positions of the sigmoid, under different degrees of distention, we used paraffin, bismuth emulsion, formaldehyde solution, alcohol, water, freezing and air. In some of the specimens we used nothing. Such observations, especially those on the sigmoid, could not have been made with paraffin followed by alcohol in the manner which Martin used these agents.

2. Many writers and observers have reported cases and called attention to the sigmoid being found in the right side, but if Martin, Jacobi or Nélaton has ever offered a theory similar to that expressed in my paper, as to why this is true, and the probable advantages gained thereby, I have failed to notice it in literature.

3. Houston, seventy years ago, described the structure of the rectal valve as consisting of mucous membrane, cellular tissue and circular muscular fibers. Martin's observations evidently were the same, except that the tunic which Houston described as cellular tissue, Martin says is fibrous.

We found the valves to be more irregular in structure, some containing mucosa and submucosa only; others had these and the circular fibers in addition, and still others contained mucosa, submucosa, circular muscular fibers, and a part or the whole of the longitudinal coat. We also found the valves to contain lymph-nodes, and in the loose connective tissue external to the muscular tunics we found large ganglia and nerves. In the pathological specimens we found dense fibrous tissue. Hence, we do not see how Martin claims that our findings, other than those stated in our paper, corroborate his, as he claims to have made one discovery only, that of fibrous tissue in the valves. This is probably the same structure referred to by Houston as cellular tissue. On the one hand, cellular tissue is the antecedent of the fibrous variety; on the other, in Houston's day the term cellular was used in a way that would be considered loose to-day.

4. He stated that there was no danger in the operation in skilled hands. To this we must dissent. We understood him to say, in a discussion before the American Proctological Society at Washington, in May last, that there was danger of perforating the bowel in transfixing the valve's free border, and with that we do agree. The intestinal wall is very thin, and the slightest move on the part of the operator or patient is liable to be followed by a fatal puncture of the bowel. After operating a number of times and having one case of peritonitis and another of hemorrhage, we began to look on the operation with fear and this led to the development of the automatic valve-clip. With it these structures can be divided by pressure necrosis, with the same clinical results and with what seems to us little or no danger.

COLITIS, CONSTIPATION AND APPENDICITIS: THEIR ETIOLOGIC RELATIONS.

WITH A CONSIDERATION OF THE VALUE OF INCISION AND
DRAINAGE IN CERTAIN FORMS OF APPENDICITIS*

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I desire first to direct attention to the question of etiological relationship between constipation, colitis and appendicitis.

My attention was first attracted in this direction by the following case, seen by me over four years ago: Jessie C., of Ada, Ohio, aged 12, had, when I saw her, the usual signs and symptoms of a periappendicular abscess, which I opened and drained. Her father, who is a physician, told me that from her earliest infancy she had been a frequent sufferer from colitis, with the symptoms and signs usual in such cases. Moreover, the present illness commenced as an attack of colitis, and only after these symptoms had continued for some time did the symptoms of appendicitis arise. She was even at the time of my visit having frequent

mucous stools, tormina and tenesmus, and continued to have these symptoms for some time after the symptoms referable to the appendix had subsided. She is still a sufferer, at times, from the same trouble.

Since that time a number of cases have occurred in my practice, which seem to me to show that appendicitis not infrequently arises as a result of extension of inflammation or infection from the colon. From among these cases I will briefly report the following:

CASE 1.—Mrs. B., of Lima, Ind., was referred to me by Dr. G. W. McCaskey, whom she had consulted on account of bowel trouble. Dr. McCaskey, after examining the case, concluded that the patient had been for months a sufferer from gastrointestinal catarrh, but that she was at present suffering from a mild appendicitis, this being the third attack, the first having occurred three months before. For two years she had been a sufferer from obstinate constipation. On removal, the appendix was found to be the seat of a catarrhal inflammation, with slight signs of periappendicular inflammation. So certain was Dr. McCaskey that in this case the appendicular trouble had its origin from the bowel, that he suggested that it might be advisable to treat the colon for a time in the hope that an operation might thus be avoided.

CASE 2.—Mrs. M., widow, aged 35, was taken sick October 23. I saw her two days later, when I got a history of habitual constipation. She had had a slight passage on the day before she was taken sick, this being the only bowel movement for ten days. She had had several attacks of belly pain prior to this, but without any localized pain or tenderness. When I saw her the abdomen was greatly distended, generally tender, and vomiting was frequent. She also complained of much pain in the back and head. Because of the frequency of peritonitis of appendicular origin, the abdomen was opened in the right semilunar line and a slightly adherent and perforated appendix was removed, and an abundance of foul pus evacuated.

CASE 3.—Mrs. R., aged 56, is at the present writing convalescent from appendicectomy done on the second day of the first attack. Her attending physician, Dr. Drayer, who was my assistant for three years, and has had considerable experience in appendicitis, told me that he had treated her a number of times for attacks of belly pain, which he regarded as acute exacerbations of a chronic colitis, and assured me that this was the only time he had ever found any signs of appendicitis. This patient still has symptoms of enterocolitis.

CASE 4.—Mr. S. was referred to me by his brother, who is a physician of ability. He was taken sick with the usual signs of an acute colitis, including frequent bloody stools, and after five days developed appendicitis, for which he was operated. Many authors consider chronic constipation a causative factor in the production of appendicitis, but I know of only one (Maylard) who speaks of the possibility of extension of inflammation from the cecum to the appendix. He says: "Extension of inflammation from the mucous membrane of the cecum to that of the appendix probably takes place in some cases."

