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From the Author, with
kind regards.
Alexander Shield

SURGICAL LECTURES AND ESSAYS

BY

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OPERATIONS ON THE LARYNX.
GOITRE AND ITS TREATMENT.
OPERATIVE TREATMENT OF CANCER OF THE BREAST.
CYSTS OF THE BREAST AND CASES OF INTEREST IN MAMMARY DISEASE.
ILIAC ABSCESS.
CASES OF SO-CALLED SIMPLE FRACTURE.
THE MODERN TREATMENT OF SIMPLE FRACTURE.
THE TREATMENT OF HYDROCELE.
BURSAL CYSTS IN CONNECTION WITH THE KNEE.
ULCERS OF THE TONGUE.
THE MODERN SIGNIFICANCE OF SEPTIC PERITONITIS.
APPENDICITIS AND ITS TREATMENT.



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PREFACE.

This book contains a series of clinical lectures and papers on subjects of surgical importance. As many of my professional acquaintances have expressed their approval of these lectures when they appeared in an isolated form, it is to be hoped that they will be pleased with them collected into one volume. The final lectures on appendicitis and peritonitis are open to the criticism of repetition. The subjects are so important that I think this is justified. I have endeavoured in these lectures merely to express the results of my own experience, and it is to be hoped they may prove interesting and useful to the many friends from whom I have received kindness and support in my professional career.

I am indebted to my friend Mr. Eliot Creasy for the assistance and valuable suggestions he has given me in the compilation of this volume.

A. MARMADUKE SHEILD.

4, Cavendish Place, W.

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SURGICAL LECTURES AND ESSAYS.

REMARKS ON A SERIES OF CASES OF EXTERNAL OPERATIONS ON THE LARYNX.[1]

The operation of thyrotomy is one of considerable antiquity, though we question whether its full scope and utility have been recognised until within the last few years. The late Mr. Durham stated that Ehrmann, in 1844, first performed this operation for laryngeal growths, which he diagnosed, of course, without the aid of the laryngoscope.[2] Since then a number of operations upon the air-passages by external incisions have been performed, particularly in Germany, and Hahn especially greatly improved the technique of the operation of thyrotomy, introducing the well-known inflatable tracheal tube which bears his name.

The Operation.

The following series of cases seem of sufficient interest to warrant their publication, as they illustrate the scope and excellent results which are to be obtained by thyrotomy and other external operations upon the air-passages. As a preliminary I would describe the method of operation, which differs in some small particulars from that usually

[1] Delivered before the Medical Society of London, March 10th, 1902.

[2] Holmes's 'System of Surgery,' 3rd edition, vol. xi, p. 697.

adopted. In the first place, the services of a highly-skilled anæsthetist are essential, and no surgeon should attempt one of these cases without such aid. Chloroform is, I think, the best agent to employ. A good light is needful, and in dark weather the aid of a forehead electric lamp is often highly advantageous.

When I first commenced to perform these operations, I followed the usual rule, and made two incisions: one for the preliminary tracheotomy, the other for the division of the thyroid cartilage. The somewhat limited area thus exposed rendered the checking of all hæmorrhage very tedious, and thus materially increased the difficulty and length of the operative procedures. I now strongly advise that the larynx and trachea should be exposed by one longitudinal incision from above the thyroid cartilage to a point one and a half inches below the cricoid. This incision is deepened until the cartilages are reached, and on retraction of the edges of the wound the whole field of operation is laid bare in a remarkably advantageous manner. The hæmorrhage is always profuse, but in this large wound the veins are caught with pressure forceps, and tied or clamped with ease and alacrity. Indeed, the checking of hæmorrhage by this method effects an agreeable contrast to the small incision, where the perpetual "welling up" of venous blood is a serious inconvenience to the operator. At the lower extremity of the wound the thyroid isthmus is seen, and this may be drawn downwards, so as to uncover an additional ring of the trachea; if large it may be divided between two clamp forceps. During all these proceedings the patient's head is well thrown back and steadied by an assistant.

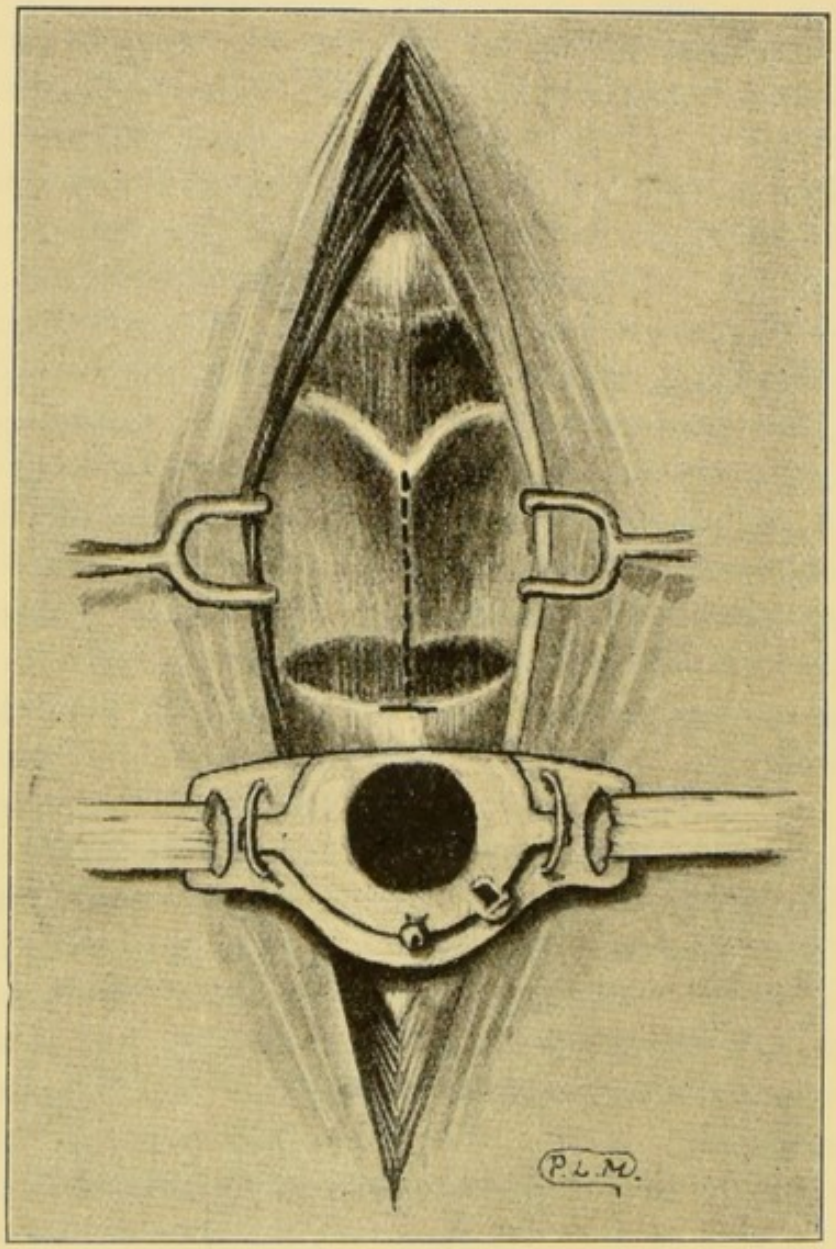
The second stage of the operation—that of opening the trachea—has now arrived. This is done easily and deliberately below the cricoid cartilage, and the tube is inserted. Personally, I prefer the tube covered with compressed sponge. This I powder with iodoform before introduction. I usually allow eight minutes to elapse for the sponge to swell and the anæsthetist to adapt himself

to the new conditions of administration. The methods of administering the chloroform vary with different authorities. Personally, I prefer the administrator to blow the vapour into the tube by means of a small bent cannula. This allows any blood or mucus to be instantly cleaned out of the tube by means of feathers or a brush. It may here, too, be pointed out that the tube, whether covered with compressed sponge or surrounded by the usual inflating rubber bag, should be tested by the surgeon with scrupulous care, to ascertain for himself that the accessory materials are properly secured. When the sponge, for example, swells in the trachea, some difficulty is experienced at the end of the operation in withdrawing the tube from the tracheal wound, and if badly constructed the sponge may easily become detached—an awkward and alarming accident. All brushes should in like manner be well made, so that any possibility of their heads "coming off" is out of the question. The tube being secured by tapes, if the thyroid cartilage be calcified, as is common in adults, it may be divided by a fine saw—a very fine saw[1]—or by strong scissors curved on the edge. If possible, the extreme upper border of the cartilage should be left intact, so as not to interfere with the petiolus of the epiglottis. The assistant now grasps each cut margin with artery forceps and thoroughly everts and retracts them. Some surgeons prefer sharp hooks for this purpose. The growth or foreign body at once comes into view in a remarkably clear manner. If a growth, the novice will be surprised to find that it is always more extensive than he was led to anticipate from laryngeal examination. The decision is now arrived at as to the extent of the operation to be performed—whether the growth is alone to be removed, the tissues at its base, or the lateral ala of the thyroid cartilage itself. The operation is usually done for what may be termed potential epitheliomata, warty growth with cellular infiltration at the base, in adults, or for actual epithelioma of one or other of the cords. The tissues from which the growth springs are

[1] The blade should be flexible and the teeth minute.

generally freely removed. It is now my practice to paint the growth with a 20 per cent. solution of cocaine, to which is added ten grains of supra-renal extract dissolved in half a drachm of cold water. The extract must be freshly

FIG. 1.



The long incision for thyrotomy; the dotted lines show the position of section of the cartilage; the tracheotomy tube is in position. (After Moure.)

made. The diminution of troublesome local oozing by this means is highly advantageous and striking. A small and carefully purified Turkey sponge is pressed into the trachea

at the lower angle of the laryngeal wound. It should have a piece of silk attached. This is an additional preventative against blood passing down the air-passages; I regard it as an invaluable aid, and shall relate a case where I relied upon it alone, an ordinary tube being inserted below. The growth is now grasped with "mouse-tooth" forceps, and freely cut away. I do not hesitate to sacrifice all the soft parts down to the cartilage beneath. Pressure is made on the wound inside the larynx with minute sponges held on forceps, and wrung out in spirits of turpentine. I next apply a fine and sharp curette, and finally the galvano-cautery at a cherry-red heat, sparing no pains to render extirpation as free and as extensive as possible. The application of the cautery finally checks all oozing. A little finely-powdered iodoform is dusted upon the part, and the thyroid cartilage is united with strips of kangaroo tendon. Here a fine drill must be employed if the cartilages be markedly calcified.

The incision is accurately united with fishing gut and horsehair right down to the tracheotomy tube, and here a point of great importance has to be considered, the question of withdrawal or retention of the latter. As a rule, I now remove the tube so soon as ever the patient has recovered his "coughing reflex" and partial sensibility. Any blood which may then enter the air-passages is readily expelled by coughing. The lower part of the wound, after the withdrawal of the tube, is not closed, but covered with a pad of iodoform gauze and kept carefully cleansed. The diagram shows the extent of the incision, the position of the suture in the thyroid cartilage, and the tracheal tube in position.

Treatment After Operation.

The dressing of the neck is very simple, and mainly consists of collodion to the upper part of the wound and iodoform to the tracheal opening. About the fourth day the margins of the latter are approximated by adhesive

strapping. The patient keeps the sitting posture in a "steam tent," and occasionally inhales the vapour of creosote. Three times a day a spray of "Listerine," mixed with equal parts of tepid water, is used for the larynx. No use of the voice is to be permitted. The patient must be provided with a slate to write his wishes and replies. I have found that patients swallow with surprising ease after this operation. I usually employ rectal alimentation for two days. I then commence to administer meat lozenges, which are gradually sucked. Thirst is relieved by small lumps of ice. At first swallowing is best performed by the patient lying upon his side, the tube of the feeder being placed in the dependent cheek. Should any slight fœtor be noticed in the breath, and this is not normal on the third or fourth day, I add a little carbolic acid to the "Listerine" spray. In about fourteen to twenty days convalescence is established; indeed, the recovery is very easy and quick. I never allow the voice to be used for a full month, and then only in a quiet whisper. The recovery of the vocal functions is ultimately quite surprising, though the intonation is always hoarse. The following cases may now be related:

Case 1.—*Fracture of the larynx, dyspnœa, tracheotomy, obstruction of the glottis by cicatricial tissue, thyrotomy and removal; complete recovery.*—This case has already been reported very fully in the 'Lancet' for November 14th, 1896, but to make the series complete I reproduce its main features. A woman, aged 23, sustained a severe fracture of the larynx, which was asserted to have been caused by her walking in her sleep and falling over a chair. I always looked upon this statement with suspicion, and a belief that the injury was sustained from personal violence. She was admitted into St. George's Hospital on July 10th suffering from dangerous dyspnœa, and the house surgeon, Dr. Fison (now of Salisbury), performed tracheotomy and thus saved her life. She was discharged to all appearances well on July 29th, the

tube having been removed on July 20th. She had complete aphasia, but breathed well. On July 31st, however, an attack of dyspnœa came on. She returned to the hospital, where the wound was opened and the tube again inserted. The case was watched through August, and the larynx gradually became stenosed. The cords were thickened, and beneath them some cicatricial formation could be plainly seen. In September thyrotomy was performed, and the larynx below the cords was nearly closed by a cicatricial web, which was continuous with a collar of indurated tissue and the cartilage externally. This was obviously due to chronic inflammatory action about the fracture. No projecting part of cartilage could be felt. The tissue was cut away with scalpel and forceps, and the larynx strongly stretched open with the finger. The operation was done in the usual way, and there was nothing to note about the after-treatment. By August 23rd all the parts were healed and she was walking about the ward. She made a good recovery and was seen two months after. She breathed well and her intonation was a little hoarse, but surprisingly good, considering the extensive operation done. The cords remained greatly thickened.

Case 2.—*Syphilitic stenosis; ultimate result unfavourable.*—A man, aged between 30 and 40, was admitted into St. George's Hospital in May, 1897, and had tracheotomy performed on account of sudden and urgent dyspnœa. He was suffering from manifestations of tertiary syphilis, and was placed upon full doses of iodides. The appearances with the laryngoscope were as follows:—Great swelling all round the aperture of the larynx; anteriorly a glimpse could be obtained of a growth, smooth on the surface, which seemed to originate very far down below the cords. Both cords moved imperfectly and remained widely abducted, as though some nerve lesion were present. After taking iodides for several months the swelling greatly reduced, and the

formation could then clearly be seen; it was smaller than before, and uncertainty still existed as to its distinct nature. The cords were still widely abducted and motionless. On stopping the tracheotomy wound urgent dyspnœa was at once produced. Doubt occurred in this case as to whether the dyspnœa, especially marked during inspiration, was due to abductor paralysis or to the presence of a neoplasm, and accordingly it was decided to perform thyrotomy. This was done in June, 1897. There was a special difficulty about the operation, owing to the calcification of the thyroid cartilage, which had to be divided with fine-cutting forceps. On opening the larynx no distinct growth was found; there was a swelling below the cords, consisting almost entirely of inflammatory thickening, covered with a prominent and rugous fold of mucous membrane. This was cut away with curved scissors. Recovery from the operation was uneventful, but no benefit was obtained, and the patient was discharged still wearing the tube. The wound at the site of operation persistently contracted, with the formation of much scar tissue. Under cocaine the larynx was thrice dilated, and once under anæsthetics the parts were stretched with the finger. The patient became intolerant of further proceedings, and preferred to wear his tube. When relating a series of cases of any operation, it is, perhaps, as important to relate the failures as the successes, and I should not be disposed to repeat this operation for syphilitic stenosis unless a very distinct neoplasm or "web" of tissue could be removed.

We next come upon a series of four cases where this operation was performed for growths of the larynx, with results only to be described as excellent.

Case 3.—*Recurrent papilloma; thyrotomy and excision of growth; no recurrence.*—I wish to relate this case very shortly, lest the identity of the patient be discovered. A cleric, aged 54, began to suffer in 1893 from dyspnœa and hoarse intonation. A growth was

discovered on the left cord, and a portion of this was removed with forceps, and was stated to be papillomatous. It was then removed in three separate sittings by a skilled laryngoscopist, and after some applications of a caustic nature a cure was reported. The patient stated that he recovered his voice and breathing well. In three months fresh symptoms arose, and he went abroad, when, so far as could be made out, similar operations were performed again with benefit. I saw him towards the end of 1893. He then had a growth on the left cord, which looked the size of a pea and was of a pink colour. The larynx was swollen and inflamed, and a complete view of the growth difficult to obtain. He was hoarse and had some slight inspiratory dyspnœa ; he was a stout "full-blooded" man. No induration or glands could be felt in the neck. I treated him with leeches and iodides for a fortnight, and then performed thyrotomy. The growth on exposure was, as usual, more extensive than could be estimated from above. It was the size of a cherry, sessile, and implicating both the cord and the side of the larynx. I cut it away freely, curetted the side of the larynx, and applied the galvano-cautery. The bleeding was very free, and I employed the manœuvre before spoken of—namely, plugging the trachea below the growth and above the tube with a small Turkey sponge. The only special remark I have to make about this case was the freedom of extirpation. The whole of the soft parts on the left side of the larynx were removed. Parts of the growth were sent to three good observers. One stated it was epitheliomatous, another papillomatous, and a third called it a degenerative papilloma, potentially cancerous. The fact was that the growth was inflamed, and its true characters difficult to determine. I informed the patient that the prognosis of his case was dubious. He made a rapid recovery, and the only after-anxiety was some bronchitis with fœtor of the breath on the fourth day. He recovered his voice sufficiently to articulate hoarsely, but never to do his duty. He remained perfectly well for four years. I saw and

examined him at intervals. He died in 1898 from "influenza and pneumonia," but there had not been any return of laryngeal disease. I purposely omit the names of the medical men who were concerned in this case, but I may state that the highest skill was brought to bear on the previous laryngeal efforts, and they were probably performed as well as it is possible to execute such operative proceedings by the way of the natural passages.

Case 4.—*Fibroma; thyrotomy; removal by galvano-cautery; recovery of voice.*—A single woman, aged 33, came to St. George's Hospital in March, 1897. She had had good health until three years previously, when she gradually began to suffer from dyspnœa and loss of voice. The aphasia got worse and worse, so that she could only use her voice a little in the summer. She had occasional severe attacks of coughing with dyspnœa, which lately had been increasing and had alarmed her.

On examination of the larynx, a pale, lobulated, rather sessile growth, the size of a large pea, could be seen to the right side and a little below the cords. It seemed to spring from the left cord, and narrowed the aperture of the larynx to a mere "chink." Dr. Whipham saw this case with me in consultation, and agreed as to the desirability of thyrotomy. The operation was performed on March 23rd. Dr. Dickson administered chloroform, and a preliminary tracheotomy was done. There was much venous oozing, and an enlarged layer of thyroid tissue lay in front of the trachea, which made the operation very difficult. A Trendelenburg's tube was inserted. The thyroid cartilage was split in the middle line and pulled apart with sharp hooks. There was at this stage troublesome and profuse venous oozing, checked by pressure with a turpentine sponge. The growth, about the size of a large pea, now came into sight; it grew from the left cord. On being seized with the cold wire snare, its base was very tough and resistent, and it was found impossible to pull it away. Accordingly its base was

slowly severed with the galvano-cautery. A tracheotomy tube was left in for a week, the parts being often sprayed with hydrogen-peroxide solution. The tube was removed finally on April 1st, when the parts above were soundly healed. The final result of this case was excellent. In August, 1897, the patient had entirely regained her power of speech, which she had lost for six years. This was the more remarkable as great puckering and deformity occurred. The pathologists pronounced the tumour to be a fibroma and innocent in nature. It was thickly covered with a stratified epithelium.

The principal difficulties in this case were the profuse bleeding, which much obscured the parts. The Trendelenburg's tube acted well, no blood getting down into the bronchi. There can be no question that the bulk of this tumour could have been removed *per vias naturales*. There can equally be no question that its base could not be so dealt with. It was peculiarly broad, and to a large extent incorporated with the right vocal cord.

Case 5.—*Removal of large papillomatous growth from the larynx, together with the "cord" and all the soft parts.*—The patient was a Catholic ecclesiastic, aged 45. He came under my care in the summer of 1898. Hoarseness had gradually supervened for three years, and lately had progressed to almost complete aphonia. These symptoms had been much worse lately, and in addition "suffocation spasms" had recently been experienced. The case was under the care and inspection of Mr. Edward Blackett. The patient was a pale, ascetic-looking man. His voice was harsh and raucous, sometimes disappearing entirely. The left side of the larynx was occupied by a growth the size of a peach-stone, which was lobulated, livid in colour, and seemed to have a broad base. There was no glandular enlargement in the neck. Under cocaine the mobility of the growth was freely examined with a curved probe, and it was found to be very sessile. Dr. Whipham also examined the case on several occasions,

and the question of attempted extirpation *per vias naturales* was much discussed. Finally thyrotomy was determined upon, and was performed on August 10th, 1898. There was nothing very special about the operation, excepting that the growth was very extensive; and I was uncertain as to whether the half of the larynx also should not be removed *in toto*. The bleeding was also profuse and troublesome. He made a good recovery without complications. Dr. Lazarus-Barlow kindly examined the growth, and found it to be of the usual nature—a warty papilloma, with abundant cell-proliferation, but not truly epitheliomatous. For many months this gentleman's voice remained only a whisper, but his phonation gradually improved, and I have had a chance of examining him two years and four months after the operation. His voice is so surprisingly good that it is difficult to make observers believe he has had an operation done, and this is again borne out by the extraordinary changes in the larynx itself. The right cord is so mobile as to come over to the left side of the middle line, and here exists a ridge of mucous membrane or scar tissue, which looks at first sight exactly like a vocal cord. There is no sign of return of the tumour, but the aperture of the larynx is a little oblique or deformed. The result of this case has made a great impression on my mind as to the beneficial effects of this operation.[1]

The next case is equally satisfactory, though at the time of writing this paper only nine months have elapsed since the operation, so that one can hardly pronounce the certainty of a permanent cure, yet I believe such a result is exceedingly probable.[2]

Case 6.—*Sessile papilloma removed by thyrotomy; recovery, with improved voice.*—A gentleman, aged about

[1] The patient was present at the meeting, and read aloud with a good and distinct voice.

[2] Recently seen (February, 1902), quite well, voice much improved.

40, strong, plethoric, "thick set," and given to field sports, saw me in February, 1900. He had used his voice a great deal in hunting, and had noticed hoarseness and dyspnœa gradually creeping on for about three months. An examination was made with great difficulty. He was unable to open his mouth to the full extent, and any introduction of the mirror caused violent spasm and retching. The tongue could not be protruded. Feeling sure that some serious laryngeal trouble existed, much patience was exercised, and the patient practised opening his mouth and breathing. Ice was applied to the pharynx, and a 5 per cent. cocaine spray. At length with a small mirror I distinctly saw a growth. It was only a momentary glimpse, and, beyond the fact that it was on the left side, I was unable to study its characteristics. I therefore administered iodides in full doses, and repeated examinations of the throat were made. By the middle of March I was able to see the growth mass distinctly, and it had obviously not diminished in size. Moreover the patient had had one severe attack of dyspnœa, which caused him to start up in bed with a sense of suffocation.

I afterwards learnt that during this time the patient had taken other opinions, both in London and the provinces. I need not enlarge on the treatments advised, as they were quite inapplicable to the case. I felt certain that personally I was quite unable to remove this growth by the natural passages, for even after weeks of patience and practice it could only be seen with great difficulty. By my request Mr. Butlin saw the patient with me in March. He recognised the difficulty of good inspection of the growth, but concurred with me in advising thyrotomy. The operation was done in the usual way, and no difficulty was experienced. As the neck was short, thick, and plethoric, I made the superficial incision unusually free, from the hyoid bone to the sternum, and the fierce venous bleeding, easily checked, showed how materially a too small opening would have delayed the future steps of the operation. After opening the larynx

I passed a small Turkey sponge on a piece of silk down the trachea for about an inch, and saturated the growth with a strong solution of cocaine and supra-renal extract. I was surprised at its size. I had estimated it at that of a pea. It was quite as large as a cherry, and very sessile. After extirpation the cautery and curette were vigorously applied, and on withdrawing the little sponge a small clot was brought up on its superior surface. The Hahn's tube was removed so soon as the "coughing reflex" was restored, and the patient was convalescent in fourteen days. The wound healed at once. He had no bad symptoms. Microscopically the growth was a papilloma, but there was much cellular infiltration at its base, and one skilled observer was confident it was cancerous. Recovery of voice is in this case confined to a loud whisper, but the patient is in the best of health.

Case 7.—*Thyrotomy for foreign body* (*bone*).—On December 28th, 1899, I was called to see a young man suffering from dyspnœa. His face was dusky and covered with sweat; his respirations distinctly laboured, with evident inspiratory stridor; and his voice reduced to a hoarse whisper. He stated that four days ago he had accidentally "swallowed" a large piece of bone, that it "stuck in his neck," and he brought up some bright blood. The difficulty of breathing and the pain in swallowing had apparently only been severe enough to frighten him in the last twenty-four hours. His condition was one of distress and danger.

Laryngoscopic examination was attended with the greatest difficulty. The parts were much swollen, having, indeed, an erysipelatous appearance. In the narrow "chink" between the swollen thyro-arytenoid folds a distinct glimpse was obtained of a piece of bone; it appeared like a spicule of osseous substances stretched across the larynx antero-posteriorly. The difficulty of seeing it, and the spasmodic and dangerous dyspnœa of the patient, made, in my judgment, any attempt at

removal from the mouth very unwise. Seeing the perilous and urgent nature of the case, I at once made arrangements for operation. Chloroform was carefully administered by Dr. Blumfeld. I exposed the whole front of the larynx and trachea to the root of the neck by a free median incision, which was rapidly deepened; the very free venous bleeding was readily checked by forcipressure, though so free an opening. Tracheotomy was performed, and a Hahn's tube was introduced. On opening the trachea a quantity of pus was ejected from the wound, showing that the foreign body was already doing grave local mischief. The thyroid was calcified, and I had to divide it with powerful curved scissors. On opening the larynx I could not see the bone, but by the finger it was

FIG. 2.



