was used; so far as tension was concerned, sutures might have been dispensed with altogether; the feeblest of restraining agents, to prevent the natural resilience of the skin, were used and succeeded. The abdominal flap, by its fixation around the abdominal opening, and by the silver loops over the India-rubber tubing, resisted abdominal tension; the groin-flaps suffered no tension whatever. It seemed to me a serious drawback to the probable success of the operation: first, to permit any strain at all on the sutures uniting the groin-flaps; and, secondly, not to keep the incisions free from contact with urine. This could be prevented only by transferring the tension to the under flap, and by so closely approximating the edges of this flap to the abdominal opening (by elastic compression) that urine could not reach them. Neither of these contingencies is provided against in Mr. Wood's operation. Again, fixation by strapping across the transplanted tissues must be a positive evil, tending to cause sloughing by compression. Compression by the herniated bladder, even on the abdominal flap, does little harm, for resistance is offered by the dense epidermis within, and is scarcely felt on the lax connective tissue outside.

When he says, "Such an elongation of the flap, so far from its vascular connections with the abdomen, and subjected to the pressure of the resilient dartos and the tension of the scrotal skin brought over it, I have found to result frequently in sloughing or atrophy", Mr. Wood must be thinking of his own operation, not of mine. There is neither scrotal skin nor resilient dartos over the penile flap to compress it. The upper covering of the penile flap was got partly from the mucous membrane on the floor of the urethra, partly from the sides of the penis; and the scrotal skin was dissected up, not with a view to transplantation, but that, by stretching out the corrugated folds of skin, more freedom might be afforded for raising the groin-flaps over the umbilical flap. Retention of urine in these cases, first noted, I believe, by Neudörfer of Prague, is more likely to depend upon the abundant muscle naturally existing at the neck of the bladder, than on the sparse fibres of the transplanted dartos; and the probability of retention taking place may be increased by a judicious management of the incisions at that part.

"As the upward contraction of the cicatrix progresses, and the child grows, the opening left at the root of the penis will enlarge, etc." The opening is not at the *root* but at the *point* of the penis. Contraction of cicatrix can, in my cases, only do good by diminishing the calibre of the urethra; and, if it draw up the abdominal flap, it must draw the neck of the bladder and penis with it. Again and again I dwelt upon the importance of avoiding this contingency, which, in Mr. Wood's cases, usually demands a second operation; I particularly noted the fact that this contingency had been avoided. The further plan of completing the formation of the new penis which I adopted is, I think, that of Thiersch, and is entirely different from Mr. Wood's second operation.

If Mr. Wood will again do me the honour of looking over my paper, he will, I think, see that, if an "unfortunate chance" have to be credited with the introduction of his name, a deliberate intention guided me in describing the peculiarities of the operation. So profoundly was I impressed with the consummate skill he exhibited, that I built my chief hopes of success on endeavouring to make stronger the least strong points in his operation; and the imperfect summing-up chiefly referred to points where I had departed not from other operations, but from his. I borrowed freely from several methods, and I said so. The first part of the plan I followed resembles Mr. Wood's in having one umbilical and two groin flaps; it differs in the shape of the flaps, their size, and the manner in which they were secured. The second, most difficult, and, in my opinion, the most important part of the operation, is entirely different from Mr. Wood's second operation. At one operation, and by different methods, I did what Mr. Wood does not attempt in less than two, and usually requires more to complete. That so much success, in the face of most unpromising circumstances, has attended my first efforts is due, not to my being able to operate with one tithe of the skill of Mr. Wood, but to the plan of the operation.

Though the plastic method of treating this deformity has hitherto proved the most successful, I think Mr. Wood is too severe in his condemnation of the procedures of Simon and Holmes by diverting the course of the urine into the rectum. The most perfect success of the plastic method can never give more than a very small bladder with incomplete control over its contents; and, until some restraining power as strong as the rectus muscle can be laid in front of it, the bladder will bulge forwards according to its size and dilatibility, and be correspondingly an encumbrance and deformity. If either of the above methods succeeded, and the extroverted mucous membrane could be covered with skin, and the epispadias cured, the result would probably surpass any that had followed the plastic method. In this belief, I intend to treat any case that may in future come under my care after some such method as that of Simon or Holmes.

