

In all but one of my own cases the impaction took place in the small bowel.

There is evidence to show that sometimes even very large calculi may traverse the intestine, and I have notes of one case in which two calculi safely traversed the bowel until they reached the anus, at which stage they became impacted.

The patient was a man of 61, who was under my care over 20 years ago suffering from enlargement of the prostate. He told me that when 18 years of age he began to have attacks of pain attended by vomiting and followed by jaundice. During the next seven years he passed eight gall-stones; six of these were only as big as small marbles, but two larger ones—1½" and 2" in diameter—became impacted in the rectum and had to be removed by forceps. Since then he had never suffered from gall-stone pains.

The natural termination of cases in which the stones have caused obstruction is a matter of considerable interest. Though sometimes they safely pass and are voided *per vias naturales* with the complete cure of all symptoms, this fortunate happening is not the rule, and more commonly a stone once impacted either causes death by producing complete obstruction or by setting up peritonitis. As a rule the diagnosis has to be made from a consideration of the symptoms and by a process of exclusion. In a thin person the actual stone might be felt as a hard mass in the lower abdomen or bimanually and it might be detected by the X ray, although this is a method which is seldom employed in emergency cases. (To be concluded.)

A SYMPOSIUM

ON

INDIGESTION.

Being Remarks of the Opening Speakers at a Recent Discussion on this subject at the Hunterian Society.

III. THE MEDICAL ASPECT.

BY

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FOR the purposes of this discussion I would define indigestion as signs and symptoms, mostly referable to the abdomen, produced by a disorder of the normal action of the stomach and intestines.

One of the symptoms most commonly produced by disordered function of stomach and intestines is pain, which may vary from acute agony to a sensation of burning, or even mere discomfort. A feeling of distension with or without real swelling of the abdomen is another very common symptom, which may or may not be accompanied by the outward and visible signs of flatulence. Of the more common signs of indigestion, swelling of the abdomen, tenderness on pressure, muscular rigidity, flushing of the face, hot or cold hands and feet, are the most usual. These signs and symptoms may be associated with any lesion, functional or organic, of the whole alimentary tract, from the cardiac end of the stomach to the rectum, and it is often a matter of great difficulty to determine what part of the tract is at fault.

The main functions of the alimentary tract are dependent on its motility and powers of secretion. When pathologically disturbed, it may move too quickly or too slowly in part or in whole, and the secretion may be above or below the normal. These disorders may be the direct result of some gross local lesion of the mucous membrane in some part of the tract, or may be the result of faulty

and ill-balanced innervation, or a fault in the secretion of the great accessory glands—the liver and the pancreas. It may be, however, secondary to a lesion arising entirely without the alimentary tract, whose activities may be impaired by the mechanical influence of, say, a tumour or an inflammatory process which has resulted in adhesions. So that when a person complains of pain in the epigastrium at some time or another after food, and nausea, vomiting, and constipation, both painstaking examination and reasoned interpretation of discovered facts are necessary for an accurate diagnosis.

PAIN AS A SYMPTOM OF INDIGESTION.

One of the most useful symptoms for study by the medical man is pain, and its careful location leads to very helpful diagnostic results. Pain in certain localities has proved to be at least very suggestive of lesions in definite parts of the alimentary canal. Even more helpful is the discovery of areas which are tender on palpation. A pyloric ulcer of the stomach is found to give rise to tenderness and rigidity in the middle line just below the xiphisternum. A duodenal ulcer very frequently gives rise to tenderness and rigidity in the right hypochondrium, pain being often referred as well to the right shoulder. The most common site of this hypochondriac pain is about midway between the middle line and the arch of the ribs, some two inches above the level of the ninth rib. Pain associated with a lesion of the gall-bladder is also felt in the right hypochondrium, with rigidity of the upper third of the right rectus muscle; the area of tenderness, however, found in connexion with this lesion is more definite and circumscribed, usually at a point on a level with the ninth rib and about two inches internal to its tip. Lesions of the jejunum and upper and middle ileum produce pain that is felt for the most part in the region of the umbilicus; lesions of the lower ileum as in typhoid fever produce pain in the right iliac fossa, and where there is rigidity, it is usually the middle third of the right rectus that is affected. The

pain and tenderness produced by lesions of the appendix or its immediate neighbourhood are manifested in that area which we know as McBurney's point, and the lower third of the right rectus is more or less rigid. The green-apple pain felt above the pubes, usually of a cramping character, is suggestive either of a general irritation of the colon, or an endeavour on the part of the colon to overcome some obstruction. Ulceration and irritation of the descending colon and sigmoid is usually indicated by a pain and tenderness in the left flank and iliac fossa.