Side view; actual size.



Front view; actual size.

detected lying firmly impacted below the cords, and extending downwards to the body of the cricoid. Apparently it was tilted on its edge. So firmly was the bone impacted that it required considerable force to extract it with forceps, and this demonstrated how hopeless would have been any attempt to remove it from above. The piece of bone was of the extraordinary size and shape shown in Fig. 2. It is hard to believe that so large a foreign body could have passed the glottis, and yet the patient survived, and was, moreover, able to breathe. Silk sutures were passed and not tied, and the wound was tamponaded with iodoform gauze. The operation occupied about fifteen minutes, being much expedited by the free median opening. The tube was removed in twelve hours,

and the wound, covered by lymph, was drawn together by the sutures, which had been previously passed. Thymol inhalations were employed. The patient made a good recovery. His voice long remained "low and gruff," but ultimately it quite recovered, and was literally as strong as ever.

The next case is not one of thyrotomy proper, but may be termed supra-thyroid pharyngotomy. It affords an excellent illustration of how a growth near the superior aspect of the larynx may be reached and dealt with through an external incision.

Case 8.—*Supra-thyroid pharyngotomy.*—A widow, aged 57, came to the throat department at St. George's Hospital in July, 1897. She had total aphasia and some dyspnœa. The aphasia had come on about eighteen months ago, and had gradually become worse. She was a stout woman, inclined to emphysema, with a short, thick neck. It was only after repeated examinations with the laryngoscope that I was able to clearly distinguish and define the position of a new growth. The neoplasm apparently sprang from the anterior surface of the thyroid, and extended a little way along the surface of the stalk of the epiglottis.

On July 5th the following operation was performed under chloroform, ably administered by Dr. Menzies:—A transverse incision was made in the thyrohyoid space, and another at right angles to it along the front of the thyroid cartilage. The anterior jugular veins were divided and tied, and the sternohyoid and thyrohyoid muscles were also divided. Here an error took place in the operation, and I found myself working above the hyoid bone instead of beneath it. This part of the operation was unexpectedly difficult, owing to the profuse venous oozing and depth of the neck. At length the thyrohyoid membrane was exposed and divided, and the epiglottis, after dividing the glosso-epiglottic ligament, was drawn out of the wound by a ligature passed through it with a sharp curved needle. By this means the larynx was drawn right out of the

incision, and the growth readily came into view. It was more extensive than was thought, and some small, irregular, tuberculated masses extended along deeply into the epiglottis. It was readily removed with a snare, and the curette and galvano-cautery were deeply applied to the site of origin on the epiglottis, so as utterly to destroy the tissues in immediate relation. The larynx was then replaced and the wound sutured. The growth was a papillary epithelioma. To the naked eye it appeared epitheliomatous.

The patient was very ill, and a severe attack of pneumonia came on a week after the operation. The wound discharged at one spot, and some fluid food passed out. For the first four days she was fed by nutrient enemata, but afterwards managed to swallow by lying on the side with the head hanging over the bed. By August 17th the wound had nearly healed, and she was breathing well and commencing to recover her voice. On November 19th the patient was well and strong, and had no dyspnœa. Her voice was "shaky" and uncertain, but she could well make herself understood. There was still some swelling about the arytænoid cartilages. There was no trace of return of the growth. I last saw her in 1899, two years after the operation. She was in good health and could speak well. The epiglottis was depressed, but there was no return of the growth.

I feel sure that in these cases it is an error to suture the external wound immediately. Sepsis occurs from the pharynx, and it is wiser to stuff with iodoform gauze and merely pass the sutures, not tie them, until granulations and plastic lymph appear in the wound. I believe that this method is far safer to employ in all operations upon the neck where a communication has taken place with the gullet or pharynx.

Case 9.—*Case of laryngeal cancer; removal of one half of the larynx, with great temporary benefit.*—There are many remarkable features about this case, which I shall

incidentally allude to in the relation of it. A night watchman, aged 60, had suffered from sore throat and hoarseness for about three months. He was a pale, thin man, and when he came to the hospital, in September, 1901, was suffering from dangerous and increasing dyspnœa. Examination was difficult, but a lobulated growth could plainly be seen filling the larynx and springing from the right side. It was ulcerating, and seemed to spread to the pharyngeal region behind. On September 7th chloroform was cautiously administered and a low tracheotomy carefully performed. This relieved all danger of dyspnœa, and the larynx was repeatedly examined and the growth touched to estimate the possibility of removal. I may here point out that time is well spent in these difficult cases in repeated examinations, and the operation of tracheotomy ought never to be postponed, as is so often the case, until the dyspnœa is urgent and death actually impending. On September 23rd I performed thyrotomy. I stuffed the trachea above the tube with a small Turkey sponge attached to silk, and it acted perfectly. I found the growth very extensive, and removed the whole of the right ala of the thyroid with raspatory and scissors. I unfortunately found distinct signs that the pharynx was involved. The galvano-cautery was applied freely. Bleeding was very profuse. After operation the wound was tamponaded with gauze, and a fresh sponge was placed in the trachea. The tube was removed in ten days. The patient could then breathe well. The result of the operation has been complete relief from dyspnœa, and the patient can articulate in a whisper, though half his larynx has been removed. Recurrence of growth in the pharynx I looked upon as certain.

I last saw the case in January, 1902. The growth was returning in the depths of the wound. Dyspnœa was entirely relieved. The main interest of this case is the great difficulty of estimating the actual extent of growth in advanced laryngeal cancer. I spent a fortnight over

the study of this case, and concluded it was free of the pharynx, in which I was wrong. The case also affords a striking contrast to the others. It illustrates forcibly a clinical truth which all of us may lay to heart—that if an adult, especially a male, should suffer from abiding hoarseness and laryngeal irritation, no time should be lost in getting a careful laryngeal examination made, so that if a growth exists it may be detected and dealt with in its earliest stages. The results, as shown by the cases detailed, are as good, as neglected cases are disastrous and unsatisfactory.

THE EXPERIENCE OF FORTY-TWO CASES OF GOITRE TREATED BY OPERATION.

A CONSIDERABLE number of patients suffering from goitre have come under my care during the last fifteen years, and as their history and treatment is full of interest, I have thought it worth while to embody the results of my experience in a brief communication. Forty-two cases have been submitted to some form of operative procedure, and a smaller number have had medicinal and climatic treatment. The patients have come from the most varied localities. We will consider the latter class first. The medicinal treatment generally adopted has been the administration of iodide of potassium, with tincture of iodine in the proportion of 3 grs. of the former with 1 minim of the latter. I have increased the dose of the tincture to 3 minims, but have never gone beyond this limit. The usual vehicle has been infusion of gentian, and the mixture has always been administered in a glass of water after meals. These large doses of iodine want careful watching, and should marked signs of iodism, or especially anæmia and weakness, supervene, the remedy must be discontinued. The thyroid extract, pushed to full doses, has also given good results in my hands, and I am quite unable at present to say what cases are benefited by iodine and what by thyroid extract. In one case only have I tried the hydriodic acid in the form of Gardner's syrup, and I found it answered well. The remedy is certainly worthy of a more extended trial. I have usually sent private patients to the East Coast, and I feel sure that sea air is a most important adjunct to the iodine treatment. I am aware that it is customary to minimise the influence of drugs

upon this affection. The evidence of my own experience, however, renders me able to assert that small goitres may entirely disappear under this treatment, and the symptoms of large and formidable goitres may be counteracted. A striking instance of therapeutical treatment is as follows :

Case 1.—In 1900 I saw a stout, puffy lady, aged 70, who had a truly enormous and lobulated goitre, extending from the chin to the sternum, and laterally nearly as high as the auricles ; it was as though the thorax and abdomen sloped straight up to the chin. She had borne this great tumour for at least forty years, and had resided principally in tropical countries. This lady had a feebly acting heart, but no albuminuria. The face was dusky and congested, and there was slight inspiratory stridor. The great irregular masses of growth did not move freely upon the deeper parts of the neck, and the integument was covered with an intricate plexus of enormous veins. Notwithstanding the size and serious connections of this growth, this lady had been able to lead an active life, but on residing in London she at once commenced to experience respiratory troubles of a "bronchitic nature." As instancing the operative enterprise now prevalent in the metropolis, she had been advised to have this tumour removed without delay, and was assured that no risk to life would occur, an opinion with which I strongly and emphatically disagreed. This patient took the iodine and iodide of potassium mixture for two months with marked benefit. The growth reduced considerably, and at the end of three months the skin of the neck hung in wrinkled folds where before it was dusky and congested.

Residence on the East Coast has also been of marked benefit to her. Considerable cardiac and bodily weakness followed the prolonged administration of iodine, and this was relieved by the administration of small doses of digitalis. She is now quite comfortable, and any operative measures, at her advanced age, are, in my judgment, to be shunned.

I have little belief in the efficacy of local measures, and the injections of iodine or perchloride of iron into parenchymatous goitres I have never advocated. Any local inflammatory action set up by these agents most seriously prejudices the chances of the patient in any needful subsequent operative proceedings. The same objections do not apply to the external application of the red iodide of mercury ointment, though, personally, I have not seen much benefit arise from its employment.

In a considerable number of cases of goitre, such treatment quite fails to check the growth of the tumours or diminish their size, and operative treatment has to be adopted. And here the family practitioner, who especially deals with these cases in their early beginnings, is placed under a heavy responsibility, which cannot be ignored. A study of the cases presently to be related conclusively shows that the operative treatment of goitres as yet small, and especially if yet mobile, is, if properly carried out, free from any special risk; mobility on the deep parts of the neck is the principal guide to the comparative risks of the operation; operations upon goitres of enormous size, of long growth, and extensive deep connections, are perilous in the extreme, even with all skill and experience in operating. Of the forty-two cases, in only six could I distinctly make out the presence of adenomatous tumours, which are certainly more exceptional than one might suppose. In three, small cysts were discovered. In two cases very large cysts existed. They filled the side of the neck, nearly from the jaw to the clavicle. One operation was for exophthalmic goitre. It was performed for reasons of respiratory difficulty. There was one fatality from hæmorrhage in a tumour of enormous size, which was showing carcinomatous change and was associated with secondary growths in other parts. In one advanced case the operation of removal of one lobe was abandoned, because of extensive implication of the carotid sheath, the subclavian vein and pleura, in a huge mass of growth which extended below the level of the clavicle. The

remaining cases were simply parenchymatous goitres. Some of them were of great size, but they all had the common feature of mobility, and their removal was effected with comparative ease. In no case did sepsis occur, immediate union being the general result.

First as to the adenomatous tumours. The majority of these were in the isthmus of the thyroid gland, and were detected by their marked mobility, rolling about under the examining hand. They were removed by a free straight incision, the capsule of the gland was incised over them, and they were shelled out. In one case very free and persistent hæmorrhage occurred from the cavity, but this was finally arrested by plugging with a fine strip of iodoform gauze soaked in turpentine. I have also seen veins of great size coming across the front of the thyroid, over the capsule of the adenomatous tumours. These have been secured by "dipping" under them a fine curved needle threaded with fine catgut. I may also draw attention to the fact that the diagnosis of thyroid adenomata from cysts is very difficult, if not impossible, and that grave consequences may result from cutting into goitres for the enucleation of supposed adenomatous tumours which do not exist. I have witnessed one fatality from repeated hæmorrhage from this error, but the case did not occur in my own practice. The patient, a girl aged about 20, finally had the affected lobe removed *in toto*, but she had suffered repeated bleedings from the previous erroneous incision, and was too weak to bear the additional strain of the second operation.

In my own judgment, no supposed adenomata of the thyroid gland should be cut down upon, unless they can be distinguished as mobile rounded tumours, quite distinct from the gland substance in which they are embedded; and the question of serious hæmorrhage from large vessels in the capsule is always a possibility.

The cysts of small size have been treated by opening, painting with carbolic acid, and stuffing with iodoform gauze. Here again trouble may arise from hæmorrhage.

One of the cysts I opened was no larger than a small walnut, yet it contained venous blood, and the flow from it was with difficulty arrested by plugging with turpentine gauze and by digital pressure with a sponge. I may remark here that digital pressure is of considerable value in these cases, and will generally succeed, if patiently applied, in checking the bleeding.

The two examples of large cyst are of great interest, and as they both were very similar in their course and symptoms and treatment, the relation of one of them will suffice as an illustration of the difficulties which surround these cases.

Case 2.—A married woman, aged 42, was under my care in 1889, suffering from a huge cyst of the neck, obviously connected with the thyroid gland. The formation was oval. It occupied the left side of the neck from the level of the hyoid bone nearly to the cheek, and moved freely when the patient swallowed. The history was vague, but the swelling had certainly existed over ten years. It had once, some six years ago, been tapped, and nothing but blood escaped. Of late it had increased in size remarkably, and caused much respiratory trouble, with difficulty in swallowing also.

The cyst was very adherent to the tissues of the neck; from its long standing and fixation, I felt that an operation to remove it *in toto* would be very difficult and perilous. Inflammatory changes had doubtless occurred in its walls, and this would incorporate the cyst with the sheath of the vessels and other important structures. The following operation was therefore performed:—An incision about 2 inches in length was made over the lower part, which exposed the dark-coloured wall of the cyst covered with enormous veins. A fine aspirator needle was introduced between the veins, and it was discovered that the contained fluid was straw-coloured serum, containing cholesterin in great abundance. The veins were clamped, and a free incision made into the cyst, about 8

ounces of fluid being evacuated. The edges of the sac were sewn to the skin and a large tube inserted. I was prepared for long and tedious treatment in this case, and I had also spoken to the patient on this point, but I was hardly fully aware of what would actually occur. To summarise the results, the treatment lasted nearly eighteen months. Several attacks of severe inflammation of the cyst occurred, and large pieces of membrane and calcareous material came away through the opening from time to time. The neck was dressed with iodoform gauze, and washed out regularly through the tube with iodine and water. All this time I could see, month by month, that the cyst was shrinking, and I encouraged the patient to hope for an ultimate cure, which was indeed effected. The last step in the treatment was to burn an obstinate sinus which resulted with a fine galvano-cautery. Two years afterwards this great cyst had become entirely obliterated, and the only sign of its previous existence to be ascertained was a slight thickening at the side of the neck, and a faint puckered scar. I was much struck with the trouble and care which this case necessitated, and only the conviction that removal would be very perilous induced me to recommend it. The absence of scarring or deformity of the neck in the final result was, however, very striking and gratifying. The second case of large cyst ran much the same course, but was cured in about nine months. Calcareous material and pieces of cyst wall came away from time to time in much the same manner. The result was perfect, a faint, small scar only resulting.

Operations for exophthalmic goitre upon the gland itself have not found much favour. The patients are anæmic, and their anæmia, mental state, and cardiac conditions are not very favourable to the performance of severe operations. My experience has been limited to one case, where the enlarged isthmus and lobe of one side (the right) caused respiratory trouble.

Case 3.—An anæmic single lady, aged 32, was sent me

by Dr. Boake, of Ilminster, suffering from slight exophthalmos and a troublesome cough, associated with marked inspiratory stridor. Her thyroid gland had been noticed enlarging for two years, and all the signs of Graves' disease were well marked, especially the emotional symptoms. The right lobe of the thyroid body was the size of a small lemon, and was parenchymatous in nature. A loud bruit could be heard over it, and over the vessels of the neck. I removed this lobe and part of the isthmus of the gland in the usual manner, and no great difficulties were encountered in the operation itself. Chloroform was the anæsthetic administered. After the operation a very uncomfortable complication arose—namely, urgent vomiting, which grew worse and worse despite all remedies. She would "retch" violently at the slightest sound or touch. This caused some hæmorrhage from the wound, and the sutures had to be removed. This serious sickness lasted for two days. The temperature was never above 100°, but the pulse was exceedingly quick. Rectal feeding was resorted to, and bromides were administered *per rectum*. On the morning of the second day I applied a powerful blister to the epigastrium over a surface the size of the palm of one's hand, and sprinkled the raw surface with a powder of ½ gr. of morphia. This acted immediately, and the sickness ceased. But it gave great anxiety in such a case, as may be imagined. The further progress was very satisfactory. The wound healed, and the remainder of the growth rapidly shrivelled up. All her symptoms disappeared, and two years afterwards she was in perfect health. There can be no question in this case that marked improvement in the constitutional state followed the removal of the growth.

It would be well next to relate the one fatal case which has occurred in my series, for it illustrates the inevitable risks attending operations on large and neglected growths.

Case 4.—A woman, aged 43, had suffered from goitre

for over twenty years. Of late the growth had increased rapidly, and caused such serious dyspnœa that she could hardly lie down. The tumours were of excessive size, and hung down over the front of the sternum (Fig. 3). The neck measured 22 inches round in the widest part. Enormous venous sinuses were everywhere visible, and a loud bruit could be heard over the tumour. All kinds of medicinal treatment had been employed without avail. In both breasts, and in the side of the thorax, were numerous small tumours, about the size of nuts, hard, movable, and insensitive. These had all appeared within six months, coincidently with the increased growth of the thyroid tumours. One could hardly doubt but that they were of the peculiar nature of secondary carcinomatous thyroid growths, to which several writers have drawn attention.[1] This opinion was strengthened by the rapid increase of the thyroidal tumours, and some hard masses which could be felt. The great tumours were also very fixed upon the tissues of the neck. I had decided to remove one of the "secondary" breast tumours for examination with the microscope, when the patient was "taken" with an alarming attack of dyspnœa, and this did not entirely pass off, respiratory stridor being constantly present. It was obvious that the case was a desperate one, and the plate shows that tracheotomy would have been hardly feasible. I accordingly determined to remove the right lobe and central isthmus, though I was quite cognizant of the grave risks of such an undertaking. A very free curved incision was made, and, by dint of careful dissection and clamping of numerous veins, all at first went well. The pedicles, thick, "fleshy," and full of enormous vessels, were satisfactorily isolated, after section of the sterno-mastoid, and I was, with elaborate care, separating the mass from the jugular region posteriorly, when profuse and uncontrollable venous bleeding occurred, with that sudden and fierce vehemence which is only seen in these most embarrassing

[1] Henry Morris, 'Trans. Path. Soc. London,' vol. xxxi, p. 268; 'Arch. Surg.,' London, vol. xi, No. 43, p. 227.

FIG. 3.



A goitre of many years' standing, in which carcinomatous change had occurred, and in which the operation proved fatal.

cases. Realising that the only hope was at once to reach the site of this mischief, I at once clamped and divided the pedicles and turned the mass over to the middle line, The source of bleeding was an enormous sinus, as thick as one's thumb, which led directly into a dilated and pouched jugular vein. It was at once caught and clamped close to the parent trunk, but the patient lay in a pool of blood, and was obviously moribund. Removal was effected as soon as possible, the mass being stripped towards the middle line. Again profuse hæmorrhage took place from some large venous sinuses, which apparently passed from between the trachea and œsophagus into the growth. Transfusion, warmth, and all other measures to combat the collapse were employed, but the patient never well rallied, and died about seven hours after the onset of the bleeding.

There can be no question that the patient died of hæmorrhage; still, had I the case to treat again, I do not know that I could have proceeded with greater caution or operated more thoroughly and carefully. The growth was very vascular. It was a parenchymatous goitre, developing in some situations carcinomatous change. Unfortunately, permission to examine subsequently the tumours in the mammæ was refused. This case well illustrates the risks run, and the dangers to be encountered, in removing an enormous old goitre undergoing cancerous change. It is perhaps right to say that these operations should not be attempted, yet it is hard to see patients die unrelieved from pressure on the trachea without an attempt being made to save them. In this case tracheotomy would have been quite out of the question, on account of the bulk of the growth lying in front of the air-passages, right down to the sternum. I have thought it right to relate this case in full, for our failures teach us more than our successes, and a long series of successful cases is only too apt to cultivate a belief in the minds of the inexperienced that such operations are safe and easy.

It would be well at this point to insert the account of an equally formidable case, where the operation of removal

was abandoned, I believe wisely, and the minor proceeding of ligature of the thyroid arteries carried out. This operation was unavailing in checking the growth of the mass.

Case 5.—A delicate girl, aged 20, had suffered from goitre for fifteen years. Her mother and one sister were similarly affected. The patient and her affected relatives live at Liss, in Hampshire, while four other healthy sisters reside in other parts. The swelling has varied in size, but has on the whole increased steadily, with aching pain, and it has occasioned fits of difficulty in breathing in the last few years. Her condition on admission into St. George's Hospital in January, 1901, was as follows:—A large globular tumour occupied the left side of the neck (mainly), extending from the jaw to the clavicle. It extended as far back as the trapezius on the left side, and over to the border of the right sterno-mastoid. There was no exophthalmos or bruit. The swelling, which was covered by enormous veins, measured 18 inches in circumference at the widest part. The heart's action was quick, but no bruit was to be heard. There were signs of tuberculous affection at the right pulmonary apex, and the patient had had the right knee excised for tuberculous disease a year previously. Bony union had resulted. The general aspect of the patient was that of a weakly anæmic girl, very unfitted for severe operative proceedings.

The operation was done on January 28th, 1901. A very free curved incision was made on the left side, from the angle of the jaw to the clavicle, and along that bone to the sternum. The sterno-mastoid and sterno-hyoid and sterno-thyroid muscles were flattened out over the tumour; they were freely divided, and the fascial capsules also, so that the tumour became markedly prominent and its limits could be defined. The superior pedicle could be isolated, but formidable difficulties presented in other quarters. The carotid sheath was absolutely incorporated with the tumour, and the latter could not be shelled away

from the vein in the usual manner. The mass also descended under the clavicle, so that it was impossible to isolate and define the lower pedicle. The tumour was covered with enormous sinuses, any one of which, if injured, would have given rise to uncontrollable hæmorrhage. The situation was clear. Had I persevered in removal, there can be no question but that I could have got the tumour away. There could be equally no question that fatal hæmorrhage might readily occur; it seemed to me that there was hardly a chance for her survival. The anæsthetist concurred, and expressed the opinion that the patient was already very collapsed. Under these circumstances I tied the superior pedicle with kangaroo tendon and closed the wound. The patient was collapsed and sick for a few days, but all went well, the extensive incisions rapidly healing. She went to Wimbledon, and returned in March. The tumour had increased in size, though her general health seemed better. There was now no respiratory difficulty; ultimately the growth decreased in size, under the syrup of hydriodic acid.

The operative treatment in the majority of cases has been the removal of one lobe of the affected gland, with part of the isthmus. I have kept careful notes of the after history of most of the cases, and atrophy of the remaining lobe occurred practically constantly. In two cases out of thirty the atrophy did not occur, but the remaining lobe (right) steadily increased in size, and secondary operations were performed for its removal. Under these circumstances, a portion of gland the size of a Tangerine orange was left attached to the lower pedicle. The atrophy of the remaining lobe was sometimes very rapid, sometimes slow, but at the end of six months even large and unsightly tumours had become so reduced that the appearance of the neck was not peculiar or very noticeable. It may therefore be confidently asserted that removal of one lobe and part of the isthmus is an operation attended in the vast majority of cases with successful results, and a description of the operation I usually employ may be usefully inserted.

The more mobile the growth, the easier the removal. Size makes small difference. The cases which are perilous are goitres of many years' standing, which become incorporated with the carotid sheath. In many of these cases iodine or iron injections have been employed, and the resulting inflammatory adhesions render the removal difficult and perilous in the extreme.

The operation I employ may be considered under various headings.

1. *The question of the anæsthetic.*—This is a most vital matter. In large goitres, with inspiratory stridor, any general anæsthetic is associated with risk. In such cases the choice will lie between local anæsthesia with eucaine, and the cautious administration of chloroform or the A.C.E. mixture. There can be no doubt that the former method is the safer, but there are obvious objections to it in practice, and I have hitherto never employed it. In all my cases chloroform or a mixture has been given, mixed with a plentiful supply of air.

2. *Full aseptic precautions must be employed.*—A number of ligatures of very fine silk and catgut must be prepared, and I have used kangaroo tendon for the ligature of the pedicles with unusually good results. In no single instance has the substance given trouble in the way of extrusion afterwards. It has been prepared by careful cleaning in hot water, and the simple retention in a solution of 1 in 20 carbolic acid for a month prior to use.

3. *The incision must be free; the larger the growth the more extensive the incision.*—To attempt these operations through small incisions is to court disaster. The incision should run along the anterior border of the sterno-mastoid to the clavicle, and along that bone as far as the episternal notch. The large flap thus formed should be turned forward, and should include the skin, fascia, and platysma. The anterior jugular or other veins should be divided between ligatures. The next essential step is the proper exposure of the tumour. It is covered by the expanded and thinned sterno-hyoid and sterno-thyroid muscles, which may well

be said to form a muscular capsule. Beneath these is a capsule of fascia, which is often mistaken by the inexperienced for the true capsule of the gland. If this error be made the operator will work outside the capsule, and the isolation of the tumour will be difficult or impossible. Where the growths are large I invariably divide the sterno-mastoid about its centre and tie the external jugular vein, should it present. The division of this muscle allows the tumour to come forward from the carotid sheath, and I regard it as an essential step to the safety of the operation. The stripping of the capsule should be done with the fore-finger, cautiously worked along the surface of the great tumour. Next comes the isolation of the pedicles. This is again done by the finger, aided by a blunt dissector, and the operator should proceed carefully and patiently until he can definitely "hook up" the pedicles of the gland upon his finger. In the same way the separation from the internal jugular vein is conducted posteriorly. This vessel may be of huge size, and is readily torn if adherent or involved, and with the separation of the tumour from it the main anxiety of the case is at an end. The pedicles are now clamped. The operator should place the clamp on the lower pedicle, so as to include some glandular substance. This does away with the fear of injuring the recurrent nerve. The pedicles are now divided, and the profuse gush of blood which occurs may be regarded with equanimity, for it comes from the tumour, not the general circulation. The mass is now turned over toward the middle line. It will be found adherent to the side of the trachea and larynx, but can be boldly separated. Here some large adventitious veins may be found, but as the wound is so large and open they can usually be readily clamped with curved pressure forceps.

