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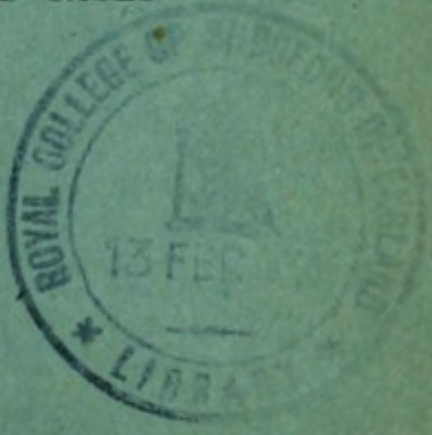

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REMARKS UPON APPENDICITIS,

BASED UPON A PERSONAL EXPERIENCE OF 181 CASES.

BY

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THE subject of the treatment of appendicitis is by no means exhausted. Since my last report of eighty-seven cases, published in the *Boston Medical and Surgical Journal* of August 4, 1892, I have seen one hundred and two cases in which the question of operation for a probable appendicitis was raised. Of these, eight proved to be some other abdominal disease, as shown either by operation or by autopsy. In the remaining cases some affection of the vermiform appendix was probably present. This list does not include the cases I have seen with my colleagues at the Hospital. In my own there have been forty-three deaths. At least thirteen of these were moribund at the time of my first visit. In my surgical practice the deaths from this disease have exceeded many fold those from all other causes combined. In the surgical wards of the Massachusetts General Hospital in the last four years there have been one hundred and thirty-six cases, exclusive of thirty-one of my own. The greater number of these in the practice of my colleagues I examined myself. In a total of one hundred and thirty-two operations there were one hundred recoveries and thirty two deaths.

Even after the above experience I still feel in grave doubt as to the proper treatment of certain cases. Many of my colleagues after exceptional opportunities of studying this disease, have expressed misgivings as to many questions that have arisen from time to time, as new or unusual conditions have appeared. One is apt to make the most positive assertions in connection with the treatment of appendicitis after his first few cases. In my first paper upon this subject, published in the *Boston Medical and Surgical Journal* of January 19, 1888, I drew five conclusions from the five cases I had seen up to that date. To one or two of these I still adhere; the others long since have been shown to be unsound. My present views upon this subject will undoubtedly change

in time; their only claim for attention rests upon the wide experience from which they have been drawn.

This uncertainty which I feel in the management of the gravest forms of appendicitis; the large death-rate, not only in my practice but in that of my associates; the great prevalence of this disease, and the numerous cases that, unrecognized, are left to die unrelieved—these are my reasons for presenting a few remarks upon one of the most important questions which have arisen in the past few years.

There is a group of cases in which there can be, at the present time, little or no discussion as to the advisability of interference. I refer to the cases of localized peritonitis—in which drainage is acknowledged by universal consent to be the proper treatment. But even in this procedure there has been, and still is, a difference of opinion as to the advisability of separating the adhesions and removing the appendix.

In those mild cases in which the constitutional and local symptoms are trivial, there are many opposing views as to the wisdom of interference. In the severe types of inflammation, in which there is a considerable extravasation, and in which the constitutional and local signs are marked, there is little to be said at the present time against immediate surgical interference. But even in these cases the attending physician is not always familiar with those conditions in which a grave prognosis would be given by an experienced man. Cases have come to my notice—as will be seen by a glance at the subjoined tables—in which the favorable moment for interference has passed, and in which an operation has been performed in the presence of a general peritoneal infection. The group of symptoms by which we may recognize this impending danger is still to be accurately described. I do not mean to say that it is ever possible for a man who has seen but few of these cases to make his own diagnosis and prognosis from any written description—for it is only by long experience that one is able to give a probable prognosis in any case—but an analysis of a great number of cases, and continued discussion on this subject should enable the general practitioner to recognize at least those conditions in which the services of an expert should be sought.

I am firmly convinced that appendicitis is the most important acute abdominal disease of the present time, and that, excluding certain zymotic diseases, it is the cause of more deaths than any other acute abdominal lesion. It has been said by some that deaths from peritonitis after operations for perforative appendicitis have been due to the operation itself. While I have no doubt that peritonitis has resulted and death has followed in cases which, if left to themselves, would have got well, still these instances are extremely rare. On the other hand, the number of deaths from this disease if left to itself has been and always will be deplorable. Moreover, the number of deaths from appendicitis is

much greater than we suppose; for there is no doubt whatever that many such deaths are ascribed to other lesions—especially to typhoid fever. Since May 1st I have known of at least twenty deaths from appendicitis in the practice of various men in this community. That the fatal result has not been due to the operation itself in all these instances is shown by the fact that in many of them no surgical interference whatever was made, while at every operation a general peritoneal infection has been found.

The number of deaths from appendicitis in which the true cause is not even suspected is, I have no doubt, very large. We have no accurate means of ascertaining the number of these deaths. If we take the mortality returns, however, and select those cases where death has been caused, in males under forty, by "inflammation of the bowels," we shall get an approximate estimate of the number of deaths from this disease. Fatal "inflammation of the bowels," I hardly need say, in males under the age of thirty or forty, is usually caused by appendicitis. The statistics which I have gathered in my own practice in acute abdominal surgery show that in an enormous percentage of cases in males the cause lies in the vermiform appendix. Ten per cent. would be a large estimate for all other causes of peritonitis. In the city of Lowell, in 1892 and nine months of 1893, Dr. Gage's examination of the returns shows twenty-seven deaths from "inflammation of the bowels" in young males. In the year 1880 there were in the city of Boston 40 deaths from inflammation of the bowels in males. In 1881, 41; in 1882, 40; in 1883, 43; in 1884, 54. In five years, therefore, in the city of Boston we have, presumably (deducting ten per cent. for other causes), 194 deaths from appendicitis in the years in which few operations were performed.

I need hardly better emphasize the importance of this subject than by calling attention to the great number of deaths from this disease—deaths most of which, I have no doubt, could have been averted even by our present imperfect methods of diagnosis and operation.

Diagnosis.—The diagnosis of appendicitis has been considered easy, but in my experience it is at times impossible to discriminate between this disease and certain others, though the history, with the local signs, is sufficient to make a diagnosis in the majority of cases. With occasional exceptions, a diseased appendix is the cause of all peritonitis, local or general, occurring in males. In children who are not able to describe their symptoms the disturbance may apparently be abdominal when it is really due to lesions in distant parts. Errors are more likely to arise if symptoms of intestinal obstruction are present early in the disease. In some instances the septic extravasation is so rapid that inhibition of peristalsis is one of the earliest symptoms. A general peritonitis, associated with obstipation, with distention and absence of physical signs, cannot be clearly distinguished from certain other forms of acute ob-

struction. The rarity of the latter conditions enables us to rule them out on the chances. The indications for interference, however, in all these lesions are clear, so that an early exploratory operation will be on the safe side.

On the other hand, when the symptoms point to any one of the rarer lesions—like intussusception, volvulus, or internal strangulation—the possibility of an appendicitis must always be borne in mind. Not infrequently I have found a gangrenous appendix in cases in which a diagnosis of internal strangulation had been made by the most experienced men. In one case in particular, the pain and local signs were all situated between the umbilicus and the spleen. Nothing was found in this region at the operation but purple and distended coils of small intestine. Death took place in a few hours. At the autopsy, in the diagonally opposite quadrant the appendix was found perforated and gangrenous —the source of the whole trouble. In all cases of general peritoneal infection, in which the lesion is obscure, the possibility of an appendicitis must be borne in mind.

The prominent symptoms of appendicitis, when occurring singly, may be due to other causes than a perforation of the appendix.

Pain.—Sudden acute pain is common to all acute abdominal conditions, including hemorrhage. Pain associated with constitutional disturbances, rise of temperature and pulse—even if the site of the pain is remote from the appendix—is usually due to an affection of this organ. Pain considered alone very frequently has no direct relation with the usual anatomical seat of the appendix. In most of the cases in which the diagnosis is beyond question, as shown either by autopsy or by operation, the initial pain is in the epigastrium, or is an indefinite pain "through the bowels," "all over the bowels," "in the lower part of the bowels," "in the stomach," or "in the bladder." The explanation of this phenomenon lies probably in the close nerve relations throughout the abdominal cavity—in the intimate network of the sympathetic system. In making a diagnosis, therefore, the seat of the pain in the first hours of an appendicitis is of no great importance. As the case progresses, however, the pain usually becomes localized in whatever region the appendix may occupy; but even this statement has exceptions. At times the pain is referred to remote regions throughout the whole course of the affection. The character of the pain may range from a slight discomfort to an agony, in which the patient writhes in the greatest distress. In long-continued cases the pain may subside and become an unimportant feature of the disease.

Rigidity of the abdominal muscles is an important symptom, and usually accompanies the pain of sudden extravasations.

Tenderness.—Tenderness is a more important symptom for diagnosis than pain, inasmuch as this symptom usually exists directly over the lesion. Even in a general peritonitis this symptom is more marked

over the appendix than elsewhere. The tenderness may be exquisite or it may be elicited only by deep pressure.

One must be on the lookout for error in estimating the importance of this symptom. In this respect the attending physician, who has had a long and intimate knowledge of the patient, is better able to judge than one who sees the case for the first time. Some patients make much of pain and of tenderness, while others make very little of it; a casual observer may be deceived where a constant attendant will not. In practice, however, it is seldom difficult to estimate with sufficient accuracy the value of this symptom.

Vomiting.—In almost all cases of appendicitis—whether of the mild or of the severe type—vomiting soon follows the onset of pain. If the other symptoms subside, or if the peritonitis becomes distinctly localized, vomiting soon ceases. In unfavorable cases, in which the peritonitis soon becomes general, regurgitation—first of the normal contents of the stomach, later of bile, and finally of the contents of the small intestine—is a continuous symptom until death, which often takes place in the midst of an attack. If the vomitus is not distinctly stercoraceous in fulminating cases, it soon becomes of coffee-ground color. The existence of this symptom I look upon as a very serious matter. As a rule, when there is constant regurgitation of dark coffee-colored fluid, the prognosis is unfavorable. The septic nature of the vomitus must also be taken into account when anæsthesia is used, because in several cases a fatal septic pneumonia has followed, or a septic bronchitis has complicated an otherwise favorable course.

The material found in the peritoneal cavity is often, in general appearance, precisely like that vomited in advanced peritonitis—thin, dark and offensive.

Diarrhœa.—A large number of cases are accompanied in the first hours of the attack by more or less diarrhœa. In some the diarrhœa precedes the attack. In the latter instances the inflammation of the appendix very probably starts in an extension of the catarrhal processes from the cæcum. In most cases, however, perforation takes place at the very outset, without any premonitory symptoms whatever.

Time of Perforation.—In many of the articles upon appendicitis which have appeared in the last few years, much attention has been paid to the time of perforation. We should watch for symptoms of perforation, which we are told is liable to occur on the fourth, fifth, or sixth days, or later. I would state here my conviction that in most, if not in all severe cases of appendicitis—in fact in all cases in which there is a localized peritonitis—there is a necrosis of the appendicular wall, with a large or small perforation and extravasation. The opening, however, may be so very minute as to escape observation. The first symptoms in severe cases of appendicitis depend upon necrosis, perfor-

ation, and escape of micro-organisms—not upon a catarrhal or an ulcerative process in the interior of the appendix. This is proved conclusively to my mind by the fact that in those cases which begin in apparent health with a violent attack of acute pain, and in which local or general peritonitis rapidly develops, the appendix, when I have found it, has always been perforated. In such conditions the pain is caused by a more or less extensive extravasation of the intestinal contents. Vomiting is reflex, and is due either to the pain or to the immediate absorption of the extravasated material by the peritoneum. In all severe cases of acute appendicitis, therefore, with localized or general peritonitis, seen immediately or within a few hours, I am thoroughly convinced that an extravasation already exists, and that precious time is lost in waiting for the perforation to take place on the third, fourth, fifth, or any other day.

Constitutional Symptoms.—*The pulse.* The quality and the rate of the pulse give us, in appendicitis, valuable information as to the patient's condition and as to the prognosis. Observations of the pulse, however, throw little light on the diagnosis. It is early affected in serious cases, and may rise from 75 to 115 or 120. A pulse of 120 or more is considered by some surgeons an absolute indication for operating. In my experience a pulse of 120 in an adult is a grave symptom as to prognosis—depending, as it does, upon a serious constitutional infection. Its value, however, varies with the extent of the general peritoneal infection.

Temperature. The temperature in this, as in other forms of peritonitis, has very little weight with me, both as to diagnosis and as to prognosis. In some cases of general peritonitis, where the prognosis is absolutely hopeless, the temperature curve by itself is in every way satisfactory. I have known patients to die with a falling curve, and others to get well after an evening temperature of 104° to 105° for days. I have discarded, therefore, almost entirely the temperature as a guide to prognosis. It is an aid to diagnosis, however; but too much stress should not be laid upon this symptom.

Respiration. The respiration usually throws little light upon the condition of the patient. It is generally accelerated to correspond somewhat with the pulse and temperature. A very rapid respiration, however, is always a grave symptom, unless it depends upon simple mechanical distention. Caused by septic absorption its existence is of the gravest import. In a certain percentage of cases it is due to some complication in the lungs.

Distention. A general distention of the abdomen may be due to constipation from the use of opium, or to the formation of gas. Where there is no inhibition of peristalsis, this condition gives rise to discomfort only. The abdomen should be auscultated for evidence of intestinal

action; for even in some cases of the greatest distention there is no paralysis of peristalsis. Very often a general peritonitis can be ruled out by this method, the distention being merely mechanical. In case the distention is due to profound septic infection, no sounds whatever will be heard on auscultation; and there will be not only a stasis of the intestinal action, but at times a serious interference with intestinal circulation. The changes in the intestines caused by interference with the portal circulation are very marked early in the course of a general infection. They do not appear in a post-mortem examination, and therefore come under observation only in the course of surgical manipulations. These changes have the same cause as intestinal paralysis, and appear coincident with the latter. I have had unusual opportunities in recent years to observe this phenomenon, not only in its earliest manifestations, but also in its full development. Within the past two weeks I have seen, in a case of incipient general peritonitis, the jejunum distended, dark red to purple, with the portal radicles dilated and black. In another case (internal strangulation) the whole small intestine was similarly changed. Its coils were heavy, lifeless, distended, and cyanotic. The portal tributaries were beautifully injected, dark, and prominent. In the former case, to my great surprise, recovery followed, while in the second death took place in a few hours.

