:			
Absolute count ...	...	...	17,000
Polynuclears ...	...	...	62.3 per cent.
Lymphocytes...	...	...	36.3 "
Eosinophiles ...	...	...	0.3 "
Mast cells ...	...	...	—
Large hyaline ...	...	...	1 "
Temperature, 99.8°.			
Free discharge of pus.			
Third day after operation:			
Absolute count ...	...	...	20,000
Differential:			
Polynuclears ...	...	...	76 per cent.
Lymphocytes...	...	...	22.5 "
Eosinophiles ...	...	...	—
Mast cells ...	...	...	—
Large hyaline ...	...	...	1 "
Temperature, 102.5°			
Discharge of pus much less.			
Fourth day after operation:			
Absolute count ...	...	...	16,000
Differential:			
Polynuclears ...	...	...	82 per cent.
Lymphocytes...	...	...	16.5 "
Eosinophiles ...	...	...	0.5 "
Mast cells ...	...	...	—
Large hyaline ...	...	...	1 "
Temperature, 103°.			
Discharge almost ceased.			
Fifth day after operation.			
Absolute count ...	...	...	16,200
Differential:			
Polynuclears ...	...	...	77.3 per cent.
Lymphocytes...	...	...	20.3 "
Eosinophiles ...	...	...	1.0 "
Mast cells ...	...	...	—
Large hyaline ...	...	...	1 "
Temperature 99°.			
A few hours after the taking of the previous count a large quantity of pus was evacuated from the wound.			
Sixth day after operation.			
Absolute count ...	...	...	10,800
Differential:			
Polynuclears ...	...	...	75.5 per cent.
Lymphocytes...	...	...	21 "
Eosinophiles ...	...	...	0.5 "
Mast cells ...	...	...	—
Large hyaline ...	...	...	2.5 "
Temperature 98.6°.			
Free discharge of pus, and no subsequent retention.			

INCREASE OF LYMPHOCYTOSIS DURING RECOVERY.

While making examinations of the blood of patients who had been operated upon for appendicular abscess it was observed in many cases that, very soon after the percentage of polynuclear cells and lymphocytes had returned to normal, the percentage of lymphocytes became increased. In most cases the increase was absolute, while in others it was only relative.

The following count is that of a case of appendicular abscess sixteen days after operation, where the discharge of pus had almost ceased:

Absolute count ...	...	...	10,000
Differential:			
Polynuclears ...	...	...	57.7 per cent.
Lymphocytes ...	...	...	36.5 "
Eosinophiles ...	...	...	2.0 "
Mast cells ...	...	...	0.5 "
Large hyaline ...	...	...	2.5 "

Most of the cases that showed lymphocytosis continued to do so up till the time of discharge from hospital, so that I could not ascertain how long the condition persisted. The greater number of those cases appeared to be in fairly good health; but perhaps the condition of the blood may be explained by the low condition of the patients after a severe attack of appendicitis.

SYPHILITIC LEUCODERMA AND THE
PIGMENTARY SYPHILIDE.

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"DAPPLED" is the term by which to describe the state of the skin in syphilitic leucoderma. A glance at the appended illustration will show what is meant by it. Dappling may be studied on the coat of a grey horse or a fallow deer, and with especial interest on that of the giraffe. It consists of the location of isolated patches of a tint different from the ground on which they are placed. The patches may be small or so large as to cover almost the whole of the ground, and thus make it difficult to recognize that they ever were merely patches. In the giraffe of South Africa the skin is a brown bay, but almost angular areas are mapped out by lines of yellowish-white, whilst in the giraffe of Northern Africa the lines of light colour have widened out until only islands of brown remain. Yet the two animals are probably not distinct species. In the dappled horse the arrangement of colour is reversed, it is the patches (or spaces) which are pale and the interspaces (or ground) which are of darker tint. I have felt it necessary to state these facts in order to make comprehensible my own theory of syphilitic leucoderma. In the domesticated horse it is only certain individuals which show a marked tendency to dapple in any conspicuous degree. We must suppose, however, that the potential endowment exists in all. Many, perhaps all, dappled horses become whiter—that is, less dappled—as age advances. The young of many animals show in extreme youth a speckling, spotting or streaking of their skins which they lose when adolescent.

My theory as to syphilitic leucoderma is that the human skin is in many persons latently dappled, and that the condition becomes obvious under certain states of disturbed pigment function of some of which the spirillum of syphilis may be the cause.

The two letters which appeared in the JOURNAL of November 28th, 1908, p. 1650, warn me to be more careful as to making negative suggestions. The fear of the criticism of men better read and enjoying better memories than myself is now before my eyes. It must suffice, therefore, to say that if any portrait or detailed description of leucoderma syphiliticum in a negro or in one of the dark races has been published, I should be very thankful to be referred to the work in which it occurs. Such records, if they exist (and probably they do), would be most helpful to us in the endeavour to interpret the phenomena of this interesting condition.

In my last letter* I left the description of our own museum portraits unfinished. I will now, with your permission, attempt to complete it. Before doing so, however, it may be well that I should say a few apologetic words in reference to the letters from Dr. Pernet and Mr. Ernest Lane, which have appeared in the JOURNAL of November 28th, 1908, p. 1650.

These gentlemen point out, and with, I regret to say, some truth, that I have much understated the case as regards the amount of attention which has been given to this subject by English authors. I was wishful to show that the condition is one which is probably far more frequent on the Continent than it is with us, and had no wish to disparage or neglect our own literature. I admit that the expressions I used were too strongly put, and they can at first sight be explained away only by pleading either ignorance or forgetfulness. I hope my friends will allow me to plead guilty to their accusation under the head which they may deem the most pardonable. My words have, however, been taken to imply much more than they were intended to. They were dictated when I was standing on the Museum floor with a display of six portraits of leucoderma syphiliticum before me from Continental sources, and not a single one from an English source; and although I was aware that most of our systematic works, whether on syphilis or dermatology, had mentioned it, I had forgotten that any of their authors had recorded original facts, and thought that most had derived their information from foreign sources. I felt sure that, although the condition is one which invites alike the camera and the artist's brush, no English portrait of it had appeared. Whilst my letter was in the printer's hands my memory was fortunately reinforced in reference to the portrait given in the new *System of Syphilis*, and by the indulgence of the Editor I was allowed to squeeze in at the last moment a line of postscript in order to show that I knew of it. Now, of this portrait I had been previously quite cognizant, and had pointed it out with much commendation to

Fig. 1.—The arrangement of leucoderma syphiliticum on neck of a girl. Copied by permission from Chotzen's *Atlas*.

some friends, but I had not then been able to display it with the others in my collection (it has since been added), and at the time I wrote it had absolutely escaped my recollection. It was, in fact, brought back to my recognition by one of my friends, to whom I had myself shown it a fortnight

* BRITISH MEDICAL JOURNAL, November 21st, 1908, p. 1592.