partly due to altered heart action and partly to a deficient blood supply. Certain drug habits, such as opium-eating and cocaïnism, also are included in this class.

Third, *Psychical Causes.* A nervous temperament, neurasthenia, hysteria, or hypochondriasis, often acts as a predisposing factor leading to a habit of insomnia. Grief, shock, worry, and mental anxiety are very frequent causes. The insomnia which occurs at the menopause is attributed partly to the accumulation in the blood of toxic products not eliminated by the catamenia. In cases of insanity, insomnia often appears both as a premonitory symptom and as a feature of the disease, also as a factor leading to its occurrence.

Fourth, *Causes Arising from Change in the Mode of Life.* Among the most noticeable in this class are changes in the time of the principal meal, changes in climate, especially to high altitudes, and such changes of occupation as nurses are liable to, from night to day duty.

Such considerations as the foregoing must be our guides in deciding upon treatment. The dermatologist, the pædiatrist, the surgeon, no less than the alienist, becomes familiar with those causes of insomnia which arise in his own specialty. The general practitioner must scan the whole field. In many instances, especially in acute disease accompanied by pain or fever, the treatment called for by the general requirements of the case will relieve the incidental insomnia without separate prescriptions for it. In fact the rule would be, in cases classed as symptomatic, to treat the main disease. A second most important principle of treatment is urged by C. K. Clarke when he says that drugs should be our last resort, after exhausting all accessory remedial agencies such as come under the head of hygiene, including matters of food and drink, exercise, bathing, ventilation, and habits of work. Sanger Brown also reminds us that drugs that abolish consciousness are not necessarily hypnotics. Still there is no safer rule for our guidance, especially in the irritative class, when pain is present, than to address our treatment primarily to its relief, and it is because opium in one form or another is still our great reliance as an anodyne that it is still considered a soporific, although its action is to engorge rather than unload the blood-vessels of the brain, and so far to antagonize the normal conditions of sleep.

Lack of space would forbid our taking up for detailed consideration all the therapeutic agencies to procure sleep, and there is the less need to do so inasmuch as they are mostly familiar remedies, with the exception of the more recently discovered chemical hypnotics, which still demand further impartial trial before they can be permanently classed. We must, therefore, refer our readers to the larger special essays on this subject, particularly to those of C. K. Clarke, E. P. Hurd, Sanger Brown, and Bradbury, in which full particulars are given. To these we may well add a few points which enforce the principles of treatment already enunciated and are of direct practical value.

As to electricity, Eskridge and Sanger Brown agree that its efficacy as a hypnotic is doubtful, but if used it should be in the form of a galvanic current of from 2 to 5 milliampères, which may be passed through the head for ten minutes or more, a large electrode being placed behind the ear. Trional has been so generally used, and with such confidence in its safety that we may make the following citations: R. Ferguson recommends that it be reserved for use in cases in which sleep may be well begun, but is liable to be broken off before the end of the night. It may be given at any time during the night, because its action is so prompt, as compared with that of sulphonal. Sanger Brown says that trional is not always safe even in small doses, which caution is enforced by a case reported by E. M. Thompson and by other reports published during the past year.

Discussing the management of insomnia in cardiac failure Alexander Morison says that we must attack the most evident cause in each case and then give the chosen drug in adequate doses. He values sulphonal most in cases in which emotional excitement is a prominent cause, and next to that opium, but sleep must be had.

As pointing to "the importance of anæmia of the brain for molecular inactivity and sleep," Fox claims almost certain success for the use of a long, narrow sinapism down the whole length of the spine; and the efficacy of Clarke's recommendation of a bath for twenty minutes at 104° F., with perhaps cold to the head in the insomnia of mania, evidently depends on the same principle. In addition to the works quoted, my readers will be glad to have their attention directed to the little volume of M. de Manaceïne, with its research into the physiology and pathology of sleep and a very extensive bibliography.

J. Haven Emerson.

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INTERCOSTAL NEURALGIA. See *Neuralgia.*

INTERMITTENT FEVER. See *Malarial Diseases.*

INTERTRIGO. See *Eczema.*

INTESTIN, bismuth naphtalin benzoate, is an intestinal antiseptic and astringent, which is given in dose of 0.5 to 1 gm. (gr. viij.–xv.) for dysentery, diarrhœa, and intestinal putrefaction.

