The pulse is only slightly, if at all, accelerated in the early stage; it may be normal in every way, even though the temperature be raised. Any continued or decided acceleration of the pulse generally corresponds with the occurrence of local peritonitis; to wait for such alteration is, therefore, to sacrifice the best time for operation.

When the appendix is acutely inflamed gaseous distension of the caecum is frequently present; this local distension is due partly to the excessive formation of gases by the active bacterial decomposition of the contents of the caecum and appendix, and probably in some cases partly to an accompanying inflammation of the interior of the caecum (typhlitis) with atony of the gut. It is more likely to be present when the appendix is retrocaecal in position and closely embedded in the wall of the caecum. It gives rise to a local swelling with a tympanitic note on percussion, to borborygmi, and occasionally to painful peristaltic waves. This may cause the observer to think that he is merely dealing with a case of caecal dyspepsia, and the swelling of the caecum may mask the inflamed appendix placed behind it; or the painful contractions of the distended gut attempting to empty itself may even suggest intestinal obstruction.

(c) *The Order of Occurrence of the Symptoms.*

It is largely due to Murphy that the importance of noting the order of the symptoms has been realized. Pain is always the first symptom; a few hours later nausea or vomiting occur; after a few more hours local tenderness manifests itself, and the temperature rises. Murphy states that leucocytosis is a still later symptom. He adds: "The symptoms occur almost without exception in the above order, and when that order varies I always question the diagnosis." Every surgeon who has carefully investigated this point must be able to confirm this dictum, though it must be allowed that important exceptions occur. If fever precedes the onset of pain, if vomiting accompanies or precedes the first bout of pain, it is generally not appendicitis that we are dealing with.

(d) *The Local Conditions found on Examination.*

On examination of a case of acute appendicitis in the pre-peritonitic stage there will accordingly be found slight elevation of temperature with slight quickening of the pulse-rate. Local tenderness will be determined over the position of the appendix either in the right iliac fossa or on the right wall of the pelvis as felt from the rectum. There may, but more likely will not, be local rigidity. These points, taken with a suggestive history of onset, are in most cases sufficient to enable one to make a diagnosis of acute appendicitis before any local peritonitis has developed. At the same time the great probability of the condition being acute appendicitis does not absolve one from the obligation to make the most thorough examination in order to exclude any lesion elsewhere. Examination of the chest and urinalysis are especially important.

ALTERNATIVE METHODS OF TREATING THE APPENDIX STUMP.

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In the ordinary operation undertaken for quiescent or catarrhal appendicitis, ligature or crushing of the appendix stump followed by its invagination into the caecum presents no difficulty and is entirely satisfactory in its results. In another class of case with local or general suppurative peritonitis and profound toxæmia, any search for the appendix may be mistaken enthusiasm, and likely to extinguish the last hope of the patient's recovery.

Between these two extremes other conditions may be found which may tax considerably the ingenuity of the operator, and cannot be dealt with by the ordinary methods. Such conditions may be encountered in the following type of case: The patient may have been ill for some four, five, or more days, or may in addition have had previous attacks. On opening the abdomen a mass is found, consisting of omentum, ileum, caecum, and

appendix, partially or wholly matted together, in the centre of which there may or may not be some thick pus or thin sero-purulent fluid. I have recently operated upon three such cases, in which the condition of the patient contraindicated prolonged manipulation; though it seemed very desirable to remove a highly infective appendix, yet it appeared inadvisable, if not impracticable, to do so in its entirety by the usual method.

In these circumstances I was forced to adopt unorthodox methods of dealing with the stump—methods for which I do not claim originality, though I have not myself seen or heard of their use; as they were very happily successful they may be useful to others.

Cases I and II presented a very similar condition of affairs—a matted mass of bowel and omentum of the consistency of soft cheese, enclosing a little thin offensive fluid, and a gangrenous, perforated appendix. In each case the terminal half of the organ was gangrenous, whilst the proximal half was deeply infiltrated, stiff, and densely adherent to neighbouring bowel. In each case no difficulty was experienced in separating the distal gangrenous portion; it was the proximal half which proved intractable in view of the patient's inability to stand prolonged manipulation.

In Case I separation of the proximal half of the appendix was accompanied by profuse venous haemorrhage, flooding the wound and flowing over the abdominal incision. Attempts at securing bleeding points with forceps only made matters worse, the softened tissues crumbling and tearing with the utmost readiness; the bleeding could only be arrested by firm gauze packing.

It seemed unwise to make further attempts at separating this portion, and accordingly all the freed part of the appendix was tied off, the base was "squeezed" by forceps to obliterate communication with the caecum, and the still adherent proximal portion crushed longitudinally to destroy its vitality. The caecum was now brought up to the abdominal wound and secured by a few points of suture; the "dead" appendix stump was now extra-peritoneal, and it was further isolated by ribbon gauze. The usual drainage was employed, with closure of the rest of the incision.

In Case II, with gangrene and local peritonitis, the proximal end of the appendix was adherent to the ileum, and its separation was attended by tearing of the latter. The tear was sutured, and a further attempt made, with a similar result. As time was valuable, the stump was treated as in Case I, the ileum and caecum being secured in the wound and the appendix stump isolated in the abdominal incision.

In Case III an inflammatory mass as large as a child's fist, without abscess formation, was found. The appendix was at first retrocaecal, and then passed upwards and outwards, embedded as it were in the outer wall of the caecum. The caecum itself was glued to the posterior parietes, and was absolutely immobile. The distal half of the appendix lying on the outer caecal wall was easily separated, but the proximal end lying behind the fixed caput caeci seemed a difficult problem. The distal end of the appendix was cut off without ligature, a small stab hole made into the lumen of the caecum through its outer wall, and the open end of the appendix stump thrust into the caecum and secured by two or three points of catgut. The appendix stump now opened into the caecum at both ends, and the wound was closed without drainage.

All three cases made good recoveries. I feel confident that in Cases I and II the crushed appendix stump sloughed into the dressings, and that in Case III it discharged at both ends into the caecal cesspool.

THE thirteenth Congress of the German Orthopaedic Society will be held this year in Berlin on Monday and Tuesday, April 13th and 14th, under the presidency of Professor Th. Kölliker of Leipzig. The principal subject proposed for discussion is the operative treatment of spondylitis, to be opened by Dr. Albee, of New York, with an address on his method of osteoplasty in spondylitis. The next day Professor Biesalski will open the proceedings with an address on the physiological advantages of transplantation of tendons. Among other communications are the following: Dr. Gocht, on the technique of arthrodesis; Dr. Schulthess, on the theory and practice of Abbott's procedure; Dr. Wilms, on the operative treatment of flat-foot.