

8. Cholecystenterostomy has a limited but distinct field of application, i. e., obstruction jaundice from malignant disease or impermeable cicatricial common-duct stenosis.

## GALL-STONES.

OBSERVATIONS ON THEIR TREATMENT.\*

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During the past decade it has become generally recognized that the treatment, if not the diagnosis, of certain diseased conditions demands from the moment of their onset the joint attention of both physician and surgeon. Among such diseases may be mentioned appendicitis, pyelitis, and, in its various forms, cholelithiasis. In the first mentioned of these diseases surgical observation is considered of so much importance that the case is generally transferred to the surgeon, or he at least is summoned by the family physician to see the patient in consultation, as soon as a probable diagnosis of appendicitis has been made.

In cases of cholelithiasis the drift of opinion is in the same direction, though for manifest reasons the importance of early surgical observation is less urgent. In the diseases just mentioned, as in all others, it is but natural and right that the family physician should first be summoned, but he owes it to his patient as well as to his own reputation, that a surgeon should be called *early* in the course of the disease, for it is only thus that a just estimate of the progress of the case can be formed whether it be toward permanent recovery, toward operative interference or—what is most common in such cases—toward a temporary stage of recovery. It is not alone the immediate outcome of the attack which is to be considered, but an important observation can thus be made and a definite opinion formed on the nature and severity of the disease should similar attacks occur in the future.

The decision as to the propriety of operation or as to the most favorable moment for such interference is often difficult and requires the nicest judgment, which must generally be based upon a large experience. The personal equation, and perhaps the training of the practitioner, will very often influence him in the decision of this question. Many of us who see such cases in consultation with physicians can frequently tell before visiting the patient whether it be wise to at once order preparations to be made for operation. When summoned by certain physicians I often feel so certain of the probability that immediate operation will be needed that all necessary arrangements are made before leaving my office.

The remarks just made apply of course only to large medical centers. The country practitioner judges his case from the standpoint of both physician and surgeon and we surgeons from the cities are often surprised by the keenness of observation, by the excellence of the judgment, and by the broad grasp of the essential characteristics of the case which are so often shown by our colleagues in the country.

Turning now our attention more particularly to the subject of this paper, cholelithiasis, we are confronted with a number of questions of the greatest importance, some of which have yet to be solved. Among these may be mentioned: What period of time is necessary for the formation of a gall-stone? Much difference of opinion

exists on the subject, and the limits of the answer seem to be from a few days to many months. Another question is the influence of medical treatment on gall-stones. Prophylaxis is of the greatest importance, but the general consensus of opinion seems to be that gall-stones when once formed can not be materially influenced by internal medication. The character of the bile and the state of the lining membrane of the biliary passages may be favorably modified by medical and hygienic treatment, but a stone once formed can not be changed by any such treatment. If not too large, conditions for its passage into the intestine may be made more favorable, or the biliary passages may be brought into a condition where they do not resent the presence of a calculus, but more than this can not be expected from treatment by diet, drugs, or exercise.

It is now believed by many that so-called biliary colic is not produced so much by the passage through or impaction of a calculus in the bile passages as it is by inflammation of the gall-bladder and ducts. As long as the bile and the biliary passages remain normal a gall-stone will as a rule produce but few symptoms. It was formerly believed that gall-stones produced colic only when they began to move along toward the duodenum, thus causing an irritation of the ducts, and that reflexly vomiting and often fever would accompany the attack, but that jaundice and distension of the gall-bladder supervened only when the stone became impacted. We now know that this view is not entirely correct. It is true that a calculus is generally the cause of the inflammation in the bile passages—probably about 90 per cent. of the cases—but it is the inflammatory process and its complications rather than the stone which produce the severe symptoms. Distension of the gall-bladder will often take place when the cystic and common ducts are entirely free from stones, and not only will the usual symptoms which are generally attributed to the passage of a stone, such as colicky pain and vomiting, be thus produced, but also those of graver character, such as chills, fever, and jaundice, and death even may result without the impaction of a stone. It is sometimes forgotten that jaundice may thus be produced, and I find it to be a not uncommon error to suppose that the cause of jaundice occurring in an attack of cholelithiasis must be the downward passage of a calculus and its impaction in the common duct. In this connection let me narrate the following case:

CASE 1.—Mrs. A., aged 29 years, had been a vigorous girl, but since the age of 15 years had been subject to attacks of colicky pain in the abdomen several times a year. These attacks lasted from twelve to thirty-six hours, and were not often severe enough to confine the patient to bed. She had an attack of typhoid fever in the spring of 1898. On Feb. 19, 1899, the patient was seized with sharp pain over the region of the gall-bladder, and until February 26 she suffered from several severe attacks of pain, occurring daily, generally accompanied by vomiting. On account of the severity of the pain she had to be kept almost constantly under the influence of morphin. On February 25 slight jaundice appeared and her temperature rose to 101. Her physician, Dr. Bradshaw, wisely decided that operation was necessary. She was admitted to the Presbyterian Hospital on Feb. 26, 1899. Her temperature was 103, pulse 114 and she looked sick, the abdomen was moderately distended and there was tenderness over the region of the gall-bladder. She was distinctly jaundiced.

Operation was performed Feb. 26, 1899, under chloroform anesthesia. A 4-inch vertical incision was made through the right rectus muscle. The transverse colon was found adherent to the liver. On separating the adhesions a small, much thickened and adherent gall-bladder was found, about the size of a small walnut, there were also numerous adhesions about the cystic duct in which were felt two small calculi. The gall-bladder was opened, and through it the stones were extracted; they were three in number, with very sharp angles, and each

\*Presented to the Section on Surgery and Anatomy, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

one not much larger than a millet-seed. The opening into the gall-bladder was sutured to the parietal peritoneum. The discharge of bile was very profuse during the next two or three weeks and caused a severe irritation of the skin, which produced more or less vomiting, which was probably nervous in its origin, but which for a few days in the second week was quite serious. The bile ceased to flow on March 24—the twentieth day. Up to the present time the patient has remained in perfect health.

Another stumbling-block which is often found in the path toward a correct diagnosis is the idea that if a stone be impacted in the common duct, the result will be a distended gall-bladder. The physician will sometimes argue that a stone can not be lodged in the common duct, because the gall-bladder is not distended, and he, therefore, decides against operative interference because the gall-bladder is not palpable. With a recent impaction, such distension is not uncommon, but with impaction which has persisted for any length of time a shriveled, thickened gall-bladder is the rule rather than the exception. In the case, the narration of which follows, the gall-bladder, which was opened on the twentieth day after impaction, was found markedly distended.

CASE 2.—R. F., married, aged 33 years, had always been healthy, having had three children. There was no history of previous abdominal pain. About Sept. 20, 1898, she felt rather miserable and on October 6 she experienced some vague abdominal pain, located at first near the umbilicus and later in the right hypogastric region. There was no nausea nor vomiting. The bowels moved after a dose of salts; the pain continued to increase until the date of her admission to the hospital, October 8.