W. A. Bastedo.

INTESTINAL MOVEMENTS.—The movements of the muscular walls of the intestine have a twofold purpose, since they serve in the first place to propel the food along as the processes of digestion and absorption take place and also aid those processes by intimately mixing the food with the digestive juices, and by bringing continually fresh portions in contact with the absorbing wall.

The muscular wall of the intestine is formed by two distinct coats separated by a thin layer of connective tissue in which ramifies the plexus of Auerbach, consisting of small ganglionated nodules of cells, from which pass strands of non-medullated nerve fibres, uniting the various ganglionated masses, and sending off terminal networks which ramify around the muscle fibres. The cells of the inner muscular coat are arranged circularly around the tube of the intestine, while those of the outer coat are arranged longitudinally, and there has been much dispute as to whether these contract synchronously or alternately. It appears most probable, however, from recent observations of Bayliss and Starling, that simultaneous contraction is the rule, and that the longitudinal fibres simply aid the circular fibres in evoking contraction of the lumen of the tube.

Two distinct types of movement occur in the intestine, namely, the true peristaltic wave of contraction, and the swaying or pendular movements, which are identical in rhythm with contractions of the wall taking place at a much more frequent rate than those concerned with true peristalsis. In addition to these a very pronounced and much more rapidly progressive wave has been observed under certain circumstances, such as exposure of the gut to cold, anæmia of the intestine, or presence of gaseous contents, to which the name of *vermicular* contraction has been given. Mall considers this a distinct type of intestinal wave, but according to Bayliss and Starling it is but a pathologically intensified form of that type of contraction which causes both the pendular movements and ordinary rhythmical contraction.

The velocity of the true peristaltic wave, of which the chief function is to move the food onward in the intestine, is very low, amounting only to about 2 cm. per second; so that in the cat it has been estimated that it would require about an hour and a half for this form of wave to travel from one end to the other of the intestine. The rate of progress is very regular, and, when the local nervous mechanism represented by Auerbach's plexus is in action, it passes only from above downward. But after the nerve cells of this plexus have been paralyzed by nicotine or cocaine, the contractions which are then purely myogenic pass equally, from a point directly stimulated, in either direction up or down the tube. This change in character after paralysis of the local nerve centres demonstrates that the normal true peristaltic wave is a local reflex, and the same, it is stated, can also be shown for the other more rapid type of rhythmical contraction which is connected with the pendular movements.

Mall has shown that the local reflex consists of a relaxation of the wall in front of the advancing wave in addition to the localized constriction which travels down the tube, and Bayliss and Starling, who have recently investigated the subject, confirm this view, and style this combination of a contraction wave preceded by a wave of relaxation, "the law of the intestine."

The purpose of this diphasic wave is almost self-evident: the wave of contraction at and behind the advancing mass of intestinal contents gives the propelling force which drives the mass slowly forward, while the relaxation wave in front makes the passage easy by widening the lumen of the portion of gut into which the mass is being pressed, and so diminishes the resistance to its progress.

That true peristalsis, when under the influence of the nerve cells of Auerbach's plexus, passes only in one direction is beautifully demonstrated by a procedure due to Mall, in which a loop of gut is resected, and then, in one experiment is replaced in normal position, and in another experiment is replaced in a reversed direction so that what was normally the upper end is afterward the lower end. In the first case, peristalsis remains normal and no obstruction occurs, but in the latter the waves pass from lower to upper end in the resected portion so that obstruction occurs when the food is other than of a thin fluid consistence.

It may here be pointed out that this local reflex forms an important distinction between the peristalsis of the œsophagus and that of the intestine. The difference is illustrated by the effects of completely severing transversely the muscular coats of the two tubes and then exciting a wave of contraction above the section of injury; when, in the case of the œsophagus, the peristaltic wave passes the point of severance as if no disunion existed and without any period of delay whatever, while in the case of the intestine the wave is completely stopped and does not appear at all in the lower segment of the gut.

The pendular or rhythmic movements are best seen when the peritoneal cavity is opened under a bath of warm saline. They recur fairly regularly with a rhythm often to thirteen per minute, and are caused by contraction waves which travel many times more rapidly than the true peristaltic waves, viz., at the rate of 2 to 5 cm. *per second*, as compared with 2 cm. *per minute* (*vide supra*).

