ruin. Some highly-complicated cases, however, can be fairly understood, even when several structures are affected.

GENERAL CONCLUSIONS.

Permit me, before bringing this lecture to a close, to submit the following general conclusions to which the discussion has, I think, fairly led, namely:

1. That chronic diseases of the chest, even of individual structures or organs, to which we apply particular names, are in reality usually made up of different morbid conditions in various combinations.

2. That two or more directly related structures are frequently implicated, and present well-recognised associated lesions in cases which are thus designated.

3. That definite and well-understood pathological relations exist between the important organs occupying the thoracic cavity, which explain many of the combinations of morbid conditions met with in medical practice; but also that these and the structures associated with them may be implicated together, apart from the effects of any such obvious relations.

4. That certain classes of cases must be dealt with specially and individually, as regards the morbid combinations which they are likely to produce.

5. That we must be prepared for cases in which separate and independent diseases exist together, as well as for those in which the changes are of a highly complicated nature, and which may tax our knowledge and skill to the utmost in our attempts to unravel them.

6. That in all cases of chronic thoracic disease due attention and consideration must be given to the chest walls; and that, in not a few instances at any rate, the diaphragm ought not to be forgotten or overlooked.

SOME THOUGHTS ON THE METHODS OF EMPTYING AN OBSTRUCTED BOWEL.¹

By W. THORNLEY STOKER, M.D.R.U.I., F.R.C.S.I.,

President of the Royal College of Surgeons in Ireland, President of the Section, and Surgeon to the Richmond Hospital.

It is the privilege of the President of this Section to address the members at its opening meeting on some matter of surgical interest, and it is an occasion when one may fairly be excused if he selects a topic to which he can apply his experience, rather than one of the novel and obscure subjects in which the theorist delights to revel, and which capture the intellect rather than deal with every-day incidents of our surgical life.

I do not intend to go far afield for material, because it seems to me that the importance of facts is to be measured by their commonness, and that just as the dignity of labour overshadows the greatness of kings, so the most frequent incidents of our surgical life throw the curiosities and rarities of our science into the shade. Common surgery means universal surgery, and implies that which may be cultivated to the greatest good of the greatest number. What Tennyson has called "the falsehood of extremes" is one that creeps very insidiously into the daily life of the enterprising surgeon. There is a tendency to argue from extreme or rare and individual cases, and to lose sight of broad and collective issues. How often we see elaborate and able papers written with a view to deduce a theory or a practice from a particular and eccentric instance, and the paucity of material concealed by an overshadowing cloud of science condensed from the literature of half a dozen modern languages. This "paper-making" or encyclopædic style is destructive to a fine cultivation of our science, but is a less evil than that which it conceals—the undue craving after originality. Every second surgeon wants his name connected with an operation or an instrument, and in this age of hot and unwholesome competition the hunger is disastrous to the quiet and perfect digestion of abundant material which waits on normal appetite.

¹ Read before the Section of Surgery, Royal Academy of Medicine in Ireland.

As far as my sight reaches I can see no direction in which the craving for novelty and originality has caused men to overstep themselves more than in the operations undertaken so often and with such a light heart for the relief of some forms of obstruction of the bowel. The hateful expression that "there is practically no danger in opening the peritoneum" is ever before the reader in these days, and as regards a class of cases I wish to speak of, a more false or poisonous teaching was never promulgated.

It is more than five years since I read before this Section of the Academy a paper "On the Treatment of Acute Intestinal Obstruction due to Collections within the Lumen of the Bowel," and I am here to-night to repeat with every force I can, and with what added weight time, experience, and the position I now hold may give to my words, the doctrines I then enunciated.

