Most of the cases have been of some weeks' or some months' standing when they were seen. The affection seemed at first so trivial that it appeared to the patients not worth attending to, and it was only when it became apparent that it was not wearing off, but was getting progressively worse, that they applied for treatment.

The affection seems to show little or no tendency toward spontaneous improvement: in fact, the disposition seems to be to an increase of pain and sensitiveness over what followed the injury, and simple therapeutic measures seem of no avail.

One or two specimen cases may be of interest.

Miss A., forty years old, an artist, consulted the writer in the spring of 1889, with regard to a chronic sprain of the large phalangeal joint of the left middle finger. Six weeks previously she had wrenched the finger in opening a bureau drawer, and it had been lame for some time, and for three or four weeks it had been getting progressively worse. When seen by the writer the joint was swollen, hot and tender; no motion was allowed, and at night the finger was very painful. The patient was very nervous, and said that the previous spring she had had nervous prostration. For two weeks the finger was kept upon a splint and painted daily with iodine. This produced a very slight improvement, but not much. The splint was then removed for a few minutes at night and the finger soaked in hot water. This was followed by massage; and after a treatment extending over some six weeks, the usefulness of the finger was practically restored. The recovery has been permanent.

Jennie P., a mill hand, twenty-one years old, apparently well, although nervous, applied for treatment at the City Hospital in August, for a synovitis of the metacarpophalangeal joint of the thumb. It had been injured in November, eight months previously, and in May, six months after injury, it had become so bad that she gave up work and tried various remedies. At the time when she was seen the joint was swollen and very sensitive to pressure and manipulation. The thumb was immobilized for a month without any apparent effect and then the splint was gradually discontinued and massage begun, and in a month or six weeks more the use of the thumb was fully restored.

These cases will serve to recall the kind of case of which I speak, and to call attention to the extreme slowness of the recovery even under the most favorable conditions.

There is but little to be said with regard to the pathology of the affection, at first it appears to be a simple acute synovitis due to injury, but it soon assumes the type of a chronic synovitis and probably passes on into an arthritis in severe cases. That is, the bone becomes affected as well as the synovial membrane, causing thickening and distortion of the affected joint. It would seem that in cases where the stiffness had been of some months' standing, adhesions would have formed which would lead to obliteration of the joint, but even in such obstinate cases as the one last related, the restoration of perfect mobility seems possible in a large proportion of cases.

Rheumatism and rheumatoid arthritis undoubtedly have a part in keeping up certain cases of chronic finger sprains, but beyond this it is not possible to speak definitely of the etiology. Certain cases of spontaneous synovitis of the finger-joints clearly belong to this class.

The treatment which after much experimentation has seemed to be the best, is complete immobilization of the affected joint for a period of two to four weeks, followed by a gradual discontinuance of the splint and the use of massage and hot water.

In general the tin finger-splint has been used and the affected joint freely painted with iodine during the time of its immobility. In private practice it has been more comfortable to apply the copper-wire splint, which is done by winding the finger in sheet wadding and then winding a spiral of thin copper wire about it with one or two lengths running from the tip to the base of the finger. This gives complete and comfortable immobility, but requires constant adjustment and is liable to interfere with the circulation. After the finger has been immobilized for such time as seems best according to the severity of the case, the use of hot-water soaking is begun along with massage every second day. Gradually the splint is discontinued without much regard to the pain caused, and the patient encouraged to use the finger.

Two points have appeared to the writer to be established: one is that simple fixation, however prolonged, is not enough to cure the affection, and secondly, experience in the more severe cases has shown that the immediate use of massage is not tolerated. Consequently a period of immobilization must be insisted upon which at the time seems to be accomplishing very little, but which probably is an essential part of the treatment. And at the close of this period of fixation there is often but little improvement to be noted, and pain on movement seems perhaps as severe as in the first place. But this must be disregarded and massage begun.

Salicylate of soda three times a day, or oftener, in ten-grain doses, has formed part of the writer's treatment, because in some cases there was evidently a rheumatic element, and because in the majority of cases it was found to control the pain and seemed to hasten the convalescence. The general condition often needs attention.

Once more may I call your attention to the fact that this affection does not tend towards spontaneous recovery, that its progress is in any event lamentably slow, and that it is often associated with neurasthenia.