A YEAR'S EXPERIENCE OF GALL-STONES.*

By THOMAS COLE, M.D.Lond., etc.,
Physician to the Royal United Hospital, Bath.

As hepatic diseases are seldom alluded to at our meetings, it has occurred to me that it would be not altogether unprofitable to string together a few results of my experience during the past year in the matter of gall-stones; and I do so more from a desire to excite discussion on the subject, and thereby to benefit by the remarks of others, than from the hope of being able to impart any knowledge of a special character.

Observation would lead me to believe that gall-stones are far more common than they are generally supposed to be by our profession; and I would add that they are often also very much more dangerous. Many cases that are diagnosed as gastric spasm, flatulence, or colic, are, no doubt, due to the escape of gall-stones from their habitat into the intestines. For instance, a lady consulted me recently for sudden and severe attacks of pain in the epigastrium, and radiating thence all over the abdomen, with sickness. They lasted for from a few minutes to an hour or two. She had usually been treated for cramp in the stomach, and was surprised when I told her she was suffering from gall-stones. My opinion was shortly confirmed by my finding at least twenty calculi after one of her seizures, which lasted only about an hour—too short a time, of course, for the development of any jaundice or other symptoms of obstruction.

Only last week, I asserted with some confidence that a lady sixty-eight years old was passing a stone. She had severe pain in the hepatic region, with vomiting, loss of appetite, and constipation; and had had many similar attacks. Her sister, who has suffered from gall-stones from childhood, was most sceptical as to the nature of the illness, because the pain did not seem to be severe enough, and no jaundice had supervened. The next day, I was able to produce, very triumphantly, a small stone, in shape exactly like a flint implement of the prehistoric period; and I found two more a few days afterwards. I do not know anything that inspires confidence more than the fulfilment of a prophecy like this, which you can prove so easily to a patient, and just at a time, too, when his gratitude for relief from the pain his enemy has caused has not vanished from his heart. By way of parenthesis, I would express the belief that gall-stones are not particularly uncommon in the young. I have lately attended a lad aged 16, who expelled twenty-seven stones in a week; and I shall allude further on to a case which proved fatal in a man aged only 24.

It is interesting to note the occurrence of gall-stones in two members of a family, in one of whom the tendency to the disease had been so strong as to have existed from childhood. The worst attack this lady ever had was during last year, and it lasted about seven weeks. Vomiting and intense paroxysms of pain tortured her more or less the whole time; the deepest jaundice prevailed; and there was the most intense prostration. At last, the mouse that had troubled the mountain came forth, and a tiny one it was—not bigger than a bean; and she had passed hundreds in her life, so that the ducts should have been fairly patulous. But I think the passage of the stone was probably hindered by catarrh of the ducts, from irritation produced by the presence of the stone, which was very rough and sharp. The patient was so constantly sick as to preclude any use of emetics. It was somewhat curious that the exciting cause of this attack was the vomiting attendant upon the progress of an uric acid calculus from the left kidney. The patient's being subject to both uric acid and hepatic calculi would seem to favour the opinion, that gout and biliary stones are closely related as effects of one common cause.

Another of my patients has passed quantities of uric acid calculi, and has suffered too from gall-stones, and is now the subject of granular kidney. She is also a female. Two or three patients also have been the victims of gall-stones and regular gout.

Rather a rare occurrence has happened to two of my patients, both females—that of vomiting gall-stones. No doubt they were squeezed, by the action of the abdominal muscles in vomiting, back from the duodenum into the stomach, just as bile regurgitates from the same cause when people are sick, making them think they are bilious, whatever that term may mean. According to works on liver-diseases, it is extremely unusual for gall-stones to be ejected from the stomach, unless, they have ulcerated their way through directly from the gall-bladder into the stomach. This obviously was not the case in the two instances I have mentioned.