The existence of distention dependent upon a local infection is of the gravest import. At times the heavy coils can be felt through the abdominal walls. In all such cases the possibility of a portal thrombosis must be considered. Whether due to portal thrombosis or to local infection, with simple paralysis of peristalsis, no symptom is more important in the diagnosis and prognosis of this disease than a distended abdomen, accompanied by vomiting. Death almost always follows. Great care must be taken, therefore—as regards diagnosis, prognosis, and operation—to ascertain whether this distention is due to a septic infection, to a mechanical obstruction, or to simple constipation.

It is evident that the value of distention as a symptom depends upon its cause. In one or two abdominal cases I have been deceived, and have found, to my chagrin, that no serious condition, either of stasis or of mechanical obstruction, existed. Distention in connection with appendicitis, to be of any value from the diagnostic or prognostic standpoint, must be due to a general peritoneal infection. If due to any other cause its weight as an influencing symptom is almost entirely neutralized. For instance, I have observed time and again an uncomfortable distention after removal of the appendix in acute cases. Careful auscultation has shown the existence of peristalsis. At times the intestinal action has been strong enough to cause loud borborygmus. Such a sound is not only reassuring, but calls for the exhibition of cathartics and the rectal tube. Not that a general peritonitis may not be impending, for I have

watched this symptom in doubtful cases, have noticed its gradual subsidence, and have seen develop the ominous signs of total intestinal inertia, and a complete inhibition of intestinal contraction, with an almost invariably fatal result.

Rectal and Vesical Symptoms.—Examination of the rectum should never be omitted. In those cases in which the diseased appendix hangs over the brim of the pelvis we almost always get rectal tenderness. Moreover, the appendix, perforated and inflamed, in this position may give rise to frequent and painful micturition, to retention, or tenesmus. The absence of these symptoms, however, does not exclude appendicitis, for the appendix may be situated in some of its unusual positions. In certain cases pain in the bladder and frequent micturition have been almost the only symptoms.

Leucocytosis.—In all my hospital cases the past summer, examinations of the blood have been made Dr. Richard Cabot. With one exception there has been a marked leucocytosis in all cases of perforation. So invariably accurate has this symptom been as an index of inflammation that in my last case I postponed operation twenty-four hours on account of its absence. An extensive general infection was present, nevertheless, and death took place a few hours after draining.

Anatomy.—I have very little to add to what has been written on the anatomy of the vermiform appendix. I have found it in the most unusual positions. The point of attachment to the cæcum is invariable—near the insertion of the small intestine, at the extremity of the well-marked line of longitudinal striations. In the greater number of cases the appendix lies at the brim of the pelvis, near the origin of the internal iliac artery. It may drop into the pelvis, or point to the left, or upward. It may be coiled upon the iliac fascia. More rarely it is placed behind the cæcum, with its tip upward or upward and outward. These variations depend upon the position of the tail of the organ, its base being fixed. At times, however, the cæcum itself is displaced, and then there may be a very great variation from the usual position of the appendix. For instance, I have found the cæcum and appendix in an omental hernia. I have seen the cæcum displaced upward, with the appendix on the liver. At times it is well over to the left.

Among the more unusual conditions I have twice seen the appendix in a pouch behind the cæcum, sheathed as it were in a pocket of peritoneum. Of all variations the commonest is the post-cæcal position, in which the appendix is practically extra-peritoneal. When my experience was very much more limited I looked upon this situation as one of great safety, on the ground that the natural obstacles to extravasation made the prognosis almost always favorable. I must now acknowledge this view to be erroneous. In many cases I have found the appendix in this position, with an extensive gangrene of the retro-

cæcal tissues. Not infrequently the inflammation has broken through the natural boundaries and caused a general peritonitis. In severe cases the extravasations have followed up the colon and infected the surface of the liver, both inferior and superior, and in one instance have caused an empyema. The prognosis is, therefore, by no means necessarily favorable. Yet the obstacles to extravasation are greater than in the common positions. A perforation in such a position is marked by flank tenderness and dulness; the appendix usually presents itself, and can be more frequently removed without a general infection; moreover, walling off the peritoneal cavity when it must be opened is more feasible than when an appendix is centrally located. The greatest evils have resulted from gangrene of the perinephritic tissues, extending under the liver and into the foramen of Winslow.

The question when to operate in appendicitis is the hardest one to decide.

Circumscribed Peritonitis and Abscess.—I think all will agree with me that cases of abscess should be opened and drained. Most surgeons believe that in cases of localized peritonitis no attempt should be made to separate the adhesions for the simple purpose of removing the appendix. I have no doubt whatever, from my own experience and from what I have seen of the work of my colleagues, that it is extremely dangerous to break down the barriers between an appendicular abscess and the rest of the peritoneal cavity. In some instances this must be done—drainage can be established in no other way.

Many successful operations have been reported in which the general peritoneal cavity has been found infected, and the conclusion is sometimes drawn that the presence of septic fluids in the abdomen is of little importance with proper cleansing and drainage. I have had at times recovery after recovery, in those cases even in which there has been a total invasion of the peritoneal cavity. Then, under conditions precisely similar, in which the infection has been no greater, and the patient's strength has been just as good, or even better, case after case has gone on to a general fatal peritonitis in spite of everything that I could do to prevent it. In these deplorable cases a fatal termination has taken place whether I have washed out with water or with an antiseptic solution; whether I have confined my attempts to cleansing the peritoneal cavity by the use of dry gauze; whether salines have been used before the operation and after the operation, or both, or not at all; whether opium has been given or not; whether high or low rectal injections have been used; whether gauze drainage alone, rubber drainage alone, or gauze and rubber drainage combined—whether any or all, or none, of these methods have been used, the same result has followed.

I am very much afraid of pus in the peritoneal cavity. It makes no difference what the pus looks like, or where it comes from, its presence

in the abdomen is one of the gravest conditions that can possibly occur. In certain forms of inflammatory disease a rapid convalescence has followed, no matter how much soiling of the intestines there may have been. In other cases a septic instrument, a soiled finger, or a drop of such fluid as the uterine canal often contains is sufficient to start a fulminating and fatal peritonitis, and this in spite of all efforts to prevent such a result. In one of my cases I separated the firm adhesions about a perforated appendix, well shut off, and removed the appendix and omentum in a very rapid operation. There was very little shock. The patient died with a general infection in a very few hours. I have no doubt whatever that the method I used in this case was directly the cause of the fatal result, and I have never tried it since.

The objection to simple drainage, without the separation of adhesions, lies in the possible existence of other pus-cavities. In certain forms of appendicitis I have observed pocket after pocket of pus in exploring the pelvis. These have been cases operated upon during the first three or four days—cases in which the symptoms have been grave from the outset, and in which there has been every reason to believe that there was a general infection. After opening abscesses in which the adhesions are of a week or ten days' duration, I have generally found but one cavity; I recall but two or three instances in which there was a second. If for no other reason, the low mortality in cases of circumscribed abscess, and the perfectly satisfactory permanent results that have followed simple incision and drainage, are sufficient grounds for limiting our operation to the cavity itself.

The Operation in Localized Abscesses.—In a localized peritonitis of appendicular origin, in which there is an adhesion to the abdominal wall, the incision should be made through the most prominent part of the tumor. This will often be found tympanitic. With rare exceptions, this resonance is due to gas mixed with the contents of the abscess. Now and then, however, we shall find that the abscess is retrocæcal, and that the bowel lies between the collection of pus and the abdominal wall. In the former case, having reached pus, the abscess cavity should be thoroughly drained by means of rubber tubing and gauze. If the cavity is very large and extends into the flank, flank drainage should also be used. In a large number of cases the abscess will be found behind the cæcum—the appendix being situated in that position—and a single flank opening will suffice. In some cases of localized peritonitis the abscess cavity is so situated that it cannot be drained except among the healthy intestines. This complication has always seemed to me *à priori* a dangerous one. That there is danger in this method of drainage is borne out by my experience. When it is possible to evacuate such cavities through the rectum or through the vagina, I certainly believe that this is the better method to use. The

dangers are undoubtedly less by this method than by up-hill drainage through the unaffected peritoneal cavity. Nevertheless, drainage through the rectum or vagina is very unsatisfactory, and I should not resort to this method unless the abscess was pointing unmistakably downward. Last year I treated two cases by rectal puncture. In both a satisfactory recovery followed. In one, however, another attack made a second operation necessary, in which the appendix was successfully removed by Dr. Beach. In this case there was a most satisfactory termination, the second operation having been performed during a mild attack with comparative safety. In the great majority of cases--the appendicular abscess being unattached to the anterior or lateral abdominal wall—the abdominal route must be selected. Every effort must be directed against contaminating the healthy intestines more than is absolutely necessary. An incision over the tumor, as far toward the flank as possible, should be made, and it should be long enough for free exposure of the tumor. Before an opening is made into the cavity by separating the adhesions with the finger, the former should be walled off in all directions with gauze. In case the opening is in the median line, a very effectual barrier can be made by disposing the gauze in the form of a well. After thoroughly evacuation and irrigation, a double rubber tube should be placed in the bottom of the cavity and gauze should be packed about the former. The gauze barriers which have been soiled in the process of evacuation should be removed and replaced by clean gauze. In the great majority of my cases, when it has been necessary to use gauze, I have taken that sterilized simply by heat. Iodoform gauze I have used very sparingly, chiefly on account of the danger of absorption of iodoform. The prognosis in these cases is grave, but the mortality is much less than in cases in which there is already a general infection.

Localized Peritonitis with Probable General Infection.—It is an entirely different matter in the first few days of a severe attack, in which there is reason to believe that there is a general peritonitis, or the beginning of one. When the peritoneal cavity is opened, and when it contains a serum, clear or turbid; when the peritoneum is injected, though there is no intestinal paralysis, all adhesions about the appendix should be separated, the intestines irrigated or wiped, and every dependent part thoroughly drained. The prognosis in such cases is very grave, for an appendicitis of this variety is always associated with a beginning general infection. The reason for this is that in almost all cases of extensive extravasation through a perforated appendix the micro-organisms have very great virulence, and the colonies that must remain, even after the most thorough cleansing, exert so powerful an influence that the peritoneum cannot always overcome it.

It is in the treatment of an acute severe form of appendicitis that we can lay down a definite rule, if we can in any form. In this variety—

marked by sudden pain, vomiting, rigidity or distention, and high pulse, with a localized tenderness—I expect always to find the appendix perforated; and through the perforation the contents of the intestine may be escaping with such rapidity into the peritoneal cavity that no efforts of Nature can restrain them. Such cases should be operated on at the earliest possible moment, the earlier the better, just as soon as the gravity of the situation is realized. We shall be disappointed, however, in our results, even when a rule of this kind is followed, not only because we shall not be called early enough, but because there are instances in which a fatal extravasation takes place, not in a few days, or even in a few hours, but in a few moments after the giving way of the appendicular wall. The mortality in such cases must be about the same as the mortality in a single perforation from a gunshot wound in a healthy intestine. Eliminating the dangers from hemorrhage, the chances are very similar. No one would seriously maintain that in perforating gunshot wounds of the intestine, without hemorrhage, a low rate of mortality prevails even if the surgical relief is attempted almost immediately. In case the extravasation goes on three or four hours we must expect, in gunshot wounds, a very high death-rate from peritonitis. The same conditions are present in certain forms of appendicitis. The opening is as large or even larger, and the fecal escape as great or greater. I have operated within six hours of the very first symptom of a perforative appendicitis. One of the earliest operations in my list was performed at nine o'clock in the evening, the first pain having occurred at three o'clock that afternoon. The peritoneal cavity was apparently completely invaded by a thin fluid of distinctly fecal odor. On isolating the appendix, gas and fecal matter escaped from it with a noise before the ligature was applied. This condition had probably existed for several hours. In this case, after careful cleansing of the peritoneal cavity with gauze and draining with rubber tube, general peritonitis rapidly developed, and the child died in the course of thirty-six hours. In another case, after a mild attack of two days' duration, in which there was undoubtedly a slight extravasation from the appendix, a gangrenous opening of large size in an appendix of considerable lumen suddenly developed at half-past ten. The abdominal cavity was opened at one, and was found full of serum, from which I obtained pure cultures of the bacillus coli communis. The appendix was removed with the greatest ease, but the harm had already been done. This robust young man died in twenty-seven hours with a general peritonitis. These two cases are the earliest operations in my experience—one in six hours and a second in three hours after a rapid extravasation. I am convinced, therefore, that we cannot, even in the earliest operations, have invariable success. I fully believe, however, that we shall save a large number of cases which, under dilatory tactics, we should lose, by opening

the abdomen in all cases of more than moderate severity in the first few hours or days of an attack.

I have often seen a patient for the first time in the third, fourth, or fifth day of an attack of severe type in which an adhesive barrier has been successfully formed against further extravasation. Under these conditions the most important and difficult question arises—whether to operate or not. I have considered this question many times. It is during these days—the third, fourth, and fifth, or later—that the early operation may be said in some cases to be too late. The extravasation from the perforated appendix has taken place; the harm from this extravasation has been done; the peritoneum, in its own way, has effectually, thus far, opposed this extravasation. The adhesions are not strong, and in separating them we are almost sure to contaminate the rest of the peritoneal cavity. It seems to me—though I am by no means convinced of the truth of this assertion—that there are instances in which we see the case too late for the early operation, and too early for a safe late operation; that if we operate we undo the work that has thus far been successfully accomplished by Nature, and that we convert a case that is doing well into a case of fatal general peritonitis. This is one of the most important questions in connection with the discussion of this disease. I do not mean to say that interference in a localized peritonitis on the third, fourth, or fifth day is inadvisable. I have operated many times at this period. I have done so, however, with the greatest care not to break down the recent adhesions. There is no more difficult operation in surgery than that of removing an appendix at this stage without infecting the general peritoneal cavity. I do not mean to assert that, on the third, fourth, or fifth day, in a case that is getting on well, with a localized abscess, we should delay; but the reasons I have given must appeal to one who dreads the presence of infecting material in the peritoneal cavity. The objection to leaving to itself a case in which presumably the adhesions are not strong is the giving way of these barriers under pressure and a consequent fatal extravasation. That this danger is by no means slight is seen in the constant occurrence of a general peritonitis in cases that are apparently doing well. If the symptoms of general peritoneal infection appear suddenly, in the course of a localized peritonitis, several hours at least must elapse before the surgeon can attempt to repair the mischief. In case the adhesions are broken down by the operation these efforts to cleanse the peritoneal cavity can, of course, be made at once.