Lange² says: "Appendicitis is due, in America, to two of our natural failings, those of eating too much and chewing too little, the result of which is constipation." I believe this statement would be more nearly correct if the last phrase were made to read, "the results of which are colitis and constipation."

The uric-acid diathesis is acknowledged as a predisposing cause of appendicitis. This condition is usually accompanied, and not improbably caused, by gastrointestinal disturbances. The majority of cases of appendicitis occur in childhood. Enterocolitis and colitis find the majority of their victims during the same period.

Greig Smith³ regards the mechanical causes of appendicitis by far the more important. He says: "It may safely be affirmed, that very few cases of appendicitis would become dangerous if there were a free passage always patent between it and the cecum."

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It is quite reasonable to suppose that either impaction of the feces in the cecum or swelling of its mucous membrane may produce closure of this passage. When we consider that both these conditions frequently, if not usually, obtain in colitis; that colitis is a disease of frequent occurrence; that both colitis and appendicitis occur most frequently in childhood; the conclusion seems forced on us that colitis is frequently the cause of appendicitis.

As for myself, my personal experience has convinced me that colitis and constipation, either or both, frequently cause inflammation of the appendix. If my position is correct, then the physician has in the prophylactic treatment of appendicitis not only a legitimate field, but one from which he may expect to reap a harvest for which both he and his patients may well be thankful.

The second and last question which I wish to discuss is: Is not incision and drainage the best method of treatment in some cases of appendicular abscess? No one of experience in appendicular surgery doubts for a moment that the appendix should be removed in the great majority of cases operated on. Neither can there be any doubt that the number of cases in which incision and drainage is the better operation has grown less as skill and knowledge in this branch of surgery have grown greater. Greater skill will enable some operators to remove the appendix in cases in which its removal at the hands of other operators would be attended with unwarrantable risk.

If the truth of this statement be granted, and I take it that no one will dispute it, then does it not follow that this same "greater skill" would enable those possessed of it to establish drainage with greater celerity and with less shock to the patient than their brothers of lesser skill? Good logic, it seems to me, requires an affirmative answer to this question also. If our reasoning thus far be correct, then either one or the other of the following conclusions must be accepted as true: 1, no case of appendicitis can be saved by incision and drainage that can not be saved by appendicectomy; or 2, incision and drainage without removal of the appendix is the better operation in some cases of appendicular abscess. Other things being equal, appendicectomy is an operation of greater gravity than simple incision and drainage. There are some cases in which the shock of either operation would prove fatal. On the other hand, there are cases that would withstand the simpler operation, but would die if subjected to the graver one. If then incision and drainage is sufficient to bring about recovery, even though it be granted for the sake of argument that it will not be perfect or permanent, then we are forced to the conclusion that some cases may be saved by this method which would die if subjected to removal of the appendix.

The question as to the advisability of removing the appendix, after recovery following incision and drainage, is, of course, not now under discussion.

If one believes that appendicectomy is the graver of the two operations under discussion, and at the same time holds that the appendix should be removed in all cases operated on, at the time of the primary operation, is he not likely to reject as unfit for operation some cases on which he who holds the contrary opinion would operate? If operation will give even the slightest chance of recovery, then the patient is entitled to that chance. I do not think that any one will claim that the immediate death-rate following in-

cision and drainage is greater than that following appendicectomy in case of like gravity. I mean deaths occurring as a result of the attack for which the operation is made.

Deaths due to attacks recurring after incision and drainage may with some show of reason be charged to this method of operating. But it will not do to assume that all such deaths might have been prevented by removal of the appendix, for that would be assuming that the operation of appendicectomy itself had no death-rate, which would be manifestly wrong. On the other hand, I believe it to be true that incision and drainage has per se no death-rate. Some cases, in extremis, treated in this way will die, but not from the operation. I contend that a greater number of this class of cases will die after appendicectomy than will die after incision and drainage.

For a paper published in the *American Jour. Med. Sci.*, 1893, the statistics of which are given in Greig Smith's "Abdominal Surgery," vol. ii, p. 762, I collected 448 cases operated on. Of these, 157 cases of appendicectomy during the attack gave a mortality of 19.7 per cent.; 14 cases operated on during quiescence gave a mortality of 14 per cent. Incision and drainage in 188 cases gave a mortality of 18.18 per cent. This is certainly a remarkably favorable showing for incision when we consider that the cases that were treated by incision and drainage were so treated because their gravity, in the opinion of the operator, precluded the more radical operation.

Through private correspondence with fourteen operators of repute in this country, I collected 177 cases of appendicitis treated by incision and drainage. To these, adding 25 of my own, we have 202 cases thus treated. There was a recurrence in 13 per cent. of these cases. The time elapsing after operation varies from two weeks to twenty-one years.

Dr. Ochsner reports 9 cases, with 5 recurrences; Dr. Joseph Eastman, 20 cases, with 10 recurrences. While I do not wish to be understood as questioning the validity of the reports of Drs. Ochsner and Eastman, I do want to say that their statistics are so at variance with any other statistics with which I am acquainted, that I am forced to the conclusion that they do not teach the truth as regards the frequency with which recurrence of attacks may be expected after incision and drainage.

In my own cases I have had one recurrence. This occurred after four years. Two of my cases were operated on only two months ago. The rest were operated from ten years to six months ago. The average time since operation is about three years. My opinion is then that 13 per cent. of recurrences after drainage is certainly as many, if not more than actually obtain.

Granting that 13 per cent. will suffer with recurrence they will still have the chance of relief which operation affords during the second attack, which chance will be as good as this class of cases have from operation in the primary attack. Or they may have the chance which an interval operation affords. The interval operation is attended by nearly 6 per cent. less risk than is operation during the attack.