On admission her temperature was 103 and pulse 90. She was a fairly well-nourished woman. There was no jaundice. The edge of the liver was felt an inch and a half below the costal margin; the abdomen was somewhat tympanitic; there was considerable tenderness in the right hypochondriac region, and there was felt, extending from the costal margin as far down as the umbilicus, a mass which seemed as large as a large cocoanut. It was very tender, and moved slightly with respiration. October 9 and 10 there was but little change; temperature 100.5 to 101.5. The mass was slightly tender but there was no diminution in its size or tension.

Operation was performed October 11, under chloroform anesthesia. A four-inch vertical incision was made through the right rectus muscle; the liver edge extended two inches below the costal margin; the gall-bladder was much distended and very tense. The patient was turned on the right side, gauze pads being packed around the gall-bladder; a trocar was plunged into it and gave exit to about six ounces of fluid, which at first was thin and clear bile, and then it became thicker and finally consisted of pus and mucus. The finger inserted into the gall-bladder felt a stone, oval, non-faceted, about 1½ inches in length. It was extracted. The edge of the cut gall-bladder, whose wall was much thickened, was sutured with catgut to the parietal peritoneum and the remainder of the wound closed by suture. The patient made a good recovery. There was considerable discharge of bile, which, however, steadily diminished until November 2—22 days—when it ceased. The maximum temperature was 100.5 on the second and third days. The wound was entirely healed on November 8, on which day she was discharged from the hospital. She reported on May 20 that she had enjoyed perfect health since the operation.

In the next case which I will narrate the impaction had existed for four months and the gall-bladder was found shrunken and much thickened.

CASE 3.—R. H., aged 50 years, married, had enjoyed fair health, though she had occasionally suffered from attacks of so-called indigestion. In February, 1897, she suffered for ten days from a short attack of what was called biliary colic; she remained well for two weeks and then came another severe attack. Since then until May 24, 1897, when she was admitted to the hospital, she had suffered from similar attacks once or twice each week. The attacks generally lasted about two days, and began with severe pain over the region of the gall-bladder, with vomiting. This was followed by chills and sweating. From May 10 to 12 she was slightly jaundiced. During most of this time the urine had been of a dark mahogany color.

On admission, May 24, she was found to be a well-nourished

woman; the abdomen, which was very fat, was somewhat tympanitic, and just below the free border of the right ribs there was slight tenderness, but no resistance and no tumor could be felt.

Operation was performed May 26, under chloroform anesthesia. A four-inch oblique incision was made an inch below the right costal margin, and the omentum was found adherent to the under surface of the liver, which was small in size. Under its edge was felt the shrunken and much thickened gall-bladder, adherent to the neighboring structures. After considerable search, which was difficult on account of the adipose tissue and numerous adhesions, a calculus was felt at the junction of the common and cystic ducts and another in the common duct close to its entrance into the duodenum. As it was impossible to move either stone, the common duct was therefore hooked up with the left index finger and its wall incised and a three-faceted stone, the size of a hickory nut extracted. The other stone, somewhat smaller in size, was pushed through the same opening. The opening in the duct was closed by continuous catgut suture. A gauze drain was inserted and the remainder of the abdomen closed. The patient made a good recovery, there being a slight leakage of bile until June 27. She was discharged from the hospital July 2, and since that time has enjoyed good health.

In this connection it may be of interest to state that there are reported in this paper nine cases where cholecystotomy was done for stones impacted in the common duct. In six of these a thickened, contracted gall-bladder was found, in one a thickened but moderate-sized gall-bladder, and in two a thickened and distended gall-bladder containing pus.

CASE 4.—E. J., aged 52 years, married, for eight or ten years had been subject to bilious attacks consisting of pain in the upper right side of the abdomen and accompanied by vomiting; the attack lasted usually from one to three days; she had been jaundiced but once. The present illness began on May 8, 1898, when she was seized with severe paroxysmal pain below the right costal margin. There was no fever nor vomiting and no jaundice. On May 15 she had another attack of severe pain and vomited persistently for twenty-four hours. There was marked local tenderness in the right hypogastric region. On May 17 slight jaundice appeared.

She was admitted to the hospital on May 18. The abdomen was slightly distended; she was tender over the right hypogastric and lumbar regions; there was marked jaundice; temperature was 102; she was very drowsy.

Operation was performed May 19 under chloroform. A mass could be felt in the epigastric region just to the right of the vertebral column. A four-inch vertical incision was made through the right rectus muscle. The edge of the liver was hard, irregular and much engorged, and was slightly adherent to neighboring structures. The gall-bladder was not visible. There was felt, just to the right of the bodies of the vertebrae, a hard mass the size of a duck's egg, to which were firmly adherent omentum and intestines. The mass was at first supposed to be a carcinoma, but after separating adhesions it was found to be an enormous stone, occupying the entire length of the common duct, which had become enormously distended to contain such a large mass. It was with considerable difficulty that the duct could be exposed so that a three-inch incision could be made through its wall, which was very much thickened. The stone, however, was too large to emerge from such an opening. It was, therefore, broken into several pieces with the points of a strong pair of scissors and was extracted piecemeal. It was then found that the mass consisted of an amalgamation of a number of stones, the two largest being about the size of a walnut. These were so firmly agglutinated that considerable force was required to separate them. The mass was four inches in length and the maximum circumference was six inches. A large amount of bile escaped after the extraction of the stone. The cystic duct was shortened and was apparently empty, but the finger passed on toward the gall-bladder. At its neck was found a constriction, and beyond this in the bladder itself were found thirty or forty smaller stones, the largest being the size of a hickory nut. The gall-bladder was contracted around these stones and was much thickened. It was not opened. The opening in the common duct was partially sutured with catgut. To facilitate drainage a counter-opening was made in the right lumbar region, through which a strip of gauze was passed, as was also another which was led out through the abdominal opening. Considerable shock followed, but she soon rallied. Her mental state improved daily, though it was ten days before it became normal. There was a free discharge of bile until June 20—32 days—when it ceased. The maximum temperature was 101 on the second day. The

patient was discharged cured on June 30, and up to April, 1899, had remained in good health.

It should also be borne in mind that cholecystitis is generally infectious. Normal bile is sterile, but it is easily infected, and the proof is rapidly accumulating that in the majority of cases of cholecystitis the colon bacillus and often other pyogenic germs will be found in the gall-bladder, and that even before the secretion becomes purulent the general infection may be so severe as to seriously endanger the life of the patient. Case 1 illustrates this point.

