omentum to the line of the wound; these adhesions are, no doubt, in the majority of cases pretty quickly absorbed, but the rate of their absorption differs widely in different patients, and all experienced abdominal surgeons will have seen cases in which complaints have been made for prolonged periods after operation, which were evidently due to the intermittent drag upon transverse colon and stomach produced by these attachments. The possibility of this, always present even after only one section, is doubled after two, and these being in different parts of the abdomen, there is added the possibility of opposing traction upon the same viscus.

For these reasons it will, I think, be admitted that it is important, if it be possible, that the differentiation between cases having an appendical from those having a gastro-duodenal origin should be made before the abdominal wall is incised; and it is in the hope that the suggestions given above may be useful in this direction that the cases so far cited have been brought forward. They are, of course, much too few to warrant any definite conclusions; but if they are corroborated by other observers whom they may stimulate to watch for them, ultimately sufficient evidence may be accumulated to be useful in what is, at present, a somewhat difficult, though a most important, point in diagnosis.

I have already referred to the great assistance rendered by expert radiography. This seems likely to be still more effective in the future if Holzknicht's symptom complexes prove reliable. One of the most unpleasant features of previous methods of obtaining evidence as to the presence of hyper-acidity or hypo-acidity—the use of the stomach tube—may then be almost eliminated. The use of Haudek's double bismuth meal² and of Schwarz's fibro-dermic capsules in conjunction with radioscopy would appear to give all the requisite information.

So far as my cases go, however, some of these methods of obtaining evidence are in the future; but even in the past, as my list shows, a definite diagnosis was made previous to and proved correct by operation in 114 cases out of 124. Even if the 9 cases of acute perforation are eliminated as being based upon sharp physical signs which could hardly be misunderstood, and the 7 of carcinoma, in all of which a mobile hard mass could be felt, there remain 98 cases in which a correct diagnosis can be placed to the credit of the clinicians concerned, and which is very different to "over 50 per cent. of mistakes" which Mr. Moynihan appears to have encountered.

I venture to lay the more stress upon this, since in the great majority of instances the diagnosis was made before the case came into my hands, and I had simply to verify it and act accordingly. The statement as made by Mr. Moynihan cannot but throw doubt upon the diagnostic means available by physicians or upon their use of these means. As my own experience is so entirely different, I feel bound to bring it forward, small as it is, to counteract as far as may be in my power any such effect.

REFERENCES.

¹ *Rev. de chir.*, March 10th, 1912, p. 402. ² *Archives of Roentgen Ray*, June, 1911, p. 6.

THE Department of Tropical Medicine and Hygiene of Tulane University, which is under the direction of Professor Creighton Wellman, has sent out its first research expedition for the study of malaria. The expedition, which is headed by Dr. Charles Cassidy Bass, a member of the department, sailed from New Orleans on April 20th for Central America. The Commission will return to New York in time to report the results of the investigation to the meeting of the American Medical Association.

ACCORDING to the *Canada Lancet* the total number of medical colleges in the world is 320. Of these, 120 are in the United States; 34 in Great Britain and Ireland; 8 in Canada; the "rest of the world" making up the balance of 158. In the United States in 1910-11 there were 19,786 students in all medical schools and colleges, the smallest number since 1900. Of this number 680 were women, of whom 159 graduated. The total number of graduates in the United States in 1911 was 4,273—the smallest number in ten years. The percentage of total graduates is 21.6. In Canada there are 8 regular medical colleges, in 2 of which the teaching is given in French. In the United States 13 medical schools "suspended" or were merged into others during the year. Of the 120 now in existence 101 are regular, 12 homoeopathic, and 7 eclectic.

APPENDICITIS—AND QUICKNESS.

BY

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THE word *quickness* at the head of this note is used in a double sense: first, with regard to the speed in which appendicitis may run its course, and, second, with regard to the need of the surgeon losing no time in getting to work when once the presence of the disease is recognized—or, on good grounds, suspected.