Given then 100 cases of appendicular abscess treated by incision, 13 will recur. Operated on during quiescence these cases will give a death-rate of 1.8 per cent. In other words, we will have the death-rate of interval operations in the hands of good operators to-day. I am not unmindful of the fact that many cases treated by incision and drainage will require an operation for

hernia later. But this operation will be required in a certain number of pus cases treated by appendiceectomy also. Again, an operation for hernia in the absence of infection will give a death-rate much less than the difference in favor of incision and drainage as compared with appendiceectomy in cases of the character under discussion. Whether a case suited to incision and drainage could be subjected to appendiceectomy with less risk of hernia following than would obtain if treated by the former method remains to be proved. I take it that no competent man would think of treating a case by incision and drainage that could be treated by appendiceectomy without drainage, and it is the drainage that causes the hernia.

Of the fourteen operators above referred to all but one, Joseph Price, replied in the affirmative to the question: "Do you from your own experience regard incision and drainage as the best method of treating some cases of appendicitis?"

I wish, in conclusion, to say that it is my firm conviction that no operator can subject all cases of appendicitis to appendiceectomy, without a higher death-rate than is necessary.

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DISCUSSION ON PAPERS OF DRs. DEEVER AND PORTER.*

DR. NICHOLAS SENN—I am willing to confess that there are more fistulae following the retention of the appendix than its removal. Appendicitis, if not interfered with, leads in a great majority of cases to a number of conditions, but I think there is much to be done in the way of prevention. We all recognize Dr. Deaver as one of the most radical of men. Under ordinary conservative treatment, 80 per cent. of all cases of appendicitis will recover, and perhaps not more than one-half of them will ever suffer a second attack. I am glad that we have in this Section such a representative as Dr. Deaver, as he represents one side of the question and I the other. His statistics are better than mine, as I operate only on desperate cases, where there is no question as to the propriety of performing the operation, while Dr. Deaver operates on every case of pain in the appendicular region. I do not know of any more difficult subject to deal with from a surgical standpoint than appendicular fistula, and it is a dangerous operation to perform when treating it, no matter what the method. I have proposed in a number of instances to operate in the way I have described before, i. e., subperitoneal enucleation, and I prefer this method. Appendicular fistula means a great deal, and when I have reason to believe an attack has terminated in the formation of an abscess which has ruptured into the cecum, I am very cautious, as these cases are extremely dangerous. But if the abscess has formed during a first attack and ruptures into the cecum, I am very loath to recommend operation.

DR. MORDECAI PRICE, Philadelphia—I am exceedingly glad to be able, on one occasion at least, to take Dr. Deaver's side; we are not now in Philadelphia. I can endorse Dr. Deaver very strongly in this connection. I have operated 125 times, twice without pus, and fifteen times the head of the colon was open. In many cases the appendix was separated from the head of the colon by ulceration. I have not yet regretted a single operation. I have devised an operation with a view of avoiding fecal fistula by first opening the abscess and then simply enucleating the appendix. I thoroughly irrigate, draw the colon forward, separate all the adhesions within the peritoneal cavity, repair the head of the colon to the best of my ability and use silk suture for this purpose when it can be borne. I use simple gauze drainage in all cases. I replace the colon as far back as I can so as to have a long drainage tract to close by contraction. Dr. Deaver states that the drainage-tube does harm, and I am sure it is often the cause of fecal

fistula. I have yet to see a case where a cure was not effected within three weeks. The wound will close by the slow contraction of the cicatricial tissue, and I have not seen any case give trouble in this respect. As to Dr. Senn's statement that 80 per cent. of cures take place by medical treatment, I have never heard him make any such statement in any surgical meeting before. I am surprised to hear it and am surprised to hear him advise leaving the appendix in under any circumstances. If I had appendicitis and had my choice of the two men, after Dr. Senn's statements to-day, I should prefer to have Dr. Deaver treat me. This is one of the most serious questions we have to deal with. It is not five weeks since I saw two cases die of so-called medical treatment. I operate on every case that will leave the table alive, and I am more than ever convinced that when a man can not make a diagnosis he should not trust to his medical treatment. The cases that kill are those that have to be operated on before a positive diagnosis can be made. There are three men in this room in whose practice I have operated 22 times with only one death. Gauze drainage and Schuylkill water will save everything that you can operate on; the trouble is the men do not use Schuylkill water. I had a case of abscess in the kidney region which I simply opened and drained and in which I had made a mistake, as I believe it was a case of appendicitis and the appendix was no doubt gangrenous. I remember a case which a year ago had suffered typhoid for four weeks and pain and misery for a year. At the end of that time the muscles were like boards. His physician, who was a good man, told me he was sure pus was present, but I could not make up my mind what it was. I opened the patient and pus flowed out. I washed him out thoroughly and found a hole in the head of the colon into which I could stick my thumb. There was a large amount of rank pus present and I found five stones in the appendix. I then repaired the head of the colon, broke up every square inch of the bowel, washed out thoroughly, put in gauze and left the wound wide open. I have not used fifty silk-worm-gut sutures in ten years to close these cases. In ten days a fecal fistula occurred, and the temperature was 102. I again opened the wound and put my fingers into a quantity of pus. I used the gauze again and the man is now on the way to health. I consider this the most important part in the treatment of appendicular fistula.

As to the first paper, many young people are affected in this way. Some cases occurring in patients 50 years old have been operated on with good results, and there is no reason why you should hesitate in any case merely because of age. The patient will be more comfortable after operation than before. If you can not make a diagnosis and the case looks like death do an exploratory operation at once. When it is only exploratory a two to three inch opening in the skin would never kill any one.