That the gall-bladder and passages are easily infected is shown by their behavior in typhoid fever. In the chapter on this subject in Keen's valuable book, it is very clearly shown that the gall-bladder contains the typhoid bacillus in nearly every case of typhoid fever. Thus Chiari reports that in 22 cases of typhoid fever, he has found on bacteriologic examination the typhoid bacillus in 19. Westcott has tabulated 74 cases of typhoid infection of the gall-bladder which have accompanied or followed typhoid fever. That the bacillus penetrates even the gall-stones is shown by the result of a hundred examinations made by Fournier, in 38 of which the typhoid bacillus was found. In this connection the following case will be of interest:

CASE 5.—Mrs. Y., aged 26 years, of good family history, for several years had complained of occasional attacks of pain in the right hypochondrium, coming on with great severity at night and occasionally accompanied by vomiting. The pain soon subsided, and she was always up and about the next day. After her marriage, in April, 1894, the attacks entirely disappeared. She gave birth to a child on April 3, 1895, and her convalescence was normal; after she had been up and about for about two weeks she began to complain of chilly feelings, pain in the back and in the extremities, and sent for Dr. E. W. Hedges of Plainfield. These symptoms increased for six days, and were accompanied by a gradually rising temperature and pulse and the probable diagnosis of typhoid fever was made. There was no pain over the liver, but on May 25 a tumor of small size was palpable in the hepatic region. At the end of twenty-four hours it had increased considerably in size and was more tender on pressure. On May 29 I saw the patient, in consultation with Drs. A. H. Smith and Hedges. There was then a tumor in the right hypogastric region, which seemed about the size of a large coconut. There was some abdominal distension and some vomiting. There was also marked tenderness in the right side of the abdomen.

The symptoms pointed either to an abscess, the result of a perforated typhoid ulcer—the diagnosis of typhoid fever having already been made by Dr. Hedges—or to a cholecystitis. The temperature was 103.5, pulse 128. The patient appeared very ill. Immediate operation was advised, and accordingly was done in the evening, under chloroform anesthesia. A four-inch vertical incision was made to the right of the right rectus muscle. A much distended gall-bladder, exceedingly tense and slightly adherent to adjacent structures was found. The patient was turned on the right side, and the bladder surrounded by gauze compresses, a trocar and canula was plunged into the distended gall-bladder. Pale, green bile spurted out through the canula with such force that it struck the wall, six feet distant. The bladder was then opened by an incision, and a finger passed in felt as if it was entering a bag of fine gravel. Gall-stones which would have nearly filled a pint measure was scooped out, the largest being about the size of a large pea, and the smallest resembling caviar. It was roughly estimated that about 5000 stones had been removed. The gall-bladder was sutured to the parietal peritoneum and a tube inserted. The wound did well, but the temperature and pulse rose steadily until on June 7 it reached 107. The spleen was easily palpable and rose-colored spots appeared on the abdomen. At the end of the third week the fever began to decrease and reached normal at the end of the fourth week. On June 8 a stitch was removed, and a leakage of bile, which had still persisted, ceased on June 12. The patient made a good recovery from her typhoid fever and has remained perfectly well ever since.

The indications for surgical interference in cases of cholelithiasis have in the past few years become much more clearly defined, though the importance of operation

for the relief of these conditions is not so strongly impressed on the profession at large as I feel sure will be the case in the course of the next few years. The different views on this subject seem to be in very much the same stage as were those on appendicitis eight or ten years ago. It is, however, true that dilatory tactics in this latter disease are much more precarious than in the case of cholelithiasis, and the public at large have not as yet become educated to that degree that our patients insist on operation for the relief of gall-stones as they so often do for the removal of a diseased appendix. On account of this less dangerous character of gall-stone attacks, I doubt if the indications for operation will ever be so clearly defined or certainly as urgent as are those for appendicitis, and there will always be room for a considerable difference of opinion on this subject.

It is often a difficult question to decide when the physician should cease his efforts to cure by purely medicinal means and should transfer the patient to the surgeon for operative interference. A great change has taken place in our views on this subject within the past few years, and the modern physician is now apt to call upon the surgeon at a much earlier date than was the custom ten, yes, even five, years ago. The results of operation on the gall-passages have been so successful that many physicians, if not their patients, will decide that operation is preferable to a life that is constantly threatened by attacks of biliary colic or to a regimen which takes away much from the charm of living. Unfortunately, however, this view is not universal, perhaps through ignorance of the success of operations on the bile-passages or perhaps as the result of the physician's own experience with operations which have been done on some of his own patients, who have been transferred to the surgeon only as a last resort when they are thoroughly poisoned, when their kidneys have become overburdened, and when the mortality of operation must be very great. I fancy that many of the surgeons here present have with difficulty been able to conceal their indignation when after weeks, yes months, of so-called "watching," a patient, semicomatose with high fever, with urine loaded with albumin and lacking in any reparative or resisting power has been handed over to him for operation. He is often tempted to decline to interfere, but still he feels that it is his duty to make an attempt to save a life, even though the chance be but 1 in 10 instead of 9 in 10 as it should have been. The reason generally advanced for such delay is that the diagnosis is uncertain and that the case must be kept under observation until it can be ascertained with certainty that the fever, that the jaundice, that the sepsis are due to a gall-stone rather than to a catarrhal choledochitis. Is this right? Should not rather a laparotomy be advised, call it exploratory if you like, the danger of which, should the operation be fruitless, is very slight.

I speak strongly on this subject, for it has been my lot to receive several patients in this deplorable condition when there had been every opportunity weeks previously to give the patient a fair chance for recovery through operative interference. It is but lately that I saw such a case with a physician of wide experience; on my urging immediate operation he replied, "the result of the operation on the last patient I sent you was not so favorable as to encourage me to advise operative interference in this case." Let me narrate the history and allow you to judge whether it was not the inexcusable delay rather than the operation which caused the fatal result.

CASE 6.—J. B. had enjoyed fair health, with the exception of

so-called stomach attacks, until the beginning of 1895, two years before her present illness began. Since then, however, she had never been entirely well, being troubled every three months or so with an attack which gave the following symptoms: She would be seized with sudden cramp-like pain in the region of the liver and in the pit of the stomach; vomiting would follow, which was at times severe and continuous for a day or two. The pain continued generally for from twelve to fifteen hours. There had never been jaundice. The entire attack would generally continue for two to four days. Her last attack occurred on April 23, and from the onset seemed more severe than usual. April 25 she had a severe chill, followed by fever; on the 26th her symptoms were worse, and on the 27th I was called in consultation with her physician. Her temperature was then 103.5; she was very drowsy, and distinctly jaundiced. There was some resistance and tenderness over the region of the gall-bladder. I urged immediate operation, but it was decided to "watch" the patient for a day or two. This process of watching continued for five days longer, during which time the serious symptoms continued, the temperature being from 102 to 104, the mind being more or less obscured by the cholemic poisoning. The patient also vomited. On May 1 she was sent to me for operation. On admission to the Presbyterian Hospital she appeared semicomatose. Her temperature was 105, pulse 112. Her urine contained albumin and granular casts. Though the chances for recovery seemed few, it was decided to operate, and on the same day chloroform was administered and a four-inch transverse incision was made below the costal margin. The omentum was found adherent to the abdominal wall and to the edge of the liver. On separating the adhesions a shrunken, thickened gall-bladder was exposed. A stone was felt in the common duct near the duodenum. It was extracted through an incision in the wall of the duct, which was afterward closed by a catgut continuous suture. A gauze drain was led out through the abdominal wound. On May 2 the patient was stupid and drowsy, though her temperature remained below 100. On May 3 she passed but little urine, which was loaded with albumin and contained granular casts. Her temperature began to rise, and she died on May 5, from poisoning which was mainly uremic in origin.