A CASE OF BILIARY CALCULUS; CHOLECYSTOTOMY; DUODENAL FISTULA; RECOVERY.¹

BY J. F. A. ADAMS, M.D., PITTSFIELD, MASS.

Mr. B., aged thirty-eight, married, manufacturer, residing at Bridgeport, Conn., consulted me November 22, 1890, and gave the following history:

For ten years past he has suffered from attacks of severe abdominal pain, at intervals varying from two or three weeks to two or three months. The first of these attacks was followed by local peritonitis, since which he has had four other attacks of peritonitis following the pain, which has always been in the region of the gall-bladder.

Two years ago, after an unusually severe attack, he had jaundice for the first time, accompanied with nausea and itching. In three or four weeks the skin resumed

¹ Read at the quarterly meeting of the Berkshire District Medical Society, July 29, 1891.

its normal color. Since then the attacks of pain have not usually been followed by jaundice.

In August, 1890, while in England on business, he had a severe attack of pain, followed by local peritonitis, but not by jaundice, except a slight yellow tinge of the conjunctiva. He returned home immediately after and suffered on the voyage from constant pain and tenderness. After reaching home he was confined to his bed for ten days with a temperature of 101° to 103° . Since that time the attacks of pain have increased in severity, and have occurred about once in two weeks, relieved only by hypodermic injections of morphia. Jaundice also appeared in September, and has since been persistent and very deep in color. Since jaundice appeared each attack has been accompanied with nausea, which had not previously occurred.

There has been constant tenderness over the gall-bladder since the attack in August, and the stools have been white or light clay-colored, as they have always been for a few days after an attack of pain. The urine has been coffee-colored. The patient has lost fifty pounds in weight during the last three months. He is naturally a robust, vigorous, cheerful man. He is now thin, yellow and feeble, with a haggard and dejected expression.

At this time I gave him some general advice, and advised an operation.

The patient came to see me again the last of December. He had had an attack of pain December 17th, since when the jaundice was diminished and he had felt generally better.

On December 30th I went with him to see Dr. William W. Seymour, of Troy, who had himself submitted to the operation of cholecystotomy in December, 1889, at the hands of Mr. Lawson Tait, and had reported his case in very attractive style in the *Medical Record* for December 6, 1890. Dr. Seymour gave us a detailed account of his former sufferings, of the operation, and of the completeness of the cure; showed us his cicatrix and phial containing his one hundred and fourteen calculi. We saw in him a big, active, athletic man, a monument to the success of cholecystotomy. Mr. B. was very favorably impressed, and made up his mind that he would submit to the same operation if the attacks continued. But, as he then thought himself much better, he preferred to wait a little.

The next day, December 31st, while on his way to Bridgeport, he had one of his severest attacks, and during the next three weeks he had one severe attack and three milder ones.

On January 24th he came to Pittsfield by way of Boston. Just before leaving Boston pain came on again and caused him intense suffering during the journey. There was no hypodermic syringe at hand, and he felt only slight relief from the inhalation of chloroform. Soon after his arrival he was relieved by morphia, but the pain returned and continued for more than twenty-four hours, requiring morphia again on the following day. On that day the temperature was normal and pulse 80° to 100° . There was tenderness over the region of the gall-bladder and pain there, and also below the right scapula. No increased dulness or other indication of a distended gall-bladder, and no enlargement of the liver; urine very dark brown; skin deeply jaundiced.

On the third day the pain was less, but the temperature rose to 101.5° , and pulse to 108° . On the fourth day, a sharp attack of pain came on with nausea and

vomiting. He was again relieved by morphia. After this there was no more severe pain, but tenderness was great for three days longer. During the week he had taken almost no food, and for a week after he took only liquid food in small quantities.

The patient was now told that surgical interference could no longer be deferred with safety, and readily consented to the operation. It was decided that this should be performed by Dr. William T. Bull, of New York, at the House of Mercy, in Pittsfield, on the 15th of February.

On the morning of the 13th he took a dose of Carlsbad salts which caused two dejections, soon after which he was again seized with pain which lasted all day, with excessive tenderness and vomiting. The next day he was free from pain, but had slight tenderness and occasional nausea. Pulse and temperature normal.