DR. R. H. M. DAWBARN, New York City—I believe that twenty-five years from now we shall hear the same discussion as at present. He who is radical will be said to be killing his patients, even though he proves the contrary; while the opposite side will still be taken by many of the unconvinced. The most conservative surgeon is the one who conserves the patient's life, however radical his measures. I agree with Dr. Deaver absolutely; and if I had the diagnosis of genuine appendicitis, not merely appendicular irritation, made on my own person I should certainly be operated on at once. While I do not wish to stand up for Croton water, as Dr. Price has done for Schuylkill water, we in New York do not expect pus. With so many men anxious to discuss this subject, I do not think any of us should take more than a moment on any one point, and I wish only to allude to one point. One may so frequently prevent fistula, and I have a feeling that in the majority of cases its formation is due to deficient technique. When I find the appendix is gangrenous I have invariably for some years past surrounded the gangrenous part of the cecum with a purse-string suture (a running Lembert) well outside of the gangrenous portion, and then inserted this portion. In a week the slough will separate and this portion would fall off into the feces. It would be a very unusual degree of gangrene that could not thus be surrounded. If the cecum be not left smaller

* Dr. J. B. Deaver's paper on "Appendicular Fistula" appeared July 14.

in caliber than the ileum opening into it no trouble will result. As to the statement that when a gangrenous patch is present fecal fistula will surely follow, I am sure it is not necessarily true. The technique I have named is credited to me in Fowler's work on "Appendicitis."

DR. W. D. HAMILTON, Columbus, Ohio—I have had fair opportunities for studying cases of appendicitis, considering the size of the city in which I live, and much of my experience has been gained within the last eight years. No absolute rules can be given in regard to the disease which will be applicable to all cases. It is not too much to ask the general practitioner to make repeated examinations of the abdomen of the patient from the time at which he is first called, and if the case be suspicious, he should at once call the surgeon and let him take the responsibility of saying when the operation should be done, if at all. Several points have interested me to-day, and one was the question of irrigation. I have no doubt that in some of the desperate cases it should be used, especially when the infection be general and purulent. In other cases it is unwise, lest the infection become general from its use. In my own experience fistulae have ordinarily healed without suture within a few weeks. A few have needed closure by operation. If the patient is kept in bed for a time on a liberal liquid diet and the wound kept clean the fistula, if one of the large bowel, will frequently heal. I remember a case of appendicitis operated on a few weeks ago in which a fecal fistula occurred and three or four weeks afterward it became necessary to establish an opening in the loin in order that drainage might be facilitated.

I wish to emphasize the point Dr. Senn made yesterday, that enucleation of the appendix is useful when the organ is inaccessible and can not be brought outside. It is a useful experiment and is often applicable where it might be impossible to ablate the appendix by any other method.

DR. H. MYNTER, Buffalo—If I had the choice between following Dr. Deaver and Dr. Senn, I should take the former. I agree with him that the question is decided best by early operation. I must acknowledge that I am astonished to hear Dr. Senn state that nine out of ten cases get well by medical treatment. I think we may state that in all cases of appendicitis the first change is congestion, then cicatricial retraction, obstruction and stricture. Pyelitis follows, bacilli get to work, ulceration occurs, gangrene, perforation and peritonitis result. One can not usually make a mistake in such cases. I have wondered if it is opium that Dr. Senn believes in or is it hot and cold applications? As a rule, medicine will have no effect whatever. In regard to the first of the papers, it was stated that certain cases recur after incision and drainage, but in my own practice I have only seen 5 per cent. recur after this treatment. I believe this is the proper thing to do in a great many cases, but if you see the patient early the removal of the appendix should be done as Dr. Deaver says. If we get them late, that is a different matter. The consensus of opinion is that in the late operation, say after six days, the appendix should be left alone. Dr. Deaver says that fistula is the most important sequela, but I do not agree with him, as I have seen only five in my practice. They get well by being left alone, and there was only one exception to this rule. When healing does not take place after resection, end-to-end anastomosis should be performed. Everything considered, I feel that Dr. Deaver takes a very strong position. I entirely agree with him in operating early, but I disagree with him in removing the appendix in every case. I believe in personal equation, and I also believe that Dr. Deaver may be able to do it where others would fail.

DR. W. W. KEEN, Philadelphia—Like the poor, appendicitis is something we always have with us. As a result of the discussion which was held two years ago in Denver, thirteen months ago in Chicago, at the meeting of the American Surgical Association, two questions were proposed: 1, should operation be done in every case the moment the diagnosis of appendicitis is made, and 2, should the appendix be removed in every case? It is sometimes stated that Philadelphia is asleep, but on that occasion the only two surgeons who advocated instant operation and universal removal of the appendix