It is only comparatively recently that physiologists have reached the conclusion that the pendular movements first noticed by Ludwig and the rapid rhythmical contractions of the wall arise from a common cause, viz., the simultaneous contraction of both circular and longitudinal muscular coats. When inspected by the eye alone the pendular movements which cause oscillating translatory movements of the loops of gut as a whole, backward and forward, are not apparently connected with any change in the cross section of the intestine. When, however, a distended rubber ball connected with a recording tambour is placed in the intestine it is at once obvious that a synchronous rhythmical change in volume of the intestine accompanies the swaying movements, further that any factors which influence the amplitude of one form of movement similarly and correspondingly alter the other, and that both become completely inhibited together by stimulation of the splanchnic nerves. There is hence little doubt that the older view, which attributed these pendular movements to the contractions of the longitudinal fibres only, is erroneous, and that they are merely an accompaniment of the rapid rhythmic contractions.

The purpose of these rapid rhythmic movements is not, as in the case of the true peristaltic waves, to force the food along the intestine. Digestion would be almost completely prevented by them, if they forced the food along at the rapid rate at which they travel, for the food would then traverse the entire intestine in a few minutes. Further, examination by means of the Roentgen rays of food to which subnitrate of bismuth has been added, as it is undergoing digestion in the small intestine, demonstrates that several hundreds of such waves may pass over a long mass of food without causing it to move downward in the slightest degree. Onward progress takes place at intervals only, when the quite distinct wave of true peristalsis sets the contents in translatory movement.

Although the intestinal movements are co-ordinated by the local nervous mechanism, control is exercised upon them by the central nervous system, chiefly through the vagi and splanchnic nerves. Various opinions have been expressed as to the action of the vagus, but the most careful experimentation upon the subject is that of Bayliss and Starling, who found that the effect obtained increased with successive stimulation, and that the most typical result obtained was an inhibition with a latent period of less than one second, followed by an augmentation in amplitude of the rhythmic contractions, which augmentation develops after an interval of from ten to thirty seconds and lasts for some considerable time after the cessation of the stimulus. Stimulation of the splanchnic nerve invariably causes diminution of the rhythmic movements and, when the stimulus is sufficiently strong, complete stoppage of the movement, which lasts for a few seconds after the stimulus is removed.

The Roentgen rays were first utilized for the study of the effect of the rhythmic movements on the intestinal contents by Grützner, who administered insoluble pellets containing nitrate of bismuth with the food, and found that these were chiefly rolled about from side to side of the intestinal tube in an oscillatory fashion by the rapid waves, while their progress along the intestine was very slow and inconstant, being sometimes for a short interval retrograde.

This method of studying the effects of the rhythmical contractions upon the intestinal contents has recently been improved by Cannon, who, instead of administering insoluble pellets containing the bismuth salt, has mixed the latter, to the extent of ten to thirty per cent. in fine powder, with the food. Cats were the animals experimented upon, and the food used was powdered salmon mixed as described above with subnitrate of bismuth (see also *Stomach, Shape, Position and Movements of*).

Cannon's experiments demonstrate that the most important result of the rapid rhythmic movements is the segmentation and resegmentation of the food many times repeated, with the result that the contents are intimately mixed with the digestive juices and that new surfaces are constantly exposed to the villous wall, by which means the process of absorption is enormously facilitated and hastened. A large mass is almost simultaneously divided into many minute segments, each segment is then again divided and the parts of adjacent segments are combined to form a new segment. This process is continuously repeated many hundred times, so that the contents are in this way most intimately mixed up with the digestive secretions.

Movements of the Large Intestine.—The movements of the large intestine have also been investigated by Cannon, using the method which has been indicated above in connection with the movements of the small intestine. He finds that the usual movement of the transverse and

ascending colon and cæcum is an *antiperistalsis*. The movements occur in intermittent periods, which come on at intervals of about fifteen minutes. Each period of activity lasts for about five minutes, and is followed by a quiescent interval of about ten minutes. The waves recur during an active period at the rate of eleven waves in two minutes. During activity the ileo-cæcal valve is closed and the contents are hence churned up, intimately mixed, and exposed to absorption, without in any way interfering with the processes going on in the small intestine. When new portions of material enter the large intestine, a strong general contraction sets in along the cæcum and ascending colon so forcing some of the material already present onward. As soon as this has been effected the antiperistaltic movements described above commence. With the accumulation of material in the transverse colon, deep tonic constrictions appear one after another and carry the material into the descending colon, thus leaving the transverse and ascending portions free for the play of the antiperistaltic waves.