Do not let anyone misunderstand me, although I hold that we live in a time when there is too free a resort to operation in general, and although we may look for a subsidence of the waves and a return to a normal level, yet I have no cry to raise against the general advance of the operative treatment of the bowel—that would be foolish as well as futile. I have no word to say now against laparotomy in any class of cases save one, and even in that class I make no wholesale condemnation, but only urge that it shall be adopted after grave consideration and in selected instances. My remarks do not apply to obstruction due to neoplasms growing in the substance of the bowel or to pressure on it by peritoneal or intraperitoneal material; but to those very common cases in which, owing either to an atonic intestine failing in its peristalsis, or a normally strong one becoming overloaded by its contents, the balance between the propulsive power of the bowel and the load it has to move is destroyed. The result is the decreasing power of the gut, its extreme distension, and the production of the condition named "ileus paralyticus." We seldom see these cases until they have arrived at an advanced stage, until great abdominal distension has taken place, and until the issue is very evidently one of much gravity.

I have seen a great number of such cases in my own practice and in that of others, and I wish to reiterate the opinion I have already expressed that laparotomy is in them an extremely fatal operation, and should only be undertaken when other legitimate means have been exhausted, or where they are evidently improper owing to the advanced stage or general condition of the case. To formulate rules as to when or in what conditions such an operation might be undertaken is not possible except to the book-surgeon. The man who has practical experience knows that abdominal surgery cannot be reduced to a formula, and it is long experience and the tact which may be cultivated, but cannot be conferred, that teach us when we must and may open the abdomen in ileus paralyticus. To be sure, even the most skilled may fall into the error of delay, and there is no case so surrounded by doubtful problems as that of which I am speaking.

As regards antecedent treatment I have not much to add to, and nothing to subtract from, what I have already urged in the paper I have quoted.

Of the ordinary local measures such as the application of heat and rubefacients I have a growing dread. I have never seen them doing substantial service, and I have repeatedly witnessed their production of such superficial redness and inflammation as served to obscure diagnosis and increase the dangers of operation. If poultices or massage be employed they should be used in such a degree as to soothe or stimulate, but not to produce irritation.

Of the value of belladonna, if used freely and early in the case, I still hold a favourable opinion and I am convinced that its best therapeutic effect is obtained by administering it if possible uncombined with opium. I have nothing to take from, or add to, the ideas I have already expressed about this drug. Its action is understood, and its administration logical. It relieves pain, while it does its work. It finds its chief use in those cases of peristaltic paralysis due to tympanites or faecal accumulation, and as these are most often seen in obese persons, and are attended by great meteorism—both conditions which render operation extremely dangerous—this drug is often

an alternative with the knife. It should be given in full and repeated doses, and pressed until it shows its constitutional effect by producing either dilated pupil or dryness of the throat. The latter symptom is that most usually seen. It is perfectly useless employing this drug unless it be administered to its full extent. It may generally be combined with calomel. It is remarkable that whereas the tolerance of belladonna when given in chronic obstruction is very variable and its employment requires caution, it is extremely well borne in acute cases. The weak and impeded heart which is present in so many examples of acute obstruction is materially aided by the use of belladonna, which is a most excellent cardiac stimulant.

Of opium itself I still have a respectful terror; it masks symptoms so much that it is capable of being a very destructive agent. Nothing but severe pain indicates its use, and in view of the vomiting which is generally present it is best employed in the form of morphine, and best administered by the hypodermic method.

Of the early employment of purgatives I am even less afraid than formerly, but I have somewhat modified my opinion as to the best drug to use. While I have not relinquished calomel, I rarely employ it except in combination with belladonna. I have a growing fondness for salines. I generally use the sulphate of soda, and give it in hourly doses of one or two drachms until an ounce or more has been administered. The worst that can result from the use of a cathartic that fails to purge is disturbance of the stomach, and this unhappily is such a usual incident of these cases that it is of less moment than it otherwise would be. The difficulty of giving a purgative is often very great on account of the vomiting which exists, and in such cases their administration by the rectum is occasionally successful. Before using a purgative in this way the rectum should always be washed out with warm water. The greatest therapeutic desideratum of our day is a method of catharsis by hypodermic medication; and whoever can discover a purgative capable of this mode of introduction will have done as much for humanity as Jenner or Simpson. Nothing is more perplexing than the problem of how to purge a patient whose stomach rejects everything that is introduced into it.