Relapsing or Recurring Appendicitis.—In those cases in which an appendix, unperforated, is removed in a period of health the mortality is very low. In my experience, which is very small in these operations, there has been no death. From the cases collected by Bull it would appear that the mortality is less than two per cent. Taking all the cases

together, however, I believe that we shall find the general mortality in the hands of all surgeons to be more than this. There are isolated and unreported cases—one of which I am personally aware of—in which death has taken place. Nevertheless, I believe that the operation should be advised and performed in all cases in which from frequent attacks, we are able to infer that there is chronic trouble. The operation in these cases should be performed by as short an incision in the right linea semilunaris as is adequate. If the appendix is not adherent and the cæcum is movable, the operation may be performed through a very small incision. If there are many adhesions to be broken up, or if the appendix is not easily delivered, a longer incision must be made. In many cases a cuff of peritoneum can be made by a circular incision about the base of the appendix. This cuff should be turned back and the body of the appendix tied with silk. The cuff of peritoneum can then be turned forward and united in the Lembert method with fine silk sutures over the stump. I think it is a good plan to cauterize the base of the appendix before covering it. The abdominal wound may then be united. In one case in which the appendix was removed after recovery from an acute attack, I found a small collection of foul pus, by which the adjacent coils were presumably infected. In this case I left the wound open, with gauze drainage. A slow recovery followed. In similar cases I think it is always best to use drainage.

The Operation in Acute Appendicitis with a General Infection.—In these cases, as soon as the peritoneal cavity is opened, the turbid serum which it contains should be evacuated, as well as possible, by means of dry, sterile gauze. This should be done before search is made for the appendix. The incision in such cases should be made over the usual seat of the appendix, beginning near the pubes and extending upward and outward parallel with the fibres of the external oblique, and should be long enough to permit free exposure and manipulation of the parts. Having dried the pelvis and presenting intestines as well as possible with gauze, fresh pieces should be placed backward, upward, and toward the median line as a barrier against renewed infection. The appendix should now be sought. In a large proportion of cases considerable thin fecal fluid will be found, more or less confined to the immediate vicinity of the appendix. This should be removed by separating the adhesions about the appendix, irrigating and wiping, care being taken that the irrigating fluid shall escape from the wound without any impediment whatsoever. If the intestines get in the way and prevent the easy return of the fluid, we may be spreading in all directions fresh quantities of septic material and making matters worse than they were before. Having separated all the adhesions in the pelvis or wherever the appendix may be situated, pieces of dry gauze should be packed into the dependent places and removed as soon as

they become saturated. As soon as the parts are dry the appendix may be delivered and tied off. After a final cleansing and drying a double rubber drainage-tube should be placed at the most dependent portion of the cavity, and about this gauze should be lightly packed. Strands of gauze should also be placed upward toward the umbilicus and toward the right flank. In many instances it is of great advantage to make an opening in the right flank and to apply here also a gauze wick. A dry absorbent dressing should be placed over the whole wound. In a large proportion of cases, even if the general peritoneal cavity has become infected, this procedure will be followed by very satisfactory drainage, and the patient will recover. Unfortunately in many instances this effort will prove futile.

In some cases of general peritonitis the patient's condition is too bad for anything more than a simple incision with drainage. Search for the appendix cannot be made without adding so much to the shock that death may take place on the table. It is a question whether in cases of this kind operative interference is not to be condemned. The patient is on the verge of death, and the slightest manipulation will be surely fatal. The slight shock from anæsthesia even may be sufficient to produce death even if no operation whatever is performed. The only chance for recovery in cases of this kind lies in leaving the patient to Nature. I have never seen a recovery under these circumstances, but I have known one patient to get well, though apparently moribund after operation for an incipient general infection. Statistics show that in very rare instances recovery may follow, even in advanced cases of general peritonitis.

In some instances death is clearly impending. I was once persuaded to operate on a moribund patient. The family were assured that the patient would die under ether. After a few breaths of ether he did die. I think it was a mistake to undertake an operation in this case, for surgical interference is unjustifiable in the face of certain death, even when it is insisted upon by the family.

Treatment of Distention.—One might infer from what is being said daily that nothing more is necessary in the obstipation of a general peritonitis than the free use of salines. In a general peritoneal infection, beyond the very earliest stage, medicinal treatment has no effect whatever. Salts, even if retained in the stomach by the most violent effort of will, produce no effect. Peristalsis, inhibited by septic influences, has an additional burden to overcome in excessive distention, for the power to contract may be neutralized completely by the latter condition. The question arises whether in desperate cases it is not advisable to incise the distended coil and let the accumulated gases escape. In one instance this procedure, practised by Dr. Warren, was followed by immediate relief and ultimate recovery. It is quite likely that occasionally this

method may turn the scale. The use of salines, in my experience, has been worse than useless under these conditions, for not only has there been no intestinal action, but the patient has been excessively weakened by vomiting or by violent efforts of will to retain the nauseating solutions.

The Use of Salines in Appendicitis.—In the mild form of appendicitis, the so-called catarrhal variety, in appendicular colics, and even in slight extravasations with localized peritonitis, salines or other cathartics may be given with safety in the majority of cases, not only in the early stages, but throughout the disease. Mild cases, however, do not require the use of cathartics; they do just as well under the opium treatment, or under no treatment at all. There is danger that occasionally a mild case may become a fulminating one. In the latter condition, and in all cases marked by sudden violent onset, salines or other cathartics should not be used under any circumstances whatsoever. I have no doubt whatever that the exhibition of salines will cause, in many such instances, renewed and fatal extravasations. Not only are the contents of the intestines liquefied by the use of saline cathartics, but intestinal contractions are stimulated, and if we have a considerable perforation in an appendix of large calibre, there is nothing whatever to prevent an extravasation extensive enough to infect the whole peritoneal cavity in a very few minutes. I have seen these extravasations taking place in the abdominal cavity time and again, and I have found not only the general peritoneal cavity everywhere invaded by thin fecal matter, but I have seen it pouring out of the perforated appendix. I therefore believe that cathartics should never be used in the beginning of an attack of appendicitis—that the use of opium is far more rational if anything must be used.

It is a different matter when the appendix has been removed after tying its base, or when, having drained a localized peritonitis, gauze barriers have been arranged against further extravasation; or when the disease has been going on long enough to make the adhesions strong. But not always in cases in which presumably there are adhesions is it best to give cathartics until after the operation. Up to the first four or five days the adhesions which confine the septic material in a localized peritonitis are not strong, and increased pressure through the appendix caused by stimulated peristalsis may, and frequently does, rupture these adhesions and cause immediately a fatal peritonitis.

The theory of intestinal drainage seems to me a good one. I always feel encouraged when after abdominal operations the bowels begin to move freely; but in mild cases there is no danger from septic absorption, and therefore no occasion for catharsis. In general infections with an open appendix, no amount of intestinal drainage can get rid of the extravasated material, and cathartics are worse than useless. In localized

peritonitis there is no immediate danger from septic absorption, there is plenty of time for surgical drainage, and cathartics may rupture the recent adhesions. Finally, with the intestinal canal intact, free catharsis is very desirable, though certain salines cause exhausting vomiting and are often ineffectual.

Pathological Considerations.—In every case of localized abscess that I have seen there has been a very offensive odor to the pus. In many cases the abscess cavity contains gas, either intimately mixed with pus or in large bubbles. The odor may be fecal, or its quality may be that of simple decomposition. At times the odor has been very peculiar —difficult to describe, but extremely nauseating and offensive. The odor indicates an intestinal origin, or at least contamination.

In many of the cases that I have included under the heading *Appendicitis* there has been no absolute demonstration of the appendicular source. The diagnosis rests upon the facts, first, that in every case in which I have been able to find the source of infection it has been in the vermiform appendix, with one possible exception; and, secondly, that even if I have not demonstrated a diseased appendix, I have found no other pathological explanation. In the exceptional instance referred to the tip of the appendix was gangrenous. Drs. Fitz and Councilman thought, however, that the infection of the appendix was secondary to the abscess, and that the abscess was the result of a pylephlebitis.

Some writers refer to a gangrene of the cæcum as complicating appendicitis in its acute stages. Such a condition, it seems to me, must be very unusual, for I have never observed it. I have often seen extensive gray deposits of lymph on the intestinal wall. These masses are always present in an appendicitis with perforation. But the intestinal wall under them is not affected so as to be weakened. In this deposit will be found great numbers of micro-organisms. The gross appearances in a localized peritonitis in its early stages are precisely like those of a general peritonitis as regards the deposits of lymph in more or less extensive gray patches. There is no reason why a necrosis of the intestinal wall should not take place; but so far as I have been able to observe, and so far as I have been able to learn, this gangrenous process very seldom occurs. In fact I have never seen perforations of the intestine with extravasation, from any other causes than gunshot wounds, stabs, ulcerations, strangulations, etc., except in those very rare instances where a large appendicular abscess has broken into the intestine. The question of resecting the intestine, therefore, for acute gangrene in the course of an acute appendicitis seems to me so remote that we need give it very little attention. It is, however, sometimes necessary to resect and suture the intestine in extensive fecal fistulæ resulting from a rupture of the abscess into the cæcum. Even in these cases it is much better to wait until Nature has closed the opening as far as she is able. In one

instance the whole contents of the intestines were evacuated for some weeks through the stump of a perforated appendix. There was some mechanical obstruction low down, probably from inflammatory pressure, and this spontaneous outlet undoubtedly saved the patient's life. I fully expected to be obliged to resect, but in two or three months the fistula closed entirely and the intestinal functions were perfectly re-established. In no instance has there been a permanent intestinal fistula after any of my operations. I have resected the cæcum once or twice for long-continuing fistulæ where the abscess had been left to take care of itself and had perforated the intestinal as well as the abdominal walls. In these operations the prognosis is very good indeed.

I have observed great variations in the diseased appendix itself. In all cases of perforation, the appendix throughout is swollen and hard. The mesentery of the appendix shares in the inflammatory infiltration. In many instances the mesentery is covered with the gray exudation alluded to above. In all, almost without exception, the mesentery is friable, and the ligature must be placed with great care so as not to cut through the vessels entirely. The appendix itself, though more friable than in a normal condition, is never so brittle as to be easily torn. In explorations with the finger, there is usually no difficulty whatever in recognizing the diseased appendix.

Unless there have been one or more previous attacks of localized peritonitis, the appendix, even in the second week of the disease, is bound to the surrounding parts by very easily separated adhesions. The strength of these adhesions, however, varies; and the experienced finger can tell with reasonable accuracy how much force it is safe to use in their separation. Yet in many instances it is impossible, even with the greatest care, to avoid infecting the general peritoneal cavity.

The appendix may become perforated at any point between the tip and the base. I have found the perforation quite as frequently at one point as at another. The perforation takes place, as a rule, where the concretion lies; and the concretion may be formed anywhere.

In my cases, almost without exception, there has been a fecal concretion in the appendix or in the abscess cavity. This body may be no larger than a grape-seed, or it may be as large as a small olive; it may be round or oblong, or more rarely, somewhat irregular. It is so soft that it may be crushed between the thumb and finger. The surface is generally smooth. It always lies directly under the perforation in a necrotic pocket. There may be more than one stone: in some instances I have found two or three. In such cases there is usually but one perforation. When the appendix is not entirely removed the other stones may give rise to subsequent trouble, although this accident must be very rare. I have never found a grape or other large seed, but in one instance the stone seemed to contain a large number of very minute seeds.

Importance of Bacteriological Examinations.—Early in my experience of abdominal work I observed that certain cases did badly. It was hard to tell the reason for this. A fatal peritonitis would follow an operation in which I could recall no error in antiseptic technique. In all such cases the operation was a hysterectomy. In almost no clean operations did any such misfortunes occur. For instance, no deaths in clean ovariotomies have occurred in my practice since my first two operations in 1885. The only source of infection in cases of peritonitis following hysterectomy has been the uterine canal. In all these hysterectomies the extra-peritoneal method of treating the stump was used. In cases of appendicitis precisely alike, I have observed that one patient would get well and the other would die, acute general peritonitis always proving the cause of death. No bacteriological examinations have been made in my septic abdominal cases until this year. Of late, in as many cases as possible I have made cultures, at the time of the operation, of the abdominal fluids—of the clear or turbid serum, of the contents of the excised appendix, and of the pus of the appendicular abscess. The results already attained throw a great deal of light upon the cause of death in many instances. In most septic serous effusions into the peritoneal cavity, pure cultures of the bacillus coli communis have been found. This micro organism, however, is not present in all cases. It has been found frequently enough in rapidly fatal peritonitis to justify the prediction of Dr. Roswell Park in regard to this organism, in his paper before the American Surgical Association last June. The presence of this bacillus will probably explain the rapidly fatal character of certain forms of appendicitis. I have found it also in one or two instances of localized peritonitis. I have failed to find it in a number of cases of circumscribed abscess of a few weeks' duration. The importance of a careful bacteriological examination in all cases of appendicitis cannot, in my opinion, be overestimated. This is true not only of the cases of perforation, but of those mild relapsing or recurring cases in which the walls of the appendix have been not perforated.

Prognosis.—The prognosis in cases of appendicitis depends entirely upon the variety. In the mild cases, with one or two exceptions, recovery without operation has taken place. In none of them was an operation seriously considered. Not that an operation in these cases is unjustifiable, for one can bring forward many strong arguments in favor of surgical interference.

The prognosis in cases of localized peritonitis is almost invariably good. In my list recovery has followed in almost every instance. I may say that recovery has been invariable in those cases in which the operation has been limited to simple evacuation, unless an incipient general peritonitis existed at the time. Two or three deaths have taken place when the prognosis seemed to be very favorable. But even in

these cases the constitutional symptoms were severe, and although there were no symptoms of a general infection present at the time of the operation, I have no doubt that this condition had already begun. The prognosis when appendicular abscesses have been opened and drained is good. The recoveries have been permanent, with the exception of one case drained by the rectum, and another drained in the right iliac fossa. There have been renewed attacks in one in which Dr. Beach successfully removed the appendix; in the other there has been a second attack, and the man is now prepared for an excision during the interval. In the case drained by rectum the chances are that there was no closure of the wound by granulation from the bottom, as in healing by the abdominal route.