The excellent diagram (Fig. 4) by my friend Mr. Mummery well shows the steps of the operation hitherto described. The clamps are seen upon the divided pedicles, and the large cut vessels are depicted upon the divided surfaces, beyond the clamps. The tumour is seen turned

FIG. 4.

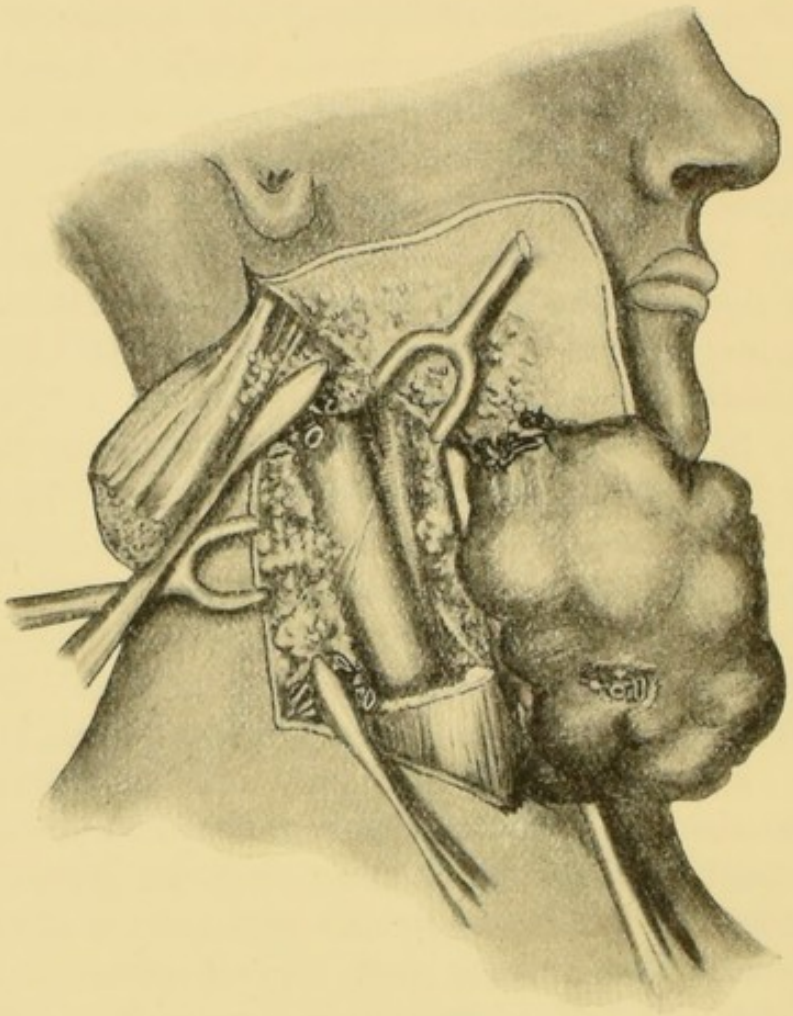


Diagram of operation for removal of a large goitre. The pedicles containing large vessels are seen clasped. The sterno-mastoid is divided and turned aside, exposing the jugular vein. It now only remains to clamp the isthmus and remove the mass.

over towards the median line. The divided sterno-mastoid is depicted, and the jugular vein is exposed at the bottom of the wound. This is all as actually seen, and describes better than words the actual condition of the parts.

I next engage the mass of gland-tissue near the isthmus in a powerful clamp, and gradually close it, crushing the gland-tissue, and the mass is cut away on the distal side of the instrument. At this period of the operation the anæsthetist must act with peculiar caution. Great "faintness" and collapse are very apt to supervene, and I have known the respiration temporarily cease at this stage. I am not sure of the cause of these symptoms. Obviously, there are several explanations which suggest themselves, such as crushing of nerve-trunks or the forcing of "thyroid juice" into the circulation. Hence, towards this stage, the anæsthetic should be so managed that the patient is not "deeply under," and corneal reflex should always be present. Enemata of warm water may be administered, and it is customary to inject strychnine, though I doubt if this is really needful. The final securing of the mass of gland-tissue near the isthmus is effected by transfixing with a pedicle needle, threaded with kangaroo tendon. The ligature is strongly tightened as the clamp is removed, and the crushed tissue readily gives way, a neat and secure pedicle being thus formed.

The cut sterno-mastoid muscle is now united with fine slips of kangaroo tendon. It readily unites. A large tube is introduced, and brought out at the lower angle of the wound. The margins of the incisions are carefully sutured with fishing-gut and horse-hair. In the first twenty-four hours profuse oozing occurs from the tube, saturating the dressings, which need frequent changing. The tube should be shortened inch by inch, and may finally be removed on the fifth day. I have found distinct benefit from this prolonged drainage, and I strongly advise it. All my cases have healed speedily without fever. The resulting scar, red and unsightly at first, becomes wonderfully inconspicuous as time advances, and the skin shrinks, a faint

white, curved line being the only representative of the extensive incisions at the time of operation.

Some useful conclusions can be drawn from the above cases and considerations :

1. That medical treatment should not be neglected in cases of goitre.

2. That cases of goitre which tend progressively to increase should always be submitted to operation before they grow to a huge size, and before their deep connections become complicated.

3. That the operation of removal of one lobe and the isthmus is practically always followed by atrophy of the corresponding lobe. The operation is free from special risk, if done properly, and with the assistance of an experienced anæsthetist.

4. That large old adherent goitres will still remain difficult and dangerous to remove, and that it is the duty of every practitioner to urge this upon his patients, and submit them to operation while removal is yet comparatively safe and easy.

SOME IMPORTANT POINTS IN THE DIAGNOSIS AND TREATMENT OF MAMMARY CANCER.[1]

The origin of mammary cancer.—It is not too much to say that this all-important question is still shrouded in mystery. I shall this evening take the view that the earliest observed changes in mammary cancer are a morbid proliferation of the acinous epithelium, resulting in large nucleated cells, which never progress towards a higher type, and that these spread by local extension and by infection of neighbouring cell-elements, with the same power of morbid proliferation. Thus cancer may be looked upon as an error of growth, as a divergence of the proper functional activity of the epithelium into morbid channels. Such a change is especially likely to occur at the menopause, when the secretion of milk ceases, and all sorts of irritations of the mammæ from the pelvic generative organs are rife. There can be no doubt that irritations of the breast at this time may readily produce cancer. And these are especially sore or eczematous nipples, blows, and old inflammatory disturbances, or the sites of removal of previous innocent tumours.

As regards the parasitic theory of cancer, it is our duty to look upon this exceedingly important subject with an open mind. The life-history of sporozoa in the intestines of various animals is scarcely understood, and the presence of psorosperms or encysted sporozoa in cancer-cells rest solely on microscopical evidence, and this is disputed by observers of great eminence. It is more convenient for

[1] Abstract of an address delivered at the Watford Branch of the British Medical Association, December 13th, 1893.

clinical purposes this evening to consider cancer as an error of epithelial growth, for that, at all events, draws our very forcible attention to a preliminary cause of cancer—irritation of the tissues. The boundary line between chronic inflammation and cancer growth is a hard one to draw; and if one took a microscopical section of chronic mastitis from a person prominent in the world one would probably find that pathologists would be very reticent in expressing positive opinions as to its cancerous nature or otherwise.

The practical rule we learn from all this is to attend carefully to the condition of the nipples when sore or irritated. It is especially important to see that they are well protected in early adolescence, for the congenitally imperfect nipples often found are due, in my belief, to undue pressure of stays and corsets. Suckling is rendered difficult or impossible, and congestions and irritations lay the foundation of future chronic inflammatory changes and of cancer-formation. Commonly a woman with cancer will tell us that she never could suckle with the affected breast, and such cases are only too likely to terminate in this terrible malady in persons of over forty years of age, especially when predisposed by hereditary taint.

Early symptoms of carcinoma.—First note that in examining a breast for cancer we should never "pinch up" the breast substance between the fingers, but always lay the hand and fingers flat upon the breast substance. If we appreciate a distinct tumour against the flat surface of the fingers, be sure that such really exists. The characters of the formation in true carcinoma will be as follows:

1. The tumour is of stony hardness and of a somewhat square outline.

2. It infiltrates the breast substance, and does not move within it freely like an encapsuled innocent tumour.

3. The nipple is retracted and the skin over the tumour dimpled.

The glands in the axilla may or may not be implicated. The patient may or may not be emaciated and worn-looking. The tumour may or may not be the site of the

peculiar "lancinating stab" of cancer. All such signs as these are variable, and with such considerations as mental shock and grief, endemic influence or hereditary proclivity must be given that secondary position in forming an opinion which their extreme uncertainty affords. Discharge from the nipple is usually found in cysts, but bloody or ruby-coloured fluids may issue from the nipple in cancer; and here I show you a beautiful drawing of a hæmorrhagic cyst in the centre of a mass of scirrhus. There is nothing that exactly imitates the extreme hardness of scirrhus, and if cancer be not hard, it is then so rapidly growing as soon to dispel all doubts. The retraction of the nipple is a most fallacious sign. It is due to the drawing in of the ducts by the fibrous contraction of the scirrhus. This may be exactly simulated by chronic inflammatory contraction, the puckering over an old abscess, a shrivelled cyst, or a fibro-adenomatous growth. The three conditions where difficulties and pitfalls arise in practice regarding the diagnosis of early cancer are as follows:

1. Chronic mastitis, with lobular indurations.
2. Deeply seated cyst.
3. Deeply seated abscess, tuberculous or otherwise.

To-morrow morning any one of us may be confronted by one of our patients, who is of the cancerous age, and has discovered a "hard lump" in the breast. We are naturally apt to share in her alarm, and are too prone to make up our minds that such a case must be cancer. Such deplorable errors have arisen from this attitude that we cannot be too much aware of the inherent difficulties which surround an early diagnosis in these cases. It is of the utmost importance that a definite opinion be early formed, and I would here draw forcible attention to the pernicious practice of waiting in these cases until the glands are enlarged or prominent signs of cancer show themselves, the patient being meanwhile comforted with plasters and ointments. We are all too apt to fall in with the desires of patients to delay, and thus we prevent them really having the chance that operation affords.

The condition that gives us the greatest trouble in diagnosis is undoubtedly chronic inflammatory induration.

This is frequently bilateral; the outline when felt with the flat hand is never definite like that of cancer, and it lacks the stony hardness of that disorder. Many of you will notice that I omit the question of local temperature in this all-important question. Cancer, especially bad cancer, is apt to be inflamed and hot, and chronic inflammation is so seldom unduly hot, unless irritated by applications, that local temperature cannot be looked upon as a distinguishing sign. Seeing that chronic mastitis often heralds cancer in the breast of an elderly woman, it is our duty to watch such cases with close attention. Some of them are syphilitic. Remembering this, it is my own practice—I give it you for what it is worth—to cover such a breast with a freshly-prepared plaster of mercury and ammoniacum, while I give iodide of potassium. The breast is covered with "gamgee" tissue, and firmly bandaged. At the end of three weeks I again examine, and if the suspicious hardness should have increased under this treatment rather than diminished I should counsel exploratory incision, with permission to remove the whole breast, in a patient of over forty years of age. Retraction of the nipple and puckering of the skin may be found in these cases, especially if there has been an old abscess.

Next, let us all remember that an apparently hard lump deep in the breast may be a thick-walled cyst or a chronic abscess.

I know of no absolutely certain methods of diagnosing these conditions except by cutting into them. They are best treated by dissecting the cyst or abscess freely out, and hence diagnosis and treatment can be effected by the same means.[1]

Time will not allow us to enter into the diagnosis of cancer from such innocent tumours as adenomata. These are common in younger women, and mobility in the breast

[1] Cases were here related of errors in diagnosis in these three conditions, and illustrations of specimens handed round.

substance will distinguish them from malignant disease more than any other one symptom.

We have thus got over the principal difficulties in the diagnosis of early cancer, for a short period of observation will settle the question in chronic mastitis, and an exploratory incision is urgently needed in cases of "deeply-seated lumps" which may be fluid or solid.

Conditions of the nipple precursory to cancer.—I have already urged the importance of this subject, and will only now draw your attention to the conditions of the nipple-eczema and the so-called Paget's disease as precursory to cancer. The latter, of which I show you a beautiful painting, is peculiarly red, raw-looking, and florid, weeping with serous exudation, and devoid of projecting papillæ, vesicular exudation, or marked scab-formation. Very similar conditions are seen on the glans penis in association with cancer there, and also on the skin of the scrotum. Scrapings of the cells, prepared with Liquor Potassæ, will show the so-called psorosperms. In persistent chronic eczema, or in this affection, any progressive induration beneath the nipple may certainly be looked upon as an extension of proliferating epithelium down the ducts, and true cancer-formation, and early removal of the breast must be at once urged. It is these cases which often give the longest instances of immunity after operation.

Treatment.—Complete excision of the breast is still recognised as the best treatment for mammary cancer, and we will commence this part of our subject by considering what cases are unfit or very unfavourable for operation. These may well be summed up as follows:

1. Very fat women, especially when glycosuria complicates.
2. Extensive infiltration of the skin, especially with shotty nodules here and there interspersed.
3. Marked fixation of breast to pectoral muscle. This is to be ascertained by raising the arm to render the muscle tense. If manipulation of the breast be practised when the arm hangs by the side, the pectoral muscle will move with the breast in a very deceptive manner.

4. Extensive glandular implication, especially of the glands at the root of the neck.

5. Evidences of dissemination of the disease in other parts, especially the bones.

6. In the aged, and especially the spare and wrinkled, cancer will often form in the breast and remain quiescent for years. Nay, more! It will often shrink and shrivel up with the individual who bears it, never getting larger than a small walnut, and if ulcerated will scab over feebly or discharge a scanty serous fluid. Such growths will lie dormant or retrogressing in the flat and shrivelled mammæ of old women for twelve or fourteen years. The glands are rarely affected or the general health severely implicated, and the patient dies in the ordinary course of nature from some cause not connected with the cancer. Such cases should seldom be submitted to operation.

Important points in the operation of excision.—Everyone thinks that they are able to operate on a cancerous breast, but to do the operation thoroughly is by no means simple. Let us first remember that the gland is not round like an orange, but often has irregular processes of tissue passing from its periphery, and these are peculiarly likely to be left behind. The skin should be much more freely removed than is usually the case, and early union of the wound should never be brought about at the expense of retaining infected skin; this is a most common error.

The question of opening the axilla is one of vast importance. In spare women, where the condition of the glands is obvious, the axilla should be opened if the glands are markedly enlarged as compared with the opposite side, not otherwise. In fat women it is essential to open the axilla, and so explore the glands with the finger; for otherwise it may be impossible to know if they are enlarged or not. Opening the axilla, especially in inexperienced hands, increases the risk of the operation in consequence of the liability of injury to the axillary vein and the greater difficulty in keeping the wound aseptic. It is of much importance to remove the fascia and cellular tissue which

overlies the greater pectoral, for here large lymphatic spaces exist in direct communication with the axillary lymphatics. The preliminary cleansing of the skin is best effected by hot carbolised soap and water, followed by sponging with hot rectified spirit and water, and finally with a solution of corrosive sublimate (1 in 2000). The axilla should be most carefully cleansed by shaving, carbolic soap, and the perchloride lotion. The instruments and hands of the operators should be scrupulously clean, but powerful germicides should never be applied to the extensive cut surface. Good flushing with warm water seems sufficient to wash away clots, etc., and is followed by very satisfactory results. The drainage-tube had still better be used as a general rule. In thin, spare women it may be possible to dispense with it altogether. In such cases very firm pressure must be employed. When all such precautions as these are properly carried out, and especially when the axilla is opened, the operation of removal of the breast is not one to be looked upon as simple and easy.

Electricity in cancer of the breast.—The mysterious nature of electricity, and its supposed wonderful agency in controlling a fatal malady, surrounds this subject with much attraction to the suffering and credulous. For obvious reasons medical men of repute hardly like to meddle with electro-therapeutics at the present time. Our profession is ever narrow-minded regarding new remedies, and an attitude of antagonism is taken up towards electro-therapeutics which is quite unwarrantable. We must not confound electrolysis of a morbid growth, when heat is generated, acids and alkalies produced, and caustic action brought about, with the passage of powerful interrupted shocks through a tumour. It is this latter method which has been adopted in mammary carcinoma. It has been assumed, with much ingenuity, that the cancer-cells being of low vitality would perish, while the cells of the tissues remain active. It is obvious that the only way this question can be settled is by the faithful record of the

results of all treated cases. I am aware that a considerable number of cases have in the past three years been submitted to electricity used in this way. The published results have been very scanty, and this must raise a doubt in our minds as to the success of the treatment. If once I was convinced that this method gave better results than excision, I should say it was our duty to adopt it, and I regret that in our large London hospitals, which number electrical experts among their staffs, this question has not been settled by the treatment of a definite number of cases, with a trustworthy report of the results. I may finally add that I have seen small nodules in the skin destroyed by the ordinary process of electrolysis, and that cases are rumoured of death having occurred from powerful interrupted shocks passed through the left breast—the cardiac action being probably inhibited. So the method is not altogether free from risk.

Treatment by escharotics.—It is quite possible to remove an entire breast by caustics, but the process is tedious and painful, and has little to recommend it. It is otherwise with open cancerous ulcers, with a tendency to fungation and foul discharge; these are often much benefited by caustics. The ulcer being well soaked with a 5 per cent. solution of cocaine, a caustic application, as chloride of zinc with collodion, or Potassa Fusa, may be lightly applied. Ricord's paste, a mixture of sulphuric acid and charcoal, is also useful, but should be very sparingly applied. The disintegrating tissues may be removed by the constant application of the balsamic preparations, especially benzoin, when the cocaine and paste may be applied as before. A comparatively healthy surface may be thus obtained with little pain or risk, and the local and general relief is often remarkable. Personally I would avoid all pastes containing arsenious acid, on account of the uncertainty of their action and the risk of general poisoning.

Galvano-cautery.—There are still some surgeons who remove the breast by the incandescent wire-loop. I have no experience of the method, which must be followed by

much suppuration and by a risk of secondary hæmorrhage. Yet we must remember that some of the older surgeons now living deliberately state that long and profuse suppuration in a "breast case" is rather to be encouraged, as more likely to eliminate all cancerous elements.

Question of prognosis.—Acute, rapidly growing, and brawny cancers will generally return in the axilla, and scar in about two years. Cases of early removal of a small cancerous nodule, when the axillary glands are not affected, will give long immunity. As a rule, the more vascular and florid the patient, the earlier does the disease return.

Re-operation.—Recurrent nodules should always be extirpated, even again and again, so long as there is not extensive gland or systemic infection. Some very promising results have followed this practice, the subjects having lived for a great many years.

Cancer occurring in both mammæ.—This is more common than is generally supposed, and the treatment is the same as when the cancer is unilateral, excepting that a very careful search should be made to see if there be dissemination of cancer generally throughout the body. In spare women both mammæ may be removed at the same operation with good results. In cases when very large wounds have to be inflicted it is perhaps better to do the operations separately. If after removal of one breast cancer should recur in the other, the remaining breast may be removed if there be no evidence of general systemic infection. All such cases present questions of difficulty, and no hard and fast line can be laid down for the guidance of the surgeon.

Some remarkable phenomena in the growth of cancer.—Cancer, especially recurrent cancer of the breast, seems to grow by "fits and starts," and will often remain stationary or even get smaller, the credit being given to some bogus remedy taken by the patient. This seems due to some interference with the vascular supply. I have seen and now relate one remarkable case, where three cancerous tuberous nodules in a breast scar almost entirely disappeared temporarily under the bodily depression of a

concomitant severe illness. So cancer may in very rare instances ulcerate and slough to such an extent as temporarily to destroy its own main bulk. The withering and puckering of cancer in the very aged has already been alluded to.

Some points in the treatment of cancer beyond the reach of operation.—It is a great error to say to persons with advanced cancer of the breast, "I can do nothing for you." Such a statement drives the patient into the hands of the charlatan, and there is no part of our duty more important than the management of these distressing cases. The first indication is the relief of pain, and this is brought out by the judicious use of morphia used hypodermically. Atropine may often be combined. To three drachms of the hypodermic injection of acetate of morphia, one grain of sulphate of atropia is added, and the injection dose is three minims, containing half a grain of morphia and one sixtieth of a grain of atropine. The atropia lessens the disagreeable effects of the morphia on the bowels and digestion. Some few patients cannot tolerate morphia; in these the opium pipe may be instituted, or, failing this, various sedative agents of the pharmacopœia may be tried one after the other, though opium or its derivatives are our sheet anchors in these distressing cases. I have known the administration of chloroform of the greatest use, especially when the bones or spine are secondarily affected. The nurse or relative may readily administer a few drops at a time on a pocket-handkerchief, and thus a patient may be spared many of the mortal agonies attending the later stages of breast cancer. Locally, any lotion or ointment may contain morphia, but I know of few more soothing applications to an incurable breast cancer than the old-fashioned conium poultice. In the country this may be made from the fresh leaves; in the towns the freshly prepared succus conii may be mixed with an ordinary bread poultice, to the amount of half an ounce or more. The breast should be dressed under a spray of sanitas, eucalyptus, sulphurous acid, or carbolic acid.

Thus all offensive odours are obviated, to the comfort of all parties concerned. The parts may then be syringed with solutions of chlorinated soda (Liq. Sodæ Chlorinatæ ʒij, Aquæ Oj), or iodine solution one drachm to the pint, or sulphurous acid solution (1 in 80). If there is much fungation and disintegration, painting the surface with pure liquefied carbolic acid is very beneficial, for it acts as a caustic, a deodoriser, and an anæsthetic. The applications are very numerous for these cases, and I merely wish to indicate the comfort that may be given to these patients by care in the application and selection of remedies. The diet should be mainly milk and fish, with farinaceous foods. Rich meat diet and wines merely serve to increase the growth of cancer, and it is a significant fact that patients under certain quack remedies are at the same time adjured to abstain from meat. Œdema of the arm is best met by elevation and bandaging. In some exceptional and desperate cases removal of the limb and shoulder may become necessary, thus clearing away the whole of the disease. I may finally mention that I have tried pyoktanin in those cases of incurable cancer, but I was quite unable to satisfy myself that it did any real good.

In such an extensive subject as we have considered this evening it is impossible to even touch upon everything of importance, but I have indicated the main lines upon which our thoughts and discussions should run. It would be interesting to know of any cases of cancer of the breast following upon local irritation, any instances of long immunity after operation, and any cases of the effect of electrical treatment in undoubted cancer.

THE OPERATIVE TREATMENT OF CANCER OF THE BREAST.[1]

In response to the invitation of your Secretary, there are two reasons why this is a very opportune occasion for bringing the subject of the operative treatment of cancer of the breast before this meeting. Firstly because most of you are aware the questions with regard to it have recently given rise to a debate of some magnitude, and have created some attention among surgeons in London; and secondly there is a reason which affects you nearer home—namely, that these cases are common in practice and that they must therefore occur to all of you. There is probably no one in this room, in the daily course of his profession, who has not been, or will not be, called upon to advise upon the treatment of one of these cases. Therefore it is of importance that we should discuss a little in detail the history of the treatment of cancer of the breast, and especially how the matter stands at the present time.

If we go back to the ancient history of cancer of the breast—the days, for instance, of the old surgeons, Paracelsus, Antyllus, and Paulus Æginita,—generally speaking, the operative treatment was much the same; cases were not operated upon until they had got to a very bad stage,—that is, until the sufferers were driven to surgery by horrible pain and fungating masses of cancer on the front of the chest. The whole diseased area was swept off with a crooked knife, leaving an enormous wound. Hæmorrhage was staunched with the actual cautery or violent styptics. These methods, rough and barbarous as

[1] Abstract of an address delivered at Beckenham before the Beckenham and Penge Medical Society, Friday, March 11th, 1898.

they were, had the one advantage of very completely and extensively removing the disease. Had such operations been done earlier, instead of waiting until the cancer was so far advanced, the probability is that the results would have surpassed much of the surgery which later occurred. Following such old and rough surgery came a revulsion against what might well have been called barbarism, and surgeons began to operate with the idea of getting union by "first intention" of the wound which they had made. The consequence was that the operations were done very imperfectly; indeed, very frequently the cancer was not removed at all. The flaps of the wounds were shut up, enclosing infected tissue, fragments of breast and fascia, between them. The skin itself was often left infected. This is the kind of operation which was very largely done in this country fifty to seventy years ago, and in the days of Brodie, Astley Cooper, and Everard Home. Such operations, therefore, were not of a very complete sort, owing to the chief care being about the bringing together of the wound afterwards. Under these circumstances the term "recurrence" was a clear misnomer; future cancers in the operation area were not recurrences at all, because the disease had never been removed completely. So bad were the results fifty or seventy years ago that we find such men as Brodie, Home, and Munroe would scarcely consent to the performance of the operation at all, except in some very favourable cases. In Brodie's works the suitable conditions for operation are laid down very rigidly; he only picks out a few cases where the growth is very early, very small, and very chronic—where the skin is unaffected, the glands are not involved,—and says that only in these is it justifiable to operate. We recognise these conditions as favourable in the present day. It was precisely the same in European countries and America. Sands stated that he only operated for what he termed moral effect. Agnew declared he had never saved a single case. Sir James Paget's estimation of the results of operation on the breast, coming later, were very pessimistic. He once

stated publicly that he did not believe there was one case out of five hundred which did not recur sooner or later after the operation. Kindly writing to me in 1896, he said that, speaking from recollection, he had known many people live over three years after operation, such as were now termed cures; of those living five or six years after operation he knew very few, and only one or two who lived ten years were known to him. I think the reason of all this can be largely explained by the supposition that the operations of those days were so done as to leave infected tissue behind, either in the wound or in its immediate neighbourhood.

Before we go any further it will be better for us to define the terms "complete" and "incomplete" as applied to operations for cancer of the breast. It is very difficult to explain them accurately, but by "incomplete" I should mean that the whole breast is not removed, and that outlying prolongations of mammary tissue are left behind. The mammary gland is not a round structure; we know now that the boundaries of the mammary gland are irregular, and portions of mammary tissue extend into the tissue beneath and around the breast. An "incomplete" operation would, therefore, be the removal of the breast by an oval incision, but round the opening numerous little masses of mammary tissue are left. Another factor of an "incomplete" operation would be leaving infected pectoral fascia under the breast, and yet another would be leaving infected cancerous glands in the axilla. By the "complete" operation, on the other hand, is meant not only the free removal of the breast with all its outlying lobules and subjacent fascia, but also the axillary glands and the whole of the great pectoral muscle, the removal of the fascia over the lesser pectoral, and the dissection of tissue even from the axillary vessels.