Cannon found the ileo-cæcal valve perfectly competent for material passing in the ordinary course of digestion from ileum to colon, regurgitation into the small intestine never being observed; but in the case of a nutrient enema exceeding a certain bulk, regurgitation did occur, under the pressure of the antiperistaltic waves, into the empty ileum. Such a regurgitated nutrient enema underwent segmentation in the small intestine exactly as in normal digestion.

Cannon further observed that strong emotion, caused by fear, distress, or rage, totally inhibited all the intestinal movements. The movements continue in a normal fashion while the animals are asleep.

Benjamin Moore.

The literature relating to intestinal movement is an extensive one, but a key to most of the researches on the subject will be found in the following papers in which earlier work on the subject is also reviewed:

Bunch: Journ. of Physiol., 1897, vol. xxii., p. 357; *ibid.*, 1899, vol. xxiv., p. 72.
Grützner: Arch. f. d. ges. Physiol., 1898, Bd. lxxi., S. 492.
Bayliss and Starling: Journ. of Physiol., 1899, vol. xxiv., p. 99; *ibid.*, 1901, vol. xxvi., pp. 107–125.
Starling: Schäfer's Textbook of Physiology, 1900, vol. ii., pp. 326–335.
Cannon: Amer. Journ. of Physiol., 1902, vol. vi., p. 251.

INTESTINAL OBSTRUCTION. (**SURGICAL.**)—In describing the treatment of this affection, acute and chronic obstruction will first be dealt with generally, and after describing in detail the various remedies and methods employed, the special treatment of the individual forms of obstruction will be considered.

ACUTE OBSTRUCTION.—The treatment of acute obstruction is a subject surrounded with difficulties, and one about which there was formerly a great variety of opinion. The men of the older generation relied entirely on the "rest, opium, and starvation" treatment, and held that operative measures are seldom, if ever, necessary; the modern surgeons, on the other hand, think that the treatment by "rest, opium, and starvation" is almost useless, and the employment of such treatment is a waste of valuable time if the diagnosis of acute obstruction is correct. The only sensible procedure is to open the abdomen and if possible find out the cause and, if possible, remove it.

The practitioner without much experience, looking into his text-book for guidance, might imagine, from the very exact description given of the symptoms peculiar to each form of intestinal obstruction, that the differential diagnosis is a simple matter, and that should he meet with a case, he would only have to employ a certain method of treatment for a certain form of obstruction, and so relieve his patient, if relief were possible. In actual practice, however, the diagnosis of the special form of obstruction we have before us is by no means easy, and in most cases the exact nature of the affection cannot be determined except by laparotomy, or on the post-mortem table. The sermons preached daily by the morbid anatomists are valuable checks to the sin of diagnostic dogmatism in abdominal affections.

There are, however, certain general principles to be followed in cases in which acute obstruction is evident.

In the early period of these cases purgatives should be strictly avoided; enemata may be administered, but purgatives never. Food should not be given to the patient by the mouth, as it is always rejected, but the strength should be maintained by nutritious enemata.

If, after washing out the lower bowel several times, the fluid injected returns unchanged, and at the same time the vomiting continues incessantly, no relief can be hoped for by any other means than laparotomy. Delay in these cases is most dangerous; we should not wait for the vomiting to be fæcal (that is evidence of obstruction of some duration), but should open the abdomen at once, for the earlier the operation is performed the greater are the chances of success. In the fatal cases following operation this result is not, as a rule, caused by the laparotomy, but by its too late performance and the advanced condition of the grave changes in the bowel which result from the long-continued obstruction. This is especially apt to be so in those subacute cases due to intussusception, local inflammation, and hernia, in which, the symptoms not being very urgent, operation is delayed till too late (Wheelhouse). Wheelhouse[1] says the previous history of the patient is important. "If he has had peritonitis, perityphlitis, enteritis, or other inflammations where lymph may be poured out and bands afterward form, the indications for operation are more urgent."

In those cases which have all the symptoms of a strangulated hernia, and yet no hernia can be made out externally, it is reasonable to suppose that the case is one of internal strangulation, which can be relieved only by operation, as reduction by taxis is out of the question.