In cases of well-established general peritonitis, in which there is a severe constitutional infection, and the intestines are paralyzed by the local poison, the prognosis is invariably hopeless. I have never seen—so far as I am now able to recall the facts—a recovery in any case of fully established general peritonitis, marked by obstipation, vomiting, and general septicæmia.

The case is quite different if we operate at the beginning of a general infection. Little could have been known of the appearances of the abdominal cavity at this stage of a general infection up to the agitation of this subject in the last few years, simply because operations were very rarely performed for any reason at this stage. The rule previous to the last few years was to wait, in all such cases, until the symptoms became so grave that the most conservative were willing to admit the necessity of interference. In the first stages of a general peritoneal infection from perforation of the appendix, there is little change in the gross appearance of the peritoneum. It may not even be injected. The intestines will be found bathed in a serous effusion in the very earliest stage—the effusion becoming turbid in a few hours. There may not even be an odor to this serous effusion. In the course of a few hours this thin fluid becomes more and more turbid, though it is always thin. If the patient lives long enough, it will become decidedly purulent in general appearance; the peritoneum in a very short time will become injected, and the characteristic appearances so common at post-mortem examinations develop. Cultures taken from the fluid in the first hours of a general infection grow rapidly and contain different forms of microorganisms. In the most virulent cases which I have seen, in which I have been able to take cultures, the bacillus coli communis plays the most important rôle. In several instances, nothing has been obtained but pure cultures of this germ. Whether the prognosis is invariably bad in the presence of the colon bacillus cannot as yet be said. There have been no recoveries in the few cases in which I have obtained this culture from a fluid that has invaded the whole peritoneal cavity. In a local-

ized peritonitis several cases have recovered in which this micro-organism was cultivated with several forms of pyogenic staphylococci.

I have had many recoveries when there has been a beginning general infection, but it is impossible to give a definite prognosis from the gross appearances, or from any information that we can obtain with our present knowledge of the subject. In two cases, apparently exactly alike, death will follow in the one and recovery in the other.

The prognosis in operations for the removal of the appendix in the interval, with or without adhesions, is very good indeed. I do not believe that the mortality will exceed five per cent., and probably it will be less than that.

Prognosis Affected by Previous Severe Attacks.—When there has been a serious attack of appendicitis, with an extensive localized peritonitis, or in those rare cases in which recovery has followed a general peritonitis, a subsequent sudden perforation has been followed in several instances by the most rapidly fatal result. I have been interested in trying to account for this fact. In my early experience with appendicitis it seemed to me that an attack of extensive localized peritonitis would be an effectual barrier against a second extravasation. While this may be true in many cases, yet not infrequently I have observed that a previous inflammation has so changed the character of the peritoneum that it has lost its power of rapid adhesion-formation; hence, when a second attack by necrosis has broken through the appendix and its pathological barriers, the peritoneum shows no power whatever of restraining the extravasation. In such cases the peritonitis has been fulminating and most rapidly fatal.

After-effects of Appendicitis.—It is as yet too soon to ascertain the number of relapses or recurrences in these cases of appendicitis in which I have advised no operation. The number that has come under my observation is very small. After excision of the appendix itself there has been no subsequent trouble whatever. In the cases of circumscribed abscess treated by drainage, without removal of the appendix, there has been subsequent trouble in not more than two instances. All fecal fistulæ, of which there have been many cases, have ultimately healed. The most unpleasant symptom in those cases treated by drainage has been a ventral hernia. In my early experience I supposed that the extensive adhesions formed among the intestines near the wound, with the closure of the cavity by granulations, would make a scar that could never result in hernia; but I have found that the scar tissue early becomes relaxed, and that an eventual giving way is by no means uncommon. Unfortunately there is no means of preventing this occurrence, and a subsequent operation is necessary.

Statistics.—In the following statistics I have considered all my cases in which the question of appendicitis has been raised. I have not

included those I have seen in consultation with my colleagues. The first ninety-three have been published in more or less detail in the *Boston Medical and Surgical Journal.*

In many of the mild cases the diagnosis seemed sufficiently clear. Though some of them possibly were not appendicitis, the symptoms were sufficiently suggestive of that disease to raise the question of surgical interference. The most significant column is that containing the fatal cases in which no attempt could be made to save the patient. This list would have been much longer had I refused to interfere in those cases in which the operation was performed as a forlorn hope. I have added the results in eight cases supposed to be appendicitis, but where some other acute lesion was found.

Of 181 cases, 130 were males and 51 females. The ages were:

Males.		Females.	
Between the ages of—		Between the ages of—	
1 to 10	6	1 to 10	6
10 " 20	39	10 " 20	10
20 " 30	38	20 " 30	7
30 " 40	19	30 " 40	11
40 " 50	10	40 " 50	5
50 " 60	10	50 " 60	5
60 " 70	1	70 " 80	2
Age not given	7	Age not given	5
	130		51

In 181 cases there has been a history of previous attacks in 46—one attack in 22 cases, two attacks in 5, three or more attacks in 19, and the number of attacks not given in 12 cases.

The number of operations followed by death in which the general peritoneal cavity was found infected at the time of operation was 24. In 1 case death followed from general peritonitis where a circumscribed abscess was carefully opened and drained, with no apparent general infection. Once death followed from general peritonitis after separating the firm adhesions of a circumscribed abscess. In 2 cases the patient died, some weeks after a successful drainage, with general peritoneal infection from a second abscess. In 3 a fatal general peritonitis followed drainage among the healthy intestines. In 1 of these the abscess probably resulted from pylephlebitis, though the appendix was gangrenous.

In acute cases with operation and recovery there was a general peritoneal infection in nine cases; in drainage of abscesses the general cavity was infected more or less in 10; in 39 cases the general cavity of the abdomen was not opened.

In the whole number of 181 cases there were 44 deaths—a mortality of 24.3 per cent. In 107 operations there were 30 deaths—a mortality of 28 per cent. The number of operations in which there was a general

peritoneal infection more or less fully developed was 32; the number of recoveries was 9—a mortality of 75 per cent.

In practically all the fatal cases general peritonitis was the cause of death. The severity of the cases is well shown by the fact that death followed in most instances in a few hours. Life was rarely prolonged over forty-eight hours.

With one or two exceptions, the operation was performed immediately. In those cases in which I advised delay I was obliged to operate subsequently in two or three instances. In but one of these was death due to this delay; in the others a fatal general peritonitis was caused by the unavoidable infection of the general peritoneal cavity at the time of the operation. This infection would have taken place just the same at an earlier date, for both were circumscribed abscesses so situated that extra-peritoneal drainage was impossible.

In addition to the 181 cases of appendicitis, I have been called to eight patients in which it seemed probable that there was an appendicitis. In 2 there was an acute obstruction from a band; in 2 malignant disease was found; in a fifth there was general peritonitis from gonorrhœal infection; 2 were acute obstructions from omphalo-mesenteric bands; in 1, operated upon by a colleague, the appendix was unaffected. Of the 8, 2 recovered—the case of unaffected appendix and 1 case of omphalo-mesenteric bands. Temporary recovery took place in 1 of the malignant cases. The others all died.

SUMMARY.

	Recovered.	Died.	Total.
Chronic cases. Operation	15	...	15
Chronic cases. No operation advised	8	1	9
Acute cases. Treated medically	50	—	50
Acute cases. Moribund when first seen	—	13	13
Acute cases. Operation	58	29	87
Recurrent cases	4	...	4
Recurrent cases. No operation	2	...	2
Appendicitis operated upon for acute obstruction	...	1	1
Acute lesions mistaken for appendicitis	3	5	8
	140	49	189

Chronic Cases with and without Operation.

No.	Name.	Physician.	Sex.	Age	Previous attacks.	Time.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
1	W. P. K., 1887	.....	M.	50	Several	Months	Pain general, tenderness local.	Local tumor.	None	.....	.....	Recovery	One or two attacks since; operation advised, but declined
2	Dr. O., 1889	.....	M.	42	Thirteen	Months and years	Usual, mild.	Local tumor.	None	.....	.....	Recovery	Remained well since 1889.
3	J. J. C. July 30, 1890	Hospital.	M.	29	....	16 months	Constipation, local pain, vomiting.	Negative when seen.	None	.....	.....	Recovery	History of rupture of abscess into pleural cavity; no operation advised.
4	B. K., Oct., 1890	Hospital.	F.	36	.....	4 months	Jaundice, local pain, chills.	Tumor.	Abscess drained	No	.....	Recovery	Origin doubtful.
5	Dr. G. C. P., Nov.18, 1890	Dr. Bigelow, of Framingham	M.	45	.....	8 months	Pain mild, local.	Tumor right iliac region.	Abscess drained	No	.....	Recovery	Tumor gradually developed; contents fecal; abscess cavity at brim of pelvis.
6	G. M., July 8, 1891	Dr. Cahill.	F.	18	....	.....	Constipation, vomiting, pain, chills.	Tumor in ilio-cæcal region.	Abscess drained	No	.....	Recovery	Origin doubtful; second operation later.
7	G. E. L., July 17, 1891	Dr. Bass, of Lowell.	M.	37	.....	3 months	Local pain, chills.	Local tenderness.	None	.....	.....	Recovery	Died a year later of strangulated hernia
8	F. H., Aug.12, 1891	Hospital.	M.	40	.....	6 months	Pain in right lumbar region, chills.	Tumor in flank.	Abscess drained	No	.....	Recovery	
9	N. H , Mar.15, 1892	Dr. Hill, of Saxton's River, Vt.	M.	21	Yes	6 weeks	Severe pain in right iliac fossa; temp. 103°, pulse 120; following typhoid fever.	Negative.	None	.....	.....	Died July 25, 1892	Autopsy: Large, thickened appendix; abscess behind cæcum; tuberculosis of lungs
10	E. D. K., Mar.25, 1892	Drs. Oliver and Fitz, Boston.	M.	9	One	10 weeks since 1st, 8 days since 2d	Severe, general pain and vomiting; pain localized in right iliac fossa next day.	Local tumor; temp. and pulse up from the first.	Abscess drained	No	.....	Recovery; remains well.	Severe at first; pain subsided after second day; relieved by Dover's powders; in bed 4 weeks; second attack, March 17th, like first
11	I. Y. K., Apr. 11, 1892	Dr. Oliver, Athol.	M.	60	.....	3 months	"Colic" persisting and finally localized in right iliac fossa and hip.	Tympanitic tumor in right lower quadrant extending into flank; at first deep.	Abscess drained	No	.....	Recovery.	Diagnosis by medical consultant: Malignant disease—hopeless; patient extremely weak; prognosis unfavorable; remains well.

12	E. H., Aug.18, 1892	Fall River.	F.	39	None	14 months	Severe pain, general.	Opening in vagina; opening near umbilicus discharging pus.	Laparotomy; large abscess drained.	No	.....	Recovery, remains well.	Diagnosis: Malign'nt disease — hopeless, by previous consultant.
13	J. C., Sept.15, 1892	Hospital.	M.	15	Several	8 months	Pain, vomiting, chills.	Tumor; tenderness near median line; rectum tender and ballooned.	Partial resection of cæcum.	No	.....	Recovery	Old abscess about cæcum with perforation; resection.
14	L. J. K., Oct. 1, 1892	Drs. Nichols and Gage, of Worcester.	M.	17	Several in past year	1 year	Pain general, local tenderness, vomiting.	Tenderness; tumor.	Operation through thick adhesions.	Could not be found.	.....	Recovery; remains well.	Local swelling softened and disappeared.
15	L. S. D., Oct. 20, 1892	Dr. Bigelow, of Framingham.	F.	32	None	7 months	Local pain, vomiting.	Tumor over ascending colon; vaginal examination negative.	Advised, but none permitted.	.....	.....	Recovery;	Appendicitis with great thickening about the bowel.
16	F. F. H., Nov.17, 1892	Dr. Gleason, of Winchendon.	M.	41	Three	3 attacks in 2 years; last attack 4 w'ks ago	Local pain, constipation, etc., fever.	Tenderness right iliac fossa; legs flexed.	Anterior and lateral drainage.	No	Not found	Recovery; remains well.	At first the attacks supposed to be "indigestion colic."
17	A. M., Dec., 1892	Hospital.	F.	32	Several	2 years	Local pain, constipation, vomiting.	Slight local tenderness.	None	.....	.....	Recovery	Doubtful case; pelvic examination negative.
18	B. F. H., Jan. 25, 1893	Dr. Glennon, of Stoughton.	M.	24	.....	9 months	Local pain.	Negative.	None	.....	.....		
19	L. W,, Jan. 26, 1893	Fall River.	F.	21	None	6 years	Appendicular abscess.	Large fistula in right side.	To close fistula; intestine resected	No	Not found	Recovery	Permanent closure; remains well.
20	J. S., May 9, 1893	.....	F.	37	Doubtful	4 months	Cramps and diarrhœa, pain and soreness in right iliac fossa, vomiting.	Tympanitic tumor in right iliac fossa; temp.102°, pulse 110.	Abscess drained; pus fecal.	No	Not found	Recovery	Dec., 1893, persistent fecal fistula. Malignant (?)
21	E. G. W., July 3, 1893	Dr. R. D. Elliot.	M.	38	None	2 months	Pain in back and hip.	Tumor in groin; temp. 102°.	Abscess fecal; opened by Dr. Elliot.	No	.....	Recovery	Doubtful origin.
22	F. S. S., July 8, 1893	Dr. Hitchcock, Fitchburg.	M.	27	None	8 weeks	Constipation, general pain, later local in right iliac fossa, vomiting.	Tenderness; resistance; thigh flexed.	Lumbar incision; large abscess drained.	No	.....	Recovery	Fecal concretions found; remains well.
23	M. R., Sept.28, 1893	Hospital.	F.	22	None	14 months	Irregular bowels, pain, vomiting.	Tumor, tenderness in right flank.	Lumbar incision; abscess drained	No	.....	Recovery	
24	J. H., Apr. 29, 1893	Dr. Davis. of Bedford, N. H.	M.	22	Three	... ..	With each attack vomiting and tenderness in right lower quadrant.	With each attack tumor and tenderness; at last attack temp.104° pulse 120.	None.	.....	.....	Remains well.	Operation advised.