were Drs. Deaver and Harte, of Philadelphia, every other surgeon who took part in the debate speaking in the negative. I can not but think that in these discussions we surgeons forget that we are surgeons and that we are called in constantly to see the pronounced cases, but not the mild ones. I am not prepared to go so far as Dr. Senn, who says that 80 per cent. would get well without treatment, yet I can not forget the statistics of Hektoen, who, in 300 consecutive cases seen post-mortem of patients dying from causes other than appendicitis, showed that 100 had evidences of this disease. This shows that a very large proportion of the cases diagnosed as intestinal colic and such like were really cases of slight appendicitis which got well without surgical treatment. I believe there is a very large proportion of cases that surgeons never see and which do get well without surgical treatment. I do not believe in practicing surgery by aphorisms, neither do I believe that it is right that every case should be treated this way or that, as each case is a law unto itself. I have operated on cases of appendicitis just as quickly as I could make the needful preparations, and I have refused to operate. In spite of the theoretical statement Dr. Deaver makes, he does not operate on every case. I believe it might be placed as a rule with exceptions that no case certainly should ever be allowed to pass beyond two attacks, because it shows there is a condition which is sure to recur. Hektoen's statistics show that one may have a single attack and no more. Appendicitis of any gravity should be operated on, and I try to follow this rule, but I do not believe that every case should be subjected to operation. We must remember that we lay down rules here for the whole country. A rule laid down for Dr. Deaver, if made to apply to a man of less experience, one who does an operation once in three or four months, would be giving too great liberty. In many communities there are not enough cases of appendicitis to give experience. We must differentiate not only the case, but the surgeon. What is permissible for a man of large experience and great operative skill is not applicable to every doctor in this country who may be called on to treat a case of appendicitis, and I would urge therefore a consideration of what is best in the case of each individual patient. As a rule, operation will be best, but there are many exceptions. Also, as a rule, removal of the appendix is best, and as we grow larger in experience and more skilful in operating from having had difficult cases to deal with, successfully and unsuccessfully, and learn by our failures we become more and more expert and urge the removal of the appendix in almost every case. I am sure that if we had a very large number of cases of appendicitis it would be unwise for us always to attempt removal.

As to fecal fistula, I agree with Dr. Price. While they are rare, it is still rarer to find one that does not heal spontaneously. A very large proportion of them will get well if left alone. However, I have seen a number of cases that did not get well, and have been so unfortunate as to have one in my own practice. I have seen some very large ones indeed, and my usual rule is to open the abdomen clear into the abdominal cavity to the side of the fistula, cleanse and pack, and then, by making an incision at the side, I insert my finger into the opening. I then invert the margins and by appropriate treatment with a Lembert suture and gauze, complete the operation.

DR. F. W. MCRAE, Atlanta—There is one statement in Dr. Porter's paper which it seems to me is misleading, that is the statement as to the frequency of recurrence of appendicitis after simple drainage of the abscess. Recurrence has taken place in more than 75 per cent. of the cases I have seen that have been drained, and removal of the appendix has been subsequently necessary to relieve the condition. Dr. Senn did not mean to say that 80 per cent. of the cases got well without operation, and he did not use the term. He said 80 per cent. would recover from the attack, which does not mean get well. A large proportion will recur and require subsequent operation. An operation for appendicitis done during an acute attack often does not leave a sound belly wall. Those who do this kind of work should consider the possibility of ventral hernia. I saw a case only the other day, of through-and-through closure where drainage was put in, develop a ventral

hernia three years after operation. Dr. Price makes a very dangerous proposition when he says that in every case of appendicitis with infection we should shut off the abdominal cavity with gauze and tear up all adhesions. I do not believe that this practice should be generally adopted, neither do I believe that surgeons generally get as low a mortality as 5 per cent. in this class of cases. I think Dr. Price's suggestion may be carried out in certain cases, but it is dangerous to recommend it as the proper practice for all cases.

Some appendicular abscesses ought simply to be drained. I have seen seven or eight cases of fecal fistula, all of which, with the exception of two, have closed without treatment other than simple cleanliness. In two of them it was necessary to operate. I reported, last December, before the Southern Surgical and Gynecological Association, the method which I adopted in these two cases. The simple point, which is somewhat original, is in the putting in of several tiers of sutures. Four or five tiers of sutures will turn the edges in without turning too much of the gut, and I have seen the method cure where a simple row of sutures would not. As to the gauze packing after operation for fecal fistula, I think Dr. Deaver's statement is somewhat misleading. I consider it bad practice to pack the gauze down to the line of suture, and I believe it will often cause a failure of the operation. I use gauze, but do not allow it to go down as far as the line of suture.

DR. JOHN B. MURPHY, Chicago—I wish to congratulate Dr. Deaver on two points, 1, on the amount of work he has done in repairing fistulae, and 2, the interest with which he has taken up the prevention of the results which he is laboring so hard to devise a means of repairing. Fistulae are not necessarily the results of bad work at the time of the operation, but they should not occur. We are not justified in having cases presented to us that will have fecal fistulae. Will we ever get this matter right? Will it ever come to be as bad or worse than it was in the beginning? I will accept the statement and will add to it that more than 80 per cent. of the cases recover without operation, but I believe that 98 per cent., even 99 per cent., will recover with a timely operation. Will we come here and father a procedure which we admit has an expense of 20 lives in every 100? Is there any amount of evidence that will right it, or any proof which will prove it? I have not had Dr. Deaver's unfortunate experience in seeing so many cases of fistula. The men who call me in consultation have been educated to calling me in early. Can we, as physicians, tolerate 15 or 20 per cent. mortality without operation? Do you want your life jeopardized to the extent of 15 or 20 per cent.? We will certainly waste some time by operating on every case, and the questions are: Should every surgeon operate on every case and should every case be operated on? We must assume that good intelligent surgical skill is available in almost every town of two or three hundred citizens, and available within a few hours. Heretofore I have said that I operate on every case of appendicitis, but I wish to apologize for making this statement, as I do not. Cases of moribund appendicitis I leave to the physician, as he is entitled to have them if he keeps them up to this stage. Within the last year one physician has had three cases of this kind on which I refused to operate, and they all died. In some cases I merely empty the stomach and cease to give them food. No case should be allowed to go on to peritonitis, and I feel that any practitioner can make the diagnosis, as it is a very easy matter. The diagnosis can be made in every case within the first twenty-four hours. It is our duty as surgeons to avoid the possibility of fistula by removing the infected appendix at a time when it can be done safely, and there should not be even a loss of 1 per cent. Can any one show us that he has operated on 100 cases without a death, or on 1000 cases and not had a number of deaths? I remember no case operated on within twenty-four hours that died. I am willing to take the responsibility of operation if it has no danger.