In subacute cases which have lasted five or six days, many patients, if operated on, die of exhaustion, and, according to Mr. Treves,[2] in cases of intussusception, after death a process of spontaneous cure, nearly complete, has been found, and apparently was arrested only by exhaustion owing to the patient's inability to take food.

IN CHRONIC OBSTRUCTION, where there is reason to believe that a stricture exists in the intestines, due to internal or external causes, it is very important that proper food should be taken, so that nothing that is not perfectly fluid or in a pultaceous condition should enter the bowel. The swallowing of all indigestible substances, such as orange pips, plum or cherry stones, raisins, etc., should be strictly avoided. Should constipation be present, mild laxatives may be cautiously administered, or simple enemata, but *purgatives should on no account be given*. If the stricture be within reach, as, for instance, in the rectum, it may be dilated with bougies or incised. Excision of a cancerous stricture of the lower end of the rectum is an operation which has afforded very good results, and, if performed early, the life of the patient may be prolonged for years and his comfort not seriously interfered with. When almost complete obstruction occurs from narrowing of the lumen of the bowel by the increased growth of the stricture, then the question arises as to the advisability of establishing an artificial anus. If the growth can be felt through the rectum, inguinal colotomy should be performed, if it is deemed inadvisable to excise the growth. Cancerous strictures nearly always occur in the large bowel, and, if the stricture cannot be felt through the rectum and the age and appearance of the patient indicate malignant disease, an exploratory operation should be undertaken and an endeavor made to excise the growth, bringing the cut ends of the bowel together with sutures or Murphy's button.

If the stricture be in the small bowel the abdomen should be opened and an artificial anus established, or the affected portion of bowel should be resected and the divided ends sutured or united by Murphy's button.

In cases of chronic obstruction which have lasted for months and the cause cannot be exactly determined, an exploratory incision is the proper procedure, for by the establishment of an artificial anus life may be, in many cases, much prolonged. Often the growth may be excised and the cut ends of the bowel brought together; and

for the success of this procedure, the earlier the operation is undertaken the better, before the system has become debilitated, as the better the condition of the patient at the time of operation so much the greater is the chance of success. Patients, as a rule, refuse operation till the discomfort of the obstruction is so great and their condition so deteriorated that operation is performed only as a *dernier ressort*.

METHODS OF TREATMENT IN DETAIL.—*Rest, Starvation, and Opium.*—This treatment is of very old date, and many yet believe it to be the only treatment that should be pursued in cases of acute intestinal obstruction. It consists, in short, of entire abstinence from food, from physical exploration of the parts, enemata, etc., and the administration of opium or morphine. All are agreed as to the propriety of adopting this treatment in the very early stages of acute cases, but, as already mentioned, surgeons of the present generation are in favor of further treatment by operation.

Opium.—Many cases of obstruction are recorded as being cured by the free administration of opium; it is certainly very probable that not a few cases of commencing invagination have ended favorably by its administration. But we must not trust to opium, even when combined with rest and starvation. Opium has its dark as well as its bright side, and if given early in cases of obstruction it obscures the symptoms and so lessens the chance of making a diagnosis; the patient's condition, no doubt, improves, vomiting and pain may be less, the pulse better, and the skin moist; but at the same time the bowel may be in a gangrenous condition, and the patient dies only the easier from having been dosed with opium. Again, the lessening of the severity of the symptoms may so lull the suspicions of the medical attendant that operation is delayed and the patient deprived of his only chance of life. I repeat that opium is a valuable drug in the treatment of obstruction if used with discretion, and with a full knowledge of its effects; it is rarely curative, but always relieves pain and lessens the peristaltic action of the bowels.

Belladonna.—Dr. Brinton first introduced the use of this drug in the treatment of intestinal obstruction, because of its power to produce relaxation of the unstriped muscular fibres of the bowel. Many speak very highly of it used alone or in combination with opium, as it lessens the sickness and depression caused by opium given alone. It may be administered by the mouth, or atropine may be injected hypodermatically. It has been used externally on the abdomen in form of ointment or plaster. Belladonna is sometimes useful in cases of fæcal accumulation, or in cases of paralysis of the bowel due to sepsis, but in cases of true obstruction it can be of but little service.