Acute Cases—No Operation—Recovery.

No.	Name.	Physician.	Sex.	Age	Previous attacks.	Time.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
25	L. L., June 8, 1886	Dr. Oliver, Athol.	M.	45	None	Several days	Sudden acute symptoms; diarrhœa.	"Cake;" temp. 102°.	None	.....	.....	Recovery	No later attacks; remains well.
26	M. E. I., Apr. 15, 1888	Dr. Colman, of Lynn.	F.	15	None	2 weeks' duration	Diarrhœa, chills, general pain, vomited once.	Tenderness in right iliac fossa; temp. 102° to 103, pulse 100; no tumor or cake.	None	.....	.....	Recovery	No subsequent attacks.
27	N. C., Aug. 11	Hospital.	M.	...	None	Whole attack 11 days	Pain, vomiting.	Tenderness over appendix.	None	.....	.....	Recovery	
28	C., 1889	Dr. Stevens, of Cambridge.	F.	10	One y'r before, lasting 2 w'ks	.....	Local pain, vomiting, chill.	Distention, local dulness; temp. 103°, pulse 116.	None	.....	.....	Recovery	
29	D., May 10	Drs. Dow and Fitz, Reading.	M.	18	None	.....	Local pain, vomiting, etc.	Tenderness in right side.	None	.....	.....	Recovery	Well ever since.
30	N. J., Aug. 10	Hospital.	M.	...	None	2 months	Local pain.	Tumor in rectum.	None	.....	.....	Recovery	
31	M H., Sept. 14	Dr. Donavan, of Quincy.	F.	...	None	1 week	Chill, local pain.	Tumor right iliac fossa; tenderness.	None	.....	.....	Recovery	Complicated by Pott's disease.
32	C. M. K., Sept. 18	Dr. Hitchcock, of Rockland, Me.	M.	32	One	2 weeks	Diarrhœa, local pain, vomiting, chill.	Tenderness.	None	.....	.....	Recovery	No subsequent attack.
33	W., Sept. 22	Dr. F. H. Williams, of Boston.	M.	10	None	.....	Pain general and local.	Local tenderness.	None	.....	.....	Recovery	No subsequent trouble.
34	F. S., Oct. 25	Dr. Swift, of New Bedford,	M.	30	One	3d day	Sudden, severe pain in right hypochondrium; vomiting, chills.	Slight tenderness and dulness in right iliac fossa.	None	.....	.....	Recovery	Remains well.
35	Mrs. B., Dec. 6	Drs. Foster and Towles.	F.	43	None	10th day	Severe local pain, chill.	Tumor; temp. 101°.	None	.....	.....	Recovery	
36	Mrs. H. W., Jan. 4, 1890	Dr. J. J. Minot,	F.	30	None	Several days	General pain, no vomiting.	Local tenderness.	None	.....	.....	Recovery	Remains well.
37	W. R., July 14	Dr. Blood,	M.	6	None	A few days	Pain in right iliac fossa; vomiting.	Dulness, resistance; temp. 101.2°, pulse 116.	None	.....	.....	Recovery	Circumscribed peritonitis.
38	F. P., Aug. 4	Dr. O. H. Marion.	M.	16	None	2 weeks	Sharp pain across stomach, vomiting.	Dulness, resistance near umbilicus; temp. 102°, pulse 100.	None	.....	.....	Recovery	Circumscribed peritonitis; advised delay.
39	J. D. M., Aug. 9	Hospital.	M.	15	None	12 days.	Severe local pain, vomiting.	Tumor, flatness: temp. 101 8°, pulse 102.	None	.....	.....	Recovery	

40	C. W. H., Oct. 21	Dr. Strong.	F.	35	None	.....	Acute symptoms.	Local signs right iliac fossa.	None	.....	.....	Recovery	No trouble since.
41	S., Nov. 12	Dr. Morris, Charlestown.	F.	...	Two in past yr.	11 days	Gradually growing pain and tumor; vomiting.	Tumor small; temp. 100°, pulse 88.	None	.....	.....	Recovery	
42	M. McL., Nov. 13	Hospital.	F.	35	None	2 days	Local pain, vomiting.	Local tenderness.	None	.....	.....	Recovery	One subsequent attack.
43	H. A. R., Nov. 26	Dr. Marshall, of Lynn.	M.	37	None	4 weeks	Local pain, vomiting, chills.	Tenderness, legs drawn up.	None	.....	.....	Recovery	Pneumonia second week. Abscess broke into rectum.
44	J. R. H., Sept.17,1891	Dr. Ayer. Boston.	M.	53	Several	Whole attack 1 week	Pain, vomiting, chill.	Slight.	None	.....	.....	Recovery	Colored. Died May 30, 1893, of appendicitis after oper'n at M.G.H.
45	C. M., Dec. 5	Dr. Hildreth. Cambridge.	M.	22	None	2d day	Acute pain over lower abdomen; no diarrhœa; vomited once.	Tenderness, slight rise of temp. and pulse.	None	.....	.....	Recovery	Pulse and temperature gradually dropped to normal; remains well.
46	W. W. P., Feb. 6, 1892	Dr. Hildreth.	M.	20	None	2 days	Pain in middle of lower abdomen,	Tenderness; temp.102° pulse 100.	None	.....	.....	Recovery	Symptoms subsided very quickly.
47	H. M., Jan. 11	Dr. Withington. Boston.	M.	13	None	4th day	Severe pain "in the stomach;" vomiting; localized over appendix later.	Marked tenderness over appendix with dulness, right thigh flexed slightly; temp. 101.8°, pulse 100.	None	.....	.....	Recovery	Rapid subsidence of temperature and pulse; no trouble since.
48	J. R., Feb. 29	Dr. Blood. Charlestown.	F.	39	None	4th day	Pain in "lower part of stomach, and to right;" chill, vomiting.	Tenderness in right iliac fossa, slight dulness; temp. 101°, pulse 120	None	.....	.....	Recovery	Rapid improvement after third day.
49	A. A. F., May 19	Drs. Abbott and Fuller. Providence.	M.	29	None	5th day	Discomfort; general pain and vomiting; later pain in epigastrium and right inguinal region; hiccough.	Doubtful dulness on right side, tenderness most marked in right iliac region; temp. 100.4°.	None	.....	.....	Recovery	Symptoms improved two days, then renewed and severe; subject to "bilious attacks" two or three times a year. Remains well.
50	H. N., May 20	Dr. Finnegan, of Cambridge,	M.	53	None	4th day	Intense pain in "centre of bowels;" vomiting, etc.	Tenderness more marked in right iliac fossa; highest temp. 103.5°.	None	.....	.....	Recovery	Entered Mass.Gen.Hosp. Symptoms gradually subsided; operation seemed imperative at first.
51	E. B., Aug. 15	Drs. Dudley and Osgood, of Abington.	M.	13	None	3d day	Vomiting, diarrhœa, local pain.	Tender tumor in right iliac fossa; temp. 101°, pulse 110	None	.....	.....	Recovery	Operation seemed advisable; waited one day; symptoms rapidly disappeared. Well.
52	E. S., Aug. 26	Dr. Aldrich, Somerville.	M.	11	None	3d day	Vomiting, diarrhœa, pain.	Tenderness, dulness in right flank; highest temp. 102°.	None	.....	.....	Recovery	Convalescence lasted two weeks.
53	S. N., Sept. 8	Dr. O'Shea, E. Boston.	F.	31	None	4th day	General and local pain, vomiting.	Tenderness, resistance in right iliac fossa; highest temp. 102°; pulse 140.	None	.....	.....	Recovery	Symptoms subsiding at my first visit; perhaps case of salpingitis?

Acute Cases—No Operation—Recovery—*continued.*

No.	Name.	Physician.	Sex.	Age	Previous attacks.	Time.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
54	S. N., Oct. 16	Hospital.	F.	17	None	Duration of attack 3 weeks	Pain on left, vomiting, constipation.	Tenderness; tumor on right side and by vagina.	None	.....	.....	Recovery	Perhaps salpingitis.
55	M. D., Jan.15,1893	Dr. Phippen, of Salem.	F.	29	Several for six years.	Several weeks	Pain, constipation.	Local tumor and tenderness.	Operation at end of attack advised.	.....	.....	Recovery	Recurring appendicitis.
56	Mrs. E. S., Jan. 30	Dr. Odlin, of Melrose.	F.	34	None	13th day	Local pain, vomiting, high temperature.	Local tumor deeply placed; highest temp. 103°.	None	.....	.....	Recovery	First symptoms had disappeared; third day before my visit relapsed; advised operation by daylight next day; six months later heard she was "all right."
57	W. T. G., Jan. 30	Dr. Hildreth, of Cambridge,	M.	24	None	Attack lasted 1 week	General pain, vomiting.	Local tenderness; temp. 99.2°.	None	.....	.....	Recovery	Severe case; appendix removed in interval. Dec. 15th, another attack.
58	Mrs. L. K., Feb. 1	Dr. Daniels, of Boston.	F.	75	None	3d day	Vomiting, general pain.	Very feeble; local tenderness and resistance; temp. 101°, pulse 108.	None	.....	.....	Recovery	Operation justifiable but not demanded; not advised on account of age. Later became demented
59	A. G., Feb. 22	Dr. Fuller.	M.	25	None	3d day	Pain most in right iliac region.	General and local tenderness, dulness: temp.99.2°, pulse 80.	None	.....	.....	Recovery	Very mild case.
60	Miss F. F., March 5	Drs. J. M. Crocker and Fitz.	F.	9	None	5 days	Vomiting, general pain.	Tympany, general tenderness, but greater on appendix; Temp.102°,pulse 112.	None	.....	.....	Recovery	Operation not urged, but justifiable.
61	A. J. C., May 11	Dr. Carlton.	F.	59	None	4 weeks	Local pain and soreness.	Local tenderness; mild.	None	.....	.....	Recovery	Very mild; operation not advised.
62	R. B., May 26	Dr. Burns, of Plymouth, N. H.	F.	3	None	8th day	Vomiting, diarrhœa, pain, fever.	Distention; negative; continuous high temtemperature.	None	.....	.....	Recovery	Remains well.
63	A. T., June 15	Dr. N. J. Davis, of Somerville.	F.	43	None	2d day	General pain soon localized; vomiting.	Tenderness; distent'n; temp. 102.4°, pulse 118.	None	.....	.....	Recovery	Remains well.
64	E. H, June 16	Dr. E. J. Forster.	F.	48	None	16th day	Local tenderness and pain; no vomiting.	Local tenderness; Temp.101°,pulse 100	None	.....	.....	Recovery	Remains well.

65	F. A. K., June 28	Dr. Gavin.	F.	29	None	3d week	Vomiting, constipation, general pain.	Negative; tenderness over right kidney.	None	.....	.....	Recovery	Diagnosis doubtful.
66	N. C. A., June 29	Dr. Bryant, of Cambridge.	F.	...	None	.....	Intense general pain.	Tenderness in right, dulness; temp. 101°.	None	.....	.....	Recovery	
67	M. A. H., July 8	Drs. Howe and Young, Newburyport.	F.	41	None	3d day	Sudden pain in right iliac fossa; vomiting.	Defined tumor; tenderness; temp.101.3°, pulse 112	None	.....	.....	Recovery	Tumor thickened omentum about perforated appendix; like cases operated and followed by general infection.
68	J. J. McA., July 15	Drs. Copeland and Whitman.	M.	28	Doubtful	3d week	Vomiting, diarrhœa, pain.	Tenderness in right iliac region; temp. 98.6	None	.....	.....	Recovery	Intercurrent operation advisable.
69	J. L. M., July 25	Dr. Durgin	M.	16	One	10th day	Local pain, vomiting, constipation.	Tenderness, small tumor; temp. 103.	None	.....	.....	Recovery	Very much like Case 67; operation better after recovery from present attack.
70	N. D., Aug. 6	Dr. L. G. Kemble, of Salem.	M.	14	None	10th day	Local pain, vomiting.	Tumor, tenderness.	None	.....	.....	Recovery	Ready for operation when abscess broke into bowel.
71	F. N. P., ept. 14	Hospital.	M.	39	None	10th day	Diarrhœa, general and local pain.	Tenderness, dulness in right side.	None	.....	.. ...	Recovery	
72	M. L., Sept. 21	Hospital.	F.	...	None	Duration 5 days	General pain vomiting.	Tenderness, doubtful.	None	.....	.....	Recovery	
73	E. W. G., Oct. 3	Dr. Kemble.	F.	35	Several doubtful	1 week	Pain right side, vomiting, diarrhœa.	Dulness, local tenderness.	None	.....	.....	Recovery	Later paroxysmal attacks suggesting gallstones. Diagnosis very doubtful.
74	H. H. J., Oct. 30	Drs. Clement and Croston, of Haverhill.	M.	53	None	4th day	Vomiting, diarrhœa, local pain.	Tenderness, dulness; temp. 100°, pulse 80.	None	.....	.....	Recovery	Operation seemed justifiable, but not imperative.
75	A. H. G., Nov. 10	Dr. Walsh.	M.	32	None	3d day	Chill, pain general, vomiting	Tenderness, local dulness; temp. 101°, pulse 120.	Advised but refused.	.....	.. ...	Recovery	Prognosis grave. Case almost identical with No. 115.

Acute Cases—No Operation—Death.