We have now somewhat cleared the ground for the more detailed consideration of our subject. I have said that the results of operations for cancer of the breast many years ago were stated to be very bad; but when I came to

inquire for myself into this I was surprised to find, in the last twenty years, what a number of cases there were in which extraordinarily good results had been obtained by surgeons who performed the more or less incomplete method of operating. It must be carefully remembered that these results were exceptional. Still, one found in the practice of every surgeon of long experience some cases in which there had been long periods of freedom from disease after operation. I may mention, as notable examples, cases of Mr. Teale, of Leeds, who sent me a large number of instances of patients who remained free from disease for periods of years; also cases in which there was recurrence in the scar after long periods which was again removed, and again long freedom was observed. Mr. Croft sent me a similar series of cases; and in the debate at the Royal Medical and Chirurgical Society the other night there were few surgeons of experience who could not add to the cases I had collected some of their own. Thus Mr. Hutchinson related two cases where patients had remained free for upwards of twenty years after the removal of the breast by the late Benjamin Phillips; Mr. Heath mentioned nine cases in his experience of long freedom; and Mr. H. Morris furnished me with a long series of remarkable cases from the records of the Middlesex Hospital, which I had not time to read. Indeed, there was abundant evidence that the results of the incomplete type of operation were not so unusually bad as they are generally believed to be, a large number of patients having long freedom from return of the disease. Again I must remind you that these are only exceptional cases collected from sources of large experience; I do not wish to quote them as an argument for insufficient operating. What we may call the first revival of complete and extensive operating in this country was a remarkable paper, which created too little attention, by Mr. Charles Moore, of the Middlesex Hospital, in 1867. The origination of the extensive operation for cancer of the breast must be placed to the credit of an English surgeon. Moore pointed

out the importance of removing the outlying lobules of the breast, and described how cancer spread from a focus into the tissues round in a radiating manner. His views never took root much in this country, but they attracted attention in Germany, and in America the elder Gross took up Moore's precepts, and for many years performed a very extensive operation. So far as I could see from the observations of the large number of distinguished surgeons who spoke the other day at the Royal Medical and Chirurgical Society's meetings in London on this question, it is clear that the senior surgeons by no means advocated the complete operation in every case. Some of them said they would never clear out the axilla unless they found infected glands there, having in mind the theory of glands being protective against the invasion of cancer. It may probably seem old-fashioned for a surgeon to say now there is any protection from systemic invasion of cancer by the lymphatic glands, but it was evident that some surgeons, and those of great experience, held that view very strongly. If you introduce a dye into the skin it becomes arrested in the nearest lymphatic gland, and from the analogy of syphilis and lymphangitis it is argued that the glands act as barriers to prevent disease getting into the system. It has been held by surgeons of large experience that if the lymphatic glands are not infected they had better be left, and when the disease returns in the glands they can then be removed, and that the disease can thus be prevented from being disseminated through the system so quickly as otherwise would occur. To a certain extent this is borne out by some of the results of very extensive operations, for in Halstead's remarkable cases in which he removed the pectoral muscles and a large amount of tissue, a number of the cases died of visceral deposits of cancer, thus bearing out the ideas of the older surgeons. I mention the theory, not to say that I advocate it myself, but I think it right to allude to it, considering the number of very distinguished surgeons who give it support, because it appears to me to be highly suggestive and worth while remembering. Yet it has always

seemed to me that if a cancerous gland be left undetected in the axilla it simply serves as a fresh focus of disease, and the glands next above soon get contaminated, so that if a surgeon leaves the axillary glands untouched he must be very careful they are not infected.

The next point I had better bring before you is a sketch of the so-called complete operation as practised by Halstead and Meyer, founded on the pathological researches of Heidenhain.

Probably you are all familiar with the details; but, as I shall have to refer to it from time to time, it is as well to draw your attention to some of the main features of this proceeding. Time will only allow me to be brief.

Halstead's or Heidenhain's operation essentially consists in removing the breast, the infected skin, the axillary glands, the fasciæ, and the great pectoral muscle practically in one piece. An incision is made reaching from the coracoid process, sweeping round the breast and affected skin, back to the spot whence you start. The flaps are dissected back and the breast is detached; then the incision is carried into the axilla and the pectoralis major is divided at its origin and insertion, and the infected tissue and fascia removed in one piece; the pectoralis minor is divided, and the axillary sheath is dissected bare with a sharp knife. The latter detail is one I would not recommend except to a highly experienced operator. All large vessels are clipped before division, so that the hæmorrhage should be slight. Of course this operation takes away a large amount of tissue and leaves a correspondingly enormous wound, and the magnitude of the operation must, in my judgment, add to the risks of it. It is true those risks can be greatly diminished by careful and rapid operating, and by strict asepsis; but still an operation of such magnitude must entail corresponding perils upon old, feeble, and bronchitic patients. We know we cannot always choose our patients for operation in cancer of the breast, and so prudence should make us select carefully what we can choose in methods of operating.

For instance, think of such an operation being performed on a fat, bloated, emphysematous woman of sixty years of age; it would be extremely severe compared with the minor one of clearing out the axillary glands and fascia only. There is another objection which one is obliged to consider in reference to this operation besides the increased risk which it must entail, and that is in the movements of the arm. Halstead says that in his cases the movements of the arm were extensive and good; but, speaking from considerable experience, I may say that the movements of the arm are by no means always satisfactory. I have done this operation myself on certain selected cases, and good movement of the arm has ensued; but in my last two cases of the kind the movements were very bad, the limb being tied down by an extensive neuralgic scar, and the condition of the patient was very unsatisfactory. Mr. Treves, at the debate at the Royal Medical and Chirurgical Society, also spoke most strongly of the bad local conditions he had seen after this extensive operation. One of the main reasons you get the extensive contraction is in consequence of the large area of skin removed. Whenever a large area of skin is removed about the axilla you are very liable to get an extensive, contracting, painful local neuralgic scar.[1]

Finally, with regard to this very extensive operation, I may mention the remarks of Mr. Bennett May in his recent Ingleby Lecture. He spoke very much as I do with regard to this operation, and he doubts very materially as to whether the ultimate results of the operation as to freedom from recurrence are at all equal to the risks and severity of its performance.

Of course the grave question which arises with regard to this extensive operation on the breast is as to the probable prolongation of life after it, and if a very considerable proportion of patients, as has certainly appeared in the cases hitherto reported, die of visceral cancer, one

[1] Since 1900 I have adopted a regular system of early movement and massage for these cases, which largely obviates the above objections.

does not see that they will gain very much from this extensive proceeding. I hold no brief for imperfect operating. A great deal can be done in taking away cancer of the breast, as I shall show you, I hope, presently, without such an extensive operation as that of Halstead.

Perhaps I may now mention shortly my own general method of operating. I may repeat here what I said the other night in London. Surgeons commit an error in thinking that any one operation will do for cases of infinite variability. Is there, for instance, any kind of cancer of the breast where you might do a partial operation, removing only the disease? It sometimes happens that cancerous tumours do not grow in the breast, but in its neighbourhood, forming in accessory mammæ. If you can make sure that the accessory mamma is not really a prolongation of the mammary gland, I can conceive it justifiable to remove the growth only by a partial operation, leaving the breast intact. And that such practice is not altogether to be condemned, I would mention a case in which Mr. Pearce Gould performed such an operation. Two years afterwards the disease returned in the axillary glands, not in the adjacent mamma. Those glands were thereupon removed, and the patient was again free from disease; the breast remained untouched the whole time.

Let us consider another variety—namely, a case commonly enough brought before us, where an early cancer occurs in the breast with retracted nipple, and the axillary glands are not obviously affected. The operation I would advise in such a case would be free removal of the breast by an oval incision including the retracted nipple, clearing out from the axilla all the glands and lymphoid tissue and dissecting the fascia and connective tissue cleanly off the pectoralis major. Such an operation would, I believe, completely remove the cancer without anything more extensive being necessary.

Next we will discuss a too common variety, where in addition to the cancer in the breast the axillary glands are extensively infected. This is a condition which is very

often brought before us in practice, and in addition the growth may be fixed to the pectoral muscle beneath. In such cases I advocate removal not of the whole pectoralis major, but the sternal part of it. Removal of the sternal pectoral is readily done by pushing strong scissors beneath its respective attachments and severing by successive strokes. This proceeding adds only a little to the severity of the operation. The infected glands can be very certainly removed after such extensive exposure. The clavicular fibres of the pectoral are left in their normal situations, and can so aid in the after-movements of the arm. This is the most advanced operation I would advise in the last class of case I have described; it is very thorough, but can be quickly performed. I think I have said enough to illustrate my remark that no one operation can be applicable to every kind of case of cancer, and the surgeon will do best for his patients if he selects in each instance that particular operation which is suited to the condition of the growth and the patient before him.

I would now say a few words regarding the question of removal of the axillary glands. I have already stated that very great differences of opinion were expressed in this matter by surgeons of eminence at the recent debate. Some never remove them at all unless they can plainly feel them enlarged and infected. This I believe is a fallacy, and I am confident, having made many microscopical and other observations, that it is quite impossible to be sure whether the axillary glands are infected or not unless the axilla is open and they are felt; and even after that you cannot always be certain, because often the evidence is merely microscopical. I have examined a sufficient number of these cases to feel sure that the wisest and best course for the surgeon is to open the axilla and clear out the glands in every case. If they be found to be extensively infected, remove the sternal part of the pectoralis major in order to well get at the disease. The next point we go on to consider is the operative treatment of recurrent cancer. But before speaking of this a word

or two must be said about the nature of so-called recurrence. Recurrence is a term which is used often in this connection, but it is often a misnomer. If operation is performed for cancer of the breast, and fresh growth occurs in the neighbourhood of the scar or glands in a few months, it does not mean recurrence; it means incomplete removal in the first instance—it shows that some of the infected tissue has been left behind. Secondly, what are we to say about those extraordinary cases, which I confess I hardly knew existed in practice until I began to inquire carefully into the matter, of further growths of cancer appearing in the scar and glands some fifteen to twenty years after operation? Sir T. Smith, in the recent debate, mentioned an instance where cancer had appeared in an axillary gland actually twenty-four years after the primary operation! Again, what are we to say of cases—such an one happened to me the other day—of a patient having the axillary glands and breast removed, who remained absolutely well four years, and then developed rapidly forming ascites, cancer being found in the peritoneum? Are we to think of these as recurrences of cancer, or further outbreaks of the disease in predisposed persons? This matter has lately given rise to a great deal of debate, and much difference of opinion was manifested. Some surgeons, among whom may especially be mentioned Mr. Hutchinson and Mr. Butlin, held that such manifestations were not recurrences, but merely further outbreaks of the disease in predisposed persons. But there are these powerful, and, I venture to think, practically unanswerable, arguments against these views. If these are further outbreaks of disease, how is it that nearly two thirds of them occur in the scar or in the neighbouring glands of the area previously involved? Primary cancer of a lymphatic gland is a pathological rarity. How is it that cancer recurs so often in the bones, as the femur or spine, after removal of the breast? True primary spheroidal carcinoma in the bones, such as the femur or spine, is practically unknown. If we search literature we can find

a certain number of cancers of the brain or dura mater after removal of the breast; here the dissemination from the breast focus seems undoubted. A large number of cases of cancer after removal of the mamma come back to us with a growth in the lung, pleura, or liver, structures in direct lymphatic contiguity with the area from which the disease has been removed. I think these are very strong arguments indeed, and are evidence of infection having occurred from the primary focus in the breast; the cells have for some reason long lain dormant in the tissues. This theory is of the greater importance, because it urges upon us the advisability of early operation. The reflection also occurs to our minds that there must be in these individuals a curious something or other which is inimical to the growth of cancer, and which keeps the disease quiescent in their tissues, or that the disease itself varies extremely in rate of growth or in virulency. All such observations tend to encourage the hope that the seropathy of cancer may not entirely be a pleasing dream!

Now what operations are to be done in recurrent cancer? It very commonly occurs that in the scar of the mammary tumour after removal you find one or more button-shaped nodules, and the very best results occur from dissecting them out by oval incisions. Some of such patients have great prolongation of life. The late Mr. Durham had a patient operated upon by himself and other surgeons some twelve times for these small recurrences in the neighbourhood of the scar; she remains well twenty-two years after the first operation. This is an extreme and exceptional case, but there are many others less striking which exemplify the good of this practice. Such local recurrences are easy enough to deal with; but when you get return in the axilla, when the arm is enormously swollen and brawny, œdematous and blue, the nerves and vein being pressed upon, what operation, if any, are we to do then? In a very large number of such cases there is no doubt that nothing operative can be accomplished. The mediastinal glands and cervical lymphatics are too often

implicated, and likely enough the pleura or the liver. But there are operations advised, one of which is amputation of the arm at the shoulder. This may be justifiable for a case of extreme pain; but unfortunately, as a general rule, when the humeral joint is cut through we find cancer on the face of the stump, and this is why amputation is generally such a poor resort under these circumstances. Again, operation has been suggested on Berger's method, in which the whole limb and the scapula and part of the clavicle are removed. Two large flaps are reflected, the clavicle sawn through, the subclavian vessels tied, and the whole mass removed. My colleague, Mr. Dent, has lately done a successful operation of this kind at St. George's Hospital in a case of recurrent cancer implicating the axillary nerves. The objection to Berger's operation is the terrible disfigurement, and there is also a more vital objection, and this is that the cancer is usually growing in such parts as the mediastinal glands or internal viscera at the very time this proceeding is being adopted. I have taken out the sternum of four cancer patients who died with great œdema of the arm. In all of them were deposits of disease at the back of the sternum. Such extensive operations are consequently very seldom indeed justifiable. I do not think they ought ever to be performed, unless in some extraordinary and extreme circumstances. I now draw your attention to two lesser operations which may be done in these cases for the palliation of pain, which are very useful. One is the stretching of the axillary nerves, and the other is the dissecting away of cancer from them. Four years ago I treated the case of a lady with frightful pain from recurrent cancer in the axilla, and I found the axillary nerves impacted in the growth. I split the masses of cancer and separated them from the nerves with a director. Almost for the remainder of her life the pain was strikingly relieved. This idea is not my own; I borrowed it from a case of Mr. Mitchell Banks which he published, one in which he performed much this kind of operation with great success.

Having said as much as time will allow about operations for primary and recurrent cancer, we go on to a matter which will interest you all here more than the actual performance of the operations, and that is the prognosis in respect to these cases. One of the first questions the patient or relatives will ask you is, "What is going to be the result of this? Will the operation cure the disease?" Some of you may know that two or three years ago I wrote a letter in the 'Lancet' calling attention to the fact that the term "cure" of cancer of the breast by operation was not a very happy one. I believe that this my idea is also supported by the majority of London surgeons. Cancer of the breast is not like an epithelioma on an old sore of the leg, or a chronic epithelial growth on the penis, which generally never return when early and thoroughly operated upon. We know what a common-sense Englishman means by the term "cure." If we remove a fatty tumour from the arm we say to the patient the disease is cured. We know, and our patients know, what this means. The disease is removed, eradicated; it will never return; the organism is left in a healthy state. I think we cannot say that of cancer. It is true that a large number of patients after extensive operation for cancer are alive, and keep well for three years without any return of the disease. But can we say that such a case is cured? You may, indeed, tell your patient that it is an axiom in surgery that if the disease does not recur in three years it may be considered cured; but if such a patient has a recurrence in three years and six months in the spine or liver, what will she and her friends think of our promise, and what will they think of our profession as to accuracy of prognosis? Cancer is a disease which is too ill understood to lay down prognostic laws with certainty. To state what we are not in a position to know, will shake the faith of patients in legitimate practice. What we can tell them is that such and such measures will lead to very long freedom from recurrence, and that if the disease returns in the scar or in the neighbourhood, by repeated small

operations they may have a long lease of life. We may encourage them with reports of favourable cases of freedom for ten or fifteen years, but we should not make horoscopic statements which may be falsified by events beyond our knowledge or control.

I should like to urge upon this meeting very strongly that removal of the breast on the modern plan, with dissection out of the outlying lobules of the gland and the pectoral fascia, and perhaps the removal of the sternal part of the pectoralis major, is not an easy and simple operation; it requires a very great deal of care and skill. A large number of operations are attempted for cancer of the breast which are notoriously incomplete; the dissection is not done thoroughly as it ought to be, and infected tissue is left in the wound. The clearing of the axilla from glands is seldom done properly, because the incision is seldom made large enough. Inexperienced operators are satisfied to make a small incision, and scratch and tear with their fingers through this instead of laying the parts open to observation and thorough surgery. Another important matter is rapidity in operating. Some surgeons tell us that they take one and a half to two hours over removal of the breast! Such a lengthy operation, in my judgment, adds very seriously to the danger of the patient. The risk of bronchitis in an aged person from such a long operation on the thorax is very grave. Another point of vast importance is the question of the anæsthetic. I am sure in operating for removal of the breast it is a very bad thing to keep a patient heavily drenched with ether for a long time; I always request the anæsthetist to give the patient gas and ether at the start, and towards the middle gradually substitute chloroform in the smallest quantity possible to keep up anæsthesia. If this is properly done, sensibility will be returning as the dressings are applied. Warmth of the room and warm clothing to the patient are also of great importance, and I need hardly say that the strictest care must be exercised in asepsis. When I speak of rapidity in operation I mean the rapidity con-

formable to safety and thoroughness. I have seen surgeons waste many precious minutes in talking, preparing instruments, in shifting the patient about, all of which should have been done before the operation, not when the patient is under the anæsthetic.

In concluding this sketch of the operative treatment of cancer of the breast I would urge very strongly a point which I hinted at before. Believing as I do that recurrence of cancer is due to dissemination from a local focus, the great secret in getting successful results and long periods of immunity from recurrence—and it is the factor I would insist upon more than any other—is early operating. This is the one thing we all ought to have before our minds. It so often happens, though perhaps not so often in modern days, that out of mistaken kindness cancers are covered up with plasters and concealed, and patients are encouraged to take this or that drug until the cancer becomes inoperable. In cancer of the breast, if the disease is removed freely when it is as big as a nut, we should have still better results in the treatment of this formidable malady than we are obtaining at present.

I have only given you a bare sketch of a very vast subject. If I had gone thoroughly into all the subjects which I have brought before you I might have been here for several hours. I only hope you will show your appreciation of the remarks I have made by asking me any questions upon matters which I have not made perfectly clear.

In answer to questions, Mr. Sheild said the president's criticism of the terms "complete" and "incomplete" was very proper; the same objections had been repeatedly made, and had occurred to his mind. He only used the terms in his remarks because they had been adopted largely; not because he thought them right. He thought the terms "lesser" and "greater" operations were preferable. Though he had spoken of Halstead's operation as being too extensive for ordinary cases, he could conceive instances where the operation would be justifiable. For example, in a robust woman with a cancer adhering to the

pectorals he would say Halstead's was a suitable operation, but if he were asked to perform the operation on a feeble person with bronchitis or cardiac disease he would not do so. The operation should not be done as a matter of ordinary routine. He used the term "Halstead's operation," but we should remember it was founded on the observation of the pathologist Heidenhain. Regarding the subsequent movement of the arm after an operation involving the clearing out of the axilla, it was his invariable practice never to bind the arm to the side after operations on the breast. He always left the arm in a sling; and after ten days, as soon as the wound was healed, he instructed the nurse to raise it from the side very gently and insert cushions beneath it. In this way he had generally got good movement afterwards without the wearing of a splint, which he thought would be rather irksome to the patient. There would be no objection to trying the splint in cases where the axilla was greatly opened, and especially when muscle was removed. He would be glad to try anything to obviate contraction in these cases. He thought the splint mentioned by the chairman was by no means new, as he (Mr. Sheild) had in a manuscript book a copy of a very similar splint advocated by an American surgeon to prevent contraction after burns. As to the use of Coley's fluid in inoperable cancer, the matter passed through his mind, but he did not touch upon it because he was dealing with the operative treatment of cancer of the breast; and other matters, as electricity, drugs, etc., were too numerous even to mention. However, he was in a position to give them definite information. Two years ago he published a very remarkable case of recurrent sarcoma of the breast treated with this fluid. Two large nodules of the growth disappeared entirely under its use, but it unfortunately happened the remedy also killed the patient. There was a risk of destroying the patient in order to cure him of his disease! He could only say that it was a most dangerous treatment. He had a patient at St. George's Hospital at the

present time with two large inoperable recurrent sarcomata on the back. He had removed them twice, and a senior colleague had operated on them three times. They were now so large and deep as to be no longer fit for operation, and he was treating them with Coley's fluid. He injected the larger tumour with three minims of this preparation, and the effect was nearly to kill the patient, for within an hour of the injection she had a terrible rigor, became almost pulseless, passed her motions in the bed, and was only kept alive by the free use of brandy. The tumour he injected sloughed somewhat after acute inflammation, and the other a little diminished in size; he was intending to inject it again, and the ultimate results would be probably one day published. Coley himself had laid it down that the injection of this fluid had done good in spindle-celled sarcoma; the results in cancer, even according to the inventor, had been poor. Other surgeons had come to the same conclusion. He (Mr. Sheild) had employed it in three carcinoma cases, and in all of them he had had to leave it off; no good was done. He questioned whether the fluid would ever be curative in carcinoma, but in spindle-celled sarcomata it might be of some benefit if employed with the extremes of caution. A method of treatment, on which he was surprised no question had been put to him, was the removal of the ovaries in recurrent cancer of the breast. A certain number of cases had been done, notably by Beatson, of Glasgow, and remarkable results had ensued—namely, great diminution of pain and shrinkage of the cancerous growths. But he (Mr. Sheild) thought the operation should only be performed in rather young women. He did not see how it was going to benefit a patient getting on in years, whose ovaries were inactive and not, therefore, influencing the vascularity of the mamma. He might mention that he had information to the effect that recurrence of growth was already manifest in some of the published cases of success, and he knew of two cases of "cure" not published where the removal of the ovaries had had no effect whatever on the disease! Still he

thought it was justifiable to do the operation on a young woman with inoperable breast cancer, but only after very grave deliberation and consultation, for the treatment was open to wide abuse by design or ignorance.

As to the question relating to the microscopical characteristics of recurrent cancer, in the majority of the cases he had examined the fresh growths were invariably of the same type as that in the breast—namely, spheroidal-celled carcinoma. In cancers of duct origin the epithelium was of the columnar type, resembling that of the original disease. A question had been asked as to what was the longest period of time on record without a recurrence of cancer after operation. This was a very difficult query to answer accurately, because it depended upon the truthfulness of humanity, which in the matter of successful cases in one's own profession was sometimes a little uncertain. The longest period of freedom from recurrence which was mentioned in the recent debate was twenty-four years, but even after that time the disease returned in a neighbouring gland. He could not now remember the longest period in the cases he had collected, but there were several of from fifteen to twenty years. The longest period of freedom in his own experience was fifteen years. He knew a lady who was operated upon for cancer of the breast fifteen years ago, in whom the axillary glands were not touched, and she was still said to be in perfect health. As to whether recurrences were more likely to occur in an old or a young person, he would say, as a general rule, that the older the person the slower would the cancer grow. In an old wrinkled woman of seventy from whom cancer had been removed a recurrence would be very long delayed and very slow growing, whereas in a young, robust, and plethoric woman, more especially one who was pregnant or lactating, the disease would return with virulence and rapidity, so much so that it may seem worth while operating. But there were exceptions to this, and exceptionally a very bad type of primary cancer was followed by long freedom from return after operation. This

brought him to say that there was no doubt a great deal more depended on the curious vagaries of the rates of growth of cancer than was generally believed. Extraordinary examples had been related of spontaneous retrogression of cancer. Professor Bennett, of Dublin, kindly informed the speaker of the case of a near relative of his own; she had cancer twenty years ago, and it simply withered away. If this case had been operated upon, he invited them to think, what a boast there would have been of the successful results of the special operation performed. Therefore they were obliged to take into account the vagaries and eccentricities of the disease, because it differed extraordinarily in different individuals. He had been asked how long an operation for removal of cancer of the breast took to perform? That of course must vary according to the complexity of the case, and especially the experience and skill of the operator; but it ought to be a case of considerable difficulty to take more than half an hour. The growth ought to be removed and the wound commencing to be united by that time. He very much deprecated operations one hour and upwards, for they exposed the patients to considerably increased risk.

COMMON INNOCENT TUMOURS OF THE BREAST.[1]

In the 'British Medical Journal' for June of this year you will find a series of clinical lectures by myself on the principal diagnostic points in connection with cancerous disease of the breast. I refer to them because they may be very advantageously read in connection with the lectures I shall deliver, during the next few weeks, on the diagnosis and treatment of some of the more important varieties of innocent tumours of the mammary gland.

Tumours of the breast, composed of fat, bone, cartilage, or vascular tissue, are very uncommon. I have notes of such cases, but you will not be likely to meet with them. I may remark in passing that bony formations are usually calcareous degenerations of tumours of another nature, and cartilage is usually mixed with sarcoma.