There cannot be much doubt, I think, that cases of appendicitis are being met with with increasing frequency. On all sides one hears of this disease—in the Profession and out of it; in the circle of one's friends and acquaintances; in the first column of the *Times* and in obituary notices. And it often happens that in the first column the reference is worded somewhat thus—"of appendicitis, after operation," as if the sorrowing friends were not quite sure whether the death ought to have been ascribed to the disease or the treatment. I have personal knowledge of not a few of these cases. Indeed, I confess that I have been professionally associated with a share of them, and I know that the wording of some of the notices is, to say the least, misleading. The wording ought to have run somewhat thus—"of appendicitis, after a belated operation," or "of appendicitis, after operation which the surgeon was not allowed to perform until it was too late," or "of appendicitis, after operation, the services of a surgeon not having been called in until medical treatment had been found unavailing." Perhaps the simplest form is the best, however; and I feel sure that if the publisher of the *Times* gave instructions that the word "belated" should in all these announcements precede the word "operation," it would be not only in the cause of truth but also in the interest of future sufferers. In the public mind the three words "appendicitis," "operation," and "death" are unhappily thus connected. If the surgical treatment could always be quick there would be little chance for death. At any rate, this unhappy association of ideas cannot be laid at the door of the surgeon. If he had his way—if the physicians would say, "This case of localized septic disease, or mortification, or abscess, or whatever it is, is not a case for me; it is a purely surgical question," there would be little loss of time and still less of life. Also, if matrons in charge of children at schools, and if parents, could be made to understand that severe "stomach-ache" in a child is not a case for treatment by "first aid," but that a practitioner should at once be called in, things would go more happily. The case is urgent—much more so than it may seem to be—and professional aid should be quickly obtained.

Then, it being admitted that cases of appendicitis are more often met with than formerly, I would ask the question if they are not sometimes found running their course with greater quickness than formerly. At any rate, at the present day the quickness with which some of them develop is remarkable.

A healthy boy of 16 had been working in Dr. Eckenstein's pathological laboratory for two years. He had had during this time no serious illness, but six months ago he had a slight pain in the right side when he ran. There had been no other trouble. On Monday, March 25th last, he was quite himself, feeling hungry and eating well. On Tuesday, 26th, he ate his breakfast as usual, and felt quite right till about 11 o'clock, when he had had some bread-and-butter and cocoa, after which he had slight pain. He was not really ill, however, for he did his work and went on several messages. But between 1 and 1.30 o'clock pain became severe, and when Dr. Eckenstein arrived at the laboratory at 2 o'clock the boy complained of bad "stomach-ache." He was made to lie down; he did not vomit. At 3 o'clock he said that he felt very ill, and he was then sent in a cab into the French Hospital, where, on admission, he was half-unconscious, and his pulse was hardly perceptible. His temperature was 96.2°.

I saw him at 5 o'clock that evening, and found the lower part of the right rectus abdominis contracted and hard. But I gave it as my opinion that there was no perforation

of the appendix, not only because of the shortness of the history, but because the boy's aspect was good—particularly good. But we were all agreed that it was a case for operation. On opening the peritoneum there was an abundant escape of odourless yellow serum. The end of the appendix was as large as one's little finger, and there was perforation in it (near a concretion) from which fluid was running freely. The appendix was removed, and the peritoneum of the caecum was sewn over its stump. There were no adhesions. On passing the finger towards the pelvis a considerable rush of serum took place, so a large drainage tube was introduced deeply and there left. Next day the odour of the discharge gave clear evidence of coli-bacillary infection. The boy made a rapid recovery.

What is the sign by which the surgeon may be made aware of the need for operation? In my experience there is none: or, to put it more forcibly, there may be urgent need for immediate operation in any case and yet no danger signal may have been hoisted. The temperature certainly cannot be depended upon as a guide. Indeed, if the absorption of poison has been considerable, the chart may be tracking above the normal line or even below it.

The pulse, as a rule, gives some help in the case of pain in the abdomen; but it must be remembered that it takes very little to send up the pulse rate in children. And it sometimes happens that in a case in which the surgeon has discovered a mortified appendix there has been no marked quickening of the pulse. So the pulse cannot be depended upon any more than the temperature.

The aspect of the patient I for some time considered as the most trustworthy guide to the condition of the appendix, but having seen certain patients smiling and of good colour whose appendix had already given way, I have ceased to pay much heed to the aspect as a sign. In this case the good aspect of the boy was particularly misleading.

The history—Well, no surgeon of experience pays much regard to history; and in this case the shortness of the history certainly helped to mislead.

Local signs are also apt to be misleading. There may be no pain and not much tenderness in the region, even with advanced appendicular disease; and rigidity of the abdominal muscles in the right inguinal region, though generally present, and most helpful as a guiding sign, may be wanting though disease of the appendix is far advanced.

Generally, however, the most wilful cases show one sign of danger, in rigidity, tenderness, aspect, pulse or temperature. It is, surely, an unreasonable or very young practitioner who would expect all the danger signals, as described in books, to be hoisted at the same time.