No.	Name.	Physician.	Sex	Age	Previous attacks.	Time.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
76	G. L. D., 1879	....	M.	50	None	10th day	Local pain.	Acute symptoms and signs.	None	.....	.....	Death	General peritonitis; autopsy.
77	H. K., Aug. 18, 1887	Dr. Cilley.	M.	55	One about 6 months before	3d day	Vomiting, constipation, pain.	Distention; pulse 100.	None advised.	.....	Gangrenous and perforated, containing concretion	Death same day	Autopsy found septic general peritonitis, gangrenous appendix, fecal stone.
78	Chinaman, 1888	Dr. Murphy,	M.	35	?	4th day	Pain, constipation, vomiting.	Distention.	None, refused operation.	.....	.....	Death same day	No autopsy.
79	P., 1888	..... .	F.	70	?	8th day	Mild, referred to stomach.	None; lesion unsuspected.	None	.....	.....	Death	Autopsy: gangrenous appendix containing a gall-stone.
80	E. M., Feb. 19	Drs. Jack and Fitz.	M.	26	None	8th day	Pain general; general distention.	No local signs; collapse; pulse 140.	None	.....	Gangrenous	Death 1 h. after visit.	Autopsy: general peritonitis; gangrenous appendix.
81	J. P. H., Mar. 1890	.....	M.	21	None	6th day	Pain; vomiting.	Tenderness; collapse; distention; pulse 156.	None	.....	.....	Death same day	Moribund; general peritonitis.
82	J. B. M., July 3	Dr. Stevens, of Lynn.	M.	27	None	3d day	Pain; vomiting.	Tenderness, collapse, pulse 176.	None	.....	.....	Death in 3 hrs.	General peritonitis; gangrenous, perforated appendix; moribund.
83	H. P., Oct. 19	Hospital.	M.	13	None	2 weeks	Pain, diarrhœa, vomiting.	Tenderness, distention, collapse.	None	.....	.....	Death	Moribund; general peritonitis.
84	Dr. C. F. C., June 14, 1893	Drs. Delano and Whittier.	M.	...	One 3 yrs. ago	2 days	Pain general; vomiting.	Great distention, general tenderness, collapse; pulse 160.	None	.....	.....	Death 1 hour after examina'n	Moribund when seen.
85	S. S., Aug. 11	Dr. Atwood, of Taunton.	M.	28	Several	5th day	Pain, vomiting, constipation.	Distention, tenderness, collapse.	None; moribund when seen.	.....	.....	Death same day	No autopsy.
86	P. C. B., Sept. 14	Dr. Putman, of Chelsea.	M.	19	One	3d day	Pain, vomiting, fever.	Tenderness; tumor; temp. 102.6.	Advised but refused.	.....	.....	Death 17th day	General peritonitis; father had just recovered from attack after refusing operation in New York.

Acute Cases—Operation—Death.

No.	Name.	Physician.	Sex	Age	Previous attacks	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
87	T. W., Mar. 4, 1889	Dr. Graves, of Woburn	M.	21	None	Several days	Pain, vomiting, fever.	Tumor occupying whole right side; tenderness.	Abscess opened; drained.	No	.....	Death 2d week	Pain in left side of abdomen; no physical signs; probable extension from right.
88	O. G., May 10	Drs. Aldrich and Morris, of Somerville.	M.	28	One in past year.	10 days	Pain local; severe constitutional shock.	Collapse, general tenderness, distention.	General purulent peritonitis found.	No	Perforated	Death in a few hours.	Moribund when seen; spreading peritonitis from ruptured appendicular abscess.
89	A. F., Dec. 14	Hospital.	M.	18	None	3 days	Constipation extreme, pain local, free vomiting.	Tympany, tenderness, tumor, distention, temp. 102.8°, pulse 132.	General peritonitis; drainage.	No	Gangrenous and perforated	Death in several days.	Autopsy found gangrenous and perforated appendix.
90	H. H., Feb. 27, 1891	Hospital.	M.	12	None	12 days	Vomiting, pain local; shock; pulse 144.	Distention and general tenderness.	Drainage for general peritonitis.	.....	.....	Death in a few hours	Rupture of appendicular abscess; general invasion.
91	C. R., May 26	Dr. Hunt, of Swampscott.	M.	24	None	3 days	Extreme pain, localized; vomiting.	Tenderness, general distention, temp. 103° pulse 120.	General purulent peritonitis; drainage.	No	.....	Death in 24 hours.	Autopsy found gangrenous and perforated appendix.
92	G. B. O., Aug. 21	Hospital.	M.	30	None	4 days	Pain local; vomiting.	Dulness; tenderness.	General purulent peritonitis; drainage.	Yes	Gangrenous and perforated	Death in 5 hours.	Appendix situated behind cæcum; extensive gangrene of perinephritic tissues.
93	J. J. H., Oct. 23	Dr. Galloupe, of Lynn.	M.	20	None	7 days	Pain local; vomiting.	Tenderness general, dull and resistant in right iliac fossa; temp. 100.5°, pulse 100.	Abscess with general peritonitis; drainage.	No	.....	Death same day.	Prognosis favorable before operation.
94	C. G., May 10, 1892	Drs. Young and Howe, of Newburyport.	M.	13	None	4 days	Vomiting, pain local, temp. 101°, pulse 120.	General tenderness, more marked over appendix.	Large abscess in pelvis, with general peritonitis.	No	Firmly adherent and gangrenous.	Death same day.	Prognosis seemed fair before operation.
95	J. M., June	Hospital.	M.	12	None	.....	Pain local; vomiting.	.....	Appendix removed by Dr. Beach; second operation; abscess.	.....	.....	Death.	Secondary abscess, causing death. Second operation by M. H. R.
96	C. R. G., July 9	Hospital.	M	34	None	2 days	Pain epigastric and right iliac; vomiting.	Distention; shock.	General peritonitis, drainage, irrigation.	Yes	Swollen; gangrenous.	Death in 2 days.	No autopsy; general peritonitis

ACUTE CASES—OPERATION—DEATH.—*Continued.*

No.	Name.	Physician.	Sex	Age	Previous attacks.	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
97	T. F. K., July 12	Hospital.	M.	30	None	3 days	Pain followed by general tenderness.	Distention, shock, no local signs.	Quick operation; drainage.	Yes	Gangrenous.	Death in 4 hours.	Geueral peritonitis.
98	J. W. P., July 23	Dr. Allen, of Topsfield.	M.	28	None	3 days	Severe onset, pain, vomiting.	Distention, dulness, shock, temp. 103°, pulse 116.	Quick operation.	Yes	Gangrenous, perforated, concretions.	Death in 3 hours.	Prognosis very grave before operation; general peritonitis.
99	W. W. B., Aug. 13	Drs. Jackson & Wellington, of Wayland, and Whitman, of New York.	M.	18	None	5 days	Pain local, vomiting.	No local signs, collapse, distention, fecal vomiting, pulse 170.	Operation after death.	Yes	Gangrenous and perforated	Death after a few breaths of ether.	Died before he was etherized; post-mortem operation found gangrenous perforated appendix. (This case should be in deaths without operation.)
100	E. G. F., Aug. 22	Drs. Pitcher and M. D. Clarke, of Haverhill.	F.	15	One?	6 days	Pain local, constipation, nausea.	Tumor; tenderness local; temp. 102°.	Abscess opened, drained; general peritoneal cavity not opened.	No	.....	Death in 3 days.	General peritonitis; Operation put off 2 days; did well for 24 hours; prognosis favorable.
101	C. P., Sept. 16	Drs. Howe, Snow and Young, of Newburyport.	M.	46	None	5 days	General pain; diarrhœa.	Distention; pulse 120 hernia.	Median incision; drainage.	Yes	Gangrenous, perforated; concretions.	Death.	General peritonitis; prognosis very grave; Question of strangulated hernia.
102	S. B., Oct. 15	Dr. H.C.Haven, of Richardson Lake, Maine.	M.	13	None	5 days	Pain general; vomiting.	Distention, tenderness, collapse, temp. 102°, pulse 130.	For general peritonitis; rapid exploration; gauze drainage.	No	Gangrenous and perforated	Death 7 hours after operation	Autopsy: gangrenous perforated appendix; large stone.
103	B. H., Oct. 22	Dr. Blood, of Ashby.	M.	9	None	1 week	Pain general; vomiting.	Tumor; tenderness.	Abscess drained; adhesions broken	Yes	Perforated and gangrenous.	Death in 18 hours.	Mild case; separation of adhesions caused general peritonitis.
104	H. B., Nov. 8	Dr. Wheatley, Abington.	M.	40	Several	36 hours	Pain local; vomiting.	Distention, collapse, pulse 135, temp. 101°.	Usual, rapid; gauze; later drainage.	Yes	Gangrenous and perforated	Death 3d day after operation.	General peritonitis; prognosis very grave; extensive extravasation; did well for 2 days.

105	A. W. N., May 16, 1893	Drs. Fitz and Hodgdon.	M.	55	One	5 days	Pain general.	Hiccough, distention, general tenderness.	General cavity opened; drainage	No	Firmly adherent.	Death in 12 hours.	General peritonitis; diagnosis very obscure; case hopeless.
106	J. F. N., May 27	Dr. Breck, Boston.	M.	47	None	14 days	General pain, tenderness, fever.	Post-cæcal tumor, tenderness, rising pulse and temp. after subsidence of first symptoms.	Drainage among healthy bowels.	No	.....	Death in 5 days.	Operation postponed one week, favorable course; performed in exacerbation; shock and exhaustion; no general peritonitis.
107	A. B., June 4	Dr. Wheatley, Abington	F.	5	None	6 hours	Pain local.	General distention, tenderness, rigidity, temp. 101.6°, pulse 120.	Usual; drainage.	Yes	Gangrenous, perforated; 2 stones; rapid escape of gas and feces.	Death in 36 hours.	General infection at time of operation; appendix of large lumen and large perforation.
108	M. D. W., June 20	Dr. J. M. Crocker	M.	19	None	5 days	Pain; vomiting.	Tenderness, rigidity, distention, dulness, temperature 102°.	By Dr. Beach, at M. G. H.	Yes	Gangrenous, perforated.	Death within 24 hours	General peritonitis; grave prognosis.
109	C. S. M., July 29	Drs. Delano and C. A. Porter, Boston.	M.	25	Doubtful	2 days	Vomiting, general mild pain, sudden extravasation, great pain.	Rigidity, general tenderness, shock.	Usual; drainage 2½ hours after extravasation.	Yes	Gangrenous, perforated, with seeds and concretions.	Death in 24 hours.	Fulminating case; general peritonitis; pure cultures of bacillus coli communis.
110	A. McP., July 30	Hospital.	M.	22	None	5 days	Pain local; constipation.	Tenderness, dulness, rectal tenderness, temp. 103°.	Abscess drained; general cavity open; general infection present	Yes	Gangrenous, perforated at base.	Death in 24 hours.	General peritonitis; grave prognosis.
111	W., Aug. 23	Dr. Grainger, East Boston.	F.	7	None	3 days	Pain general; vomiting.	Distention, tenderness, collapse.	General cavity full of septic fluid; drained; very quick operation.	Yes	Gangrenous, perforated.	Death.	No physician till day of operation; general peritonitis; case practically moribund.
112	Miss S., Sept. 12,	Dr. Allen, of Haverhill.	F.	9	None	5 days	Pain general; vomiting.	General distention, tenderness, dulness.	General peritoneal infection found, irrigated and drained.	Yes	Gangrenous, perforated.	Death in 2 days.	General peritonitis; fecal concretion.
113	W. A. N., Sept. 19	Dr. Stickney, of Arlington.	M.	18	Several	3 days	Severe pain, vomiting, constipation.	Rigid abdomen, dulness, rectal tenderness, temp. 102°.	General infection found; drained.	Yes	Gangrenous, perforated; large stone	Death in 2 days.	General peritonitis; grave prognosis.
114	J. P. S., Oct 19	Dr Francis, of Brookline.	F.	55	None	17 days	Pain general; constipation.	Dulness, tenderness in right flank, temp. 101°.	Median incision for intestinal obstruction.	No	.....	Death in 3 days.	Autopsy found abscess behind cæcum, pylephlebitis cause of death; tip of appendix gangrenous subsequent to abscess.

ACUTE CASES—OPERATION—DEATH—*Continued.*

No.	Name.	Physician.	Sex.	Age	Previous attack	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
115	T. B. G., Oct. 19	Hospital.	M.	...	One a year ago	2 days	Pain local, vomiting, constipation.	General distention, pulse 120, temp. 103°, rigid abdomen.	Usual; drainage with gauze.	Yes	Gangrenous, perforated; fecal stone	Death.	General peritonitis; pure culture of bacillus coli communis.
116	A. H. B., Oct. 30, 1892	Dr. Jordan, of Wakefield.	M.	55	Two	5 days	Pain local, vomiting, chill, constipation.	Distention, tenderness, hernia, temp. 100.8°, pulse 100.	Late because of reluctant family.	Yes	Sloughing; perforated.	Death on 3d day.	General infection present, which developed into general peritonitis; question of strangulated hernia.

Acute Cases with Operation—Recovery.

No.	Name.	Physician.	Sex	Age	Previous attack.	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
117	E. T., Sept 3, 1887	Hospital.	M.	52	None	9 days	Pain; local tenderness.	Tumor, tenderness, dulness.	Large abscess drained.	No	.....	Recovery	
118	E. C., Oct. 13	Hospital.	M.	34	None	2 w'ks	Doubtful.	Tumor.	Abscess drained.	No	.....	Recovery	
119	Miss H.	Drs. Marion, of Brighton, and Dr. Fitz.	F.	18	.....	.....	Pain.	Tumor, tenderness.	Very large abscess opened.	No	.....	Recovery	Prognosis good.
120	Wm C., July 6, 1888	Hospital.	M.	20–30	None	2 w'ks	Pain in right iliac region.	Tumor, tenderness.	Abscess opened and drained.	No	.....	Recovery	
121	J. S., Oct. 30	Hospital.	M.	58	Doubtful attacks 2 years.	3 w'ks	Pain; fever.	Tumor, tenderness, dulness.	Abscess opened and drained.	No	.. ..	Recovery	
122	W. S. R., May 4, 1889	Hospital.	M.	17	None	12 days	Pain in ileo-cæcal region, tenderness, vomiting.	Tumor, tenderness.	Free incision and drainage.	No	.....	Recovery	Attack following operation of excision of knee; grave prognosis.
123	H., June,	Drs. Goss and Fitz.	M.	18	None	1 week	Pain, vomiting, irregular bowels.	Dulness, tenderness.	Dr. J. C. Warren; free drainage. Mass. Gen. Hosp.	No	.....	Recovery	Very extensive multiple abscess cavities; grave prognosis.
124	C. A., Feb. 2, 1890	Drs. Odlin and Fitz.	M.	34	Several	2 w'ks	Tumor; tenderness.	.....	Abscess opened and drained.	No	.....	Recovery	Severe case.
125	C. H., Feb. 8	Dr. Oliver, of Athol.	M.	35	None	2 w'ks	Colic, chill; pain in centre of bowels; painful micturition; pneumonia.	Tumor in right iliac fossa projecting into rectum; temp. 102, pulse 100.	Abscess opened and drained.	No	.....	Recovery	Prognosis grave; patient much exhausted.
126	M. J. L., Mar. 2	Drs. McCarthy and Fitz, Cambridge.	M.	18	None	8 days	Pain in ileo-cæcal region, vomiting, chills.	Tumor, tenderness.	Abscess cavity drained.	No	... .	Recovery	Good prognosis.
127	W. F., Dec 31	Drs. Nickerson and Fitz, Saylesville, R.I.	M.	14	None	11 days	Pain, chill, vomiting	Tenderness, dulness, violent constitutional symptoms.	Drainage.	No	.....	Recovery	Grave case.
128	G. M., May 18, 1891	Dr. Stevens, of Lynn.	M.	32	Two in past year.	6 days	Pain, vomiting.	Abdomen distended, temp. normal.	General cavity opened and drained	No	.....	Recovery	General infection; prognosis grave.
129	J. K., July 4	Dr. McIntyre, Cambridge.	M.	11	None	3 days	Pain, vomiting; temp. 102°, pulse 135.	Dulness, tenderness, shock, thighs flexed, tumor, right lower quadrant.	Free incision, drainage.	No	.....	Recovery	Grave prognosis; second operation a week later by Dr. Cabot.