Enemata.—In cases of chronic obstruction of the bowels enemata are of considerable benefit; they are especially useful in those cases in which vomiting occurs. In cases of obstruction due to fæcal accumulation enemata are particularly beneficial. Warm water is generally sufficient, by repeated injections, to clear out the large intestines, but in cases of impacted fæces enemata of sweet oil, with one drachm of spirits of turpentine to the pint, give extremely satisfactory results.

Enemata have frequently proved useful in effecting the reduction of an intussusception; to be of service they must be administered early and copiously. Some recommend that they should be administered with the patient in the inverted position.

In cases of acute obstruction the benefit of enemata is not so clear; many medical men in these cases object to them altogether, because they are liable to increase the peristaltic action of the bowels.

In certain cases enemata are inadmissible and often injurious. They cannot possibly be of benefit in cases of intussusception in which the invaginated bowel has reached low down, in stricture of the rectum, or in cases of volvulus of the sigmoid flexure; in this latter affection enemata only increase the amount of twisting, and so do infinite harm.

Some surgeons recommend that copious enemata should be given, in every case of intestinal obstruction, before any other method is tried. Dr. Hloway,[3] not content with the ordinary enema syringe or siphon apparatus, recommends the use of a force pump which can throw a continuous stream; if this fail, then he advocates laparotomy. In reading over the account of the discussion on intestinal obstruction at the Liverpool Medical Institution,[4] the writer was much struck with some remarks of Dr. Barr, and thought that they applied to those cases of intestinal obstruction successfully treated by enemata. Dr. Barr said: "If you look upon all cases where you have got severe pain in the abdomen, constipation, and vomiting, with perhaps more or less shock, as cases of intestinal obstruction, then, no matter what line of palliative treatment you adopt, you ought to have a very good percentage of recoveries; but if you belong to a more exclusive school, and in your anxiety for accurate diagnosis eliminate all cases of colic, constipation, enteralgia, etc., then you will find you have a terrible disease left, which tends more frequently toward a fatal issue than to recovery."

If we were as certain of the correct diagnosis of the disease treated as of the successful result of the treatment in many of the reported cases, much confusion and difference of opinion as to the value of certain remedies in the treatment of intestinal obstruction would be avoided.

Enemata have been used for diagnostic purposes. If during the injection the fluid can be heard gurgling in the cæcum, it is almost certain that the obstruction is in the small intestine; if it is stopped at some intermediate point, it is probable the obstruction is at that spot.[5]

Metallic Mercury.—This very old method of treatment is now never practised, though comparatively recently it has been advocated by Matignon, of Paris, and cases of intestinal obstruction successfully treated by this means are occasionally reported in the journals. The cases in which it is of use are those of old fæcal accumulation; for other forms of intestinal obstruction it should never be employed; it cannot possibly do good, and may do much harm.

Shot.—Dr. Maydieu,[6] of Paris, reports cases of ileus successfully treated by the administration of shot. He mixes seven ounces of shot with four ounces of olive oil, and gives two drachms of the mixture every half-hour. This treatment may do more harm than good, and is mentioned merely as a curiosity. It replaces the treatment by bullets of the physicians of the sixteenth century.

Washing Out the Stomach.—Kussmaul was the first to introduce washing out of the stomach for intestinal obstruction, and a number of successful cases are reported as the result of this mode of treatment. The good result is explained on the ground that evacuation of the distended bowel affords opportunity for the spontaneous reduction of a herniated or twisted loop of bowel. The temporary relief afforded is said to be very great, and the practice is so simple and harmless that it is worthy of a trial. Of course, the majority of cases of intestinal obstruction could not possibly be relieved by it.

Massage and electricity have been extensively practised in the treatment of intestinal obstruction and still have their advocates. It is now the opinion of most surgeons that in cases of acute obstruction, at any rate, they do more harm than good. The only cases of obstruction likely to benefit by them are those due to fæcal accumulations. E. O. Day[7] reports two cases of intussusception successfully treated by massage. He had seen ten cases of this affection, and the only recoveries were the two treated by manipulation and massage.

Puncture of Bowel with an Aspirator Needle or fine Trocar.—This method has its advocates, and cases are reported in which, after the bowel has been punctured and a large amount of gas and fluid fæces evacuated, the obstruction has been relieved. As a rule the procedure is not a dangerous one, but occasionally, owing to paralysis of the coats of the bowel, the punctures do not close, fæces escape, and a fatal peritonitis is the result. At best, puncture is a proceeding in which the element of