In this connection let me briefly quote a few statistics:

Kehr performed 180 gall-bladder operations—including cholecystotomy, cholecystectomy, cystendesis, etc.—and lost only three patients. Out of 46 choledochotomies he lost 4 patients; out of 360 laparotomies done for disease of the biliary passages with all their complications he had 42 deaths—a mortality of 11.7 per cent.—and if out of this number are excluded those cases which had hopeless liver disease such as cancer, suppurative cholangitis, etc., twelve died—an operative mortality of only 3.8 per cent. Riedel, in 100 cases where he operated for cholecystitis—hydrops and empyema—lost none of his 98 cholecystotomies, the only two deaths being in cases where he had extirpated the gall-bladder. On the other hand, Naunyn reports 150 cases of disease of the biliary passages treated conservatively by medicinal treatment alone, with a mortality of 6.6 per cent., due to complications, exclusive of cancer. We must also remember that recovery in many of the 93.5 per cent. who did not die must have been temporary only, as the stone still remained.

Let us briefly consider a few of the conditions where operative interference must at least be discussed, and I will take the liberty of illustrating each variety with cases which have occurred in my own experience which will best perhaps indicate my beliefs and practice.

#### CHOLECYSTITIS.

This is most often due to the presence of a gall-stone, but whatever be its cause, the indications for treatment are very similar. Should the attack be acute and subside in a week or two without symptoms of sepsis or cholangitis, operation is not indicated. Should, however, the distension of the gall-bladder, with pain and some fever, persist for weeks the question of operative interference must be seriously considered. Of course, with

patience the attack may subside, but on the contrary grave complications may appear. The longer the duration of the inflammation, the greater will be the disposition to future attacks. This is especially true if the inflammation has been excited by a calculus, because the chances for its passage into the duodenum, after the attack has persisted for weeks, is but slight. With this double predisposition—an altered lining membrane and a stone as an irritant—the risk of future trouble is very great. Is it not wiser, then, to end the present attack and to remove the tendency to future attacks by means of an operation, the risk of which is so slight, provided it be done early in the course of the disease before serious structural alteration in the bile-passages and neighboring viscera has taken place, as under such conditions the operation may become one beset with great difficulties and attended by a serious risk? Whether interference is to be recommended at the end of three or in six weeks will depend on the severity of the attack and perhaps also on the social condition of the patient. Case 2 already reported illustrates my views in this connection, and I will take the liberty of reporting still another case in which a cholecystotomy was done on the fourteenth day of the attack.

CASE 7.—N. E., aged 34 years, married, until present illness had enjoyed fair health. On January 13 she felt chilly and had some general abdominal discomfort with considerable distension; she was confined to the house but did not go to bed until January 15, when she was seized with severe pain in the right hypochondriac region, radiating through toward the back. She vomited once; the pain and tenderness continued with probably some fever until January 23, when she entered the Presbyterian Hospital.

On examination she complained of slight tenderness, but said that her pain had been gradually disappearing; there was no jaundice and no vomiting and the stools were of good color. Below the right margin of the ribs was felt a soft fluctuating mass, moving with respiration, which did not seem adherent, and was but slightly tender. The liver edge was felt  $1\frac{1}{2}$  inches below the ribs. Her temperature remained between 99.5 and 101. Slight tenderness persisted, and the tumor seemed to increase in size.

On January 27 chloroform was administered. As the tumor seemed to be situated rather far externally there was some doubt as to the certainty of the diagnosis of distended gall-bladder, therefore a one-inch intramuscular incision was made in the right loin, an inch below the border of the ribs, and on exploring with the finger it was found that the tumor consisted of a distended gall-bladder. The wound was closed and a fresh incision four inches in length was made through the right rectus muscle; the gall-bladder was distended to the size of a large cocoanut and was very tense. It was carefully walled off by gauze compresses. The patient was turned on her right side, and through a trocar plunged into the gall-bladder eight to ten ounces of a greenish bile, followed by considerable mucus, flowed out. The opening in the gall-bladder was enlarged, and the finger, inserted, felt in the cystic duct at its neck a calculus the size of a hickory nut. It was extracted and exploration failed to find any other calculus. As the gall-bladder was moderately thickened and its lining membrane unhealthy, a cholecystotomy was done, the gall-bladder being sutured with catgut to the parietal perineum and the abdominal wound closed except for a space through which a strip of gauze, which had been inserted into the gall-bladder, emerged. The patient made a good recovery, bile ceasing to flow on the twentieth day, and the wound being completely closed on February 25, when she was discharged. She has remained perfectly well up to the present time.

It must be borne in mind that both these patients were working women for whom a long illness or a state of semi-invalidism was a very serious matter.

Should at any time in the course of such an attack symptoms of cholangitis, sepsis, empyema of the gall-bladder, pericholecystitis or abscess of the liver ensue, there can be no question as to the urgency of operative interference and the delay in such cases is unjustifiable. Let me illustrate this by two cases.

CASE 8.—Mrs. N., aged 59 years, for thirty years had been

subject to severe attacks of colicky pain in the abdomen. For the past two or three years these had been so frequent that the patient had been a semi-invalid. She had scarcely dared to go out, as any excitement or undue exertion was apt to precipitate an attack. They averaged about ten a month and would last from two to twenty-four hours. During the past year they became much more frequent and more severe, were generally accompanied by vomiting, and on several occasions the patient was jaundiced. Recently their duration had been from one to three weeks. During the past year the patient had been advised by her physician, Dr. Bradshaw, to undergo operation, but she was encouraged to decline any operative procedure, by the advice of a distinguished consultant who saw the patient on several occasions. On July 1 the patient had one of her severe attacks, but it was accompanied by fever, and later by septic symptoms. The fever continued until the time of the operation, in August. She vomited frequently and became very much emaciated; had a varying temperature, from 103 to 103.5. I first saw the patient on August 8. Her temperature was then 104, pulse 120. She was thoroughly septic, looked very weak, and seemed scarcely able to endure a serious operation. The abdomen was somewhat distended and boggy; there was some tenderness and resistance over the region of the gall-bladder, and also an indistinct mass could be felt. At the earnest solicitation of Dr. Bradshaw and myself, the patient consented to operation.