The group of tumours to which I wish to direct your special attention to-day is an exceedingly common and important one. I may first say a few words concerning the nomenclature applied to this class of tumours. I will call them the fibro-glandular group. The tumours in this category are composed of gland and fibrous tissues in various proportions, and therefore a number of names have been, perhaps needlessly, used to designate the different forms. Thus such terms as chronic mammary tumour, fibroma of the breast, adenoma of the breast, fibro-adenoma of the breast, are all familiar to you, but they may all be included in the group which I have just men-

[1] A clinical lecture delivered at St. George's Hospital, October 13th, 1896.

tioned. At one extreme of the class you may put the pure adenomatous tumour, consisting of nothing but gland tissue, and at the other the hard, firm tumour, which is composed of nothing but true fibrous tissue. Between these two come the bulk of the cases. I may tell you that pure glandular tumours of the breast, *i. e.* those which are made up of nothing but gland tissue, are rare, and so are those which we place at the other extreme, the structure of which consists of fibrous tissue alone. The composite growths between these two extremes are very common; full 90 per cent. of these tumours will be found to consist of a mixture of fibrous and glandular tissue in various proportions. *Apropos* of pure adenoma, Gross, whose experience has been unusually wide, found no less than eighteen examples; but a better idea of their rarity in ordinary practice may be gathered from the fact that during the last thirty years there have only been two cases in this hospital in which the tumour was found to consist of absolutely nothing but glandular tissue. During the same period the records of this hospital have only dealt with three examples of pure fibroma,—that is to say, of tumours containing nothing but pure fibrous tissue.

The following case will serve as an example of pure fibroma of the breast:—A married woman, aged 42, was admitted into this hospital on July 9th, 1882. In her right breast was found an irregular, large, lobulated tumour, very movable, hard and heavy, which had existed many years. There was no puckering of the skin, and the nipple was not retracted. The glands in the axilla were not enlarged. On section this tumour appeared like scirrhus, but under the microscope it was found to be pure fibrous tissue, arranged in concentric whorls, but containing no glandular elements whatever. While on this subject I may mention that fibro-adenomata are found in animals as well as man. I have seen examples in a bitch and in a cow. In vol. xl of the 'Pathological Society's Transactions' there are recorded cases of this tumour in the mammary glands of cows and of an old rat. These

tumours are also common formations in the male breast, a point which should be carefully borne in mind.

I may next draw your attention to certain points regarding the clinical history of fibro-adenomata, which among other features will show their striking innocency. In the first place the tumours are found nearly always in young women, the majority of the subjects being under thirty years of age, while many are under twenty. The youngest instances I know of in literature of these fibro-adenoma of the breast are as follows:—Two cases are quoted by Patterson in the 'Journal of Anatomy,' 1891, the girls being aged 12 and 13 respectively. Hopkins quotes in the 'Boston Journal' for March 26th, 1885, a case aged 11, and in this instance a similar tumour had actually been removed from the opposite breast of the same girl at the age of 7. A case is related where the late Mr. Cooper Foster removed a tumour of this nature from a child aged only ten months, and this is the youngest case with which I am acquainted. Gross found 12 cases of his pure adenomata to occur before the fortieth year of life, 6 after 40. Out of 84 cases, Bryant found most of them before the fortieth year, only 16 of the patients being beyond that age.

I have personally collected a series of 35 cases, and 28 of these occurred before the fortieth year.

I may also say that I have collected 61 cases from University College Hospital Reports, extending from 1877 to 1890; 45 of these occurred before the fortieth year, 16 after.

These figures will enable you to conclude that the group of tumours which we are considering occurs at the exact opposite period of life to carcinoma, and that the majority are found in young women and unmarried girls.

It may be added that, clinically speaking, it is quite impossible to distinguish between pure fibroma, pure adenoma, and the mixed varieties of tumour of which we are to-day speaking. After laborious search with the microscope you may be able to say this is a pure adenoma,

a fibroma, or a mixed tumour—fibro-adenoma; but it is quite impossible to do this from external manifestations and observations.

We will next deal with the causation of these tumours. In speaking of this we are met with the consideration so frequently coming before us in connection with the causation of tumours generally—that although many reasons are given why they should grow by learned people, we are still really ignorant as to why a given tumour has formed. However, the following are the causes usually given. A large number of these patients attribute their trouble to a blow upon the breast. When you consider how very frequently women get blows or slight injuries upon the breast, you will be able to appreciate how very vague such a history may be. Then, again, in some books you find it stated that these tumours are found in girls who have disordered menstruation, and the growths are supposed to be in some way related to disturbance of this function. The tumours are very often painful at the menstrual periods, indicating some irritation of the sexual organs; but real evidence is very vague as to this being a factor in their production. I think a far more possible cause of the formation of these fibro-glandular tumours in the breast is that of Cohnheim especially advanced by Mr. Roger Williams, who has referred them to "sequestrations." This theory, a well-known one, is to the effect that such tumours take their origin from embryonic sequestrations of breast tissue which take on a late development. In the same way it has been supposed that cartilaginous tumours of the parotid originated from fragments of embryonic tissue being left in that gland. I only give you the explanation for what it is worth. It is a subject I feel far from certain about myself.

While on the question of etiology I wish to make it as clear as I can to you that a certain number of these tumours originate by papillary growths within cysts, *i. e.* a cyst forms, and a growth fills it up, thus forming an adenomatous tumour. I have an example of this on the

table for your inspection. At my next lecture I will show you a drawing which exhibits numerous cysts of the breast in the process of formation, and the adenomatous growths in some places almost filling them up.

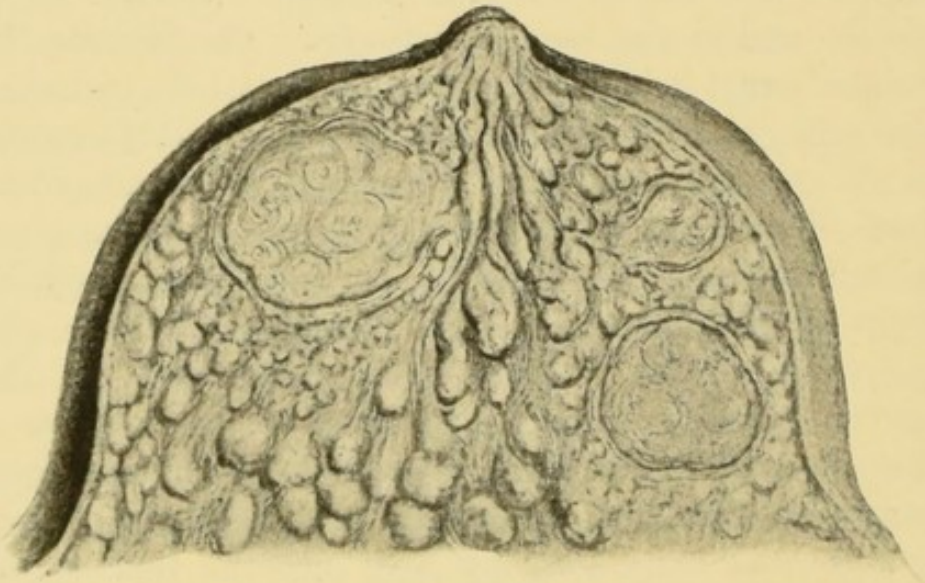
Next I must speak of the locality in which these growths occur. They may form in any part of the breast, but are, I think, commonly met with on the marginal aspects. You will find these little round movable tumours growing on the sternal aspect of the breast, or towards the lower part of the mamma, or near the axilla. This circumstance has led to the supposition that a large number of these fibro-glandular tumours are formed in what are called "accessory mammæ." Those who are acquainted with the anatomy of the skin will know that in the axillæ and in the neighbourhood of the breasts there are mixed sweat and sebaceous glands, which sometimes secrete milk, and may be looked upon as breasts in miniature. It is supposed that marginal fibro-adenomatous tumours of the breast frequently originate in these glands, quite apart from the breast. Mr. Williams estimated that out of fifty cases of fibro-adenomata of the mammary region, 7 to 14 per cent. originated in these accessory mammæ. But very few of us realise how far the cusps of the breast itself extend. The mamma is not a round structure, but straggling prolongations of mammary substance extend a long way into the tissues round it. I have myself seen such tracts of tissue pass over the axillary sheath. Almost all these little islands of breast substance are connected with the mamma by a string of mammary substance, and the tumours in them are really developed in outlying lobules of breast tissue. As an instance of this I will read you the following cases:

A single girl, aged 21, was admitted into this hospital in July, 1878. She had a small, hard, movable tumour, of the size of a hazel-nut, at the upper margin of the right breast, but free from it. The notes stated that it was not connected with the mammary substance. At the operation performed by Mr. Pollock a slender stalk of mammary

tissue was found connecting the little tumour with the breast. Such, I believe, is the true explanation of many tumours which are said to originate in accessory glands. There are, however, undoubted instances of these tumours really originating in accessory mammæ, and the following may be taken as an example :

A single woman, aged 24, was admitted into this hospital in October, 1879, with a solitary, hard, movable tumour, just above the margin of the left breast. It was attributed to a blow. The tumour was of four years' duration, and was removed by Mr. Holmes, who found that it was quite unconnected with the breast. Another case is quoted by

Fig. 5.



Cameron in the 'Journal of Physiology,' vol. xiii. In this the tumour was of the size of a cricket-ball, situated in the axilla, and quite free from the breast.

Fibro-glandular tumours are often multiple, *i. e.* more than one occurs in the same breast. They are often, also, found in both breasts. This is an extremely important point from the clinical aspect, because in this way many so-called recurrences of these tumours are explained. The fact is that fibro-adenomata practically never recur, but other tumours may form in the same breast and simulate recurrence. I hand you a drawing which well illustrates

multiple fibro-adenomata of the breast (Fig. 5). It shows how these tumours are encapsuled, and that they are often connected with the breast substance by a kind of stalk. The fact that these tumours may be multiple should make you cautious in prognosis. At the very time of operation you may be assuring the patient that she is "cured," when really tumours you cannot feel may be then actually in process of formation, too small for you to detect, but none the less certain to become presently manifest.

We will next touch upon the naked-eye appearance and the minute anatomy of these tumours. The appearance on section is probably familiar to you. The tumours are almost invariably encapsuled, hard or firmish, cutting crisply and lobulated on the exterior. Their cut surface is white or slightly roseate, and they frequently have small cysts in their interior, which when cut across are of the size of a pea or smaller. If you look at the numerous specimens on the table you will see all the features illustrated. Frequently the cut surface is marked by fissures or clefts; these are due to lobes of the tumour or to compressed and irregularly dilated ducts of large size.

Time will not allow me to enter at length into all the microscopical appearances of these tumours. The common form closely resembles breast substance; yet note, they are not hypertrophies, not inflammations, but true tumour growths. One of the specimens consists of pure gland tissue, another is mainly fibrous tissue, while another shows glandular tubules scattered here and there throughout the growth. Thus originate the terms "acinous" and "tubular" adenomata. Cysts are exceedingly common, from duct obstruction.

I must next tell you of a few exceptions to the general symptoms of these tumours. First remember that, as a rare thing, fibro-adenomatous tumours may occur in old women. When this happens they are very fibrous and exceedingly hard, so that resemblance to scirrhous cancer is very close. Cases are related which show that if these growths are left to old age they may be actually invaded

by scirrhus. Moreover these tumours do not always remain of small or moderate size, of the dimensions of a hazel-nut, hen's egg, or small orange. They have been known to grow and progressively increase in the breast for a number of years, attaining to a great weight and formidable dimensions. But in these days of anæsthetics and improved surgery, and the consequent absence of much dread of operation, patients do not allow such tumours to grow to the size they formerly reached. In olden days women used to bear these growths in the breast for years and years, until they attained to an enormous bulk. And here I want to draw your attention to a very important matter, viz. that these tumours may increase very markedly under the influence of pregnancy and lactation. A fibro-adenomatous tumour in the breast of a woman may double in size and become alarmingly large during gestation, but may afterwards subside to its normal dimensions. One of the most remarkable cases of this nature I know of in literature was reported by Dr. Ashwell, and is referred to by Bryant. The tumour was of adenomatous type, and had increased so much during each pregnancy that at one time it was estimated to weigh 20 lbs. When removed by Stanley, in 1843, it only weighed 7 lbs.

The next point about these fibro-adenomata is their proneness to undergo cystic change. The cysts may attain to a very great size, quite overshadowing the original tumour. Such cases were called fibro-cystic disease of the breast, and there are many examples of the affection to be found in the records of every large hospital. Almost all fibro-adenomatous tumours which reach a great size contain one or more cysts, and these may hold pints of fluid—clear, straw-coloured, glairy, or coloured in various ways from altered blood. The following is a case in point:

A single woman, aged 45, was admitted into St. George's Hospital in May, 1886. In the upper part of the right breast was a movable tumour as large as an orange. The

skin was free and the nipple not retracted, neither were the axillary glands implicated. The tumour, which had existed for a long time, was removed, and Professor Delépine examined it. He reported that it was a cystic fibro-adenoma, with atrophy of epithelial elements, and that it was of innocent nature. "The cysts are formed at the expense of the ducts or secretory channels, and retention of the fluid distends the vessels." The cysts in these tumours generally contain a glairy, colloid, or mucoid fluid, and they may, very rarely, consist of milk. This may be explained by extravasation occasionally taking place into the cysts in lactating women.

To show to what enormous size "fibro-cystic tumours" will attain, I may tell you that in 'St. Bartholomew's Hospital Reports,' vol. x, tumours weighing respectively 5 lbs. and 18 lbs. are recorded. Bryant, in 'Guy's Hospital Reports,' describes one of 8 lbs. and the size of a small soup-plate. The patient was seventy-three years of age, and the tumour had been in her breast fifty years. You may always take it that such large tumours have existed for many years. Gross and Astley Cooper report cases which grew to the size of a fœtal head, and one of these weighed 29 lbs. In the preface of Velpeau's book is mentioned an instance in which the tumour had existed for a number of years and weighed no less than 40 lbs. There are many other recorded examples.

The following case shows how a fibro-adenomatous tumour in the breast of an adult may simulate carcinoma:

A widow, aged 42, was admitted into this hospital in July, 1884. She had a tumour deep in the left breast, the size of a Tangerine orange. There was no reliable history obtainable in the case. The glands, nipple, and skin were all normal. An exploratory incision was made, and the tumour was found so hard as to be almost gritty, and the breast was accordingly removed. Microscopical examination showed it to be a hard fibro-adenoma with a stalk, the tumour being adherent to its capsule from inflammation. In old women these tumours are sometimes

actually calcified. Gross says that as many as 6 per cent. are thus changed. This estimate seems too high. There has not been an instance in this hospital of the calcification of adenoma for thirty years. It is worthy of remark that fibro-adenomata are sometimes calcified when they happen to be associated with scirrhus,—that is to say, where adenoma and scirrhus have grown in the same breast. Several instances of this nature are reported.

The next exceptional circumstance I want to point out to you is that it has been stated that these tumours spontaneously disappear, and among those who held such an opinion was a great authority, Sir James Paget. Personally, I am in great doubt whether any true tumour growth ever disappears spontaneously; and the recorded instances of this really mean that the tumours have been confounded with cysts or inflammatory indurations, which do sometimes entirely disappear. The following case has some bearing on this matter:

A lady's-maid, aged 23, was received into this hospital in 1882. Six months before admission she noticed a lump in the left breast, which was freely movable and non-adherent to the skin. Belladonna was applied, and iron was administered internally, and by August it was noticed that the tumour had almost gone. On August 24th the pain had entirely disappeared and the neuralgia had subsided. Now this may have been an instance of an inflamed cyst or a patch of induration of an inflammatory nature, and I expect that this is the probable explanation of many such cases.

In exceptional instances these tumours may become inflamed from excessive handling or the being painted with irritants, as iodine. I know of one remarkable instance, related by Mr. Campbell de Morgan in the 'Pathological Society's Transactions,' of gouty inflammation attacking a fibro-adenomatous tumour of the breast. The history of this case seems perfectly clear. These tumours are certainly very apt to become extremely painful and troublesome after marriage. If you allow a patient

bearing one of these growths to marry, the tumour will become congested and cause considerable annoyance. It is therefore very important to bear this fact in mind. I know that this is the reverse of what was formerly taught, but I am speaking from actual experience of what I have personally noted and witnessed.

I wish in conclusion to say a few words about the diagnosis, treatment, and prognosis of these growths.

The diagnosis you will have almost gathered from what I have already said. Fibro-glandular tumours occur in young women, are encapsuled, firm, lobulated, very mobile —slipping about in the breast very readily,—commonly tender and painful, especially at the menstrual periods and under the influence of sexual excitement. The two chief factors in the diagnosis are the youth of the patient and the mobility of the tumour. Then there are the negative symptoms. The skin is never puckered, the axillary glands are not enlarged, the nipple is not drawn and puckered towards the growth.

As to treatment, when these tumours are found it is always wise to remove them, because they are sources of trouble and anxiety to the patient, and there is the possibility, as I have pointed out, of their growing to an enormous size, or in late life being invaded by scirrhous cancer.

In the vast majority of cases the tumours are removed very simply. If you cut on to the tumour substance and through the capsule the growth will readily shoot out of its bed. But this is not always the case; the tumour may have a stalk, or be adherent from inflammation, and I advise you very strongly never to attempt removal of these growths under the influence of nitrous oxide gas. You may not be able to finish before the patient becomes conscious, and I need hardly describe the distress and confusion which may then ensue. Therefore always give a general anæsthetic in sufficient quantity to enable you to remove the tumour deliberately and carefully; and check the bleeding, and unite the wound with elaborate care. I

must also impress upon you the small but very important point in the performance of the operation, of always dividing the capsule. I have seen even able surgeons omit to do this, and thus commit themselves to a troublesome operation of perhaps half an hour instead of a comparatively simple one occupying a few minutes.

The removal of these little tumours is often looked upon as a "minor" operation. You know how I dislike this term, and how I am always telling you that "minor" operations, unless performed with all the forethought and elaborate care which should belong to all the proceedings of surgery, are very apt to lead you into "major" troubles and complications! This is especially true of these little tumours.

The difficulty of operation is enhanced when there happens to be a pedicle connecting the tumour with the mammary substance, for then more elaborate dissection is required. In removing fibro-adenomatous tumours the strictest aseptic precautions should be observed; wounds deep in the mammary substance very often do badly. You tell the patient that the operation is an exceedingly simple one; but if the deep wound becomes septic you may get troublesome diffuse mammary suppuration, necessitating drainage, and inevitable unsightly scars. I have seen these unfortunate sequelæ several times. Thoroughly and most carefully purify the skin of the breast by the most approved methods, and let your instruments be boiled and your fingers scrupulously clean. Beware of sponges, unless you have yourself seen them purified. Remember also that you must check all the hæmorrhage from the lowest depths of the wound. A cavity may easily be left deep in the substance of the breast, and if you stitch up the wound superficially before stopping the bleeding the space will fill up with blood-clot, and secondary hæmorrhage or suppuration only too readily occur. Having stopped the bleeding, by ligature, pressure forceps, and hot flushing, the wound may be united. I pass sutures of fishing-gut through the lowest depths of it, and unite the skin with

horse-hair. Finally, insert a horse-hair drain and keep this inserted for twenty-four hours to two days, and put on a dressing with equable bandaging and pressure. Sound and speedy healing is thus ensured. If there be many tumours in the one breast, as is often the case, you must try and remove them all through one incision. First remove the largest of the tumours ; then squeeze the others forcibly towards the large opening and cut down to them through it. In this way I have removed several of these tumours at one operation through the same wound. All incisions should radiate from the nipple.

There is another plan of removal which is very excellent in suitable cases. It is known by the name of its inventor, Gaillard Thomas. So far as my experience goes this operation can only be done with advantage when the tumours are in a certain position. If an adenomatous tumour be developed not very far from the lower margin of the breast, the breast and fascia may be dissected up and the tumour cut down upon and removed from behind. The breast is then replaced, and the wound drained and united. It heals with a fine scar, which is hidden by the pendulous breast in the furrow between the mamma and thorax. I have performed the operation in three cases. In two of them it was very satisfactory, but in the third, owing to the tumour being situated high up in the breast and very deep, there was great trouble from hæmorrhage, and the case did not do well. Therefore you will have to select your cases carefully for this proceeding.

One of the questions you will at once have to answer with regard to these cases is this : " Will the tumour ever come back ? " You may say with confidence that a fibro-adenomatous tumour, if it be a hard mobile growth in a young woman, will never come back, but you cannot guarantee that others may not form in the breast.

A point which I cannot impress too strongly upon you is that it is extremely difficult, in some of the more rapidly growing of these tumours, to distinguish them from sarcomata. The hard mobile tumour in the breast of a young

woman is always innocent. But in practice you will find it very difficult, in a certain number of cases, where the tumours are softer and of more rapid growth than usual, to say whether or not there is some sarcomatous structure mixed with the fibro-adenomatous tissue. So far as I know there is no way of distinguishing between growing embryonic fibrous, and sarcomatous tissue; and if such a tumour were removed from the breast of a prominent personage—an empress, for instance,—and portions of it were submitted to different eminent pathologists, you would find they would be very cautious in expressing their opinions in the public prints. Even with the microscope it is by no means easy to be certain about the matter. Therefore, where the tumour has grown with considerable rapidity, say in nine or twelve months, and is the size of an orange, and softer than an ordinary fibro-adenoma, you should give a very guarded prognosis, owing to the possibility of the growth having sarcomatous elements mixed with it. In a certain number of adenomatous tumours hard cancer has originated in the scars left by the removal of the tumours long ago, though this is very exceptional.

Still more rarely scirrhus may invade and grow around a fibro-adenoma if left to grow in adult life. A remarkable case of this has been related by Mr. Haward, and his experience is not isolated. It follows that the older the patient the more cautious you should be in expressing opinions, which future events may falsify.

Such are some of the principal points of interest regarding the common group of innocent tumours of the breast, and I beg you to verify for yourselves what I have said from observation of the many excellent specimens in our museum, and from the many cases which come to the out-patient department or wards.

CYSTS OF THE BREAST.[1]

Last week we considered the subject of that common group of breast tumours—the fibro-adenomata. I told you that some innocent growths, as fatty, osteoid, and cartilaginous tumours, which are fairly common in other parts of the body, are almost unknown in the mammary gland. My object is to bring before your notice things that are important in practice rather than matters which are rare. We will this afternoon consider the subject of cystic formations in the mammary gland, which often give rise to great alarm in the minds of patients, and to great difficulties of diagnosis as far as surgeons are concerned. You have to distinguish carefully between cysts which form in the substance of pre-existing tumours and those which occur independently of them. A large number of cysts of the breast are really cystic degenerations of pre-existing tumours. Thus you may get cystic fibro-adenomata, of which I have some good specimens on the table, and to which I drew your attention at our last meeting; or you may meet with cystic degenerations of cancers and sarcomata, which attain to a large size and contain altered blood and glairy mucoid fluids. Cystic degenerations of tumours must be kept quite distinct from the cases I am going to mention to-day. The distinction is of very great clinical importance, because for cysts which form from the degeneration of tumours the treatment is not that applicable to cysts, but to the tumour in which they form. If you find that a cyst has formed in a tumour you have to

[1] A clinical lecture delivered at St. George's Hospital, October 20th, 1896.

abandon consideration of it as a cyst, and remember that it is only part of a tumour, to which treatment must be directed.

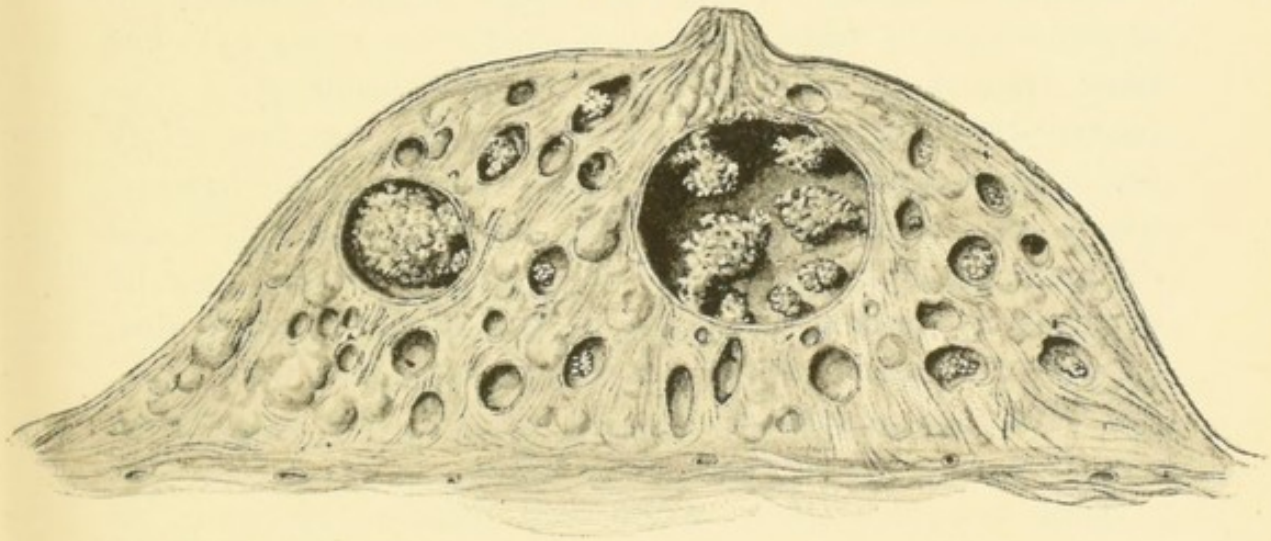
Simple solitary cysts of the breast are by no means very common. Williams, in an analysis of 2397 mammary tumours, found that only 2 per cent. were simple cysts. Professor Gurlt, of Vienna, found five cysts out of 1608 mammary tumours. The cases in St. George's Hospital show a larger percentage than this of simple cysts as compared with other breast tumours—namely, about 6 per cent. A great many cysts of the breast are doubtless never found, because they do not give much trouble, and the estimate of their frequency I have given is probably rather below the mark than above it.

We may next conveniently consider the way in which cysts, apart from tumours, form. Now when you consider the structure of the breast, and the enormous number of ducts it contains, and their complicated arrangement, you will realise that they may easily become obstructed; and this is no doubt the mode of origin of the vast majority of simple cysts. This obstruction may be brought about by the fibrous contraction of chronic mastitis, or neighbouring scirrhus, by thickening in the walls of the ducts themselves, or by the obstruction of the ducts by papillomatous growths. I believe this latter condition is far more common than is generally believed, a cyst forming behind the obstruction so caused. It has been well pointed out by Goodhart that in cases of simple cyst of the breast papillomatous growths may join together, and so include secondary cystic spaces between them. These secondary spaces may again get filled with fresh papillomatous projections, or may become pouched into the surrounding parts, so that you get secondary forms of cysts by the junction and pouching of the papillomatous growths which grow into the primary cavity.