It is interesting to notice that the areas of tenderness do not necessarily overlie directly the visceral lesion, but tend to be constant, whatever the actual position of the viscus may be, and it is most probable that a further and more careful investigation of superficial areas of hyperalgesia, whether or not accompanied by muscular spasm, may in the future lead to a more and more accurate diagnosis of the part of the alimentary tract which is diseased.

While the area of referred pain may indicate very closely the part of the tract which is at fault, it does not of itself tell us the cause or the actual character of the lesion. For instance, pain referred more or less accurately to the pyloric area, coming on some hours after the taking of food, may be due to a duodenal ulcer, or it may be due to a superficial abrasion in the pyloric area, associated with a lessening of the normal motile capacity of the stomach.

No doubt in the latter cases there occurs a large amount of spasm of the pylorus which in the presence of an erosion or abrasion will give rise to acute pain, especially when irritated by the acids formed by the fermentation of the residual contents of the stomach, which is seldom, if ever, completely emptied. Certainly, also, the pain of a duodenal ulcer is induced by the presence of excessive acid. It is impossible to say without chemical examination what is the nature of the acid which is in excess. In the vast majority of atonic stomachs the secretion of hydrochloric acid is far below the normal, and is often completely arrested, and the total acidity of the gastric contents is made up of organic acids, acetic, butyric, and lactic, which are the direct results of decomposition. To make things still more difficult, it is not always true to say a duodenal ulcer is associated with hyperchlorhydria. Where duodenal irritation has given rise (as it not infrequently does) to spasm of the pylorus and atony of the gastric wall, the acids which help to produce the pain may be organic, and the secretion of hydrochloric acid may be much below the normal, or entirely suppressed.

I have implied that atony of the stomach and spasm of the pylorus may be produced by an ulcer of the duodenum (which is to say by a lesion of a part of the alimentary tract other than the stomach itself), and it is a well-known fact that

the same condition may be produced by a chronic lesion of the appendix.

Our difficulties are thus added to by a knowledge that a purely gastric symptom may be produced by a lesion many feet away from the stomach, the more so when one realises that lesions so remote from the alimentary tract as cervicitis uteri and phimosis will sometimes cause gastric atony, with a considerable amount of spasm of the pylorus, showing how sympathetic irritation in any part of the abdomen may, perhaps only in those cases whose vagus control is naturally weak, produce spasm in any one of the sphincteric or pseudo-sphincteric areas in the gastro-intestinal tract. It needs not even a physical irritation to produce such effects. Sympathetic over-action, the result of emotion, and vagus exhaustion by long stress (whether emotional or physical) will produce in sensitive cases a similar result.

CHEMISTRY AND RADIOLOGY AS AIDS IN DIAGNOSIS.

When a patient presents himself suffering from indigestion (that is to say, from a group of symptoms more or less referable to the abdomen, such as pain, nausea, vomiting, distension, and constipation), one dare not in obscure cases be content with a cursory examination of the abdomen itself, but must be prepared even where there are definite physical signs present, to call in the aid of the chemist and the expert in X rays, before a diagnosis is sufficiently established to allow one to treat the patient with intelligence. But at the same time I am equally convinced that in a great number of cases a careful physical examination will supply all the needful information. Personally I am shocked to find with the twentieth century a quarter gone, that there are still men who seem to believe that an abdomen can be properly examined without taking off a low corset, or with the intervention of a garment between the eyes and fingers of the physician and the patient's abdomen. More mistakes are made in medicine by lack of investigation than by lack of knowledge, and while it is wise to have the help of the chemist and the radiologist, much can still be made out, not only by palpation, but by ocular observation. It is a bad thing to be too dependent on the ancillary branches of medicine.

Even in the last few years I have had three patients sent to me complaining of "indigestion" with pain in the epigastrium, who had been under treatment for some time by those interesting therapeutic straws at which the drowning physician so eagerly grasps—bismuth, sodium bicarbonate, and preparations of various peptic ferments, both animal and vegetable, when, in reality, one suffered from an abdominal aneurysm, and two others from a very well-marked chronic appendicitis.