ACUTE CASES WITH OPERATION—RECOVERY—*continued.*

No.	Name.	Physician.	Sex	Age	Previous attack.	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
130	L. P., Sept. 21	Dr. W. N. Swift, New Bedford.	M.	4	None	3 days	Pain, vomiting, collapse; temp. 102°, pulse 140.	Tenderness, distention, slight dulness in iliac region.	Radical, drainage, general peritoneal infection.	Yes	Gangrenous and perforated	Recovery	Fulminating case.
131	A. T. L., Oct. 1	Drs. Cutter and Fitz, Charlestown.	F.	14	None	3 days	Pain, vomiting.	Distention, tenderness, dulness, temp. 100°, pulse 128.	Septic fluid in general abdominal cavity.	Yes	Gangrenous and perforated	Recovery	General abdominal infection.
132	H. S. P., Nov. 18	Dr. Porter, of Auburndale.	F.	30	None	5 days	Pain, vomiting, delirium; pulse 125.	Tenderness in right iliac fossa, rectal bulging and tenderness.	Rectal trocar by Dr. Porter.	No	.....	Recovery	Good prognosis. Remains well.
133	J. W. B., Dec. 14	Dr. Fogg, of South Boston.	M.	26	None	3 days	General pain, vomiting, constipation.	Dulness in right iliac region, tumor and tenderness by rectum.	Rectal trocar tied in. Patient *in extremis.*	No	.....	Recovery	Appendix removed in 1892, between attacks, by Dr. H. H. A. Beach.
134	T. J. D., May 16, 1892	Dr. Blood, of Charlestown.	M.	18	None	5 days	Pain, localized; nausea, chills.	Distention, tympany, tenderness, temp. 101.5°, pulse 96.	General cavity full of turbid serum; drainage.	Yes	Gangrenous and perforated	Recovery	General peritoneal infection and great collapse.
135	A. J. L., June 28	Dr Kingsbury, Holbrook.	M.	24	None	1 week	Pain, localized; severe constitutional disturbance.	Tenderness, tumor.	Abscess drained.	No	.....	Recovery	Hernia in scar.
136	P. H., July 6	Dr. O'Keefe,	M.	44	None	10 days	General pain, chills, vomiting.	Tumor, tenderness.	Abscess drained.	No	.....	Recovery	Good prognosis.
137	F. N. C., July 28	Drs. Anthony and Clarke, Haverhill.	M.	10	None	4 days	Pain, localized; shock.	Tenderness, dulness, temp. 100°, pulse 120.	Usual, drained.	Yes	Gangrenous; many perforations; fæcal stone.	Recovery	General peritonitis, and very bad prognosis.
138	H. D., Aug. 10	Drs. Young and Clarke, of Haverhill.	M.	4	None	11 days	Pain, vomiting.	Tumor and tenderness in median line of abdomen.	Abscess opened and drained.	Felt but not removed	.....	Recovery	Appendix in cavity nearly in middle of the abdomen.
139	E. O., Aug. 14	Drs. Dudley, Osgood, and Hastings.	M.	16	None	9 days	Pain, localized; vomiting	Distention, dulness, local tenderness, temp. 102.5°, pulse 120.	Usual, drainage tube and gauze.	No	Gangrenous and perforated; adherent.	Recovery	Beginning general infection found at operation.

140	J. E. P., Aug. 16	Drs. Hunt, Lovejoy, Colman, and Stevens, Lynn.	M.	17	None	3 days	Pain, local, in right iliac region; constipation.	Tenderness, dulness, rectal tenderness, temp. 101°, pulse 96.	Usual, drained with tubes and gauze.	Yes	Gangrenous and perforated.	Recovery	General peritonitis beginning; abdomen filled with turbid serum; concretion.
141	J. T., Aug. 22	Hospital.	M.	20	One a year ago	2 w'ks	Pain, local; vomiting, constipation.	Tumor and tenderness, temp. 102°.	Abscess drained.	No	.....	Recovery	
142	T. S., Sept. 1	Dr. Ela, Cambridge.	M.	19	None	1 week	Pain general, then local, tenderness, vomiting.	Tumor, local tenderness.	Usual, general cavity opened.	No	.....	Recovery	Hernia in scar; gauze barrier.
143	S. C., Sept. 14	Dr. Osgood, of Rockland.	F.	13	None	3 days	Local pain, later vomiting.	Tumor, tenderness, temp. 101°.	No abscess; drainage.	Yes	Thickened.	Recovery	Tumor a phantom; appendix not perceptibly diseased, except thickened.
144	C. A. R., Oct. 2	Hospital.	M.	...	None	4 days	Local pain, vomiting, diarrhœa, chills.	Tumor and extreme tenderness, temp. 101°, pulse 100.	Usual, drainage with gauze.	Yes	Gangrenous and perforated	Recovery	General cavity opened.
145	W. E., Oct. 10	Hospital.	M.	18	None	36 hours	General and local pain.	Tenderness, dulness in the ileo-cæcal region, temp. 100°.	Usual, drainage, general cavity opened, gauze barriers.	Yes	Gangrenous, perforated; general peritonitis	Recovery	Complicated in recovery by coughing out intestines.
146	H. C., Oct. 30	Drs. Heath and Odlin, of Wakefield.	F.	50	None	7 w'ks	Pain under liver, later local.	Dulness, tenderness, temp. septic.	Large fecal abscess, drained.	No	.....	Recovery	Fecal stones in the abscess cavity; patient very much reduced.
147	Mrs. C. F. A., Nov. 4	Drs J. A. Gordon and Fitz, Quincy.	F.	50	One 3 months before	16 days	Pain in lower abdomen, vomiting, fever.	Dulness in right iliac fossa, mass by vagina, tenderness, temp. 104°.	Incision in right iliac region, gauze drainage.	No	Adherent; nearly obliterated.	Recovery	Secondary abscess opened by vagina, large fecal fistula through which entire contents of intestines escaped; closed spontaneously.
148	H. W. B., Dec. 7	Drs. Lovejoy, Colman, Hunt, of Lynn.	M.	21	None	2 w'ks	Local pain, constipation.	Dulness, tenderness, temp. 102°.	Abscess opened; drained.	No	.....	Recovery	Severe case.
149	E. K., Dec. 14	Dr. Chase.	M.	11	One 6 weeks before	2 w'ks	Pain, vomiting.	Distention, dulness, tenderness, temp. 101°.	Large abscess into pelvis, opened, drained.	No	.....	Recovery	
150	F. C., Jan. 24, 1893	Dr. J. J. Clarke, of Haverhill.	M.	25	None	1 day	Pain in front shifting to right side, vomiting.	Dulness, tumor, temp. 103°, pulse 108; tenderness on whole right side.	Abscess, drained.	No	.....	Recovery	No general infection; severe case.
151	B. D. P., Jan. 28	Dr. G. M. Garland	M.	27	Doubtful	2 w'ks	Pain, vomiting.	Tenderness, dulness, mass by rectum, temp. 101°.	Abscess opened and drained.	No	.....	Recovery	Good prognosis; no general infection.

ACUTE CASES WITH OPERATION—RECOVERY—*continued.*

No.	Name.	Physician.	Sex	Age	Previous attack.	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
152	A. N. B., Feb. 18	Drs. Marshall and Lovejoy, of Lynn.	M.	38	One a year ago	10 days	Constipation, pain, vomiting.	Tumor, tenderness, dulness.	Two large abscesses, drained.	.....	Seen, but too adherent to remove.	Recovery	Has had another attack since recovery; appendix removed Dec., 1893.
153	G. N. F., Feb. 3	Drs. Bryant and Somers.	F.	18	One 6 months before.	2 w'ks	Pain severe and general, diarrhœa, vomiting.	Tumor, local tenderness, pulse 120.	Abscess opened and drained.	No	.....	Recovery	Severe case.
154	A. B, March 1	Drs. Devine and Conant.	M.	13	None	1 week	Local pain, chill, vomiting.	Tenderness and local tumor, temp. 102°.	Dr. Conant; abscess drained.	Yes	Gangrenous and perforated with stone	Recovery	
155	W. L., April 9	Dr. W. A. Bell, Somerville.	M.	27	None	4 days	General pain, vomiting, constipation.	Local dulness, slight distention, shock.	General cavity opened; drained with gauze.	Yes	Gangrenous; perforated, with concretions.	Recovery	Grave prognosis, general infection.
156	K. H., May 3	Hospital.	F.	34	None	8 days	Epigastric and lumbar pain, vomiting, chill.	Tenderness, dulness, tumor in flank, temp. 102.°	Abscess drained.	No	.....	Recovery	Intestine sutured; fecal fistula which entirely closed.
157	C. E. L., May 4	Drs. Holden and Young, of Haverhill.	F.	22	None	4 days	Vomiting, general pain.	Large tumor, tenderness, temp. 104°	Usual, drainage, general cavity opened.	Yes	Dilated to size of intestine; gangrenous and perforated	Recovery	Enormous concretions; prognosis grave.
158	A. C., May 13	Dr. Bradbury, of Rockland.	M.	18	None	1 week	Vomiting, epigastric pain.	Dulness, tenderness.	Abdomen opened, appendix in pocket behind cæcum.	Yes	Gangrenous and perforat'd; stone	Recovery	Grave prognosis.
159	N. S., June	Hospital.	M.	22	None	6 days	General pain, vomiting, diarrhœa, chill	Tenderness and dulness in flank, temp. 101.5°.	Post-cæcal abscess drained.	No	.....	Recovery	Post-cæcal abscess.
160	F. C., June 10	Dr. Patten, of Hopkinton.	M.	38	None	2 w'ks	Local pain; chill on 4th day.	Large local tumor, temp. 104.5°.	Abscess opened and drained.	No	.....	Recovery	Fecal stones loose in abscess cavity; good prognosis.
161	L. W., June 23	Dr. Cooper, of Northampton.	M.	52	Two	12 days	Vomiting, local pain	Large tumor, temp. 102.4°.	Abscess opened and drained.	No	.....	Recovery	Concretion in abscess cavity; prognosis good.

162	M. M., July 3	Hospital	M.	17	One 3 months before	5 days	Local pain, vomiting, constipation.	Distention, general tenderness, rectal tenderness, temp. 101°.	Usual, gauze drainage.	No	.....	Recovery	Beginning peritonitis.
163	E. T. D., July 6	Drs. Sanford, Kemball, and Osborne, Marblehead.	F.	23	None	14 days	General pain, diarrhœa, vomiting.	Tumor, tenderness.	Very large abscess drained.	No	.....	Recovery	Severe case.
164	F. S., Aug. 1	Hospital	M.	27	None	6 days	Localized pain, constipation, chill.	Tenderness, dulness into flank.	Abscess drained.	No	.....	Recovery	Post-cæcal abscess.
165	Dr. E. L. P., Aug. 5	Dr. Phippen, of Salem.	M.	31	2 years ago	3 days	Local pain.	Dulness, tenderness.	Usual.	Yes	Perforated; fecal stone.	Recovery	General peritoneal cavity opened; grave prognosis; gauze barrier.
166	F. B., Aug. 5	Hospital.	M.	21	None	3 w'ks	Localized pain, constipation.	Tumor and tenderness.	At end of attack.	Yes	Thickened; full of concretions	Recovery	Appendix removed at end of mild attack.
167	F. M., Sept. 2	Dr. Liebman.	F.	18	One	4 days	Severe local pain, vomiting.	Dulness, tenderness near bladder, temp. 100°, pulse 120.	Abscess drained.	No	.....	Recovery	Fecal fistula which soon closed; favorable case
168	H. A. W., Sept. 5	Drs. Percy and Kimball, of Salem.	M.	14	None	9 days	Epigastric and general pain, vomiting.	Tumor, tenderness, temp. 103°.	Dr. Conant operated; abscess drained.	Yes	Gangrenous.	Recovery	Grave case.
169	H. P. L., Oct. 7	Drs. Odlin and Sanborn, Melrose.	F.	49	None	3 w'ks	Pain, tenderness, vomiting.	Resistance on right side with tympany; pulse 120.	Abscess drained; gauze and tube.	No	.....	Recovery	Favorable prognosis.
170	H. D., Oct. 20	Drs. Phipps and Pierce, Hopkinton.	M.	8	None	1 week	Vomiting, constipation, local pain.	Distention, dulness in flank up to liver.	Incision long and high, abscess below liver, drainage.	No	Gangrenous, but very adherent.	Recovery	Localized abscess under the liver; appendix near liver; very grave case.
171	R. S., Jr. Oct. 31	Dr. Fitz and Sturgis.	M.	12	Mild attack 8 days before, but up and outdoors	Last attack 4 days	Local pain, chill.	Tenderness, dulness, in right flank, temp. 103.5°.	Abscess behind colon, drainage.	No	.....	Recovery	Recovery from first mild attack was deceptive; fecal stone; grave case.
172	B. McG., Nov. 5	Dr. Chandler, of Townsend.	F.	16	None	12 days	General and local pain.	Large tumor occupying whole right side, tenderness.	Very large abscess drained.	No	.....	Recovery	Fecal stones removed; severe case.
173	W. Nov. 6	Drs. Atwood, Anthony, and M. D. Clarke.	M.	11	None	4 days	Pain high under liver, vomiting.	Dulness of liver, appendix signs absent	Incision for abscess, liver drained.	Yes	Perforated, gangrenous.	Recovery	Cæcum and colon with appendix dislocated; pure culture of coli bacillus.
174	Y., Nov. 8	Drs. Pierce and Swift, New Bedford.	M.	7	None	2 w'ks to 20 days	Vomiting, fever, pain in right side later.	Dulness on right side, mass by rectum.	Small abscess, firm adhesions.	Yes	.....	Recovery	General cavity opened.