I will now briefly relate a case in which five gall-stones about the size of peas were impacted in the ducts for six weeks. The patient,

* Read before the Bath and Bristol Branch.

who had had transient attacks of pain from time to time, was seized with pain, not at all severe, in the right hypochondrium, extending to the back, and considerable dyspnoea, no doubt of an instinctive character. He was not sick, only nauseated. The pain subsided in twenty-four hours; but jaundice, with clay-stools and dark urine, came on rapidly, with moderate fever. My diagnosis was catarrh of bile-ducts, and probably gall-stones. In a few days, I found a small piece of one, which settled the matter. Weeks, however, passed away, and there was no improvement. The patient lost much flesh, due conjointly, I should say, to imperfect nutrition and fever. Œdema of the lungs and legs set in, and the breathing became very embarrassed, the patient having had a weak heart for years. Remedies of all kinds were of no avail. I began to feel very uneasy as to the result, my patient being beyond the prime of life. An emetic was suggested; but he was perfectly horrified at the idea, having always suffered very much when he was sick. But this plan was supported by the advice of one of my medical friends, and an emetic of sulphate of zinc was tried. It produced very little vomiting, and no bile was thrown up; but during the day some copious bilious motions, the result of an early dose of Carlsbad salts, were passed, and in them I found five stones, as the reward of his obedience to our wishes. My patient suffered, however, a good deal from the action of the emetic; and when, unfortunately, about a week afterwards, some more stones began their travels, he declined any further assistance from this source. After a week's waiting, I gave him fair doses of salicylate of soda and benzoate of ammonia, with almost immediate effect. The motions became very yellow, and several calculi passed; and the patient was quickly convalescent. He has passed a considerable number since.

I will now advance a step further, and mention a case in which jaundice prevailed to a greater or less degree for eighteen months, with ultimate cure. The patient, a Yorkshire gentleman sixty-six years old, had lived somewhat freely and taken enormous exercise. A year before his hepatic troubles came on, he had some head-affection, and was accordingly very strictly dieted; and to this restricted diet I really imputed his attack. After a long day's shooting, he was seized with agonising pain in the epigastrium and vomiting, etc., and quickly became jaundiced. The motions were never of a right colour again for a year and a half; the urine was always dark, and the skin deeply tinted. Occasionally the cuticle seemed to improve a little in colour, and the urine to become lighter; but the clay-colour of the motions was invariable. I am quite sure that the urine and the skin can assume their natural colour almost completely, and yet the obstruction to the flow of bile be as persistent as ever. The only explanation of this is diminished production of bile, through interference with the functions of the liver. Every few weeks, a paroxysm of pain and vomiting would come on, with great weakness; yet no stone could be discovered, and the most careful search was always made.

The patient lost flesh, the liver became large and hard, and, as he had taken freely of spirits, commencing cirrhosis was suspected. There was occasional albumen in the urine, and the appetite became very poor. At last, eighteen months after the first futile attack, an awful paroxysm ensued—pain, vomiting, rigors, œdema of lungs and feet, dry mahogany tongue, fearful thirst and anorexia, and the deepest jaundice. It would be an interesting question why the jaundice deepened at this time. The sweats drenched his bed. Two and three weeks passed, and remedies were of no avail, except as palliatives to his sufferings. But one day, I found a slight change in the colour of the stools, coincident with a cessation of pain. A day or two afterwards, I discovered the stone I now hand round. It has, of course, shrunk much by keeping, owing to its brittle structure. You will see that its ends have been ground off from rough treatment by the muscular coats of the gall-bladder and duct. I would search through a thousand evacuations, however odorous, to witness the pleasure and satisfaction which the announcement of my discovery gave to my patient and his devoted family.

I did not find another stone, and convalescence, though naturally very slow, was complete. The œdema of lungs and legs faded away, and my friend has been shooting in the north this winter, the attack having taken place last March. For many days, he was at the point of death. One morning, after an awful rigor, I found him with a temperature of $105\frac{1}{2}^{\circ}$ Fahr. Two days before the stone escaped, he became utterly collapsed, with intermitting irregular pulse and icy-cold extremities, and felt he was dying. Now, rigors and sweats are common in attacks of gall-stones; but I never saw such as these; and the fluctuations of temperature were remarkable. The extraordinary part of the case was the continuance of the rigors after the stone was gone: two, three, and four times a day, he had a paroxysm, simulating ague of the most severe type. My heart sank within me, and I began to fear lest extensive suppuration was going on from injury sustained by the passage of the stone. But I poured in large doses of quinine and digitalis, with a

sort of forlorn hope, and had the infinite satisfaction of finding the attacks growing less and less frequent and severe, until at last they ceased altogether. No pus could be detected by a minute and constant examination of the stools. I thought some might possibly escape from a suppurating gall-bladder. None having been found, I can furnish no more rational explanation of these terrible rigors than that they were probably due to profound disturbance of the sympathetic system, inducing violent vaso-motor storms. Be that as it may, the case is in very instructive contrast with one I will presently relate. As to the position the stone occupied so long before its final discharge, although it is possible it blocked the cystic duct, and by its large size pressed upon and occluded the hepatic duct, yet I think it most probably occupied the common duct itself; for, otherwise, I cannot account for the permanent want of colour in the stools.