On Sunday morning, February 15th, he went to the House of Mercy, where cholecystotomy was performed by Dr. Bull, who has kindly furnished me the following description of the operation:

"A four-inch vertical incision over the cartilage of the ninth rib exposed the abdominal cavity. The gall-bladder was not prominent, but was easily brought into view by wedging the adjacent intestine out of the way with flat sponges. It appeared to be constricted about its middle. The fundus was aspirated and two drachms of bile removed. It was then opened, the wound held apart with artery clamps; a soft bougie and also a probe was passed through the constricted body, and was arrested by a calculus which could be distinctly felt with the finger. It could be moved to and fro, a distance of two inches, apparently in the dilated cystic and common duct. The structure was overhung by the duodenum, and united to it by such firm adhesions that I could not separate them without fear of tearing the wall of the intestine. In consequence of this adhesion, the finger felt the calculus *through* the wall of the duodenum, when it was pushed in the lowest position it would occupy. When it was forced into its highest position it was close against the under surface of the liver, and the part of the duct it occupied appeared to be free from the duodenum. It was difficult in the field of operation to determine the precise limits of the duodenal wall. In making the incision to remove the calculus the wall of the gut was incised for a distance of half an inch where it lay over the duct. The wound was closed with a continuous catgut suture through the mucous coat, and outside this interrupted Lembert sutures.

"The incision in the wall of the duct was left open, a rubber drain inserted in it, and the edges of the incised gall-bladder sutured with catgut to the parietal peritoneum. The viscus was not long enough to permit the skin to be included in this suture. The drain was surrounded with tampons of iodoform gauze and the abdominal wound closed by silk sutures about them and the tube."

Duration of operation two and one-half hours, chloroform was the anæsthetic.

The calculus was oval, of the size and shape of a nutmeg, and weighed 55 grains. Its longer diameter is $1\frac{1}{8}$ inch and its shorter diameter $\frac{3}{4}$ inch.

This operation was beset with unusual difficulties, for the following reasons:

(1) The gall-bladder was hidden behind the intestines and liver, and when found was contracted and contained no calculus.

(2) The calculus was in the dilated duct, was hidden behind the duodenum, and united by firm adhesions to the surrounding structures.

(3) The operation was protracted by the necessity of sewing up the incised duodenum.

(4) Owing to the deep position of the gall-bladder and duct and to the adhesions which held it there, the incised edges could not be accurately stitched to the abdominal wall, as is usually done, and the danger of the escape of bile into the peritoneal cavity was great.

After the operation the patient was greatly prostrated. In the evening he had a pulse of 108, temperature 98° and respiration 36. For four days following, the pulse, which was feeble, ranged from 120 to 150. Temperature 100.4° the second day, and 100.2° the third day, after which it was nearly normal. On the second day the urine contained albumen one-tenth of its volume, but this disappeared on the third day and did not return. He suffered from severe pain in the wound and whole of right side, and required hypodermic injections of morphia during the first few days. For forty-eight hours he took nothing by the mouth. On the third day he took champagne and on the fourth day he began to take peptonized milk. From the first he had enemata of peptonized milk, afterwards alternated with beef-juce.

The bile was discharged very copiously. For three days it was very watery and pale, being mixed with serum. After this it was thicker and bright yellow. The dressings were changed at first twice a day, but it was soon necessary to change them every eight hours and afterwards more frequently, sometimes every two hours. Great masses of absorbent cotton were completely saturated, as well as the bandage, clothing and bedding. This inflamed and excoriated the skin and caused great suffering. It caused him such pain to be moved that the dressing became a very difficult matter. The bile escaped around the tampon and not through the tube.

On the eighth day the sutures were removed. The wound had then healed, except where kept open by the tampons. The bile flowed chiefly from the lower angle of the wound and not through the tube. It was yellow and green, with much watery fluid, and the skin was inflamed wherever touched by the wet dressings and clothing.

With the discharge appeared a few white specks which, on examination, proved to be milk-curd. It was therefore evident that the wound in the duodenum was not united, and that its contents were escaping.