As regards operation in appendicitis—what about that waiting until adhesions have formed? Does any body now wait for such protection? When an appendix has perforated, and the serous fluid which bountiful Nature pours out has become infected with the colon bacilli, as in this case, it is impossible that a limiting barrier can form. And if there had been delay in sending this boy into the Hospital, or delay in operating, he would probably have died without a trace of that "walling-off" of the affected region by adhesive peritonitis of which so much used to be said.

The more that I see of appendicitis the more convinced am I that the greatest safety lies in the quickness with which the radical operation is undertaken. "But," says some one, "so prodigal a surgeon is likely to be found operating on cases in which the appendix was very slightly—if at all—affected. Surely it is better to wait a bit until there is no doubt about the appendix being at fault?"

To him I would reply that there is, of course, the possibility of such an error, but that, after all, this is a small matter compared with the risk of letting an uncertain case of appendicitis drift on either until "adhesions may have formed," or until the dangerous nature of the disease had been rendered abundantly clear by the appearance of signs which had hitherto been absent. I suppose that every operating surgeon has at times been regretfully compelled by the well-meaning advice of other persons connected with the case to hold his hand, till in the end he has been brought into the unhappy state of the submissive Job, who mourned that when he looked for good evil came upon him, and that when he waited for light there came darkness.

ON RETROPERITONEAL PERFORATION OF THE DUODENUM,

WITH A SUGGESTION FOR TREATMENT.

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DURING the last few years there has been much progress in the surgical treatment of those gastric and duodenal ulcers which have perforated into the peritoneal sac. We have learnt to know the symptoms of this catastrophe more clearly, to appreciate the significance of a rigid abdominal wall, and to recognize the interval of apparent well-being, which, coming after the first shock of the perforation, flatters to deceive. The results of operations on these cases have shared in the improvement which has followed a more general recognition of the principle that early operation is the dominant factor in the surgery of the acute abdomen, and these results would appear to have been further improved by the practice of gastro-enterostomy in addition to the closure of the perforation. It is, however, scarcely possible to claim a parallel improvement in the treatment of those ulcers of the duodenum which have perforated into the retroperitoneal cellular tissue. The surgeon rarely sees these cases before the consequent abscess has given unmistakable signs of its presence, and by this time the damage is often beyond repair. From this point onwards there is a singular likeness in the histories of cases of retroperitoneal perforation. The abscess is incised at some convenient point; the bulk of the food, together with large quantities of bile and pancreatic juice, continue to pour through the opening, and before many days the patient is dead.

In considering any scheme for the better treatment of these rare but most fatal accidents the following facts must be taken into account.

The second part of the duodenum is entirely devoid of peritoneal covering on its posterior surface where it is in contact by areolar tissue with the right kidney and inferior vena cava. A small portion of the first part of the duodenum near its termination, together with the beginning of the third part also, have no peritoneum on their posterior aspects. If ulcers perforate in these districts they must perforate into areolar tissue and not into the peritoneal sac. The accident of retroperitoneal perforation must at any time be a rare one, since ulceration of the second stage of the duodenum is uncommon as compared with ulceration of the first stage. Fenwick states that 6 per cent. of perforated ulcers occur in the second stage. The figures of Perry and Shaw, which are often quoted in this connexion, show that in 149 instances of duodenal ulcer the distribution was as follows: First stage, 123; second stage, 16; third stage, 2; and fourth stage, 8.

The great majority of duodenal ulcers are situated close to the pylorus, and when these perforate they will perforate into the general peritoneal sac, but of these ulcers in the first stage it is possible that an occasional one situated near the end of the first portion of the duodenum may perforate into retroperitoneal tissue. Of the ulcers situated in the second or descending portion a certain number will be found in that area uncovered by peritoneum and may consequently perforate into areolar tissue. The chances of retroperitoneal perforation thus limited by the natural distribution of the ulcers are further much reduced by the plastic conservative efforts of Nature to seal off the opening—efforts which, while often futile on a free, mobile, peritoneal surface, are likely to be attended with success under the favourable conditions of the second stage, where the gut is fixed in a bed of connective tissue. There can be no doubt that many of these ulcers are sealed off in this way, since duodenal ulcers adherent to the posterior abdominal wall and adjacent viscera, especially pancreas, are common. Fenwick states that 42 per cent. of his cases of duodenal ulcer showed adhesions to neighbouring organs, and most of these adherent ulcers were on the posterior wall of the gut.