Of all the points in the treatment of an overloaded or paralysed bowel there is none on which my convictions remain stronger, or in which, pleasant to relate, I have seen more improvement in method than in the use of the long enema tube. I have spoken in no uncertain fashion of the uselessness and danger of that instrument called "O'Beirne's tube," all the more awful because it was—and I fear, still is—the custom to teach that it is safe, and its employment so free from danger that even unskilled persons may use it. Mr. Treves was, perhaps, the first writer to cast discredit on this hoary impostor. It is not enough to recognise its danger unless we also admit its comparative uselessness. Life may be destroyed by it. It is rigid enough to perforate the bowel; and I know cases in which this result has, by a little untrained energy, been achieved. I will undertake to perforate the coats of any average rectum with an ordinary gum elastic long tube, such as is usually supplied by instrument makers; and what can be done may be done, if either enough will or sufficient ignorance be present. So much for its danger; what of its uselessness? I contend that no mechanical effect can be gained by the introduction of fluid into the bowel which is not possible with an instrument 9 or 10 inches long, assisted by the natural penetrating quality of water, by gravitation produced by the posture of the patient, and such gentle pressure as that afforded by the use of a tube to which I shall presently refer. The absurdity of supposing that a pipe can be passed through the sigmoid flexure must be evident to those acquainted with the anatomy of that bowel; and the obvious explanation of the instances where, on external examination, it seems to have done, can only be a difficulty to the tiro in the dissecting room or deadhouse. The length of mesentery possessed by the sigmoid bowel will often permit it to be pushed into the upper zone of the abdomen by the intrusive instrument. Nor must we overlook the danger of the force with which an injection can be introduced by the powerful pump usually employed with the long tube. I have seen a bowel which had been ruptured with fatal effect by this agency

alone. As regards the use of medicaments other than water, and supposed to be solvent—such as oil or ox gall—I disbelieve in their efficacy. They have no effect except whatever moral one they may exercise on the patient or his friends. All that can be done, can be best done by warm water alone.

For some years past I have used but two instruments for giving enemata. One is an ordinary Higginson's syringe, to the nozzle of which a No. 12 or 14 red rubber catheter has been attached. For the daily purposes of the rectal toilet, or in cases where the injection is to be retained, or ejected by natural effort, this will be found perfect. It is absolutely safe, and quite painless. It can be used in the most tender infant or the most callous adult, and in instances where injection is called for in the presence of inflamed piles, it is a blessing without any disguise.

The second instrument is an ordinary red rubber tube $\frac{1}{4}$ to $\frac{1}{2}$ of an inch in diameter, such as is used for washing out the stomach. It is convenient to have circles marked at 3, 6, and 9 inches from its extremity, so as to know what length of it lies in the rectum. A large funnel should fit the dilated extremity and should be transparent, so as to allow the fluid which is being introduced, to be seen. I have found a celluloid funnel more convenient and portable than one made of glass.

The patient lies on his back or left side with the pelvis raised so as to facilitate the passage of fluid into the sigmoid and descending colons. The only fluid that should be used is warm water, and 8 or 10 gallons of it may be employed at one sitting. The surgeon sits on the right of the patient's bed, introduces the end of the tube, and retains it in position with his left hand, while with his right he holds the other end of the tube, into which the funnel is inserted. The tube is introduced 3, 6, or 9 inches, as may be indicated, and should occasionally be moved up and down in the anus by the left hand. An assistant pours water into the funnel, and the pressure may be varied and adjusted by the height to which it is raised by the operator. The left hand can be used at any moment, when the pressure in the rectum becomes painful, to pinch the tube and stop the flow. When as much water has been introduced as can be borne, the funnel is removed, that end of the tube lowered to a basin placed on the floor, and the fluid allowed to run out of the bowel. By repeated operations of this kind large quantities of water may be used, and the bowel emptied without the patient being exhausted by straining or by the necessity of changing his position. The solution of fæces and expulsion of flatus are assisted by the pushing in and out of the tube which I have indicated, and by the varying hydrostatic pressure, caused by alternately raising and lowering the funnel at the free end of the tube.