Chloroform was administered Aug. 10, 1898. A four-inch vertical incision was made through the right rectus muscle; the omentum, edge of the liver and colon were found adherent. The gall-bladder was much thickened around two stones the size of a hickory nut. Another stone of about the same size was felt in the common duct close to the head of the pancreas; this was raised up by a finger passed into the lesser omentum and the stone was extracted through a vertical incision into the wall of the duct. This opening in this was sutured with catgut. The opening into the gall-bladder was not sutured, but was surrounded with strips of gauze, which emerged through the abdominal opening. Considering the patient's condition there was but moderate shock. She made a slow recovery. There was a moderate discharge of bile for fifteen days, when it ceased. Up to the present time the patient has remained in good health.

#### REPEATED GALL-STONE COLIC.

It is in cases of this kind that there must always be allowed a certain latitude of opinion regarding the indications for operation. In the first attack or even in the second, interference is not often indicated except complications arise, such as infective cholecystitis, cholangitis, liver abscess, etc. When, however, attack follows attack and the patient's health, or at least happiness, becomes undermined by their frequency, then operative interference must be seriously considered. The social standing of the patient may have some bearing in the treatment. If it be such that a visit to Carlsbad or that a life surrounded by hygienic safeguards can be pursued, the indications for operation are perhaps not so strong, for by such means the frequency of the attacks can be somewhat controlled and the risk of grave complications lessened. Among the "workers," however, no such precautions are possible, and the expense, from a financial point of view, the pain of repeated attacks, and the danger of serious complications must be weighed in the balance against a mortality of perhaps 1 per cent. which attends operation for the relief of this condition, when uncomplicated by serious liver disease.

There are several conditions which are of influence in deciding for or against operation. If calculi appear in the stools, and especially if they are friable, there is a better chance for spontaneous cure than in cases where the stone is locked up in the bile passages. If it does not emerge, it is probably of large size, and this is still more probable if jaundice be absent. Once trouble in the gall-passages has been excited by the irritation of such a stone or indeed by a collection of smaller stones, the chance of recurrence of the attack is great, and the safer plan of procedure is to remove the cause rather than run the risk of one of the many possible complica-

tions which occur and end so fatally in about 6 per cent. of such cases.

It is probable that a stone greater in diameter than 2.5 cm. can not emerge through the papilla into the duodenum, and the large stones which eventually pass out of the rectum have invariably entered the intestinal canal by ulceration out of the gall-bladder into the stomach or intestine. If the ulceration goes straight, the outcome is a fortunate one, but not infrequently the stomach and intestine will not arrange themselves for a safe and direct passage of the stone from the bile-tracts into their caliber, and in such cases an intraperitoneal abscess will result or a general peritonitis be started. The following case is an example of a fortunate outcome from such an ulceration stump.

CASE 9.—I. S., aged 34 years, married, was admitted to hospital Oct. 3, 1897. Until three years ago the patient had been a healthy woman, with the exception of a severe illness eighteen years before, which had resulted in loss of sight. In 1894 she was laid up in bed for three weeks with fever, severe pain in the right hypochondriac region, vomiting and abdominal distension, and ever since she has had constant tenderness below the free border of the right ribs. She has also had several mild attacks similar to the first, each one accompanied by severe pain and jaundice. When she turns on her left side she has a sensation as if a heavy body in her abdomen dropped toward her left loin. The last attack began in the end of August, accompanied by much pain, marked jaundice and some fever.

She was admitted to the Presbyterian Hospital October 3. She complained of considerable pain in the right hypochondriac region, where there was also marked tenderness, which was greatest in the midaxillary line, just below the border of the ribs. In the region of the gall-bladder there was considerable resistance, and an indistinct mass could be felt. The patient was most comfortable when lying on the right side; her tongue was heavily coated but she did not vomit. Her highest temperature was 99; pulse 88.

Operation was performed October 13 under chloroform anesthesia. A four-inch vertical incision was made through the right rectus muscle. In the region of the gall-bladder was felt a hard mass, which was found after separation of numerous adhesions to consist of adherent stomach, gall-bladder and omentum. On separating the latter the stomach and gall-bladder were found firmly fastened together over a considerable area. On separating these two structures, an opening in the stomach wall, circular in shape and about  $1\frac{1}{2}$  inches in diameter, was found communicating with a smaller opening in the wall of the gall-bladder. This latter organ was small and shrunken, not larger than a walnut, with wall very much thickened. It was excised, the cystic duct being ligated with catgut. The gastric perforation was found on the anterior wall of the stomach near the pylorus, the edges were trimmed and sutured.

It must be remembered, however, that it is not always the large stones which produce the severest symptoms. The case first reported developed the most serious symptoms and yet the cause was three minute calculi, barely larger than the head of a pin. It should also be borne in mind that the irritation of a calculus is the most common exciting cause of cancer of the liver and bile passages.

An argument which is at times used against operation in these cases is that if you remove the offending calculi it is probable that new ones will form and excite further trouble. A similar argument could be employed against almost any conservative operation in surgery and does not seem worthy of serious attention. Even if calculi should form, they can be easily removed by a simple operation, which should be extraperitoneal and free from risk.

#### JAUNDICE WHICH PERSISTS.

This does not always mean an impaction of a stone. It will often arise from a cholecystitis. In a case of prolonged jaundice it is often difficult to determine the proper moment for operation. In the past and, even though to a less extent, in the present the tendency



has been and is to delay operation too long in these cases. A reaction, however, from this dilatory and often unjustifiable treatment is beginning the show itself, and, as in many other progressive and beneficial movements, the pendulum may swing in the next few years too far in the other direction, but it still needs a vigorous propulsion, in this country at least, before it reaches an even medium position.

The main reasons for delay in the past have been due to doubt as to the following questions: Is the jaundice due to a stone or is it catarrhal choledochitis? Will not the stone be forced out of the bile-passages into the intestine by nature? Will it not drop back into the gall-bladder, where it may remain innocuous for years? In regard to the first of these reasons for doubt it may be granted that in some patients the severe characteristic pain which is caused by the passage and impaction of a biliary calculus may be absent. An anticipatory hypodermic of morphin may have cut short the pain before special attention was attracted to its severity, or the personal characteristics of the patient may have been such that the pain was not regarded as of so much importance as the severe vomiting followed by jaundice which may have been the most prominent symptoms. The following quotation is from the recent excellent address of Mayo Robson in "The Dangers of Delay:—" "I think the blame rather lies in the traditions of the past that we have not yet completely shaken off, in the reminiscences of the old days when an operation was a truly dreadful business to be avoided if possible, and possibly it lies a little in that *laissez faire* policy of the old school, for there are as yet a good number of Micawbers in the world and we know that they are sometimes encouraged by the unexpected turning up.