The chemist and the radiologist aid the practitioner to place his cases of indigestion in various

groups, so that a notable diminution or complete absence of hydrochloric acid after chemical examination, and a demonstration of a pyloric filling-fault by the radiologist is a very strong evidence in favour of the diagnosis of a malignant tumour of the pylorus: but the absence of hydrochloric acid in the gastric secretion alone is, of course, no evidence on which to base a diagnosis of pyloric cancer, and a definite filling-fault may be due to spasm and not to obstruction by a tumour. So these two pieces of evidence obtained by experts are not in themselves absolutely conclusive. The question can often be cleared up by the use of belladonna when the filling-fault will disappear, and one is forced to regard the gastric condition as part of a general functional derangement, probably nervous in origin, or to a local derangement of function induced by some remote influence, such as chronic appendicitis. Hypochlorhydria and even complete achylia are found in a large number of dyspeptics, and it is a curious fact that in certain of these conditions examination by the X rays after an opaque meal affords very little definite information, except of a negative kind, even when the examination is a serial one done with the greatest care. A study of the stomach alone up to three or four hours after the opaque meal has been given is of little value.

Many patients who suffer from indigestion complain that some hours after a meal they have a feeling of distension, precordial discomfort, and tachycardia, and it is astonishing in how few instances one has an X ray report that gives one any help at all. The eyes of the radiologist seem so often to be glued to the shadow of the advancing barium, and fail to see that some three or four hours after a meal and shortly before another is taken, there is visible on the plate or film a very marked distension of the fundus with a high air bubble, which corresponds exactly with a large increase in the upper border of the gastric percussion area on physical examination of the patient.

At an important medical meeting some years ago a physician attacked with some vehemence an elderly and distinguished member of our profession who ventured to suggest that some idea of the size of a dilated stomach could be obtained by auscultatory percussion of that organ. He declared that without an examination by the X rays any appreciation of the condition was quite impossible. I entirely disagree with this view; it is quite possible for a general practitioner, even a busy one, to get a very fair idea of the degree of gastric distension by auscultatory percussion, and this method often gives more definite findings than are afforded by radiological and chemical methods.

A careful study of the patient's history will bring out many salient points; knowledge of his home surroundings, material and psychical, are very important. I have known chronic dyspeptics cured by the removal, whether by Providence or an alienist, of an extremely trying member of

the family. I have known others improved by a loss of money so considerable that their social energies, both gastric and emotional, had to be largely curtailed, and a quieter, more regular, life forced upon them.

A CONSTITUTIONAL DIFFERENCE.

Indigestion may be directly induced by causes so diverse as over-eating, over-drinking, or emotional stress. Yet, if I may say so, the more one works among dyspeptics the more one realises that alimentary derangements are dependent, not only on gross errors and gross lesions, or the effects of over-excitement and long periods of strain, but that many people suffer after errors so small and strain so slight that one is forced to believe that there is in their physical outfit some inherent fault which is the primary cause of their alimentary breakdown. One man may be a broken-down dyspeptic at the age of 40 on a lesser load of alcohol than another may carry to the age of 80 without any symptom. One man may remain physically fit under a degree of strain and worry that has made his neighbour a chronic invalid. One man may live happily on a diet consisting largely of meat and suffer abominably on raw vegetables and fruit, whereas another has to avoid meat of all kinds and maintains a healthy body and mind on a diet that is almost entirely vegetarian. The fact is that there is some constitutional group difference among men that makes some easily subject to alimentary derangement and others able to eat and drink anything without the slightest ill-effect. What that constitutional difference is we shall know more about in a few years than we know to-day, but through the study of certain diseases we have already been able to show that functional derangement of the gastric and intestinal tract is associated with, roughly speaking, two definite types of constitution—one in which the fault is assimilative, and the other in which the fault is eliminative.

These faults, assimilative and eliminative, are associated with an alteration in the normal balance between the vagus and sympathetic systems, with resulting unpleasant symptoms. Those who err on the side of assimilation form a very interesting group. It is in this group that we find dyspeptics with long stomachs and redundant colons, and it is interesting to note that the long stomach is in many cases practically congenital. People with long stomachs and redundant colons, like people with long, poorly-muscled backs, lose muscular tone easily, and the moment that muscular tone is lost dyspeptic symptoms and constipation will begin. In this class, also, one finds the stomach that blows out after meals when practically empty, giving rise to much discomfort which is largely referred to the precordium. Associated with this loss of power is a tendency to spasm in any of the sphincteric or pseudo-sphincteric areas. It is interesting, too, to observe that in the treatment

of such cases, when seen sufficiently early, muscular tone, whether gastric or intestinal, can be restored and the patient made perfectly comfortable without there being any alteration in the length of the stomach or the redundancy of the colon. So that one is forced to believe that a long stomach or redundant colon is no more pathological in the beginning than a long back. It is only when muscular tone is lost either in the back or in the alimentary tract that evil happenings arise.