The advantages of this method over older ones are as follows:

1. The tube is soft and cannot cause injury.
2. The fluid pressure can be regulated to a nicety, and cannot be made excessive, as, if undue pressure threatens, regurgitation into the funnel takes place.
3. Enormous quantities of water can be used.
4. The currents created by alternating hydrostatic pressure have a powerful solvent effect on the fæces.
5. The operation necessitates no exertion on the part of the patient, no change of position, and can be carried on for a long time without causing exhaustion.

I trust I may be excused for entering into a detail of this kind in the presence of so many accomplished surgeons; but there are many young ears present into which my words may pass. I cannot but regard this apparently simple procedure as one of the greatest improvements which has been introduced into the treatment of bowel obstructions. I have avoided many laparotomies by employing it, and I believe I have seen a number of lives saved. Like all other surgical practices, it gains value by experience; but I am convinced that those who patiently employ it will esteem it as highly as I do; and I earnestly urge on my younger colleagues the abandonment of the old rigid tube and the adoption of the simple rectal armament included in the two instruments I have spoken of.

It is not alone in cases of fæcal obstruction that this method finds its use. In every instance where it is sought

to empty the bowel it will be found of service. It may be used with excellent effect in the paralysis of peritonitis, and will, in that difficult case, produce evacuation where other means have failed. As a method of unloading the intestine in chronic obstruction, preparatory to operation, its value also expresses itself.

There is no organ of the body which requires more tender treatment than the bowel, and none which is so often left to be dealt with by the unskilled or uneducated. Many surgeons delegate the use of the enema to an assistant, as if this potent engine were unworthy of their own attention, and many who use it employ undue force. "No force" should be the postulate of our work with the intestine. We cannot be too persuasive, and it is because so much bad practice with regard to the use of the enema is followed, that I have ventured on such an occasion as this to urge my views against the use of the rigid tube, and to plead for one which has both complete safety, and infinite advantage in point of merit. I offer you no weary list of cases because after all they are only useful to substantiate opinion, and if you cannot accept a man's deliberate opinion you are not likely to put faith in his cases. Cases, like figures, can be twisted to prove anything. In such a position as that which, by the kindness of the Fellows, I occupy, a little dogmatism may be excused, and I feel so strongly about this matter of the tube that I have ventured to deal with it in preference to some more brilliant or alluring topic. I beg you to believe that if I speak forcibly it is because I feel conviction, and when I argue for the total abandonment of the older form of tube I desire to assure you that any words I use are spoken with a full recollection of the gravity which my office attaches to them.

Of course the great difficulty to be overcome in acute obstruction is that of diagnosis, and even to the most experienced no finality is possible. There is no branch of surgery in which extended clinical observation and careful reasoning work better together. A simple process of logic will help the most trained clinician to a true conclusion. No cases afford more opportunity for the display of high surgical qualities than those of which I have spoken. Given the proper faculties of observation and deduction, the two qualities which combine to produce great surgical fitness are thoroughness and resource, and in the management of obstruction of the bowel there is the most ample opportunity for their development.

THE TREATMENT OF OBSTRUCTION OF THE BOWEL BY ELECTRICITY.

By JULIUS ALTHAUS, M.D.,

Consulting Physician to the Hospital for Epilepsy and Paralysis, Regent's Park.

INTESTINAL obstruction is now generally treated by laparotomy, after purgatives, opium, and belladonna have failed; and there is no doubt that in the case of absolute mechanical occlusion, such as strangulation by bands, etc., the knife affords the only chance for the patient's recovery. Nevertheless, we are bound to admit that the risks of the operation are great, in spite of recent improvements in its *technique*; and for this reason it would appear preferable to resort to electricity rather than to laparotomy in cases where it is conceivable that the obstruction might be overcome by a powerful contraction of the muscular coat of the bowel, that is, in faecal accumulation and intestinal palsy, foreign bodies impacted in the intestine, etc.