It may be only after the expiration of two or three weeks, when the symptoms do not abate, that the probability of a catarrhal jaundice can be cast aside. When at the expiration of this time the local tenderness, the pain, the vomiting and the jaundice still persist, and especially if the fever assumes a septic course, the probability of a stone being the cause of the attack becomes very great. The presence or absence of a palpable tumor would be of the greatest importance, but unfortunately, this is frequently absent, and the longer the attack has persisted the more likely is such a tumor to be wanting, for, as has already been stated, if the impaction in the common duct has existed for a length of time, a shrunken gall-bladder is found more often than is one distended with bile. The absence of such distension is an argument which in my experience is often used against the need of operative interference. As an illustration of what I have said, let me narrate the following case which I saw on the eighteenth day of the attack and where I advised operation, which, however, was declined. The patient died on the twenty-fifth day.

CASE 10.—B. F., aged 37 years, the mother of several children, gave a history of occasional attacks of pain of a colicky nature in the upper part of the abdomen. She had, however, enjoyed moderately good health until the morning of Feb. 19, 1897, when she was attacked with cramp-like epigastric pain and vomiting, which lasted until the afternoon, when she was given a hypodermic injection of morphin. On February 20 slight jaundice appeared, which gradually deepened. From the 20th to the 28th the patient had an average temperature in the morning of 99.5, and in the evening of 101. There was great nausea and some vomiting. From March 1 to 8 the temperature varied between 99.5 in the morning and 102.5 in the afternoon. The other symptoms continued as before, except that she frequently felt chilly. On March 9 I saw the patient, with Dr. H. Her temperature was then 103.5, pulse 110; she was markedly jaundiced; her tongue was heavily coated and dry; she vomited occasionally; her abdomen was moderately distended, and just

to the right of the median line in the epigastric region there was marked tenderness on pressure and some muscular resistance. I made the diagnosis of stone impacted in the common duct, and advised immediate operation. It was, however, not performed. From March 9 to 15 I learned that the temperature was somewhat higher. The patient gradually became more and more drowsy and her urine became scant and was loaded with albumin. I was asked to see her again on March 16. It was then almost impossible to arouse her. The daily amount of urine was only 13 ounces, and it was full of casts. Her pulse was 130. The case seemed hopeless from any point of view, and I declined to operate. She died on the following day, and at the autopsy, on which the family insisted, there was found in the common duct a stone the size of a pigeon's egg. The kidneys were in a condition of advanced interstitial nephritis.

I may add that the physician in attendance would not even acknowledge the probability of the attack being due to a stone, the absence of preliminary colic and the absence of a dilated bladder being sufficient in his mind to exclude the impacted stone. It is easy to criticise, but did not the long existence of fever, jaundice, and tenderness at least suggest the probability of stone and indicate operation? The argument that is often advanced against operative interference in such cases by internal physicians is that they have often seen such patients recover without operation and that they will wait for further evidence of stone. Delay in such a case seems to me to be unjustifiable. Are its dangers not much greater than are those of a laparotomy? Even if there be a chance that the symptoms are due to catarrhal jaundice are we not justified in recommending an operation, which, in case it is fruitless, exposes the patient to a very small risk and, in case a stone is found, delivers him from the danger of grave complications which would have almost certainly brought about a fatal termination?

The main object of this paper has been not so much to place on record the cases here reported as to advocate timely operative interference in cases of cholelithiasis; in the acute cases, to act before the operative mortality has been raised from 1 to 50 per cent., on account of complications arising because of delay; in the chronic and relapsing cases to prevent the patient from drifting into a life of semi-invalidism or the establishment of grave and oftentimes incurable liver disease. Such timely interference must be based upon correct diagnosis. Unfortunately, in earlier and milder stages of the disease, this is often obscured by symptoms attributed to dyspepsia. These patients, generally in early adult life, will suffer from occasional attacks of cramp-like epigastric pain, with perhaps a tendency to vomit. Such attacks at first last but an hour or two, and occur but a few times in the year. They are supposed to be due to indiscretions in diet. As the patient grows older, they become more severe and more frequent. A hypodermic injection of morphin may be occasionally needed. Abdominal distension is common, and the vomiting may become pronounced. The pain will last a day or two, and often there is local tenderness in the right epigastric region. Such is the history often given by these patients, but it frequently can be elicited only after careful questioning. So far between attacks they feel well. Later come the more grave and typical symptoms, and it is often only when these occur that the diagnosis is made, and the propriety of operative interference is discussed.

I have refrained from discussing the technic to be employed in these operations, as this will be ably discussed in other papers to be read before you. I will only say that my preference is, as a rule, for a cholecystotomy rather than for a cholecystectomy or cholecys-

tendensis—ideal cholecystotomy. In the 26 cases in which this operation has been done—exclusive of cancer—not a patient has ever been left with a permanent fistula. The average time of closure of these fistulae has been twenty-five days, the longest having been forty-two days and the shortest eleven days. Nine cases of choledochotomy are now reported. Two of these have died, but in both those patients it may be fairly stated, I think, that the cause of death was due to the grave complications caused by delay, rather than to the operation itself. In the seven cases that survived, the duct was sutured in all, though not always completely. In three of these there was no leakage. In four the leakage ceased in an average of twenty-four and one-half days, the longest time having been thirty-two days and the shortest fifteen days.

#### DISCUSSION ON PAPERS OF DRs. RANSOHOFF AND M'COSIL.

DR. WALKER, Detroit, Mich.—There is one point to which I wish to call your attention, and that is the suturing of the gall-bladder in cholecystostomy. I find that there is considerable leakage that remains for two months; I have seen them more than that; with the exception of septic gall-bladders, persistent empyema, I see no necessity for leaving drainage. It bothered me considerably in my first operations—the incision and the leakage that occurred—and in late operations, I close the gall-bladder and let it fall back into the abdomen. I bring this point out, and that it can be easily sutured by means of the purse-string suture. I have had no trouble.

DR. A. D. BEVAN, Chicago—I would like to make just one statement in regard to Dr. Ransohoff's opening statement, to the effect that little is known of the etiology of gall-stones. I think a great deal is known. I believe that gall-stones are mycotic in origin. This has been demonstrated not only clinically, but experimentally. Clinically, I always look for a history of typhoid or an intestinal infection, and in a number of cases I have found typhoid bacilli in the gall-bladder in these operations. Experimentally, in French laboratories (Gilbert and Houriner), gall-stones have been made in living animals by introducing into the gall-bladder pure cultures of typhoid and colon bacilli. I do not know of any concretion in the body about which so much is known in regard to its etiology as gall-stones.