The three tampons surrounding the tube were removed on the eleventh, twelfth and thirteenth day. A cavity was then left, two inches in diameter and two inches deep, lined with healthy granulations. The tube was removed and found to penetrate one inch deeper than the bottom of this cavity. The tube was not obstructed. It was cleansed and replaced and surrounded with tampons. The bile, however, continued to flow out around the tube until March 7th, the twenty-first day, when additional fenestræ were cut close to the inner end of the tube and the cavity packed very tightly with gauze. After this the discharge came chiefly through the tube.

The discharge from the duodenal fistula continued till March 14th, four weeks after the operation. For one week longer, bubbles of gas escaped during the dressing, and after this the fistula remained closed.

As long as nothing but milk and liquids were taken by the mouth, the discharge from the fistula was very

watery. It was at first acid in reaction, but afterwards neutral; but it was excessively irritating, and excoriated the whole side and back. It never contained more than a few small particles of curd, though very large quantities of milk were taken. The caseous mass passed onward through the duodenum, while the watery portion poured freely out from the fistula. When solid food was taken the discharge from the fistula was genuine chyme.

When the tampons were removed, as they were daily, the cavity surrounding the tube would immediately fill with half an ounce or more of bile and food. The bile came from the right side of the tube, and the food from the small orifice at its left side. As soon as this was withdrawn by a syringe it would well up again from the bottom. The amount of bile was amazing, but it could not be measured.

The wound granulated rapidly, and on March 26th, five and a half weeks after the operation, had closed firmly about the drainage-tube. This was then removed and a smaller one substituted, which was kept in for two weeks longer. On April 4th, seven weeks after the operation, the discharge of bile ceased for a time, and bile was then first seen in the stools. Bile was occasionally discharged from the tube, however, until April 18th, after which no more was seen. This was nine weeks after the operation. When the flow of bile was first checked, pains would be felt like the premonitory pains of his former colics. When bile reappeared at the wound, the pain ceased. A slight serous oozing continued till May 13th, since when there has been no discharge of any kind.

The stick of nitrate of silver was occasionally used to facilitate the closure of the sinus. The granulating surface was liberally dusted over daily with aristol, which acted admirably. For the protection of the skin, ointments were at first used, such as lanoline and zinc ointment; but the dry application of bismuth was found more comforting and healing. Tampons of wool were found better than cotton or gauze, as by their elasticity they kept the bile out of the wound and forced it to flow through the tube.

The bowels were at first obstinately constipated. Repeated enemata were given, as well as salines by the mouth; but nothing came away except the debris of the nutrient enemata until the twelfth day, after which the stools were liquid and dark-colored until the twenty-first day, when the first milk-curd appeared in the stools. These were colored till the twenty-sixth day, after which they were nearly white in color and very copious till the forty-ninth day, when the normal color returned. There was therefore no movement from the upper portion of the bowels for three weeks, owing in part, no doubt, to the escape of the liquid portion of the food, as well as to the morphia which had to be given to a greater or less extent during that period.

No periodicity could be discovered in the discharge of bile; but the duodenal discharge varied with the feeding. It was constant as long as liquid food was taken at short intervals; but when regular meals were taken, it came in floods about an hour after meals.

For the first two weeks the patient was unable to turn himself in bed. At the end of four weeks he sat up in bed, and at the end of six weeks was walking about the hospital. He became greatly emaciated during the first four weeks, while the duodenal fistula was open, but began to gain flesh as soon as this was closed.

The jaundice began to fade immediately after the operation, and at the end of six weeks had all disappeared except a slight yellow tinge upon the abdomen.

I went out of town on the 1st of April, six and a half weeks after the operation. He was then wearing the small tube, but was up and dressed. Dr. F. K. Paddock took charge of him during my absence. On my return on the 13th of May, Mr. B. met me at the station, looking well and very happy. Since then he has been well, though not very strong. He has had regular bilious stools, no pain, no jaundice and has gained flesh.

A CASE OF TOTAL OBLITERATION OF THE OESOPHAGUS THROUGHOUT THE GREATER PART OF ITS COURSE, OF DOUBTFUL ORIGIN; EXTERNAL OESOPHAGOTOMY AND ATTEMPTS AT DILATATION; DEATH.¹

BY MAURICE H. RICHARDSON, M.D.,
Surgeon to the Massachusetts General Hospital.

G. C., three years of age, was sent to me at the Massachusetts General Hospital by Dr. George H. Francis, of Brookline, on July 1, 1891.