DR. PLATT—I have listened with great pleasure to this discussion and consider Dr. Keen made a wise remark when he said that every case must be considered individually, separately and distinctly from all others. I do not think that every case should be operated on. If, within a very short time after the

beginning of the disease, it is believed that suppuration will occur, the operation should immediately take place and may be performed by an experienced surgeon with a mortality which is practically nil. If the patient has been permitted by the attending physician to go on until the disease has passed through a very considerable period, but has recovered, that patient is not well and should be operated on unless it is a very old person, because the operation will be far less dangerous than the risk of recurrence. I do not believe it is wise in all cases to waste time trying to remove the appendix. I have noticed in my own practice that where I have left the appendix in and have drained with gauze the patient has fully recovered and not in one case have I had a recurrence. I have known of serious damage being done by searching far and wide for the appendix, and I believe if we will let it alone nearly all of these cases will recover. But few of them will recur if we drain well with gauze and do not sew up the wound too soon, as this would interfere with drainage.

DR. F. D. GRAY, Jersey City—Appendicitis is a subject which interests me very much, although I have not had a very large experience with the disease as compared with that of many here, my operation cases not numbering probably more than 175. Not more than seven, however, have proved fatal and the cases have been taken as they came, primary, moderate and desperate, just as we find them. I am a strong believer in early operation, and I think with Dr. Deaver that every case should be operated on as soon as the diagnosis is made. I agree also with what our eminent President has said, that when we talk about advising physicians throughout the country we must not give bad advice; but what shall we aim at? Shall we strive for less than can be done by the best men? I claim that when we talk about operating on all cases of appendicitis we have mainly in mind cases which come to us for advice. I believe that any surgeon with an aseptic hand and instruments and a fair knowledge of technique can open the abdomen and remove a primary inflamed appendix with safety. When we come to statistics, admitting that 80 per cent. will get well without operation, what are the surgeon's results? Do you expect that 20 out of every 100 will die. We would all be ashamed of such results from surgical treatment. I do not claim any especial skill, but, as I have said, I have only had 7 deaths in 175 cases, and 5 of them should not have been touched had I had consideration for my statistics. I would like to plead also for the cases that may not be moribund, but still are suffering from general peritonitis. These are the cases which usually remain under the care of the physician until surgery is called on as a last resort. I have done a laparotomy in about fifteen of these cases and found them suffering from a virulent form of peritonitis. Ten of them are living to-day. After opening the abdomen I eviscerate the intestines completely into hot towels, wash out repeatedly with a saline solution and peroxid of hydrogen, flush the abdominal cavity again, return the intestines and drain with gauze. I do not simply drain in one direction, but in several, and remove the drains in two or three days. This procedure I am convinced will save many lives.

DR. RUFUS B. HALL, Cincinnati—I do not feel that this discussion should close with the statement that desperate cases should be left to the medical man. We see too many of them in which there is an accumulation of pus six, eight or ten days after the primary attack and these are the patients who deserve a chance to get well. If they are dying I agree with Dr. Murphy, but if not they should be given a chance by letting out the pus. In this class of cases I disagree with the speakers who say that we should remove the appendix in all of these instances. Should the patient get well, a second operation can be done at a time when they would have some show of surviving, but if you do complete the operation at that time you will lose your patient. When you are called to see the case at the bedside you must decide this question for yourself. If you believe that every one of them must be operated on as soon as the diagnosis is made you will lose many.

DR. H. J. BOLDT, New York City—I agree entirely with Dr. Murphy and operate on every case except those that are moribund. We have heard that about 80 per cent. will get well

without operation and 90 per cent. will survive the primary attack. A second attack may occur, however, and within twenty-four hours a general septic peritonitis may have developed. If the patients get well from the primary attack, by all means advise radical operation during the interval. I fully agree with what has been said by those who take the ground that radical operations should be done in every case of appendicitis.

DR. CHRISTIAN FENGER, Chicago—Operation is not always the first thing to be thought of in appendicitis; if 80 per cent. recover from acute attacks they will be in a state of comparative safety. My own practice and my advice to my students is to first make the diagnosis, but not to operate simply because the diagnosis is made. If the symptoms improve, the patient may recover from the attack, but if they become worse immediate operation is indicated. About 30 per cent. of the patients have a second attack. About one-half of these have the second attack during the first year, while 70 per cent. do not have any recurrence. The question when we should operate is a difficult one, but I wish to emphasize conservatism and do not feel that the 80 per cent. necessarily should be operated on.

DR. WILLIAM EASTERLY ASHTON, Philadelphia—I agree absolutely with Dr. Deaver in the position he has always taken with reference to early operation so soon as the diagnosis is made. If you are called in to see a case and you make the diagnosis you can not say what the condition of the patient may be to-morrow. It is absurd to say: "Call in the surgeon early"; you might as well say: "Call in the cook," as she has as much knowledge of what is going on as the best surgeon in the country. I agree with Dr. Murphy that 20 per cent. mortality in the early operation is horrible. If we can only offer 80 per cent. recoveries, then I for one believe that the patient is running risks which are not justified. The whole question is in our ignorance in diagnosis. If we have a large lump present, it is easy to say that the patient should be operated on, but it is in the early stages where the difficulty arises, as it is impossible for us to know what is going on or what to do. I operated on a case three weeks ago which was first seen by me on Sunday. The patient had been taken sick the previous Thursday, and when I saw him his general condition was good, pulse 80, temperature normal, abdomen flat, and pain on pressure over the right side. I advised operation and transferred him to the hospital, where I found a post-cecal appendix four inches long, thick and gangrenous. In a few hours more perforation and death would have occurred. There was considerable objection to the operation because the man had been getting steadily better so far as his symptoms were concerned, but the appendicitis caused me to urge operation, and it was none too soon.