There is another point to which I would like to call attention and that is surgery of the common duct. The incision which I reported at this Section of the last meeting, I have since employed in ten or twelve cases, and have found it to be of so much value that I would like again to emphasize its importance. Whenever we undertake a gall-stone case, it is impossible to say whether the case will be simple or whether a very extensive amount of adhesions will be met, whether we will have simply to deal with the gall-bladder or the duct. On that account, it is desirable to plan an incision which can be so enlarged as to meet any indication that might arise. The S-shaped incision I developed and reported at the last meeting. (Illustrating diagrammatically). We will allow this to represent the costal starch; here the umbilicus and the inguinal or pubic ligaments. It is planned in this way for ordinary work as an exploratory laparotomy. A straight incision is made through the outer border of the rectus muscle. If adhesions are met with, if a common-duct stone is found and a wider field is required, the incision is enlarged, or, if it is a simple cholecystostomy, the incision is represented as a straight one. If it is a complicated one, when the stone must be removed from the common duct, the incision is enlarged in this way; an addition is made above and below, so as to make an S-shaped incision. I did quite a good deal of work in this line, and it is surprising to find how extensive a field of operation is made by this incision without any tension, when this line of incision is opened by retractors, and there is a wide field in the gall-bladder, and the common ducts are all explored. I would like to emphasize the value of this, and that we are not apt to have hernia following an incision of this kind. The extended portions of the incisions run parallel to the nerve-supply of the abdominal wall, and I have found in cases where I have employed it that there is considerable contraction following the incision. It is carried up well against the costal arch, and I have had no hernia in this line

of work, whereas, when I used the outer border of the rectus—the long, straight, or rectangular—I had three hernias follow.

DR. ROBERT MORRIS, New York City—For some time I have been closing gall-bladders more than previously, and one method of disposing of the gall-bladder in a certain proportion of selected cases, which I have recently employed, will be of service. This represents the gall-bladder (illustrating); this the sutured incision in the fundus—a puckering-string suture is thus carried around the gall-bladder; the gall-bladder is inverted, so that the fundus impinges on the cystic duct thus (indicating diagrammatically). The puckering string has inverted the fundus so that it practically obliterates the gall-bladder. In a certain proportion of cases in which the gall-bladder is freed from adhesions, this method is applicable.

DR. J. B. MURPHY, Chicago—When will we operate? What cases are operative cases? I was pleased to notice in Dr. McCosh's paper that he urged the early operation, and was also pleased to note the tenor of his paper, that the danger was not from cholelithiasis, but from the pathologic conditions induced by the presence of calculi. Therefore if the danger is not from the disease itself, from the presence of calculi, but from the pathologic conditions produced by them, the sooner they are removed, after they have commenced to cause the symptoms, the more safely they may be removed, as the pathologic changes will be less.

The cases in which there is immediate danger, and which demand immediate operation, may be divided into two grand classes: 1, primary attacks with a virulent or malignant infection of the gall-bladder, and, 2, acute obstruction and infection of the common duct. These cases are, fortunately, not common, but they are sufficiently dangerous to demand immediate operation. Can the diagnosis of these conditions be made? Yes! Can it be made with exactness? Yes! With sufficient precision to justify, even demand, an operation that, in itself, involves but a small element of danger. In these cases the attack is sudden pain, accompanied by high temperature, associated with vomiting; if the cystic duct is obstructed there will be great sensitiveness, but less spasmodic pain; if the common duct be involved, no sensitiveness but great pain and jaundice are present. The patient usually has symptoms of severe septic intoxication. These symptoms mean certain pathologic changes? If these symptoms are referable to the gall-bladder, there is sepsis and obstruction of the cystic duct, and, as a result, increased secretion and retention under pressure, so that both biotic and toxic effects of the microphytes are at the greatest advantage to produce gangrene and perforation of the gall-bladder. How long a time does this require? A complete gangrene of the gall-bladder may occur as early as three days from date of onset. I have observed two cases in which there was gangrene of the gall-bladder within three days, and both in primary attacks.

The second class of cases, obstruction of the common duct, associated with high temperature, the onset of pain followed early by high temperature, means what? Obstruction with jaundice, obstruction of the common duct with infectious involvement of the lymphatics, of cholanges, chills and fever, dry tongue and delirium, the patient rapidly succumbing to the toxic effects of infection. This pathologic condition demands the immediate relief of the tension under which this infected material is retained—the drainage of the gall-bladder: unless it be the gangrenous type of infection or long involvement of the cholanges there will always be a rapid cessation of the toxic effect on relief of the tension. Therefore, the indication is not to perform choledochotomy, but to simply relieve the tension of the bile-ducts by the shortest and simplest operation, cholecystostomy, as any prolonged operation under these circumstances would prove fatal.

DR. E. D. FERGUSON, Troy, N. Y.—Apropos of one of the points discussed, as to whether we are to close the incision in the gall-bladder at the time of the operation or leave it as a cholecystostomy, there is one principle that has not been referred to, i. e., as to whether the presence of the gall-stone itself is the special pathologic condition for which we operate. The fact is we usually operate for gall-stones, and it is desirable to be sure that we get rid of them. There is no way in which we can be absolutely sure that the gall-passages are clear. We may take out several—a great many and yet leave one or more behind. This is brought more forcibly to my mind by one case in which I expected to find a gall-stone. I was confident that there was one and yet I could not find it. I hunted the ducts thoroughly: I explored the gall-bladder internally and externally and while I think I have a fairly good sense of touch in my fingers, yet I could find no gall-stone. I did a cholecystostomy and two or three days after a large gall-stone appeared at the opening. I do not believe that the annoyances to the patient connected with cholecystostomy are such as to cause us to close the

wound at once, with a possibility that we may leave gall-stones within the gall-bladder.

DR. THOMAS, Pittsburg, Pa.—I do not wish to criticize the papers, particularly as they were written by men of vast experience, but there is only one point and that is as to the first speaker referring disparagingly to the ideal method. It appears to me that if the operator has the courage of his convictions and is satisfied that the gall-bladder is empty and that the ducts are free, I do not see any objections to closing the gall-bladder. I have a specimen from a case of the ideal operation on the gall-bladder. The patient died of intercurrent disease seventeen days after the operation. I succeeded in getting a post-mortem examination, and removed the gall-bladder. If you are satisfied that the gall-bladder is empty, that the ducts are empty, close the gall-bladder and drop it in. The method in this case was with one running-stitch, first taking up all the tissues excepting the mucous membrane, and then going back with a Lembert suture and dropping it in.