I will now call attention to a case of fatal obstruction of the common duct by a large calculus. The patient, aged 34 and very delicate, had had a great many attacks, and had passed some very large stones. Every time she became pregnant, the gall-bladder seemed to become irritable, and calculi were expelled. Her last attack came on when she was five months pregnant, and was most violent. Pain and vomiting were incessant, the jaundice intense, and rigors and sweats most prostrating. Hypodermic injection of morphia, thrice daily, was the only means of relief, and kept her in comparative ease. For many weeks, there was no change; but at last a stone escaped, and I hoped all would be well, although the patient was most exhausted. But, alas! another stone took the place of the one released, and the poor creature slowly but surely sank, worn out by suffering and exhausted by innutrition, although nourishing enemata had been freely resorted to. The stone, which was cone-shaped, was wedged into the duct, just under its narrowed ending in the duodenum. It was so fixed that I do not think any force, short of sufficient to rupture the duct, could possibly have dislodged it. Her violent sickness produced no effect upon its progress. The abdomen was extremely tender and tympanitic for some time before death; but no marked traces of peritonitis were found *post mortem*. Each stone was about $2\frac{1}{2}$ inches in circumference.

I will now briefly sketch out a case of gall-stone, with ulceration of the gall-bladder and secondary hepatic abscesses. M. H., aged 60, an upholsterer, was admitted into the Royal United Hospital, Bath, on December 27th, 1877. Nine months before, she was suddenly attacked by excruciating pain all over the abdomen and back, accompanied by jaundice. The urine became dark, and the motions were described as dark also. She had six similar attacks afterwards, the last being attended by sickness. After this, she lost appetite and had pain after food. On admission, she looked pale, slightly yellow, and complained of weakness, anorexia, and a good deal of tenderness in the right hypochondrium, where the liver could be felt. The temperature that night was 102° Fahr. She had some emphysema and a little bronchial catarrh. The urine was turbid, with urates; no albumen. The bowels were more or less loose all the time she was in the hospital. The morning temperature was generally normal; but the evening temperature varied from 100° Fahr. to $104\frac{1}{2}^{\circ}$ Fahr., never being below 100° Fahr. The right lobe of the liver extended down below the umbilicus, but not across it, being peculiarly elongated, and the left normal. The right lobe enlarged considerably while the patient was under observation. It was immovable on inspiration. There seemed some slight extension of the liver area upwards in the right infra-axillary region. On February 18th, 1878, the evening rise reached to 104° Fahr., and, on the night of the 20th, a rigor occurred. The next day, there was a little albumen. The pulse had up to this time kept remarkably normal. The patient had never experienced a rigor before, save the nervous shivering so common when a gall-stone is passing, and that only in the last attack. But now rigors took place pretty constantly, and the patient assumed a more asthenic aspect, the tongue being dry and the respirations hurried, with mucous râles in the lungs. The pulse, too, mounted—often being 115 or 120. She died exhausted on March 7th.

The diagnosis formed of the case was inflammatory mischief in the gall-bladder, from irritation of a calculus. It had been suggested that the case might be one of carcinoma of the liver; and the growth of the organ, and the fact that a case had been observed in the hospital with distinct nightly rises of temperature, lent some support to this view. But I never wavered in my opinion; and the onset of rigors not only strengthened me in it, but also informed me of the occurrence of suppuration. One would hardly have supposed at first there was much the matter with the patient; and it was only the careful registering of the temperature which gave gravity to her condition.