DR. ERNEST LA PLACE, Philadelphia—There is no doubt that the mortality from appendicitis is too high. We are constantly being shocked by the death of well-known people from this disease, and every effort should certainly be made to diminish this mortality. In every case of appendicitis there is a time when operation will mean recovery. If this is true, and why should it not be true, when we know that a mere opening of the abdominal cavity has no danger, then the medical man is responsible for the death. If we could establish precise rules on which the diagnosis could be made, then the diagnosis would be an indication for operation. Is this possible? Do all of us who have studied pathology, especially recent pathology, know in a given case of appendicitis whether the pain is a symptom which has a microbic element? If so, is it the staphylococcus? Is it the streptococcus? Is it the bacillus coli? Toxins may develop, the absorption of which may cause death, and yet give very little general recognition. You may have the appendix loaded with the bacilli coli and yet you may have no temperature disturbance. The pulse may have gone up, but if it had been stimulated by the streptococcus there would have been some equilibrium between the pulse and the temperature. How are we going to tell what is going on? I know from experience of a case which occurred some months ago in a gentleman 26 years of age. He had been ill only two days, but it is my rule to take it for granted that it

is a grave case when I am not sure. The man refused to be carried to the ambulance and also to use the elevator, preferring to walk, which he did, to the top floor of the hospital building. His father wanted to be present at the operation, but I refused him permission. When I opened the abdomen his pulse was 90, his temperature normal, and I found three enormous abscesses in the abdominal cavity. Peritonitis developed. You may be sure that the next case I see will be operated on, but should I neglect to do so I shall always have the lasting regret that I had not benefited by experience.

DR. A. J. OCHSNER, Chicago—In order that my statistics which Dr. Porter quoted may not be misleading, I must say a few words in explanation. The nine cases to which he refers and which were treated by means of drainage without removal of the appendix all occurred in my practice during the past two years, 1898-1899. During this time I operated on 248 cases of appendicitis. Consequently this form of treatment was employed in less than 4 per cent. of all cases. In former years I employed it in a much larger proportion of cases. In many of these the pathological conditions were very much less serious in character, and consequently the relative number requiring further operative treatment was much smaller at that time. No surgeon should be guided in this matter by the opinion of another, for with increasing experience and skill each one will find that he can remove the diseased appendix safely at the first operation in a relatively greater number of cases.

The question in any given case is: Will the patient be more likely to recover from the present attack by simply instituting drainage or by adding to this the removal of the appendix? The surgeon in the meantime must not base his treatment alone on the condition he finds, but also on his own skill and experience.

It seems proper in this discussion to speak of a form of treatment which, if employed systematically, will not only make the operation of which Dr. Porter speaks unnecessary, but also prevent the recurrence of the complication which is the subject of Dr. Deaver's paper. In order to show why the treatment I am about to advise is of great value, I must first direct your attention to the anatomical location of the appendix. It is located in the most favorable position possible for its isolation from the general peritoneal cavity, having above it the cecum and the cecal end of the ileum; behind it is the peritoneum covering the iliacus muscle; to the right and in front is the parietal peritoneum, and to the left the small intestines. Were it not for the presence of the very movable small intestines to the left it is plain that an inflammation of the vermiform appendix must necessarily result in a harmless circumscribed abscess in the worst case. This would be the more likely because the omentum folds itself about the appendix at once in case of inflammation. In order to prevent extensive, dangerous and destructive inflammation, then, it will be necessary to secure complete rest for the small intestines. The motion in the small intestines is due to peristalsis, and this is due to the entrance of food from the stomach into the small intestines, even in very small quantities. To secure complete rest it is, consequently, necessary to prohibit the use of food of any kind by mouth, and if the stomach contains food, to remove this by means of gastric lavage. The patient may be nourished by the use of concentrated predigested enemata, not to exceed four ounces at a time, given once every four to six hours. I have employed this method in many cases and it is certainly of great practical value. It relieves the pain by rapidly reducing peristaltic motion and gaseous distention of the intestines; it prevents the small intestines from carrying the septic material from the region of the appendix into the more sensitive portions of the abdomen. In short, it prevents all of the most favorable conditions and complications of appendicitis. I would, consequently, advise the treatment consisting in absolute and complete prohibition of the use of food and cathartics by mouth; of performing gastric lavage, and of employing exclusive rectal alimentation in all cases of appendicitis.