In cases where the vagus control is weak the primary fault may be nervous and inborn—that is to say, a patient may start life with vagus centres which, even if properly fed, may be unequal to a normal strain. In others the centres may be equal to a normal strain but incapable of satisfactory emergency work, and this again may be due to an inborn incapacity apart from bad or insufficient feeding. In many cases, however, one is forced to believe that the patient starts with a nervous outfit which is completely normal, but which is weakened as life goes on, either by some definite deprivation or excess, whether endocrine or chemical. Many of the cases which I have described are found to be deficient in calcium, and are easily poisoned with sodium, and it is very hard to say whether their weakness is due to a primary fault in the glands which deal with absorption and assimilation, or whether these glands do not do their work properly from lack of the normal stimulation by certain endocrines. The only observations that I have been able to make are that many of them are directly benefited by the administration of pituitary and parathyroid, while to others the administration of adrenalin is positively harmful.

BACTERIAL TOXINS.

Another cause of the condition is the circulation in the blood of bacterial toxins, whether derived from the alimentary tract or not, these having the effect of upsetting the action of the glands concerned in absorption, the endocrine glands, and the autonomic nerve centres themselves. It is for this reason that in the case of a person suffering from indigestion one cannot neglect to examine the nose, the tonsils, the teeth, and gums, because toxins derived from these are not only absorbed into and distributed by the blood stream, but may act directly on the mucous membrane of the stomach and intestines, and there cause serious damage.

It is probable that all ulcers in the stomach and intestines, apart from those of typhoid, tuberculous, or malignant origin, are due, first to a constitutional weakness, secondly to an unusual local vulnerability of tissue, thirdly to poisoning of nerve centres and endocrine deprivation, with, in addition, a definite infection. It is not always easy to demonstrate all these causes at work.

I do not wish in this opening to dwell on treatment, but I would say this. Where one has

evidence of a recurrent ulcer with hæmorrhage, whether in the stomach or duodenum, the case should be regarded for the moment as surgical, and handed over to the secular arm forthwith, of the distinct understanding, however, that, the local lesion once dealt with, the patient should be handed back to the physician as soon as possible so that he may have the opportunity of so handling the patient that he may endeavour to correct faults, constitutional, dietetic, and infective, and thus prevent as far as possible the danger of further local breakdown.

MINOR DEGREES OF SPINAL CURVATURE.*

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THE spinal column, consisting as it does of numerous vertebræ jointed together, may be looked upon as a plastic rod. This plastic rod has a peculiar shape. Viewed from the front of the body it is straight, viewed from the side it presents three curves, one convex backwards in the thoracic region, two convex forwards in the cervical and lumbar regions respectively. At birth there is only one curve, a forward convexity involving the whole spine; the curves in the opposite directions, in the cervical and lumbar regions, are acquired and enable the child to gain the erect posture.

THE PLASTIC ROD: VARIATIONS IN SHAPE.

We have to consider now the minor variations from the normal in the shape of this rod. The plastic rod supports the weight of the trunk, the head, and the upper limbs and transfers it to the pelvis. The normal shape of the rod is maintained by muscles, symmetrically placed around it, which are controlled by a delicate coördinating mechanism. It is obvious that there are many causes that might make this plastic rod deviate from its normal shape, such as: 1. Disease, injury, or maldevelopment of one of the segments of the plastic rod (tuberculosis of the vertebral bodies, scoliosis due to a wedged vertebra, &c.). 2. An uneven distribution of the weight of the head, trunk, and upper limbs (a paralysed arm, torticollis). 3. An alteration from the horizontal of the pelvis, the base on which the spinal column rests (tilting of the pelvis due to a short leg or to an adducted hip). 4. Unilateral paresis of the trunk muscles (scoliosis due to infantile paralysis). But when we try to attribute to one of these causes the minor spinal deformities so commonly seen during school inspections we find that only about 1 in

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