The *post mortem* examination fully justified the diagnosis. A large, not particularly rough, gall-stone, of the shape of the gall-bladder, had set up the most extensive ulceration of its mucous membrane, which in places was remarkably thinned, with large numbers of varicose vessels

quite exposed. The opening into the cystic duct was obliterated, and its place occupied by a stellate scar. There were ten or twelve secondary abscesses in the right lobe of the liver, principally beneath its upper surface; one, the largest, holding about three ounces of pus, projected beyond the ordinary level, and probably accounted for the slight upward increase of hepatic dulness I had noticed before death. An explanation of the secondary abscesses in the liver is furnished by the fact that the cystic vein empties itself into the portal vein, thus forming a direct channel for the conveyance of pyæmic influences. A point worthy of remark was the immovability of the liver on inspiration, although it was large and unhindered by perihepatic adhesions. It is obvious how important this might have been, had an abscess existed in the lower part of the liver and invited operative interference. It was interesting, also, from a general pathological point of view, to observe that the temperature ran up at the very commencement of a rigor. For example, immediately one began, the temperature was found to be 100° F.; and at the conclusion of the same, it was 103° F. The pulse also invariably ran up when the rigors ensued.

As to the cause of the gall-stone in this case, I found a deep sulcus running across the upper surface of the liver from right to left, just on a level with the neck of the gall-bladder. This furrow was no doubt due to the poor woman tying her clothes too tightly; and to this I am disposed to attribute the formation of the stones, the cystic duct being thus constantly more or less pressed upon.

Lastly, I would allude to a case, the nature of which I could not clearly make out, even with the aid of light borrowed from a *post mortem* examination. I would say, at the outset, that the opinion I formed of the case was that it was one of jaundice due to obstruction by a calculus. How far I was right, will be seen directly.

The patient, a labourer, aged 24, was admitted into the hospital on November 18th, 1878, and died on December 19th. He was taken with jaundice a year before, having been suddenly seized, while working in a damp place, with pain in the stomach and vomiting, lasting for three weeks. He was very yellow. He was in the Royal United Hospital a month, but the jaundice lasted till March. He worked on and off till August, when the vomiting and pain came on again, and the jaundice returned. The pain left him again in about five weeks, but the skin remained tinted till his admission, when he was considerably jaundiced. His legs had swollen on walking about, and were cedematous when he came in. He was very weak, and short-breathed on exertion. His bowels were loose; the motions clay-coloured. He had been accustomed to a good deal of beer. The chest was emphysematous; the spleen considerably enlarged; and the hepatic dulness extended nearly to a level with the umbilicus. The surface over the liver was quite smooth, and not noticeably tender. The urine was high-coloured with bile, and was of specific gravity 1019. There was a slight rise of evening temperature, which subsided in a few days. With the exception of a little improvement in the urine and skin, he remained much the same till December 16th, when somewhat severe pain came in the abdomen, and his temperature rose to 101.6° F. During the night, he had a rigor lasting an hour and a half, and the temperature reached 104° F., and he complained of much pain and tenderness in the epigastric region. The skin was dry; the tongue coated as if with white paint; there was loss of appetite and great thirst; and he vomited a large quantity of coffee-grounds-like fluid. The motions were loose and very light. The pain and vomiting increased, and the pulse and temperature remained high. Opium in large and frequent doses was given; but the patient gradually sank from the combined effects of peritonitis and hæmatemesis.

The *post mortem* examination revealed an extraordinary state of affairs. The gall-bladder contained about two drachms of thick bile; the cystic and common ducts were quite patulous and unoccupied by any calculus, although I could not squeeze the bile out of the bladder with even considerable force. The liver was very large, congested, and bile-stained, showed no alteration in its minute structure; but in the centre of it was a large cyst, containing half-a-pint of clear bilious fluid, and a large number of small dark gall-stones. The floor of this cavity was between the lobus quadratus and lobus Spigelii, and about an inch from the outer and lower surface of the lobes of the liver. It was very much thickened; and there was a layer of tough lymph, like chamois-leather, about two inches long and an inch wide, adherent to it. This lymph was encrusted by a mass of biliary concretions, as big as a small Brazil nut, and was torn off with great difficulty. The hepatic duct was normal as far as the hilus, and a probe could be passed along several of its main branches, entering, in several instances, into the cyst at various parts of its walls. Most of these were very hypertrophied, as if they had had great difficulty in expelling their contents, and consequently had to be strengthened by physiological growth of their muscular coats. They also travelled a long way over the cyst-walls. Some