DR. MILES F. PORTER, closing—At our meeting a year ago Dr. Deaver stated that he advised removal of the appendix

in all cases on which he operated and later stated that he did not advise it, but always did it. In his paper to-day he reported a case where he did not remove the appendix, and therefore there is no difference of opinion between us. I am absolutely opposed to the method of operating suggested by Dr. Price. He says that he breaks up the abscess walls, which in my opinion not only harms the patient, but may kill him. It kills patients that do not need to be lost. As to the matter of statistics, I said that 13 per cent. of recurrences after drainage was too large and I still believe it. I must enter a most earnest protest against the statistics given by Dr. McRae, i. e., that 75 per cent. of the cases operated on recur if the appendix is not removed. I am aware of the fact that there is nothing so fallacious as facts, except figures, but making all due allowance, we must not accept this statement. I believe I understood Dr. Murphy, and I believe the impression he leaves is a wrong one, i. e., that when a case is so bad that it scarcely has a chance of recovery he leaves it to the physician. I do not think he means this. I am too sympathetic to let any of these patients die without operation, and 99 per cent. of them will probably die, do what you will; but every now and then you will save one and you will not kill any. Every surgeon should give a patient a chance for his life, and I think that we should be very careful as to the impression we leave regarding statistics. I was very glad to hear Dr. Ochsner's explanation of his method of treatment.

One man reported 175 cases of appendicitis, including severe pus cases, with only 7 deaths; I must say that he is playing in better luck than any operator I know—that is all.

DR. J. B. DEEVER, closing—While Dr. Senn and I are the best friends, it is evident we do not agree on the subject under discussion. Dr. Senn says that I am a man of extreme ideas; I am glad to go on record as such on the subject of appendicitis. Gentlemen who visit the German Hospital have ample opportunity of seeing many of my cases after operation, and can testify as to the result. I operate as soon as I can make the diagnosis and do not wait until the eleventh hour to do it, which will mean crape on the door. I regret to say that I have not one iota of confidence in the judgment of a man who says that he can wait until pus is present, for such a man knows nothing of the gravity of the disease. I could cite case after case were it necessary, but I would like to ask how many men there are here this afternoon some of whose friends would not have been saved had they had the treatment I advocate. My cases number in the thousands, and I simply say that I know in the majority of instances when a case has appendicitis, and I also know that when such is the case the appendix should come out. This subject has been very thoroughly discussed, but I confess I am much grieved to hear some of the utterances made. It is our mission to promulgate the doctrine which will save and not destroy lives.

Dr. Keen said in Denver that a living man with an appendix is better than a dead man without; I should say that in my opinion a living man without an appendix is better than a dead man with one. Dr. Keen says that I do not operate on every case, and that is true. I may not have the conveniences at hand, friends may object, and the patient may be practically dead when I am called. I do not believe any of us can cure general septic peritonitis. My experience is that in the latter case death is more painful after an operation than before it. I am arguing from the standpoint only which will save the greatest number of lives. Dr. Keen states that early operation will save more lives than late operations, and he also mentions that he sees many cases very late. Why? Because of the teaching that we should wait several days, when the patient is thought to be doing well, before doing anything. I regret seriously that such a stand should be taken. No men have my regrets more than Drs. Senn and Keen, for they are promulgating a theory which will cost many lives.

Hydrogen Peroxid as a Hemostatic.—The *Sem. Méd.* quotes Rifaux to the effect that hydrogen peroxid is extremely effective as a hemostatic. A tampon moistened with it and inserted in the nasal fossa in case of hemorrhage will arrest even the most serious and uncontrollable epistaxis.

TREATMENT OF IMMATURE CATARACT.*

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Non-progressive cortical opacities are very rare. The opacity accompanying congenital coloboma of the lens, the partial cortical cataract caused by the adhesion of a retained or acquired pupillary membrane and some forms of traumatic partial cataract do not progress. The anterior punctate cortical cataract, the posterior cortical cataract and the form of zonular cataract, in which the zone is situated well in the cortex of the lens, are extremely slowly progressive. Traumatic partial cataracts, with or without perforation of the capsule, sometimes become stationary and in a few cases the opacification partly disappears. Anterior and posterior polar cataracts are almost always stationary. The small white congenital cataract which occupies the center of the lens and apparently includes only those fibers that are formed during the second stage of development of the lens, the axial congenital cataract and a few cataracts with mixed opacities, are stationary or nearly so. Some forms of monocular stellar cataract, probably of traumatic origin, do not advance. Zonular cataract almost invariably becomes denser as the individual increases in years and in not a few cases general opacification of the entire cortex follows.

The development of cataract is due to a departure from the normal in the nutrition of the lens. The change which takes place in the lens structure may be either hyperplastic and degenerative, or simply degenerative. Cataract which forms during the course of an iritis, cyclitis, choroiditis, or which accompanies intraocular neoplasm, not infrequently presents a swollen appearance, a thickened capsule and a multiplication of epithelial cells. The epithelial cells form in masses on the posterior surface of the anterior capsule, produce cystoid cells at or near the equator of the lens, and sometimes more or less completely cover the anterior surface of the posterior capsule. This form of cataract is sometimes spoken of as inflammatory. To designate these cataracts as inflammatory is plainly a misnomer, since their development is due to perverted nutrition only. In traumatic cataract, with infection of the lens substance, a multiplication of germs takes place in the lens accompanied by an infiltration of small cells and a disintegration of lens fibers. In no other condition will we find a true phakitis.

Cases in which medicinal therapeutics are indicated, due to the condition of the interior of the eye, are those in which intraocular disease, other than cataract, is present, choroiditis, iritis, cyclitis, glaucoma, retinitis, parenchymatous kerato-iritis, atheroma of retinal vessels, etc. The treatment should, of course, be local and constitutional and does not differ because of the presence of opacities in the lens, from that which would otherwise be employed. The influence of such treatment on the lens structure is not to clear up existing opacities, but to prevent further opacification by improving or by preventing further impairment of the nutrition to the lens.

Medicinal therapeutics and other measures to improve health based on the constitutional condition of the patient have a wide range and are of value in preventing the progress of cataract, but are of no importance in causing a disappearance of opacities that have already formed. In atheroma of the vessels,

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