Recurrent—Operation between Attacks.

No.	Name.	Physician	Sex.	Age	Previous attacks.	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix	Result.	Remarks.
175 1	H. E. W., 1888.	.....	M.	21	Several in 4 years.	4 years	Diarrhœa, vomiting, pain.	Negative.	None.	.....	.....	.....	
176 2	B. H. G., Dec. 3, 1892.	Dr. Croston, of Haverhill.	F.	20–30	One	4 weeks	Vomiting, pain.	Slight local tenderness.	None.	.....	.....	Well	Operation advisable between attacks.
177 3	C. C. W., Aug. 25, 1893	Dr. Fitz.	M.	22	Several	2 years	Constipation, vomiting, pain.	Tenderness, tumor.?	Between attacks; no drainage.	Yes	Bound down; concretions.	Recovery	
178 4	C. C. R., Sept. 27, 1893	Hospital.	M.	28	Four	.....	Vomiting, pain in iliac region.	Local tenderness. ?	Between attacks; no drainage.	Yes	Old inflammation.	Recovery	
179 5	H. L. F., Oct. 4, 1893.	Hospital.	M.	20–30	Six	.....	Local tenderness, vomiting.	Tenderness in right iliac region.	Between attacks; no drainage.	Yes	Bound down; thickened.	Recovery	
180 6	W. T. G., Oct. 23, 1893	Hospital.	M.	24	Three	.....	Local pain, vomiting, constipation.	Local tenderness.	Between attacks; no drainage.	Removed	Thickened; adherent.	Recovery	

Case of Appendicitis mistaken for other Acute Abdominal Lesions.

No.	Name.	Physician.	Sex.	Age	Previous attacks.	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
181	G. W. S., Dec. 28, 1889.	Hospital; Fitz and Hildreth.	M.	29	None	3 days	Pain on left side, vomiting becoming stercoraceous.	Distention, tenderness; tense coils felt.	Exploratory median laparotomy.	No	.....	Death	Operation for intestinal obstruction; autopsy found gangrenous appendix.

Cases of Acute Abdominal Lesions mistaken for Appendicitis.

No.	Name.	Physician.	Sex.	Age	Previous attacks.	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of Appendix	Result.	Remarks.
1821	—— 1890	.....	F.	45	.....	.....	Pain, vomiting.	Distention and general tenderness; symptoms urgent.	Band divided and obstruction relieved; suture of intestine.	.....	.....	Death in short time	Shock and collapse; band resulted from ovariotomy; diagnosis acute obstruction; appendicitis?
1832	F. T., Feb. 2, 1893.	Dr. M.D.Clarke, of Haverhill.	F.	56	None	9 mon's.	Local pain and tenderness; abscess opened.	Fecal fistula in right iliac region.	To close fistula.	No	.....	Recovery temporary.	Malignant disease; supposed to be a fecal fistula resulting from appendicitis.
1843	F. A. R., June 7, 1893.	Dr. Morrison.	M.	6	None	.....	Pain, vomiting, fever.	Local tenderness; distention.	At hospital by Dr. Beach.	Yes	Thick'n'd; catarrhal.	Recovery	Case of pneumonia mistaken for appendicitis, by M. H. R.; later operated for empyema.
1854	H. R., Aug. 28,1893	Hospital.	M.	23	One	6 days	Diarrhœa, general pain, vomiting.	General distention; temp. 99.6°.	By Dr. Conant; band relieved; M. G. H.	No	.....	Death	Acute obstruction by a band found; case diagnosticated as possible appendicitis, by M. H. R.
1865	J. R., Oct. 31, 1893	Dr. Granger, of Randolph.	M.	69	None	4 days	Local pain, vomiting, constipation.	Distention, tenderness, collapse.	None.	.....	.....	Death	Malignant disease; sigmoid plexure.
1876	A. S., Nov., 1893.	Dr. Cliff.	M.	9	One	3 days	General pain, vomiting, constipation.	Tenderness near umbilicus; tenderness by rectum.	By Dr. S. J. Mixter, M. G. H.; band relieved.	No	Normal.	Recovery	Case of obstruction by omphalo-mesenteric band; diagnosticated as appendicitis, by M. H. R.
1887	(?) Oct. 17, 1893	Hospital.	M.	...	None	3 days	Pain, vomiting, constipation.	Dulness in right half of abdomen; tenderness general; rigidity.	Band relieved by Dr. J. W. Elliot; intestinal suture.	No	Normal.	Death in 2 days	Case of obstruction by Meckel's diverticulum; extensive general infection; diagnosis of appendicitis and general peritonitis.
1898	.....	Lynn	M.	21	None	4 days	Pain, vomiting, constipation.	General tenderness; dulness in left lower quadrant with violent constitutional symptoms.	Exploratory; irrigation and drainage.	No	Normal.	Death in 24 hours.	Infection from suppurating gland in left abdomen caused by gonorrhœa.

Additional Cases.

No.	Name.	Physician.	Sex	Age	Previous attacks.	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed	Condition of appendix.	Result.	Remarks.
190	L. McG., Nov. 7, 1893	Drs. M. D. Clark, Atwood, Woodbury, of Haverhill	F.	12	None	4 days	Lameness after fall; pain and tenderness in right groin; temp. 103°; pulse 120.	Right thigh flexed; slight dulness near groin; tenderness.	None.	.....	.....	Recovery	Remains well.
191	Y., Nov. 8	Drs. Pierce and Swift, New Bedford.	M.	7	None	8 days	Nausea, vomiting, fever; pain over ascending colon.	Rectal tumor; dulness over right flank; temp. 101°, pulse 100.	Abdominal and drainage.	No	Not found.	Recovery	Peritoneal cavity opened in separating adhesions; grave prognosis.
192	J. B. M., Nov. 20	Dr. G. B. Cogswell N. Easton.	M.	34	None	4 mos.	Pain; soreness right iliac region following injury.	Tenderness over appendix; no other signs,	None.	.....	.....	.....	Removal of appendix advised after further observation.
193	H. N. N., Dec. 15	Dr. T. M. Rotch, Boston.	M.	26	One (?)	1 day	General abdominal pain, vomiting; temp. norm., pulse norm.; later slight tendrness in right iliac fossa.	Temp. 101°; tenderness in right iliac fossa; no tumor.	None.	.....	.....	Recovery	Rapid subsidence of symptoms.
194	W. H. S., Dec. 18	Dr. W. W. Dodge, Boston.	M.	60	None	14 days	Severe pain in centre of abdomen; temp. 102, pulse 108; tenness over appendix	Negative.	None.	.....	.....	Recovery	Gradual improvement; question of malignancy
195	A. H., Dec. 21	Dr. McMillan, Hanover.	M.	78	None	2 days	Severe pain in right side; vomiting; Temp. 103°; pulse 104.	Tenderness and resistance in right iliac fossa.	None.	.....	.....	Recovery	Declined operation; was not urged.
196	J. F. D., Dec. 25	Drs. Chase, Fraser, and Packard.	M.	19	.....	2 days	Pain in umbilical region; vomiting; tenderness over appendix; temp. 102.8°; pulse 118.	Small tumor, with dulness in right iliac fossa.	Three days later by Dr. Packard	Yes	Gangrenous and perforated fecal concretions.	Death 48 hours	Operation delayed by advice of M. H. R.
197	B. L. H., Dec. 28	Dr. E. H Stevens,	M.	24	None	4 days	Pain general; soon localized; temp. 99°, pulse 72 third day; rigidity.	Tender on both sides; distention; next day fecal vomiting.	Excision of appendix; drainage; acute obstruction from adhesions relieved.	Yes	Gangrenous, perforated.	Convalescent	Free fluid sterile; colon bacillus in appendix. Jan. 26th, second operation for acute obstruction from cicatricial band.

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198	M. E., Jan. 1, 1894	Dr. Fanny, Boston.	M.	1	None	3 days	Pain in belly; temp. 101°, no tenderness; later distention, temp. 105°.	Negative.	None.	.....	.....	Recovery	*Vide* Case 184. Pneumonia with abdominal pain. Appendix probably not affected.
199	J. H. M., Jan. 1	Dr. Booth, Somerville.	M.	29	Several	4 years	Usual, of severe attacks.	Small hard tumor in iliac fossa.	Excision of remains of appendix.	Yes	Mostly obliterated, extensive adhesions from old abscesses.	Recovery	Condition of appendix found seemed insufficient to cause symptoms. Cultures sterile.
200	L. C., Jan. 3	Dr Chamberlain, Lawrence.	M.	14	None	6 days	Colic, distention, rigidity; tenderness; temp. 102°, pulse 106; nausea.	Flatness in right flank; tumor; tenderness.	Drainage in flank.	No	.....	Recovery	
201	E. B. B., Jan. 4	Dr. W. H. Pomeroy.	M.	38	One	24 hours	Diarrhœa, pain, tenderness, temp. 99°, pulse 88, vomiting.	Temp. 99°, pulse 112; no distention, no dulness, no tumor	Drainage twelve hours later.	Yes	Gangrenous and perforated; fecal stone.	Death 24 hours	Septicæmia; fluids sterile in abdomen. Appendix contained colon bacillus. Death from systemic poison. No general peritonitis.
202	E. F., Jan. 11	Dr. Leahy, Cambridge.	M.	21	Two	8 days	Pain in right iliac fossa; vomiting, tenderness, fever.	Distention; no especial tenderness; temp. 103.2°, pulse 120; right side dull.	None.	.....	....	Recovery	Next morning temperature and pulse normal.
203	J. R. P., Jan. 11	Dr. Davis, Somerville.	M.	19	None	11 days	Pain in right iliac fossa; slight fever; subsidence; renewed violence.	Tumor right flank and iliac fossa; tenderness; fever.	Drainage.	No	....	Recovery	Colon bacillus.
204	M. D., Jan. 13	Dr. Finnegan, Cambridge.	F.	13	None	6 days	Stomach-ache, vomiting, fever.	Distention; tenderness; extensive dulness; temp. 100°, pulse 156.	Advised immediately; died before it could be done.	.....	.....	Death	Moribund when entered hospital 12 hours later. General peritonitis.
205	J. V. K., Jan. 16	Dr. H. E. Marion, Brighton.	M.	12	.	3 days	Pain in bowels, distention tenderness, temp. 99°, pain intense and persistent	Tenderness over appendix.	Excision of appendix; closure of wound.	Yes	Normal; several fecal concretions.	Recovery	Appendicular colic-spasms could be seen during operation. Colon bacillus.
206	E. T., Jan. 20	Dr. J. N. Putnam, Chelsea.	F.	16	.....	1 week	Nausea and vomiting, chill, tenderness, slight pain; temp. 103, pulse 120.	Deep tumor in pelvis.	Drainage after two days' observation.	No	.....	Convalescing.	General peritoneal cavity opened; protected by gauze bariers.
207	E. M. D., Jan. 20	Dr Judkins, Lynn.	M.	38	None	24 hours	Pain in pit of stomach.	Groaning with pain; tenderness; distention; pulse 116, temp. 102°; no tumor.	Drainage.	Yes	Gangrenous; *not perforated*; filled with concretions.	Convalescing.	Free fluid sterile; appendix; colon bacillus. Prognosis very grave.

ADDITIONAL CASES—*Continued.*

No	Name.	Physician.	Sex.	Age	Previous attacks	Time before operation.	First symptoms.	Physical signs.	Operation.	Appendix removed.	Condition of appendix.	Result.	Remarks.
208	A. H., Jan. 25, 1894	Dr. Duff, Charlestown.	M.	19	Several	1 year	Pain in right iliac fossa, chills, temp. 101°, pulse 120; tenderness.	None at time of operation.	Excision; immediate closure of wound.	Yes	Normal; several concret'ns found.	Convalescing	Colon bacillus.
209	Dr. C. C. P., Jan. 26, 1894	Drs. Carleton, Foster, and Phippen, Salem.	M.	49	One	2 days	Pain in bowels gradually increasing, fever, distention, vomiting.	Fecal vomiting; great distention; temp. norm., pulse 84; paroxysmal pain, loud borborygmi.	Excision of appendix; drainage: ascending colon opened.	Yes	Gangrenous and perforated.	Death 18 hours	General peritonitis. Diagnosis: acute obobstruction, possibly appendicitis; colon bacillus in free fluid. Case hopeless by any method of treatment.
210	A. A., Jan. 29, 1894	Dr. Pilcher, Haverhill.	M.	64	One	10 days	Lameness in right iliac fossa, slight pain, fever.	Tumor at ileo-cæcal region; slight tenderness; temp. 100°, pulse 80.	None advised.	.....	.....	.....	Advised waiting for subsidence of tumor before operation. Malignant?
211	B. J. S., Dec. 21, 1893	Dr. O'Shea, East Boston.	M.	24	One	24 hours	Pain, vomiting, shock.	Rigid abdomen, temp. 102°, pulse 120, general and local tenderness.	By Dr. Newell, M. G. Hosp.; drainage; irrigation.	Yes	Gangrenous.	Death in 24 hours.	No visible perforation; septic extravasation and general peritonitis; bacillus coli communis.
212	G. B., Dec 22, 1893	Drs. Charles and McMillan, So. Hanover.	M.	19	One	3 weeks	Pain; vomiting.	Abscess deep in pelvis; acute mechanical obstruction, complete; violent peristalsis; patient *in extremis.*	Separation of adhesions, relief of obstruction, irrigation and drainage.	No	.....	Death in 12 hours.	Fecal stones in abscess; intestines distended and dark; omental band crossing small intestine; very rapid operation.
213	A. N. B., Dec. 16, 1893	Private hospital	M.	38	Two.	2 years	Pain in epigastrium, localized later in appendix.	Local tenderness; hernia from previous operation.	Excision.	Yes	Obliteration, except at top and base.	.....	Condition of appendix possibly not cause of pain. *Vid.* Case 152.