DR. M. F. PORTER, Fort Wayne, Ind.—There are two objections to closing the gall-bladder immediately, and these apply also to immediate closure of incisions made in the common duct. In the first place, permanent or long-continued drainage is oftentimes necessary to cure a case after a stone is removed. There is oftentimes left cholangioitis, which is quite sufficient to completely obstruct the duct, and this obstruction can be cured only by permanent drainage, or drainage, if you please, that is kept up for a considerable length of time. Again, there are cases that occur in which the plugging of the common duct is due to this cholangioitis, with or without the formation of putty-like mucus, which cases recur after the original operation of cholecystostomy, and which are relieved by a second cholecystostomy, and then again recur and die. Such cases require permanent drainage. Another objection to the ideal operation is that one can never be certain that the ducts are patulous. If there is a man who can tell absolutely, positively, when the common duct is entirely free from disease, I want to know who he is, and I want to go to him and have him teach me how to do it.

DR. FRANK WARNER, Columbus, Ohio—If we undertake the operation of cutting into the gall-bladder early, we are going to have occasion to revise our statistics of the mortality of the operation. How many of you hesitate when anything is the trouble, or suspected of being the trouble, with the appendix, to go in at once? What is the case when there is any trouble about the gall-bladder? You hesitate and hesitate until there has been an opportunity to add a very great deal to the risks which we run, not from the process itself, but from the results which are called for by the operation. There is one thing that I want to specifically condemn here, and that is the administration of olive-oil, in the hope that you are going to get rid of any very considerable obstruction around the gall-ducts. So far as I am personally concerned, I feel that you might as well pour that oil on the outside and rub it over as to put it on the inside. It is only a relic of barbarism, only a relic of ignorance that has been handed down to us from year to year by men—and some are refusing or hesitating to condemn this. But while my experience has been very small, as compared with that of many, yet it has been sufficient for me to stamp an utter disapproval on any such procedure. With that limited experience, I believe that we will do better to enter the gall-duct earlier, not wait, not make so many tentative plans to get rid of the obstruction, but enter earlier, and we will meet with much better success, and will have an opportunity to revise our statistics of the death-rates and make the operation a more favorable one to undertake.

DR. W. J. RODMAN, Philadelphia—I rise to ask the several essayists, when they close the discussion, and others who may speak on the subject, if they will state whether they have seen gall-stones in the full-blooded negro. In an analysis of 106 cases operated on by a surgeon in Louisville, only one was found in a full-blooded negro. I think some of the Southern surgeons who are here have seen gall-stones, and I would thank any one who goes into the discussion to answer that.

DR. J. E. MOORE, Minneapolis, Minn.—My own experience teaches me that there are unmistakable cases of cholecystitis in which there are no gall-stones, and some of these cases require operations, particularly those complicating typhoid fever. Right along this line I would follow Dr. Warner and urge the necessity of exploratory operations in these cases, just as we are always ready to make them in cases of appendicitis. Why should we hesitate to go into this region any more than into any other region? I have been in the habit of doing this operation, and have never had an occasion to regret it, and would recommend to you exploratory incision in these cases. I have been very agreeably surprised in the instances in which my colleagues and I have operated to find our diagnosis corroborated as soon as we got into the abdominal cavity.

DR. H. O. MARCY, Boston—Since I am on record as the first to have removed a gall-stone from the common duct, having sutured the same as well as the gall-bladder, and closed the abdominal wound without drainage, it is very natural that I should advise this method of procedure, but we can not emphasize too greatly the importance of absolute knowledge that the canal into the intestine is unobstructed before we close the opening made for the removal of the calculus. If we may be certain that the biliary passages are unobstructed, after the proper suturing of the same, I can not doubt that the primary closure of the wounds will make the operation safer than by leaving an external fistulous opening. Conditions will not seldom be met with where this ideal operation can not be safely performed, and then we must use drainage.

In gall-bladder operations I consider the modified S-incision, for the reasons advocated, an important aid. Until recently I have divided the abdominal wall in a line parallel to the lower rib, which certainly permits easier access to the gall-bladder than an incision parallel to the rectus muscle. The modified S-incision is a happy medium between the two, possessing the advantages of both. There can be no question that operative measures for the relief of biliary obstruction are not alone justifiable, but that to-day we are in a position to define the conditions demanding the operation and emphasizing the importance of surgical intervention at a very much earlier period than at first seemed warranted.

DR. W. E. B. DAVIS, Birmingham, Ala.—In answer to Dr. Rodman's question, I had one case of obstruction of the gall-bladder—the common duct—where the stone was not found, in a pure negro, 70 years of age.

DR. JOSEPH RANSOHOFF, Cincinnati, Ohio—I want, in the first place, to correct Dr. Moore in his idea that I insisted on the fact that gall-stones are the only things that we are to operate for. I have a number of cases in which gall-stones were not found, and I do not think I operated needlessly.

In reference to the etiology of gall-stones, as spoken of by Dr. Bevan, I am not ignorant of the fact that gall-stones have been produced by the use of bacteria injected into the gall-bladder, nor occasionally to form around a foreign body, but for the most part, they have not been found about a foreign body. I contend that we know very little, except after an infective process like typhoid fever, but of the time in which they form—the period—I think nothing is known, and that is an important point.

In regard to the ingenious suggestion of Dr. Morris, to close the gall-bladder by inverting it, the speaker believes that it originated more in the study than at the operating-table. When the gall-bladder is small and contracted, inverting it is entirely unfeasible. Even when the gall-bladder is of normal size its upper wall is so attached to the under surface of the liver that without dissecting it therefrom, inversion of the fundus can not be done. It is a thoroughly feasible procedure in enlarged gall-bladders, but these gall-bladders are the ones that ought not to be closed, but drained, and therefore, this suggestion of Dr. Morris does not seem to me a good one.

My main reason for objecting to ideal cholecystotomy is that I have had one patient die from it. Furthermore, we do not know whether the common duct is open or not. In the vast majority of cases you can not pass a probe through into the intestinal canal. Nor do we know absolutely that all the stones have been removed. In the vast majority of cases of operations for the removal of the gall-stones, you see nothing of bile; there is no obstruction of the duct after the first dressing, then everything is flooded with bile. The backward pressure of the bile, when the swelling of the mucosa of the cystic duct subsides after operation, is often enormous; should the sutures then fail to hold, a catastrophe is imminent.

One other thing, in regard to Dr. Murphy's statement that all cases should be operated on at once when we have obstruction of the common duct. The man with the largest experience in gall-stone surgery, Kehr, with a record of 409 cases and 32 common-duct stones, says, in acute common-duct obstructions, do not operate, but wait.

#### Contagiousness of Acute Otitis of the Middle Ear.—

Lermoyez reports that in seven out of twenty-one cases in his experience, a companion, a sister or maid, also became affected with an otitis of the same character as the first case, within two to seven days, or two weeks in one case, without a cold or any appreciable cause except contagion from intimate contact. Another argument in favor of his assumption is the frequency of otitis in general hospitals and its rarity in private practice. He therefore urges isolation of all cases of acute otitis, and warns persons with la grippe or any other infection to keep away from them.—*Presse Med.*, August 12.