of the branches could be traced to the beginning of a hard mass of greyish fibroid tissue, which occupied the space between the floor of the cyst and the hilus itself, and the probe would go no further. I could not make out any branch in particular blocked by a calculus; but there can be no doubt that some were occluded, and those which we could trace into the cyst were much pressed upon by the fibroid thickening and the large mass of biliary concretions. The stomach contained blood; and the hilus and the adjoining peritoneal surfaces of the duodenum, etc., were in a state of acute inflammation. The spleen was large. I should say that the wall of the cyst was considerably thickened, and to all appearance very muscular or fibrous from the peculiar rugose state it assumed. The thickened mass was evidently an indurated piece of liver-tissue, and probably the result of a chronic inflammatory process.

I shall be glad of the wider experience of the meeting to help me to explain this remarkable state of things. The patient's history seemed to favour the existence of a stone, perhaps in a large hepatic duct. This may have been impacted, and caused a dilatation of the duct behind it; the result being an enormously distended cyst. Calculi were then formed, and naturally took up a position on the floor of the cyst, and by continued irritation caused inflammatory changes, with deposit of lymph, and induration of the neighbouring portion of liver-tissue. Or the reverse may have happened, and fibrosis of the piece near the hilus may have blocked some of the main branches of the hepatic duct; secondary dilatation may have ensued, and the gall-stones may have been quite a tertiary phenomenon. The Yorkshire proverb, "When in doubt, do neawt", ought, perhaps, to have suggested to me a discreet silence as to the cause of the patient's illness; but I am anxious to obtain information, and to do that do not object to display my ignorance. The coincidence of peritonitis and hæmatemesis is interesting; no doubt, however, the portal vein was pressed upon somewhat, and this explains the splenic enlargement and the hæmatemesis; and probably the peritonitis was due to vasomotor changes in the vessels at the hilus from pressure or irritation.

My year's experience has naturally suggested to me many other points beyond those I have ventured to bring before you to-night. I would have spoken a few words about treatment, which is, after all, the great aim and object of all our professional labours. The causes of these painful maladies, too, are very obscure; and I would especially call attention to an idea—as to whether locality has not some share in their production—which certainly has forced itself upon my consideration. I must ask your pardon for the hurried, imperfect, and disjointed remarks I have put before you. My only desire has been to call attention to a series of cases, far more formidable than gall-stones usually produce, yet reminding us, very strikingly, that what is generally but a trivial, though very painful, disorder, may from time to time unexpectedly alter its comparatively benign character as a freer from a lurking enemy, and become, itself, one of the most cruel and deadly of the foes by which fallen human nature can be attacked and destroyed.

SURGICAL MEMORANDA.

DRESSING OF WOUNDS IN MILITARY SURGERY.

MR. MAC CORMAC'S address on Antiseptic Surgery, and the discussion which followed, seem to put it beyond doubt that Listerism, or as near an approach to it as possible, should be followed in the dressing of wounds which may be subjected to bad hygienic conditions. In such circumstances, the brilliant results obtained by Mr. Savory, who worked under the best hygienic conditions, cannot be expected with ordinary dressing. On the other hand, the experience of Professor Nussbaum shows that, with Listerism, good results may be obtained under bad sanitary conditions. In military surgery, even with the greatest care, the laws of hygiene cannot always be acted up to, and Listerism in its integrity cannot be carried out, at all events in the first line of surgical aid. When exact antiseptic dressing cannot be used, what is the best substitute? In none of the contributions to the JOURNAL from correspondents recently on active service, so far as I am aware, has any mention been made of the subject. I write, therefore, to propose what I consider a practical and useful dressing, and so elicit information from those who have had an opportunity of treating wounds on active service. Mr. Barker's lecture, published in the JOURNAL of January 3rd, gives useful information on the subject; and the materials used by him can always be procured. Latterly, any wounds coming under my observation, as I have no materials for Listerism, have been washed with a five per cent. solution of carbolic acid, covered over with a piece of lint dipped in the same solution. A sufficient thickness of cotton-wool is then laid on, and the whole bandaged. The stretcher-bearers—who, thanks to recent reforms in our method of removing the wounded from