The name evolution cysts is often given to cysts of the breast which occur in young women, while involution cysts is a name assigned to those which are met with in

elderly people. The latter class are common in the mamma of aged women, but they are often not large enough to be felt, and are discovered on section only. These simple cysts may attain to large dimensions, but this is quite an exceptional occurrence. Large cysts, the size of a cocoanut or more, are usually associated with tumours. The simple cysts we are now considering are seldom larger than a nut, a pigeon's egg, or a small orange at most. Very often simple cysts of the breast communicate with a large duct which occasionally becomes pervious, and then some fluid will exude, or can be squeezed out of the nipple, the cyst collapsing. I show

FIG. 6.



Multiple cysts with intra-cystic papillomatous growths.

you here a remarkable specimen, which has been in our museum for many years, where a bristle has been passed through the nipple to the cyst behind it. Therefore discharge from the nipple may be looked upon as a symptom of this kind of cyst, and, if the discharge is blood-stained, papillomatous growth is probably present. The lining membrane of most single cysts is endothelium, flat or polyhedral. When papillary projections grow the formation receives the name papillomatous cyst, of which I here show you a very good drawing. You will see that the mamma is full of innumerable cysts, and that many

of the larger ones contain growth. There is an unusual specimen on the table, which is one of the largest duct papillomatous cysts to be seen in any museum in London. It reminds one of the papillomatous cysts of the ovary, and must have contained at least a pint of fluid. The presence of intra-cystic growth within simple cysts leads very commonly to hæmorrhage, and the blood may be altered, so that the contents of these cysts may vary from simple straw-coloured serum to bloody, mucoid, or colloid fluids—some brownish, others of a greenish hue. Cysts may also form in the breast by dilatation of the connective-tissue spaces. The interior of such cysts is smooth and fibrous, and they contain, usually, clear and slightly albuminous fluid. I do not think it is possible, on examination, to make quite sure whether a given cyst has been formed by a dilated duct or distension of a connective-tissue space. In chronic mastitis you frequently find a large number of cysts scattered through the breasts, which have their origin both in obstruction of ducts and dilatation of connective-tissue spaces. The breast may be quite honeycombed with them, as this specimen illustrates. Chronic mastitis is almost invariably associated with cysts, and these are so hard as to feel exactly like nodules of cancer, for which they are often taken.

I do not propose to make any detailed reference to blood cysts; such a cyst may be caused by hæmorrhage from intra-cystic growths, from rupture of a vessel in the walls of a cyst, or possibly by blows and other injuries, which may cause extravasation of blood into a pre-formed cavity. But I have never yet met with a blood cyst in the breast, such as we find in the thyroid gland, where bleeding very readily takes place, and may actually continue furiously, when the cyst is opened. The important point for you to recollect is this,—that blood in a cyst, or bloody fluid, usually means that there exists intra-cystic growth, and that the cyst is not absolutely "simple."

The diagnosis of these simple cysts of the breast is a matter of the utmost importance. The very serious error

of removing an entire breast for simple cysts is too often committed. The records of every hospital and the experience of every surgeon, if he were candid, would afford quite sufficient evidence as to the frequency of this diagnostic error. Professor Gross makes the very significant statement that deeply seated small cysts which occur at the menopause are in the majority of cases only discovered after the removal of the organ in the supposition that the disease is carcinoma! This is a most important declaration from a man who had almost unrivalled experience of tumours of the breast. The similarity between tumours of the breast and tightly distended cysts is, indeed, very striking. In the out-patient room I have very often had the greatest difficulty in making students appreciate that a tightly distended hydrocele closely simulates a growth of the testicle. It is not easy to get anyone to fully appreciate that a tightly distended cyst feels solid. Remember and note carefully that a hard, painful lump in a woman's breast may be a cyst. Recollect also clearly that the point is only to be cleared up by exploratory incision. The diagnosis of *multiple* cysts is generally more easy. The tumours vary in size between that of a grape or a walnut, and are scattered about the breast. In many of such cases pressure on the breast will cause fluid to exude from the nipple. The mere fact of multiple tumours being felt in the breast should raise the suspicion of cysts. In multiple cysts, one or more are often considerably larger than the rest, and, as is the case with fibro-adenomata, the surgeon is very apt to overlook the smaller ones. No better description of cystic disease of the breast was ever written than that by Sir Benjamin Brodie, and I advise you to read what he has written in his works. He speaks of the globular tumours, of the exudation from the nipple of fluid, and of the similarity to solid growths.

Although exploration alone can certainly distinguish a deep-seated cyst, yet there are diagnostic points worth mentioning which you ought to be aware of.

Firstly, the skin over a cyst is often tense and congested, and of a slightly bluish tinge. The integument never shows such appearances as dimpling or the coarse puckering seen in cancer. If, however, a cyst has been opened, or has spontaneously suppurated and burst, the after-healing may simulate the adhesive process of cancer. The presence of dimpling or puckering of the skin over a hard tumour is presumptive evidence that the trouble is not a cyst. Regarding retraction of the nipple, I advise you to lay little stress upon this symptom. It is found in a variety of conditions. Careful and firm palpation with the pulp of the index finger will detect, as a rule, a sensation of elasticity towards the centre of a cyst. This is a very important symptom of the disorder. I regard it as the most important of all, and it is hardly ever absent, even in cysts with quite thick walls. But, as I said at first, there are many cases in which it is practically impossible to tell whether a swelling is a solid tumour or a cyst of the mamma ; and you must remember that, to clear up the matter, recourse must be had to an exploratory incision. The suggestion will often arise as to whether you may puncture a cyst with a syringe. If no tumour growth can be felt in the cyst, if you feel sure that it is simply a cyst and nothing else, it is justifiable to tap it, using a scrupulously clean syringe with not too fine a needle. You may ask me, why not always tap a cyst instead of cutting down upon it ? My reply is this :—By mere tapping you cannot tell what the walls of the cyst are like, whether there is solid growth or not, and you may leave behind a serious disease, which ought to be freely removed. If you tap, and withdraw clear serous fluid, and nothing solid can be felt on the cyst collapsing, it is justifiable to use injection. But if you withdraw bloody fluid, and on collapse of the cyst hardish masses are felt, like solid growth, your diagnosis should be completed by incision, and free removal of the cyst will probably be needful. Personally, in the very few instances in which I have had recourse to simple puncture, I have in-

jected half a drachm of equal parts of liquefied carbolic acid and glycerine into the cyst, and in all the cases a complete cure was effected, with no mark upon the breast. But the great objection is the uncertainty we must all feel as to the exact nature of the cyst. If there be growth in its walls the mode of procedure I have just mentioned will merely aggravate the malady. I am against the method myself unless it is thoroughly evident that the swelling is a simple cyst. Sir Benjamin Brodie used to teach that these formations could be made to disappear by the application of stimulating embrocations. Such measures are harmless, but of doubtful utility. I have tried Sir Benjamin's prescription without result.

When there exists a tendency towards multiplication of cysts throughout the breast, I am sure removal of the whole gland is the proper course to pursue. Any portions of gland left are almost certain to again take on cystic change. In some cases of multiple cyst I have removed portions of the breast with success; but I have notes of cases where fresh cysts arose, and the more radical operation had ultimately to be undertaken. When cysts are associated with growths in their walls the cyst should be removed and the mammary tissue round it, and if there is infiltration outside the cyst I should, in an elderly woman, remove the whole breast. The microscope alone can tell you whether or not carcinomatous change has already commenced. I commend these considerations carefully to your notice. The treatment of these cases is very difficult, and you should clearly make it understood, before cutting down upon a doubtful tumour, that the conduct of the case as to extent of removal should be left entirely in the hands of the surgeon.

Very different is the practice with regard to simple cysts, which have no growth in their walls. If not punctured they may be incised and their walls swabbed over with pure carbolic acid. A horse-hair drain is inserted and the wound united, or the cavity may be stuffed with a strip of iodoform gauze.

Mr. Bryant recorded at the Medical Society of London in 1895 an interesting series of cysts treated in this way, resulting in complete cure.

The following, then, may be accepted as general rules for the treatment of cysts of the breast, which, especially when combined with other growths, are among the most perplexing disorders we have to treat:

1. In cystic tumours the whole breast needs removal, unless it be a slowly growing cystic fibro-adenoma, which is encapsuled, and displaces the mammary substance.

2. In cysts which bear intra-cystic growths the choice lies between dissecting out the cyst and removal of the breast. The more the growth seems to infiltrate the surrounding breast, the more reason is there for removal of the entire gland.

3. In simple cysts, without growth, the surgeon's choice lies between puncture and injection, or incision and drainage.

In the year 1892 I saw a lady, aged 52 years, who had, near her right nipple, a small tumour the size of a walnut, movable, bluish in colour, and it was obviously a cyst, because it was translucent, like a hydrocele. Some drops of clear fluid escaped from the nipple. I did not see this case again until May, 1896, when, the cyst having become painful and much larger, she again saw me. The formation was now exceedingly hard, and one gland could be felt in the axilla. On incision the cyst contained bloody fluid. In the interior was a friable, papillomatous growth, which seemed to infiltrate the cyst walls. I therefore removed the whole breast and the axillary glands. Examination showed that the walls of the cyst were thickened by granulation tissue, the papillary growths were fibrous, and in the remainder of the breast were numerous small cysts filled with fluid. Removal of the breast was therefore justified, though the affection was innocent. In like manner Mr. Haward this year removed the breast of a woman aged 32, which was associated with a bloody discharge from the nipple. On

section, after removal, the growth was found to consist of one cyst the size of a walnut, and hundreds of smaller ones were scattered through the breast. The larger was filled with a remarkable fluid, which was the colour of coffee-grounds—in fact, exactly resembling the contents of a hæmatocele. It was a duct cyst, combined with intra-cystic growths. The deceptive nature of cysts in the breast is well illustrated by the following case:

A widow, aged 45, was admitted to a London hospital in 1880, with a "tumour" of the left breast. A fortnight before admission a swelling had been noticed in the left mamma, and removal was advised, but the disease was believed not to be cancerous. There was found on examination a hard, indurated, rounded mass as large as a hen's egg; the nipple was not retracted; there were no enlarged glands in the axilla. The whole breast was removed, and a cyst the size of a walnut was discovered, containing some yellow serous fluid. Its walls were thick and hard, the lining membrane was smooth and glistening, and the cyst might have been dealt with by a simple incision.

Many of you saw last week, in the out-patient department, a case which shows how difficult it is to "practise what you preach!" I narrowly escaped falling into a very serious error. Those who were present will have a life-long lesson in these cases, which they can never forget. In October, 1896 (this month), a married woman came and showed us, in her left mamma, about three inches from the nipple, a rounded, smooth tumour about the size of a small orange. It ached sometimes—was slightly tender; the skin, nipple, and axillary glands were normal. The tumour was very hard and exceedingly movable, slipping about deep in the breast. There was no history of nipple discharge. Most of the students believed the tumour to be a typical fibro-adenoma. I believed that it was a cyst, because of the sense of elasticity which it conveyed on firm central pressure. On October 15th I made an exploratory incision. Some depth of breast tissue had to be divided to reach the tumour. I cut into the swelling,

and found it, to my surprise, solid, hard, and quite incorporated with the breast substance around. I was obliged to say that the teacher was in the wrong; that the swelling was solid, and as it was so incorporated with the breast, I feared it was malignant. I was about to close the wound and advise removal of the entire breast. It then fortunately occurred to me to enter the scalpel into the centre of the swelling, when a jet of fluid shot forth, and it was a simple cyst after all, but the walls were nearly half an inch in thickness! It contained sero-pus. The cyst was scraped, and swabbed with carbolic acid, and drained. I hear it has done well. This case bears its own moral—namely, when you explore for cysts the incision must be carried into the middle of the swelling. In like manner Professor Verneuil removed from a woman, aged 34, the left breast, as it was supposed to be cancerous. The gland contained several cysts, the largest of which was the size of an egg and the smallest as large as a nut. The breast might have been saved by an incision and the drainage of the cysts.

Simple cysts of the breast may suppurate, and thereby be virtually converted into abscesses. No doubt organisms get through the ducts, or a dirty trocar may have been used to puncture.

A single woman, aged 33, was admitted in November, 1889, suffering from a tumour of the left breast, which she said had existed six weeks. The history, however, seemed doubtful. She always had a painful retracted nipple. On examination one found a large, tender, movable swelling in the left breast. The skin was not adherent. At a consultation, exploration was decided upon. Pus was found and the supposed abscess was dissected out. There was then found some papillary growth on the supposed abscess-wall, which showed that the swelling was a suppurating cyst. It had been diagnosed as a rapidly growing cancer. The following cases show that in multiple cystic disease the affection may recur if any portions of breast tissue are left:

A married woman, aged 48, was admitted to St. George's Hospital in March, 1874. A year previously Sir P. Hewett had removed the breast for a tumour described as fibro-cystic, and on her readmission at the date named there was a recurrence the size of a walnut in the skin.

A married woman, aged 46, was admitted to St. George's Hospital in 1895. Four years before, the breast had been removed for a tumour, supposed to be cystic in nature. About nine months before her second admission a "lump" again gradually formed, and slowly increased in size. It was situated in the outer part of the cicatrix, and the skin over it was then bluish in colour. The tumour fluctuated distinctly, and it was quite movable in the deeper parts. It was removed by Mr. Pick, who allowed me to make a careful examination of the specimen. There was one large cyst and several small ones, but no trace of any glandular structure. Here, then, is a case where, four years after removal of the breast for cystic disease, a fresh formation occurred in the scar. A small part of the breast was probably left behind at the previous operation, and this took on the cystic change. The possibility of this happening you may put down as an additional argument why breasts should be quite removed when full of cysts.

In very rare cases carcinoma may invade the walls of a simple cyst; I show you a specimen of this nature taken from an elderly woman. Some striking cases were recorded at a meeting of the Pathological Society last year, by Mr. Charters Symonds; Mr. Butlin also referred to similar cases, as also did Mr. C. A. Morton. There have been recognised in this hospital three such cases, but likely enough others have escaped observation. I will only now tell you very briefly the diagnostic characters of these rare but important cysts. Firstly, they have been found in elderly women—women of the cancerous age; the contents have been bloody fluid, or fluid which was glairy or colloid in nature. On incision, the walls of the cyst have invariably been found thickened and succulent, very like freshly sliced melon. The interior may be reticulated

like an old bursa. Microscopically, cancer is found scattered through the walls. This disease is, fortunately, exceedingly rare, and many of you may go through your professional lives without encountering an instance of it. But if an elderly woman comes to you with a large cyst in the breast, do not be confident that it is simple, for in six weeks or two months a cancerous growth may begin to sprout and show itself in the site of the cyst you have incised or tapped.

The next important variety of simple cyst is galactocele—a cyst containing milk. These cysts must be distinguished from the local engorgements which occur in the breasts of lactating women when the function is suddenly stopped. In any kind of animal which has the lactating process abruptly checked, these enlargements due to engorgement of the ducts will be evident, but they are not galactoceles. As one would expect, a galactocele may sometimes occur through the stretching and rupture of a duct which passes over the wall of a pre-existing cyst. But a far more common origin is the obstruction of one of the larger ducts, occurring during lactation. Galactoceles are usually single, and are sometimes of considerable size. The majority of galactoceles are moderate-sized cysts, and a significant number of them take their origin in injuries. About the time of lactation, malformation of the nipple is a possible cause of galactocele, and so are incisions which divide the ducts transversely. The contents of galactoceles are very various; one may contain serous fluid, with colostrum corpuscles, another may present clear milk, a third may enclose matter looking like butter. Gross collected seventeen cases, and he found pure milk in seven, matter of the nature of cream in two, oil in one, caseous matter in five.

Some ancient galactoceles are calcareous; some may shrink and diminish; and it must be remembered that swellings of this nature may be found many years after the lactating period. I have seen a case in which galactocele had existed in the breast for twenty years, and it had

withered up into a hard mass exactly like cancer. In the London Hospital Museum there is a specimen which contained curdy material surrounded by hard structure, and it was excised in mistake for scirrhus.

In the diagnosis of galactocele you will be aided by (1) their onset at times of lactation; (2) by their enlargement when lactating and suckling; (3) by the probable history of an injury. To the touch the milk cyst forms a smooth, elastic swelling. The skin and nipple are not implicated; the superficial veins are but little enlarged, and the swelling has cystic characters. Only an exploratory incision can certainly clear up the case.

In the treatment, I advise you very strongly to postpone operative measures until the period of lactation is over and the secretion of milk is largely checked. In an actively engorged breast, incisions have a great tendency to ooze. Milk may flow persistently through the wound, and it will be difficult to keep the parts aseptic. In cases where the contents are semi-serous, or very fluid, it is the practice to incise the cyst and dress it from the bottom, or better to dissect it out. A large cavity will then be left in the breast, and this must be dealt with in the way I described in my lecture on fibro-adenomata, *i. e.* to get anything like primary union the cavity must be united at its lowest depths and carefully drained. The following may be taken as a typical case of galactocele:

A young woman, aged 18, presented herself, and said that two years previously she struck her right breast against a chair, and three weeks after this she noticed a small lump near the nipple. She was married, but did not suckle with that breast because of the pain caused by the swelling. On examination the left breast was noticed to be well developed, with a good nipple, and it secreted freely. The right part of the gland was occupied by a small swelling. A week later the swelling was distinctly larger, but had not tended to point; milk was visible as a white spot in a red area. The galactocele was incised, a horse-hair drain inserted, and the breast supported by a

bandage. A thick milky discharge continued to flow, but it got thinner, and finally well.

The following case is instructive:—A widow, aged 40, was admitted to this hospital in 1888 with a tumour of the left breast, which had existed for at least eighteen years, having originated during her active sexual life (she had had seven children). The tumour became larger, and the case was shown in consultation. It was noticed that the swelling was obviously cystic, movable, not attended with enlarged glands, retracted nipple, or dimpling of the skin. By an exploratory incision some thick material was brought away, said to resemble "gooseberry fool." Professor Delépine was of opinion that the formation was an old galactocele, or dermoid cyst; as it was deep in the breast, I incline to the former opinion. Large cysts may also, as a rarity, form in connection with tumours containing milk. I have notes of cases in which the entire breast has been removed for old galactoceles, both in this country and abroad.

The last kind of cyst I will touch on is very rare, and I only mention it to make the subject complete. I refer to hydatid cyst. The rarity of this affection may be judged from the fact that not a single case has been admitted into this hospital for thirty years; but our museum possesses two specimens. I show you the one removed by Mr. Keate in 1841. It was asserted to contain two pints of fluid, and must have been, therefore, very large; but it is now so much shrivelled by age that it is difficult to realise it attained to such dimensions. The only case I have seen was a hydatid the size of an orange in a young woman. The cyst formed in the pectoral muscle and protruded into the breast. It was not really a breast hydatid, and was readily cured by incision. The Australian surgeons, Gardner and David Thomas, relate comparatively few cases. I have had a communication from Iceland, where hydatids are very common, that these formations are but rarely present in the breast. Hausmann, of Vienna, has collected sixteen cases, and David Thomas, of Australia,

five. The Guy's Hospital Museum contains some good specimens. I need only add that the affection takes the form of a simple movable elastic swelling in the breast. The treatment would be incision, and removal of the mother capsule.

As to dermoid cysts of the breast, I do not know that an undoubted instance has ever occurred. Most of the cases have seemed to me old galactoceles, or sebaceous cysts of the skin, which have invaded the mammary tissue beneath by pressure absorption.

SOME CASES OF INTEREST IN MAMMARY DISEASE, WITH REMARKS.

Among the cases of carcinoma of the mamma of great interest and importance which have come under my notice in the last six months, the following may especially be quoted:

A very stout, ponderous woman, aged 60, came under my care by the advice of Dr. Shann, of Lowestoft, with a large carcinomatous tumour of the left mamma. The patient was a typically bad subject for an operation. In addition to obesity she was bronchitic, and the cardiac sounds were feeble. There were enlarged venules on the cheeks, and a trace of sugar in the urine. The local conditions were still more unfavourable. The mamma was of huge size, and converted into a mass of cancer. The skin was extensively implicated, being red, hot, and thickened, with an erythematous blush round. The nipple was puckered and retracted. The axilla contained a mass of enlarged glands. At 'Consultations' removal was nevertheless advised on account of the fungation which would shortly occur. Local relief was alone anticipated, and anything like long immunity was not to be hoped for. The disease gave the patient little pain, and so far as could be ascertained the cancer had been advancing for about twelve months. The operation was performed in the following way:—Two days were spent in the purification of the skin, especially of the axilla. The incisions were carried far and wide of the diseased skin, and reached from the coracoid process to the sternum. The whole pectoral muscle fascia, axillary glands, and mamma were removed in one piece. Several glands were found

on removal of the pectoral which would probably have escaped detection had minor measures been adopted. The resulting wound was of huge size; it was drained posteriorly and brought together as much as possible. Owing to the free removal of skin an area the size of a small dinner-plate was left bare. In this situation I raised a series of tongue-shaped flaps from the edges of the wound, turned them inwards, and sewed them down upon the denuded surface. The ordinary antiseptics were used in dressings. All went well until the second week, when the patient showed signs of mental failure, as talking nonsense, refusing food, and sinking into the bed. This was met by free stimulation and getting the patient into a chair. The mental symptoms passed off in about three days. Iodoform was being used to the wound at the time. By the end of eight weeks this huge wound was soundly healed, and the condition of the patient very good. There was no sign of local return, and the condition of fungation of a huge mass of cancer was quite obviated. This patient remains well four months after operation, with no trace of return of disease, a result which surprises me greatly, as I could scarcely imagine it were possible all could be removed.

Remarks.—This case illustrates what can be done in mammary surgery by the aid of careful antiseptics, and that it is justifiable to operate on a case even if the local and general conditions are highly unfavourable. The involvement of the integument in this case was of so extensive a nature that only a very wide and bold course of incision rendered operation at all feasible. The case also illustrates that operations in apparently very bad cases of mammary carcinoma are sometimes followed by excellent results. Mental disturbances after mammary operations have several times been observed, and I have notes of other cases. Some have died acutely maniacal —they have usually been intemperate. It is noteworthy that in the practice of some surgeons mania was associated with extensive use of iodoform. The cases differ very

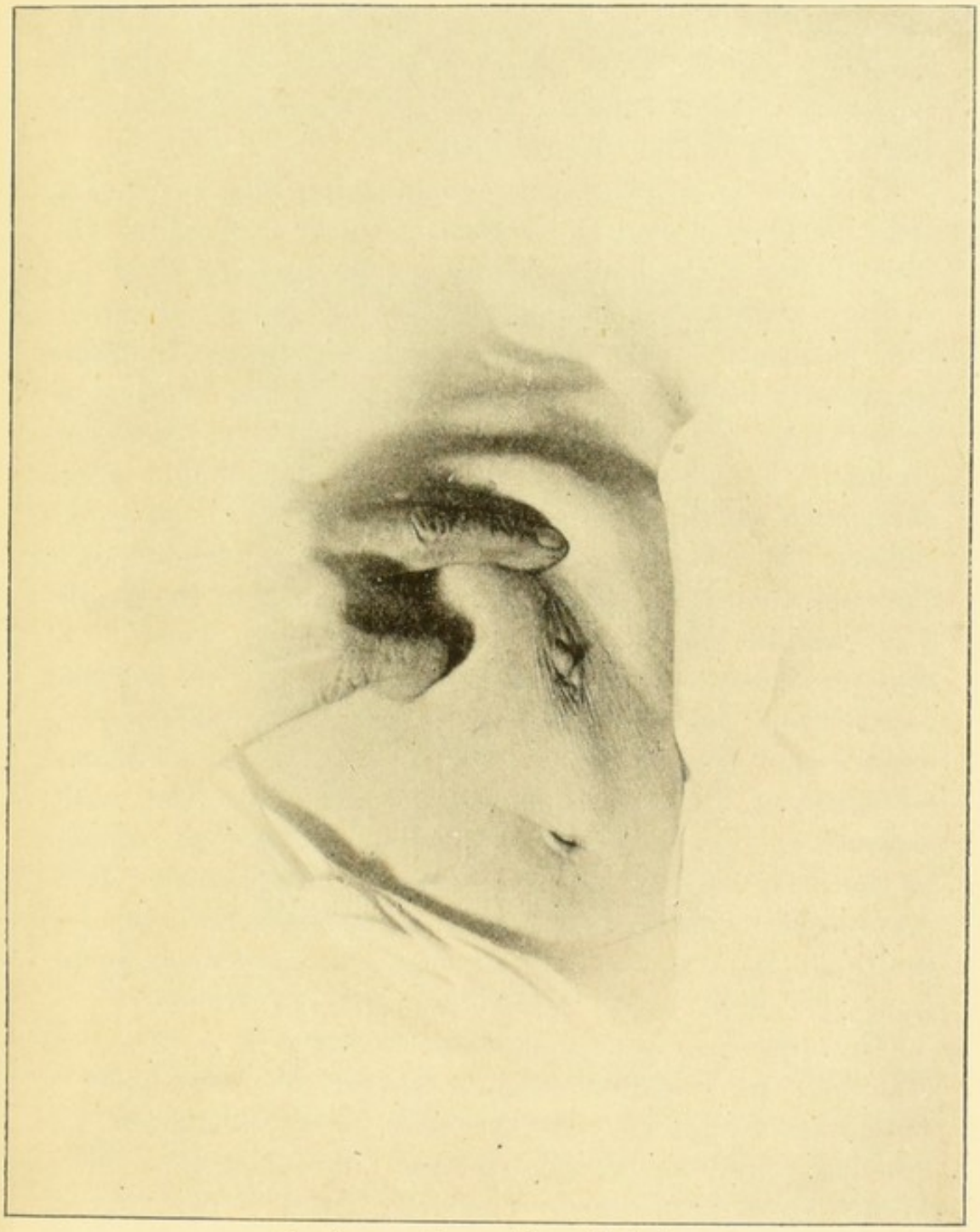
widely, and experts in lunacy could alone give reliable prognosis. The treatment resolves itself into careful nursing and the most careful dressing of the wound, for such patients are apt to displace their dressings, and sepsis is added to the already present troubles. The pulse will be the guide for stimulants and for hypnotics; enemata of bromides are often advantageous. The stronger hypnotics, as hyoscine or morphia, must be used with the extremes of caution.