Family history good. The child was perfectly well until last January, when he began to have difficulty in swallowing food. At first solids, and then liquids, were with difficulty kept down. He could swallow liquids, but they were immediately regurgitated. At other times he could swallow and keep them down. This state of things has continued to the present time. One day nourishment will not be retained at all, and the next day perhaps several quarts of milk will be swallowed and kept down. The child is emaciated and restless, otherwise not remarkable. At this time there was no history given of any possible local cause, such as the accidental swallowing of any burning or other irritating fluid.

On the 21st of July, having been under observation three weeks and no material change having taken place, he was discharged on account of an outbreak of scarlet fever in the ward.

On the 27th of July, 1891, he was re-admitted. Since leaving the hospital the little boy has not been able to swallow anything. Re-enters very emaciated and with a feeble and rapid pulse. Put at once on nutrient enemata and inunctions of cod-liver oil.

On the 29th, under ether anæsthesia, an incision was made in front of the sterno-mastoid muscle on the left side, and the œsophagus was quickly exposed just below the level of the thyroid cartilage. At this point it was normal in appearance and in calibre. The sides of the incision were grasped with retractors, and the canal exposed down to the level of the sterno-clavicular articulation, where a firm, fibrous stricture was encountered. It was impossible to find an opening into this stricture with the smallest urethral instrument. At one time it seemed as if a passage had been found, and through this was passed a filiform bougie. The opening was gradually dilated until it would admit the end of a small gum-elastic catheter. After very careful manipulation, the instrument was passed into what was thought to be the stomach. It was noticed immediately that air entered and was expelled from the mouth of the catheter with the movements of respira-

tion. It seemed probable that this was air passing to and from the stomach. After very careful observation of this unexpected phenomenon, a small quantity of milk and brandy was injected through the catheter into what was supposed to be the stomach. The child did not rally well after the operation, and died that same afternoon.

At the autopsy it was found that the œsophagus had become entirely obliterated, from the level of the sterno-clavicular articulation to the cardiac orifice. It was impossible to pass any instrument whatever through the canal. The catheter had made a false passage to the right into the pleural cavity into which the milk and brandy had been injected.

This very unusual case presents certain features of great interest. It did not seem to me possible that this could be a congenital stricture of the œsophagus, because the onset had been quite sudden, and there had been no history of difficulty in deglutition up to the third year of the child's life. I therefore, some time before the operation, investigated the possibility of the closure being due to some corrosive action. I made careful inquiries, but was unable to find any ground for the belief that the child had swallowed anything injurious. Nevertheless, I did find that the first attack came on suddenly.

The operation demonstrated clearly the feasibility, in children, of exposing œsophageal strictures situated five inches below the level of the incisor teeth. The upper end of the stricture was brought into view with the greatest ease. It was possible to hold back the sides of the œsophagus and to search for the upper orifice without any difficulty whatever. In spite of all the care that I could use in the passage of bougies and in the introduction of the catheter, the false passage was made. It would be impossible to use any force whatever in dilating a supposed stricture without the greatest danger of making a false passage. Unless the eye of the surgeon is upon the point of the instrument so as to guide it with absolute knowledge, the slightest force is sufficient to cause a lateral deviation into the pleura or into the posterior mediastinum. I was not conscious at any time of using any but the very gentlest manipulation.

In a case of this kind there is little to regret in the fatal termination. The only other course would have been a gastrostomy. I think no one would advocate such an operation in a child of three. Life, certainly, would not be worth living were it necessary always to employ this means of feeding.

I would advocate the use of external œsophagotomy for the relief of annular strictures situated within reach of the finger after an opening has been made through the neck. It is quite possible, as I have already shown, to reach with the finger as far as the arch of the aorta. I do not believe that it is justifiable to attempt any radical dilatation of benign strictures situated within reach of the finger, without first exposing the parts by the external incision. No degree of force sufficient to dilate thoroughly a stricture can safely be used through the mouth. In the case of this child, had I found a narrow stricture, I should have been tempted to excise the ring and unite the ends of the tube in a manner similar to that used in circular enterorrhaphy.

One other point to be noted is the importance of operating early. I have no doubt that in this case the chances of recovery were greatly diminished by the

¹ Read before the Boston Society for Medical Improvement, November 23, 1891.