In January, 1878, Mr. Allingham requested me to see with him a gentleman, aged 54, who had on the whole been in fair health, but had for the last three months suffered from obstinate constipation, for which purgatives and enemata had been used without much effect. Nothing in the shape of a solid or liquid motion had been passed for fully ten days, when I saw the patient. The abdomen was very much distended and tender; there was total loss of appetite, a degree of collapse, with sunken face, and a small and feeble pulse. Mr. Allingham had the day before introduced a long tube, but without bringing the faeces away; and was anxious that the effects of electricity should be tried, as the patient ap-

peared to be in great danger. I introduced an insulated sound, with free metallic end, into the rectum, and applied a moistened conductor to the abdominal parietes, chiefly in the region of the sigmoid flexure. The primary faradic current was now sent through, and its force gradually increased until the patient experienced a decided feeling of vibration in the bowel. This was done at 10 A.M., and the same evening the patient had a copious motion, with wonderful relief to all symptoms. During the next two days the bowels acted ten times, and in a week the patient appeared to be quite well.

Another case in which I have used faradism successfully was that of a married lady, aged 57, who had nearly all her life suffered from obstinate constipation, which she thought had been brought on "by living on biscuits at school." She had often gone for a week or ten days without relief, but did not appear to be much the worse for it until the time I was called in, when there was great distension and tenderness of the abdomen, bilious vomiting, and prostration after eight days' constipation.

I used the same proceeding as in the previous case at 5.30 P.M. At 1 A.M. she had a good motion, followed presently by two others, when an enormous quantity of faecal matters was discharged, with complete relief.

I regret to be unable to speak about the further progress of these cases, but in both of them life was evidently saved by the application of electricity.

"*Electric Injections.*"—In Paris the continuous current has recently been somewhat extensively used in similar cases, more especially by MM. Boudet and Larat, who have employed it in the form of so-called "electric injections." In order to avoid the escharotic effects of a metallic electrode applied directly to the mucous membrane of the intestines salt water is injected into the rectum, so as to act as a large liquid electrode, the metallic conductor connected with the positive pole of the battery being enclosed in an elastic sound, and thus conducting the electricity to the salt water. It is claimed that by acting in this manner a considerable current strength can be safely used. The circuit is closed by placing a large negative electrode on the abdomen, when the deflection of the needle of the galvanometer indicates the passage of the current. The strength in milliampères must be regulated according to the susceptibility of the patient. In many cases of pseudo-strangulation and faecal obstruction this proceeding, continued from five to twenty minutes, has appeared to give relief. In cases in which a real obstacle has to be overcome, it is recommended to use the current as directed for five or six minutes, and then to reverse its direction, care being taken first to reduce its strength, and get the needle of the galvanometer down to 0, after which the current is gradually put on again to its former power. As soon as the cathode acts in the rectum the bowel contracts, and great desire is felt for defaecation, which the patient, however, is instructed to resist until he finds it impossible to do so any longer. One, two, or three such applications may be required in the twenty-four hours. M. Boudet states that he has been successful with electric injections in 35 out of 50 cases (70 per cent.), while M. Larat claims 101 successes in 230 cases (nearly 44 per cent.). The latter recommends resort to laparotomy at once if the electricity has failed to act in the period just mentioned, and not to lose time by exhibiting purgatives. If electric injections were made soon after the appearance of bad symptoms, and laparotomy followed quickly after failure of electricity, the electrician as well as the surgeon would have a better chance of saving the patient's life than now, when they are often called in too late.

GASTRO-ENTEROSTOMY WITH SENN'S BONE PLATES FOR PYLORIC STENOSIS.

By THOMAS SINCLAIR, M.D., F.R.C.S.ENG.,
Professor of Surgery in Queen's College, Belfast.

THE choice between gastro-enterostomy by lateral anastomosis and the Heinecke-Mikulicz operation of pyloroplasty in cicatricial contraction of the pylorus is one that can only be satisfactorily made when the abdomen is opened. The plan of Loreta of digital divulsion is not likely to be favourably considered when compared with the newer methods