The next case is illustrative of a most important class, where cancer is developed in an outlying lobule of mammary gland. Such cases are stated by many authorities to be really cancers growing in accessory mammæ. As a matter of fact most of these little islets of mammary tissue are connected with the main gland by fine strings or processes of glandular structure. A common situation for peripheral carcinoma is at the junction of the mamma with the thorax. The serious disease is merely marked by an insignificant dimple in the skin (Fig. 7). A case has recently been under treatment where the carcinoma developed high in the axilla, yet the nipple was progressively drawn towards the growth at a considerable distance from it. In this case, as may be expected, the axillary glands were much implicated. When the cancer is developed quite to the sternal side of the mamma, the axillary glands may long escape, as in the following instance :

On June 21st I operated on a strong, well-nourished lady, aged about 45, who had had children and nourished them on the affected side. The history was that a slight contraction had been noticed about the mamma for twelve months, but with trifling pain or inconvenience. The nipple of the left mamma was deeply retracted, and close to the margin of the sternum was a faint dimple, which might seem quite disconnected with the mamma. The rest of the breast gave the sensation of mastitis, and the only sign to be felt with the "flat hand" was an abiding hardness beneath the dimple above spoken of. At the operation the

mamma, sternal portion of pectoral, with the fascia and axillary lymphatics, were removed in one piece. There

FIG. 7.



Carcinoma of a peripheral lobule.

was a nodule of carcinoma the size of a large hazel-nut deeply situated in the left fourth interspace, close to the

sternum. It had infiltrated and involved the pectoral muscle and the fascia covering the internal intercostal, and on its removal the greatest care had to be taken to avoid opening the pleural cavity. Not a trace of disease was found in the axillary glands. The rest of the mamma, however, was far from healthy, and indurated cords of cancerous tissue radiated from the sternal process outwards. The wound rapidly healed.

This case is of interest as exemplifying that carcinoma, even of twelve months' duration, when situated at the sternal side of the mamma, need not of necessity affect the axillary glands. It also exemplifies how deep and serious the implication of the chest wall becomes in these apparently insignificant cases. The attention of the profession has hardly enough been drawn to peripheral carcinoma. It is hard to realise that a mere dimple in the skin, with an ill-defined hardness beneath it, is of grave import. Definite tumour-formation is not appreciable, as is the case when carcinoma forms in the locality of the nipple. The question of removing the whole mamma must often arise in these peripheral cases. Instances are not wanting to exemplify the practice of merely excising the outlying disease and leaving the mamma. The breast substance is, however, seldom unimplicated, and far the wiser practice is to perform the widest possible removal. Owing to the early implication of the chest walls, cases of peripheral carcinoma cannot be too soon treated. They are really among the most urgent cases for immediate operation.

The next case is a remarkable instance of a very rare affection, the so-called Paget's disease of the nipple, a malignant dermatitis. In the cases of carcinoma of the mamma occurring at St. George's in thirty-five years, I have been surprised to find that barely 1 per cent. of the cases of mammary cancer were preceded by this condition.

A woman aged 42, married, and the mother of children, came to the out-patient department at St. George's

Hospital in 1896. The history she gave was as follows :— Eight years before a mammary abscess burst near the right nipple. The sinus never healed, and the present disease originated round the orifice, and not round the nipple; of this she was certain. It had gradually extended, with increasing "itching and burning." Now the pain was severe, disturbing her rest and seriously interfering with her rest and health. On inspection a very

FIG. 8.



Malignant dermatitis of the integument over the entire mamma.

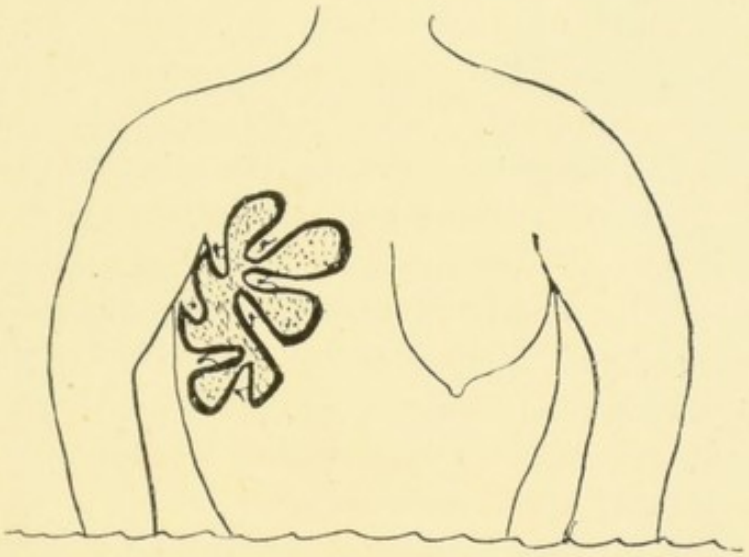
remarkable condition was apparent (Fig 8). There was a large oval patch of disease occupying the skin of the entire right mammary region, reaching to the apex of the axilla above, the sternum in the mid line, and the latissimus dorsi behind. The patch measured fourteen inches vertically by twelve inches horizontally. It was vivid crimson in colour, covered with islets or patches of white epithelial scales, moist, and exuding abundantly a sticky

glutinous secretion of alkaline reaction and musty, offensive odour. The margins were as strictly limited as though the disease had been artificially produced. There was definite parchment-like thickening of the tissues, easily appreciated on pinching up a portion. At the orifice of the old sinus was a fungating carcinomatous nodule the size of a walnut. No glandular affection in the axilla could be recognised. The case was shown at the Dermatological Society of London, when most of the members recognised the disease and remarked upon its unusual extent. It may be mentioned that "scrapings" of the surface showed abundantly those forms of cells, and cell inclusions, termed by some psorosperms.

In April, 1897, this patient's sufferings were so great that she entered the hospital and begged for any treatment likely to afford relief. The only application that gave any local comfort was a 5 per cent. ichthyol ointment. The disease had seriously increased in dimensions, and it was not without misgivings at the magnitude of the task that I undertook its removal. The operation consisted in carrying an incision round the whole margin of the affected skin, a quarter of an inch from the red border. The subjacent mamma and pectoral muscle were removed in one portion with the skin. There was an indurated and enlarged gland beneath the pectoral, which was likewise removed. The skin was removed freely with the subjacent fascia, so that the intercostal muscles were exposed. No attempt was made to unite the margins of the enormous surface thus left bare and raw, but a number of skin flaps, varying in length from three to six inches, and broader at their bases than their sides, were raised from the margins and sewn downwards upon the raw surface (Fig. 9). The wound was washed daily with warm perchloride lotion (1 in 8000), and dressed with a large piece of green protective and cyanide gauze. The flaps were adherent, and epithelial growth advanced from many points, coalescing and advancing. After six weeks some more flaps were raised, and placed upon granulating

surfaces. To make a long story short, this extensive surface was covered by a sound cicatrix in about two months. A microscopical examination by Dr. Rolleston and Mr. Hunt disclosed very curious features. The disease of the skin and the structure of the nodule was epitheliomatous, large spheroidal cells and columnar masses of ingrowing infective epithelium being very evident. The mamma itself was flattened and atrophic, and exhibited no signs of cancerous disease. The infected axillary gland contained spheroidal-celled carcinoma. The present condition of the patient leaves

FIG. 9.



Large raw surface covered with multiple skin flaps.

nothing to be desired. She has lost all pain and greatly improved in health. The large scar, traversed by bands of healthy skin, shows no signs of "breaking down" or return of disease.

This unusual case illustrates several features of a rare and curious malady. Its main peculiarities are its extent and the fact that the mamma beneath was quite free from carcinomatous change, though the skin affection had lasted for eight years. The diagnostic features of vivid red rawness, thickening, and defined margin were all present.

A matter of especial interest to us all is the method

employed in promoting healing when a large surface is denuded of skin. It is obvious that this method is applicable to many cases where the skin is extensively removed by operation or accident. The flaps should be as abundant as possible, their bases broad, and they should be secured upon the raw surface by one or two catgut sutures and firm pressure of the superimposed dressings (Fig. 9). There is an insuperable objection to Thiersch's method of implanting large portions of skin. However carefully this is done, some fresh sores are created, which add additional pain and discomfort to a patient already harassed and in suffering from a large open wound. This objection is a very real one to patients who are sensitive and nervous, and is worthy of reflection.

Regarding six other cases of carcinoma which have come under treatment, they presented nothing peculiar. The method of operation was in all cases the same—removal of the whole breast with the skin and fascia very freely, and also the sternal part of the pectoralis major. This part of the muscle is readily removed, and its ablation gives the most free access to the axilla. On several occasions glands have been detected as large as peas beneath the pectoralis minor, which would have escaped detection by any minor measures.

The following case is also an example of a rare malady —hypertrophy of the mammary glands. Only three examples of this disease were admitted into St. George's Hospital between 1865 and 1895. In none of these was operation needful, so that they were not extreme instances of a complaint which may become dangerous and formidable.

A young woman, aged 21, who had been married for one year, and had never been pregnant, applied at St. George's Hospital in May, 1897, on account of pain and increase in size of the mammæ. The enlargement had only been noticed for eight weeks; they had increased in size very rapidly. The patient was a pale, tuberculous-looking woman. The mammæ were of large size, and reached to

a point below a line drawn through the umbilicus (Fig. 10). They were marked by large venules, and felt knotty and irregular, as though masses of solid tissue existed. After a fortnight's rest in bed, with purgatives and the free administration of iodide of potassium, the congestion and

FIG. 10.



Hypertrophy of the mammæ.

hardness disappeared. The bulk of the mammæ, however, did not diminish. Menstruation was normal, and did not seem to influence the condition one way or another. The breasts were well "slung up," and compressed with large

pads of wool. Small quantities of fluid were allowed, and dry dietary. Iodide of potassium was administered in full doses. In a month the left mamma had reduced in size, and the right was not so painful and congested. A trial of elastic pressure was now advised, but the patient left the hospital. I have seen the case recently. The breasts are slowly diminishing under full doses of the iodides. The accompanying photograph, kindly taken by Mr. Clinton Dent, shows well the condition in this case.

Cases of hypertrophy of the mammæ differ very much in extent. A number of them seem to be mere exaggerations of the fulness and congestion of the breasts which accompany menstrual engorgements or pregnancy.

The treatment of the minor cases resolves itself into rest in the recumbent position, dry diet, elevation and compression of the mammæ, and the free administration of iodides internally. Cases are recorded where benefit has occurred in healthy great enlargements of the mamma, associated with checking of the menses from free leeching of the inside of the thighs, or venesection of the saphena vein. Again, the establishment of the secretion of milk by putting an infant to the breast, has in at least one case checked the tendency to enlarge. In some of these obstinate cases, however, no measures seem to check the serious progressive growth of the mammæ, which ultimately may reach to the knees of the patient and become so cumbrous and hideous as to prevent the patient from moving about. Finally the skin becomes thickened, warty, and rugose, sloughs form from congestion, and profuse discharge may so weaken the patient that she may actually die from the disease, or from the surgical measures taken to effect its removal.

Accordingly, in these exceptional cases operation should never be delayed until the patient has passed into a state of hopeless anæmia and weakness. Instances of true progressive hypertrophy are almost always found in young girls about the time of puberty, or in women under thirty years of age. The diagnosis in bilateral cases presents no

great difficulty. In unilateral cases there is a risk of confounding a large, firm mammary tumour which displaces the breast substance with hypertrophy. The mass having been removed, a large fibro-fatty or adenomatous tumour is revealed, which might have been taken away, and the mamma itself saved.

In grave cases of the disease amputation is the sole resource. As a preliminary the masses should be well raised and subjected to elastic pressure. Skin flaps being turned down, the base is transfixed with long needles, and an elastic cord twined beneath. The tumour is now removed and any obvious vessels ligatured. When the elastic band is taken off, any remaining points are secured with pressure forceps, of which a large supply should be at hand. Thus very little blood need be lost. As regards the removal of one or both glands at the same time, all must depend upon the circumstances of the case. In great anæmia and exhaustion an interval should intervene between the two operations.

Removal of the ovaries has been suggested in these cases, but I am not sure if it has ever been put into effect. The result must be somewhat experimental, and if the breasts did not decrease a serious damage would be done to a young woman.

In very exceptional cases mammary hypertrophy has been present in the male, especially in association with atrophy of the testes, and the large size of the mammæ in some male Zulus and Bushmen is well known.

The microscopical characters of the mammary hypertrophy are very peculiar. Though much consists of masses of fibrous tissue and fat, and little of the gland tissue, masses have been found of a pinkish colour and firm consistence, which are composed mainly of awn-shaped cells, and which suggest sarcomatous tissue. Elaborate microscopical examination of one of these cases in accordance with modern pathological ideas is much to be desired, as observers have hitherto reported many and divers appearances.

True elephantiasis of the breasts, as pointed out by Manson and Dr. Davies of Samoa, is a distinct disease, not to be confounded with true hypertrophy. It has little interest for practitioners in this country.

Lactation eczema.—Three cases of this troublesome affection have come before my notice in the last six months, and they all had certain symptoms in common. The women were young and delicate-looking, with fair skins and blue eyes, and had suffered from cracks and fissures about the nipple, which had been congenitally retracted and difficult for the infant to seize. I have no doubt that the proper care and management of the nipples in growing girls is a matter too much neglected by parents and family practitioners, and that the pressure of tight corsets has much to do with the flattened condition of these very important organs. It seems clear that cases of eczema about the nipple are infective—that organisms gain access to the lymphatics of the skin by minute abrasions, from the infant's mouth, or the moist, sodden surface about the areola. In cultivations of scrapings about the skin of the areola the *Staphylococcus aureus* was found in abundance. Organisms in the mouth of the infant are very abundant, and probably more than one kind may aid in producing the malady. The symptoms are quite typical; the painful cracks and fissures, the exudation drying with glazed scales, the red and hyperæmic appearance, are all characteristic of the malady. Should the affection become chronic, the surface presents a brownish aspect and the skin becomes definitely thickened. In these cases confusion with "malignant dermatitis" is readily fallen into, and I doubt not that cases of "malignant dermatitis" cured by external remedies have been really instances of mistaken diagnosis. The principal distinctions are as follows:—(1) true eczema takes its origin usually in lactation, and is found in young women; (2) the surface lacks the vivid red, raw appearance of malignant dermatitis; (3) scrapings of eczema fail to show the large vacuolated cells so familiar in malignant derma-

titis (so-called psorosperms) ; (4) even chronic eczema is more rapid in its history than true malignant dermatitis, which is essentially a chronic malady ; (5) eczema has not the sharply defined border of "malignant dermatitis," and the thickening of the integument is not so clear and definite. The appearance to the eye is perhaps the most important distinguishing sign, for the colour of "Paget's disease" is typical and utterly unlike anything else—when once seen it is never to be forgotten. In cases of doubt, occurring in older women, the rebellious behaviour of malignant dermatitis to all remedies is a significant sign of its true nature.

It may be remembered that a small patch of eczema with cracks or fissures near the nipple may be the starting-point for an outbreak of general erysipelas. I have seen this occur on several occasions. The erysipelas has been of the variety to which the term "wandering" used to be applied. The constitutional symptoms were severe, and the "blush" and œdema occurred in various parts of the skin, as the chest, arms, and forehead.

Another most important reflection regarding eczematous cracks and fissures about the nipple is the possibility of confounding such conditions with syphilitic infection. Typical chancres about the areola will probably be easily recognised. The lesion of syphilis is, however, not always typical, and, as on the penis, a very insignificant and easily overlooked lesion may prove to be true syphilitic infection. In cases of suspicion it is well to wean the child and suspend judgment, keeping a careful watch on the axillary glands and waiting for skin manifestations to arise. "Secondary" syphilitic rashes about the areola are also readily mistaken for eczema. The brownish coppery tint and tendency to serpiginous formation should at once arouse suspicion.

As regards the treatment of lactation eczema, the local applications advised are almost endless. The child had better be weaned, and should there be much hyperæmia and inflammation, soothing remedies should always be

applied. Calamine lotion, the "lotio lactis," and rice water are all excellent. Bearing in mind the bacterial nature of the disease, mercurial applications are generally advisable, and these should be at first dilute, gradually increasing their strength. Unna's plasters, containing such drugs as boric acid or ichthyol, are very valuable, and the latter drug has given me excellent results in eczema about the nipples. For the more chronic cases nitrate of silver may be applied, to be followed by mercurials. Weak tar applications are also useful, with salves or plasters of salicylic acid or resorcin; but these latter remedies must be employed with caution, and very dilute at first.

All possible means of improving the general health must be taken into account, and iron is the drug which seems to act most beneficially. It must be given in a mild form, or as "Levico water," which seldom constipates or causes digestive disturbance.

Cysts of the breast.—It is often stated that cysts of the mamma are comparatively uncommon. A number of these cases remain untreated, and many are never admitted to hospitals; I believe, however, that they form a far larger proportion of cases of mammary disease than is generally believed. The following cases of interest have lately come under notice:

A lady, aged between 40 and 50, saw me in the spring of this year for a tumour of the breast, which she had noticed for about three months. It was deep in the mamma and felt about the size of a small hen's egg, very hard and fixed. The nipple was retracted, but this had always been the case, and the skin over the swelling was not implicated. The axillary glands were apparently not enlarged; no nipple discharges had been noted. As is usual in such cases, the most varied opinions had been expressed, but the diagnosis of cancer had been confidently given. Singularly enough, about twelve years ago this lady had been pronounced to be suffering from incurable carcinoma of the cervix uteri by some of the most distinguished authorities of the day; all symptoms of this

had now disappeared and the cervix had returned to a normal condition, but I was unable to verify this by examination. As all operative interference was at first declined, I placed a mercurial plaster over the part, with a layer of cotton-wool and a firm bandage.

In three weeks' time I again inspected the case. The tumour was there as usual, but it had changed its characteristics, being distinctly less hard and prominent, with a dim sense of elasticity on firm pressure with the pulp of the index finger. Finally an exploratory incision was permitted. A considerable depth of breast tissue was cut through gradually, the parts being well held asunder and sponged. The formation, whatever it was, lay almost on the pectoral fascia. Even when closely approached it was impossible with the finger to be sure of its true consistence. In cutting into it, it proved to be a cyst with slightly coloured mucoid contents and thick walls, the size of a walnut, its parietes smooth internally, and devoid of any intra-cystic growth. The cyst, with a liberal margin of mammary tissue, was excised, and a drainage-tube brought out inferiorly; the deep wound was united with deep and superficial sutures, and soon healed. Under the microscope the wall of the cyst was lined by smooth endothelium. The mammary substance around was thickened and in a state of chronic inflammation.

This case bears its own lesson. I am confident that such instances are more common in practice than is generally believed. Gross has made the significant statement that the majority of cysts of the breast occurring in elderly women are only discovered after removal of the entire organ under the supposition that cancer existed. This statement would, perhaps, hardly hold good now, yet it is surprising how little the close similarity between a deeply seated cyst and a cancerous tumour is recognised. Exploratory incision is the one method by which mistake can be avoided. The remarkable series of cases published by Bryant in vol. xix of the 'Medical Society's Transactions' are worthy of attention in this respect, and

it is right to state that to this surgeon the teaching of the value of exploratory incision is largely due.

On April 2nd, 1897, I saw by the kind advice of Dr. Mackay, of Devizes, a lady of middle age, a widow who had a family, and who had always been able to suckle without inconvenience. She was well and healthy, but complained that a discharge constantly issued from the left nipple and soaked her linen. This had been going on for at least five years, and she gave a history of a swelling being found occasionally, which she had shown to a hospital surgeon, who advised that nothing should be done. On examination the breasts felt normal, with one exception. On the left or affected side the nipple was comparatively retracted, and to its inner side was an indistinct swelling the size of a hazel-nut, which felt like a tumour or circumscribed inflammatory patch. On firm pressure with the finger upon this a droplet of yellowish fluid exuded from the nipple. I advised exploratory incision, with permission to remove the whole mamma should growth be found. This was, however, refused, and the patient insisted at all hazards upon the mere removal of the local trouble, whatever was revealed by incision. The operation was done on April 6th, and a cyst with yellow glairy contents, the size of a small cherry, was opened. In close juxtaposition lay another, the size of a pea. On the wall of the larger cyst was a stalked papillomatous growth the size of a pea. The cysts, with the portions of mammary tissue round them, were freely excised, and the rather deep wound united by deep and superficial sutures, with a horse-hair drain inserted into the depths of the cavity; sound healing took place within a week. Examination with the microscope showed that the intra-cystic growth was entirely confined within the cyst; it was dendritic, and the central stalk covered with large cells. There was no evidence of malignant action. The specimen falls into the class of duct papillomatous cysts described in the 'Clinical Journal' December 16th, 1896.

Remarks.—The treatment of cysts within the breast

associated with intra-cystic growth is fraught with difficulty, and differences of opinion must arise. It is seldom that the remainder of the mamma is healthy in these cases, and fresh cysts are very apt to form in other parts of the breast should the organ be left.

Again, without the microscope, and even with it, it is always difficult to declare with confidence whether an intra-cystic growth is innocent or not. Once the villous protrusions, and the epithelium with which they are covered, transgress their confines and infiltrate or extend into the adjacent tissues, the villous variety of duct carcinoma is apt to originate.

In women of middle life, therefore, it would seem safer to remove the whole mamma for cysts which contain intra-cystic growth in any abundance, especially if the walls of the cyst are at the same time thickened. The following case further illustrates this most important and very difficult practical subject:

In July, 1897, I saw a married woman, aged 39, a patient of Dr. Wynne, of Limpsfield, who was childless, and who had long noticed deep retraction of the left nipple. In fact, the nipple had been "contracted as long as she could remember." Within the last two years she has suffered occasional attacks of pain, slight bleedings, and the escape of a yellow and viscid discharge. On examination the nipple was deeply retracted so as to resemble a deep, circular, crateriform depression. At the bottom of this was a florid red, moist, granular-looking growth, exactly resembling the "vascular tumour" of the umbilicus of children. Continuous with the nipple and stretching towards the axilla across the areola was an ill-defined tumour, evidently composed of altered breast tissue. It was firm, lobulated, and felt exactly like an area of chronic mastitis, except that here and there slight prominences, presumably cysts, were perceptible to the fingers. The axilla was quite free. The remainder of the mamma and the opposite breast were apparently healthy.

An exploratory incision was made on July 24th. The

cut area was tough and resistent, and a piece of breast tissue the size of a dessert-spoon was literally honey-combed with cysts. Many of these were fusiform in shape, and obviously dilated larger ducts. Others were rounded, and in size all varieties could be seen from a pea or currant to a small shot. They were full of glairy yellow fluid. Some of them contained intra-cystic growths attached to a tiny stalk, so fragile that the growths fell out of the cysts on washing the specimen; a larger and more vascular growth sprouted out of a dilated duct into the floor of the umbilicated depression, it spread out into its interior, and quite filled it. Seeing the dubious nature of these growths and the age of the patient, the whole breast and axillary fascia and lymph-glands were removed. The remainder of the mamma seemed healthy; an occasional small cyst was seen here and there. The accompanying sketch well illustrates the appearances; it gives no idea of the enormous number of cysts, which were only seen at the moment of division with the scalpel. Under the microscope Dr. Rolleston found that the papillomatous growths were of the usual structure, with no trace of carcinomatous degeneration about them. The removal of the mamma was justified from the extent of the disease, but the growths seemed of an innocent nature, and definite cure was to be hoped for.

This case is a very unusual one, from the limits of the morbid process to the larger ducts near the nipple, and the temptation to assume a parasitic cause for the growths within the dilated ducts is very great. One can hardly doubt that were such a case left, the growths would increase and take on malignant action, bursting through the cyst walls and infiltrating the mamma. Removal of the entire breast is wise in cases like this one, where such growths are very abundant.

Operations on carcinoma in old age.—It occasionally happens that carcinoma attacks or is found in the mammæ of extremely old persons. Through the kindness of Mr. J. R. Lunn, F.R.C.S., I saw a male patient last year



FIG. 11.

who had carcinoma of the mamma at the age of 91. There is now, or was lately, a woman under his care who had a growth almost certainly carcinomatous in the mamma. She is reputed to be 100 years old! These are extreme instances, but cases between seventy and eighty are not so very uncommon. At such ages the advisability of operation is always a difficult one to determine. Much will depend upon the nature of the growth, as to progress, tendency to fungation, and especially as to whether it causes pain and distress. In many aged persons the tumour is small, shrivelled, withered, and atrophic. If it implicates the skin it only shows a small superficial ulcer covered by a hard, dry scab. The axillary glands are little, if at all, affected. In such cases the patient and the carcinoma gradually decline together, and the growth seldom causes such local trouble as to justify the advising of an operation. The following case illustrates well some of the preceding remarks:

In May, 1897, I saw a lady, aged 83, with an undoubted carcinoma of the breast. She had nipple trouble for many years, a moist discharge with irritation and retraction. The tumour had only been noticed for a few months, but it may have existed longer. It was about the size of a Tangerine orange, very hard, heavy, and not at all tender or sensitive. The skin was adherent over it at one spot by a slight dimple. The axillary glands were not affected. The old lady was healthy and vigorous for her age, and did not suffer from the presence of the growth. As is usual in such cases, there were differences of opinion as to whether operation should be performed or not. I counselled against it for the following reasons:

1. The growth was chronic, and at her extreme age would probably not quickly advance.

2. It caused no local suffering or inconvenience.

3. The administration of an anæsthetic, removal of the mamma and axillary lymphatics, with the confinement to bed for even a few days, would be likely to prove risky in so aged a subject.

The risks would be bronchitis or broncho-pneumonia with pulmonary œdema, or that general failure of the vital powers which sometimes ensues in the aged from slight injury or disease. Thus the surgeon might shorten life in removing a local trouble not likely to cause great discomfort or even to curtail the term of the individual's existence.

Question of operation on recurrent carcinoma.—There are few cases which give rise to greater differences of opinion than these. As a general rule, local recurrences which do not involve the axillary vessels and nerves should be removed, and that repeatedly. Cases where life has been longest preserved after carcinoma of the mamma have been those where strictly local recurrences have been removed in the form of small, button-like deposits in the scar or its immediate neighbourhood. Extensive infection of the skin, either in the form of multiple turbercles or infiltration, forbids fresh operation, and so, as a rule, does evidence of deposits of cancer in the spine or viscera. A most important point is the condition of the cervical glands at the root of the neck. Hard, fixed glands here generally mean infection beyond the reach of operation. It may be thought that the detection of these would be simple enough, but in practice we meet with strange difficulties in the diagnosis of hard tumours in the subclavian triangle.

On August 3rd, 1897, I saw a patient, aged 53, under the care of Dr. Codd, of Bromley, and her right mamma had been removed for carcinoma five months before. The incision "tailed off" into the axilla, but hardly seemed free enough in this direction to ensure that a thorough removal of the axillary lymphatics had been effected at the primary operation. There was now, on the inner wall of the axilla, a recurrent mass of growth the size of a walnut, but movable, and obviously within the reach of operation. At the right root of the neck, deeply seated behind and above the sterno-clavicular joint, was a hard lump the size of a hazel-nut, only to to be felt on deep and

careful palpation; it felt so hard and fixed that I concluded it was bony, and at first expressed an opinion that it was an enlarged transverse process of a cervical vertebra, which I have known more than once simulate enlarged glands in this situation. The patient was lying down and the tissues of the neck were tense. On making her sit up and bow the head forward it could be appreciated that the hard, deep little tumour moved ever so little from side to side. It was thus too certain that a cancerous gland here existed, and no operation was therefore advised. I doubt if it would have been possible to remove this little growth, since the pleura and subclavian vein would have been found adherent to it. Even if such a mass could be safely taken out, other glands would remain undetected at the time of operation, but soon to become prominent after it. The only operation feasible in such cases is removal of the pectorals and division of the clavicle, the glands being removed from the axillary sheath right into the root of the neck. Most surgeons would long hesitate before proposing so serious an operation for a problematical result.

Among the more common conditions which closely simulate serious tumours of the breast, abnormalities or deformities of the ribs hold a prominent position. This may be the result of fracture, but more commonly one or more ribs are curiously bent near their sternal ends, leading to an obtuse prominence, visible to the eye and perceptible to the touch, and apparently becoming more prominent as growth of the thorax is more advanced—towards the age of sixteen or twenty. This curious deformity is noticed by accident in connection with some slight neuralgic pain or from an accidental blow, to which all the troubles are attributed. Its discovery often causes the greatest alarm. The following is a marked example of this condition, very important in practice:

An unmarried girl, aged 23, saw me at St. George's Hospital on August 18th, 1897. She gave the history of being struck with a golf ball on the right mamma about

three or four years ago. It was doubtful whether this had anything to do with the present trouble. About two months ago she noticed a swelling in the right breast quite by accident. The patient was a healthy-looking subject. On examination a prominent tumour was seen in the upper part of the right mamma. On examination this was produced by the third, fourth, and fifth ribs, which were acutely flexed just anterior to the angles, so that an obtuse, ridge-like prominence was formed, pushing the mamma forward upon it. The breast itself was quite healthy, and no true tumour existed.

The difficulty and doubt which surround the diagnosis of some inflammatory conditions of the mamma is well illustrated by the following case. A married woman, aged 62, was admitted into St. George's Hospital on August 9th, 1897. She had felt a painful swelling in the left breast towards its axillary aspect for about one month. It had rapidly increased and was associated with "shooting" pains. She had suckled with the affected side, and there had never been trouble with the breast before.

On examination the woman was pale and thin. There was a nodular, lobulated, hard, fixed tumour, the size of an orange, in the left axillary wall, which felt as though it were in the axillary part of the mamma. The skin was adherent and slightly red, and the swelling was tender on palpation. Beneath the left clavicle there was a marked fulness; the cutaneous veins were enlarged. There was nothing abnormal in the condition of the nipple. There was slight increase of local heat, but no elevation of temperature. The diagnosis of carcinoma had been positively given; indeed, the case resembled it closely.

Spirit lotion was applied, and iodide of potassium administered internally. The case was watched for a time. By August 24th the diagnosis of fluid was clear. The formidable hardness of the tumour had given way to a feeling of fluctuation and yielding at one spot, where the skin was red and thinned. An incision revealed a large abscess, which seemed to have originated beneath the

pectoral in the lower anterior lymph-glands. The mammary substance was implicated, but the abscess had not originated there. The fulness beneath the clavicle was due to the fact that the pus had burrowed in that direction. After drainage the progress of the case was satisfactory.

This case serves as a text for the consideration of one of the most important matters in the diagnosis of mammary affections, *i. e.* the detection of chronic abscess of the breast. In acute abscess the symptoms are generally typical enough. The only possible error here is the confusing acute abscess with inflamed soft carcinoma or suppuration within a cyst. The latter condition is fortunately very rare.

Abscess of a chronic nature forming slowly in the breast of an elderly woman is exceedingly like a solid tumour, because, as in the present instance, the surrounding tissues are thickened and greatly indurated, and the actual inspissated pus may be surrounded by a dense and thick wall.

Moreover the nipple is commonly enough retracted from some old inflammatory attack, and here in a thin and pale, grey-haired woman we have the picture of cancer complete.

The distinguishing diagnostic signs are not many or reliable, but by observing the following points a shrewd guess may be formed of the true nature of the malady even before incision :

1. Early cancer is seldom painful ; " throbbing," " shooting " pains belong to inflammatory affections, and local tenderness is very strong evidence of inflammatory origin. Early carcinomata, if not artificially inflamed by excessive handling, rubbing with liniments, etc., are seldom painful and tender on manipulation. In the case just related the tenderness on palpation was very marked, and at once made me suspicious of the true nature of the affection.

2. In chronic mammary abscess evidence of bygone suppurations are not uncommon. Scars may mark the

site of the openings of an old "lactation abscess." I feel very certain that a certain number of chronic mammary abscesses arise in the site of the old inflammatory foci of antecedent suppurations.

3. In the very chronic cases there is no rise of temperature or increase of local heat, and it must ever be remembered that rapidly growing malignant growths may be associated with fever of the "hectic type." The temperature chart is not therefore invariably to be relied upon as a guide between suppurative affections and growths.

4. In a considerable number of instances firm pressure with the pulp of the index finger upon the centre of the swelling will detect a sensation of yielding or elasticity. This is in direct opposition to what is found in hard carcinoma, when the centre is usually the most hard and "stony" point. I regard this sensation of yielding on pressure as being the most important local symptom of chronic abscess.

5. In a certain number of cases exploratory incision is the only certain method of distinguishing between a chronic abscess and a deeply seated nodule of cancer, and this should always be done before removing the breast. Some authorities assert that in cases of chronic abscess it is well to remove the mamma. The woman is of advanced age, the abscess and inflammatory action have damaged the mammary tissues, and cancer may then originate. In commenting upon this attitude I may point out that removal of the mamma is always looked upon with great repugnance by patients, and that abscess in elderly women is by no means universally followed by carcinoma. I cannot but think that the custom of removing the breast for chronic abscess has originated in an attempt to escape from operative error. If these abscesses are drained inferiorly, their walls curetted and flushed, and methodical bandaging afterwards applied, the final result is very good. Amputation should never be performed unless the mammary tissue is riddled with sinuses, and there be strong presumption of tubercular origin.

SOME CASES OF INTEREST IN DISEASES OF THE BREAST.

The following cases have occurred in my practice during the last six months. They present many points of interest, especially illustrating difficulties in the diagnosis of mammary disease.

Compound Cystic Growths of the Mamma.

A woman, aged 63, had noticed a tumour of the right breast for about two years. She had had occasional attacks of pain described as shooting or stabbing. There had been no discharge from the nipple, and her general health had not been affected. Her mother died of cancer of the mamma. She had suckled a numerous family with the affected breast, and had suffered from abscess many years before. The tumour was about the size of an orange, and situated in the outer part of the breast. The nipple was not retracted, but there was a slight dimple in the skin. The axillary glands were not to be felt. The tumour was movable on the parts beneath; it felt hard and heavy, but on careful palpation a sense of elasticity could plainly be detected at one spot.

On January 18th an exploratory incision was made, and a jet of bloody fluid escaped. The tumour was a compound cyst; there was one large cyst and two smaller ones. A soft, cauliflower-like growth sprouted from the walls of the larger cyst and nearly filled the smaller ones. The whole mamma and axillary glands were removed, as there were doubts whether this solid growth was entirely

confined to the walls of the cyst or not. She made an uneventful recovery.

A careful after-examination of the specimen showed the cysts to be formed by very distinct walls. The lining membrane of them was somewhat fibrous and reticulated. The smaller cysts communicated with the larger one. They were so filled with growth that they practically formed distinct solid tumours, the cystic character being only apparent on close examination. The remainder of the mamma was perfectly healthy. The growth was soft, vascular, and very friable; it mainly originated from the

FIG. 12.

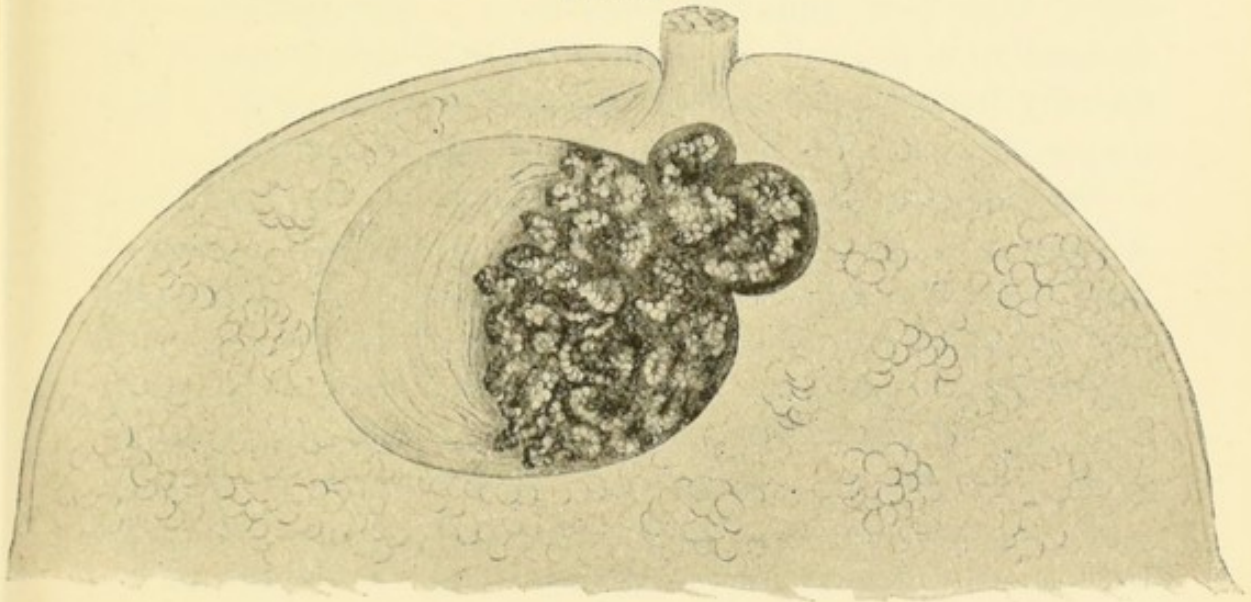


Diagram of compound cyst of the breast, containing papillomatous growth.

larger cyst wall, springing from a base the size of a florin. Under the microscope it consisted of intricate masses of dendritic growths, consisting of flimsy glandular epithelium growing upon a central axis or stalk. The attachment to the wall of the cyst was deep, and the papillary processes unusually long and soft, so that they became detached on washing the specimen in water.

The mammary tissue outside the wall of the larger cyst was not infiltrated by the growth, which seemed to spring quite from the lining membrane. The tumour therefore

consisted of a simple papilloma. The diagram shows very accurately the naked-eye appearance of this curious cystic tumour.

The next case is of an equally interesting nature, though the treatment did not present so much difficulty.

Large Single Cyst of the Mamma.

A single woman, aged 40, a cook, had noticed a tumour in the left breast for three weeks. Six months before she had a blow upon the mamma. There was no discharge from the nipple, which was not retracted. The axilla was free. A swelling as large as a duck's egg existed on the inner aspect of the left mamma. It was movable and distinctly elastic, and somewhat oval in shape, commencing directly beneath the nipple and extending inwards. The nipple skin and glands were apparently unaffected.

On January 18th an exploratory incision was made and a large cyst was opened. A quantity of dark brownish fluid sparkling with cholesterine escaped. There was no trace of solid growth. The cyst was dissected out with some difficulty, and the deep wound well brought together by deep and superficial sutures. The sac of the cyst was lined by flattened epithelium; it was perfectly smooth, and was nowhere thickened as though by growth. The breast substance round seemed healthy. From the situation of the cyst it was highly probable that it originated in one of the larger ducts. This opinion was strengthened by the fact that the exterior of the cyst was white and glistening. Though it separated here and there easily from the surrounding mammary substance, near the nipple adhesion was so intimate that actual dissection was needful to separate the cyst from the breast tissue with which it seemed incorporated.

There are many points of interest and surgical importance regarding these two cases. The first might readily have been mistaken for cancer. The woman was 62 years of age; her mother had died of cancer of the mamma. The tumour itself felt heavy and hard, and

above all things there was a slight dimple of the skin at one point. The feeling of elasticity on firm palpation alone made the idea of cyst feasible. On the other hand, there had been no nipple discharge, which might have been expected in a cyst of this size. The tumour had increased rapidly and was associated with shooting and stabbing pains, which the lay mind, and many of our own profession who are not alive to the uncertainties of patients' symptoms, associate strongly with cancer. A dimple of the skin over a hard mammary tumour is one of the strongest evidences we have that the growth is cancerous. I have several times seen this symptom simulated by the puckering due to an old abscess, but this is the only occasion on which I have known it occur in connection with a cyst. It is to be explained by the collapse of a small cyst or the shrinkage of part of the wall of a large one, whereby the adjacent tissues are depressed or otherwise altered in conformation. All such considerations show how unsafe it is to trust to any one symptom as diagnostic of cancer of the breast. The nipple was not retracted. When a hard carcinoma develops in immediate relation with the nipple, the latter is invariably puckered in and drawn towards the growth. The absence of retraction of the nipple was therefore against cancer.

Exploratory incision at once clears up the diagnosis of cases like this. It often lands the operator in a fresh difficulty. Is he to remove the whole mamma or only the cyst? In a case like the first which we are discussing this difficulty will be very great. Removal of the entire mamma was here carried out for the following reasons: (1) the patient was upwards of sixty years of age; (2) the amount of growth was very considerable; (3) a doubt existed in my mind as to how far the growth was confined to the interior of the cyst, and how far it had infiltrated its walls and involved the surrounding mammary tissue.

In cases where cysts and intra-cystic growth occur in the mamma, the instances in which it is wise to preserve the

breast are few. I have found cases in the 'Notes of St. George's Hospital' where these cystic affections have returned in the scar years after the removal of the entire mamma. The return was doubtless due to a fragment of mammary tissue left behind, which again became affected with cystic degeneration. The malady, too, seems very likely to involve other parts of the mamma. Perhaps the only instance in which it would be right to preserve the mamma would be in the case of a young woman, and when a perfectly simple cyst exists, or at the most contains only a few simple papillary projections upon its walls. The correct surgery of cysts in the breast is to me full of difficulties, and exploratory incision often presents them to the operator for the first time.

The second case is of peculiar interest, because the single isolated cyst seems clearly to have originated in a blow. If this patient had been lactating the trouble would doubtless have originated in a galactocele. Indeed, a cystic swelling forming in a lactating woman after an injury to the mamma will usually be a galactocele or milk cyst. In the case we are discussing the cyst contained a large quantity of cholesterine, which indicated the presence of some fatty matter, and makes the origin in one of the larger ducts highly probable. This cyst might undoubtedly have been dealt with by simple tapping and the injection of carbolic acid. Obliteration would have occurred without a mark on the outside of the mamma. The difficulty of advising the injection treatment for these cases is the doubt which may exist in the mind of the operator as to the exact nature of the cyst. Does carcinoma invade its walls? Is there intra-cystic growth? Is the cyst only part of a pre-existing tumour? It need hardly be said that to inject such cysts would only aggravate the malady. Something may be learned, too, from the contents of the cyst. Bloody fluid, or fluids coloured deep brown or chocolate, generally indicate intra-cystic hæmorrhage. This means the cyst is not simple, and the injection treatment is then rarely safe or applicable. If

the fluid is clear or straw-coloured, and the cyst entirely collapses on aspiration, injection is justifiable. The same difficulty occurs here as with hydrocele. The injection is by no means certain to cure. The cyst may again partially fill, or much induration may remain, raising alarm of tumour in the minds of the patient and surgeon. There is also a risk, unless elaborate asepsis is employed, of inducing suppuration; and this result occurs, I feel sure, through not employing a perfectly clean and new syringe, one which has never been used before for exploring abscess or other fluid swellings. For all these reasons the exploratory incision is, in cystic swellings of the mamma, generally preferable to tapping and injection.

Dermatitis Maligna of the Nipple (Paget's disease) in a very early stage.

In May, 1898, I saw a young married woman, aged 36, the mother of four children, with a "sore nipple" on the left side. She had not been able to suckle the last child with the left mamma. The nipple had been getting sore for about eighteen months, with sensations of burning and itching and the exudation of a moist discharge. The nipple and areola around to a space of the size of a shilling were vivid crimson, raw-looking and glazed, and covered with little white islets of epithelium. The parts were definitely thickened on being felt between the finger and thumb. The axillary glands were apparently not enlarged. The patient was shown at a meeting of the Dermatological Society on May 11th. All the members recognised the disease, and there was an unanimous opinion that the whole mamma should be removed. Partial removal by excision or caustics was not considered safe. This expression of skilled professional opinion has an important bearing on the early treatment of this important malady.

Singularly enough the patient, though a young woman, consented to do what was thought right, and the breast was therefore removed. The microscopical examination by

Dr. Rolleston showed the usual signs of the disease, the epithelial proliferation being strongly marked. There was commencing proliferation of the epithelium in the larger ducts, but no carcinoma.

This is one of the earliest instances of "dermatitis maligna" I have ever seen operated upon, and it is unusual for patients to submit to the operation of removal of the entire breast for a malady which appears to them so trifling. The question must therefore naturally arise, what treatment is to be adopted when, as is common, the patient refuses complete removal? I should not hesitate under such circumstances to perform a partial operation and destroy the area widely and deeply with the Paquelin's cautery. Removal of the entire mamma is, however, probably safer, though cases with good results from the more limited operation are not unknown.[1]

Œdematous Fibroma of the Mamma simulating Cyst.

In March, 1898, by the kindness of Dr. Brebner, I saw a lady, a widow aged 44, with a tumour of the left mamma. She had never had children. The history of duration of the tumour was quite dubious, and there was an obscure account of a blow as being the likely cause. The growth was the size of an orange and situated below the nipple, which was not retracted. The skin was quite unaffected, and the axillary glands could not be felt. The tumour gave a definite sense of elasticity, so that I made sure it was in part cystic; but in this, as will be seen, I was in error. An exploratory incision revealed a large tumour definitely encapsuled. On cutting into it it was soft and roseate in colour, and I felt quite uncertain as to its true nature and whether or not it contained any sarcomatous elements. Seeing the age of the patient, I thought it wise to remove the whole mamma. The tumour was then removed from its bed. The breast was small and atrophic, the growth occupying the greater part of its

[1] Nearly three years after a nodule of cancer formed in the scar in this case.

centre. It was noticed that a considerable quantity of fluid drained away from the tumour into the vessel in which it lay, so that shortly it was surrounded by straw-coloured serum.

Microscopical examination revealed the fact that this tumour was an example of a very rare formation in the breast, pure fibroma. It was full of serum, soft and fluctuating, reminding one of those œdematous fibromata of the uterus which so exactly simulate cystic growths and so often deceive abdominal operators.

This short history carries its own lessons for reflection. I feel confident that any surgeon of experience who had examined this tumour before exploration would have felt sure it was cystic. The swelling fluctuated obviously and was quite elastic. The naked-eye appearances of sarcoma were exactly simulated, and it seems impossible to avoid, acting for the safety of the patient, removing the whole mamma in such exceptional tumours.

An apparently Cystic Swelling in the Mamma proving to be of a Sarcomatous Nature.

A single lady, aged 42, had noticed a swelling just above the left nipple for about four months. It was detected accidentally, and might have existed longer. Occasionally it was the site of slight throbbing pain. The nipple was not retracted and there was no history of nipple discharge. The skin was not implicated in the least. The swelling was about the size of a pigeon's egg. It was elastic and apparently fluctuated, so that I felt very clear that it was a cyst. The same opinion had been expressed by surgeons both in Florence and at Rome, and at the former place the injection treatment had been proposed by an eminent authority. Fearing from the age of the patient that the case might not prove quite simple, I urged the propriety of exploratory incision, the treatment as to extent of removal being determined by the appearances thus disclosed. Opposition was offered to complete

removal of the mamma under any circumstances, but on my refusing to operate with "tied hands" this was at length overcome. The sequel shows the wisdom of this course. An exploratory incision revealed that the tumour was gelatinous in consistence, but quite solid. It was encapsuled, but the capsule itself was thickened and infiltrated, so I removed the whole breast very widely and freely. The tumour proved to be a myxosarcoma. The opinion was also expressed that it was a myxadenoma, but to my mind the appearances of sarcoma were undoubted.

This case affords another example of the great difficulty of the diagnosis of tumours without exploratory puncture or incision. The apparently fluctuating nature of this swelling might have deceived any one and have led a surgeon to inject iodine and other irritants, the results of which would have been very detrimental to the patient. Severe inflammation would have been caused and rapid increase of the tumour produced.

Carcinoma containing a Blood-cyst.

On July 27th, 1898, I operated upon a patient aged 45, who stated she had borne a tumour in the left mamma for upwards of ten years. Whether this history was quite correct or not was dubious, but her medical man stated that she had consulted him for what he considered to be an induration deep in the mamma quite six years ago. The lady was married, but childless, and there was no history of "blow" or other irritative causes about the breast. She had little or no pain. On examination the mamma was of very large size, the patient being exceedingly stout. The nipple was retracted, and above was an ill-defined, hard mass the size of a hen's egg. The skin was a little dimpled over it. These ominous signs made us certain of carcinoma. At one spot, however, towards the centre, was a distinct feeling of elasticity, which made one suspicious that the affection might be a chronic abscess with much surrounding infiltration. Exploratory

incision was decided upon, and the cancerous nature of the tumour was then clear. There was a blood-cyst the size of a large nut in the centre of the tumour, and it was this which had led to the diagnosis of fluid. The breast, fasciæ, and surrounding fat were freely removed. The axilla was opened and the cellular tissue removed, but no glands could be detected. The wound left was of very large size, yet it healed with little pain or constitutional disturbance; very free drainage was employed, as is my custom in cases of large breast wounds, and elaborate care was taken to previously disinfect the skin.

The diagnosis of carcinoma of the breast in very obese subjects is surrounded by many difficulties. In the first place it is often very difficult, if the tumour be small, to feel it at all, and the diagnosis of an inflammatory "induration" is only too readily made. It is worthy of note that the dimple or pucker of the skin is generally found over cancerous growths even in very fat subjects; yet if the tumour be deeply situated this sign may be absent. Again, a cancer in the breast of a very fat woman may be deceptively mobile, since the growth is really surrounded by a semi-fluid medium. The risk of the operation is perhaps slightly increased, and the surgeon cannot be too careful to exercise full aseptic precautions. On dissecting up the flaps the fat ought freely to be removed, yet not sufficiently to render the under surface of the skin white and bare. If large masses of fat be left, in addition to the risk of not removing infected tissue the union of the wound is seldom so satisfactory as it might otherwise have been. These operations in the very obese are always anxious, and the presence of sugar in the urine or albuminuria, with feeble action of the heart and bronchitis, increase the operative risk and responsibility of the surgeon. Contrary to the practice of many, I invariably employ drainage in mammary operations, and if the wound be large and deep drainage is effected both in the axillary region and opposite the centre of the incision, and always through the lower flap.

Operations on Ulcerating Carcinoma.

There can be no doubt that the risk of mammary operations is notably increased when ulceration has taken place. The discharge is exceedingly septic, and contains staphylococci in abundance, some streptococci, and abundant bacillary organisms of an indefinite nature. The surrounding skin is sodden with the worst products of sepsis. The mammary tissue in the neighbourhood of the cancer is generally infected, and abscess of the breast may co-exist with ulcerating carcinoma. In ulcerating sarcomata the risk is even greater, as many of the cystic cavities are full of virulent pus. If a freshly cut surface, as made in breast operations, is contaminated by such septic fluids as described above, erysipelas is invited and fatal sepsis may readily occur.

I will now mention two instances of operation upon cases of this nature, where elaborate care in the previous treatment led to sound and speedy healing.

The first case was a feeble lady of over 60. For two years she had borne a cancer in the right breast. It had ulcerated for two months. A foul crater the size of a five-shilling piece occupied the position of the nipple, and the surrounding skin was sodden and œdematous. The glands were apparently not infected. In the preparation of this case for operation the surface of the ulcer was mopped three days in succession with pure carbolic acid; the surrounding skin was cleansed with soap and water, ether, and a spirituous solution of 1 in 500 biniodide of mercury.

This solution was used to sponge the operation area night and morning. At the time of operation the ulcer and parts adjacent were firmly squeezed, whereby a quantity of septic discharge came from the ducts and was at once mopped up by pledgets of iodoform wool. I regard this as an important step. If the ducts be left full of septic fluids the operator may readily squeeze them in removing the breast, and express some of the septic matter right on

to the freshly cut surface. The Paquelin's cautery at a dull-red heat was next employed, and the whole ulcer and its edges thoroughly charred. The operation was now proceeded with, and, though a very large wound was made, healing was speedy and free from fever.

The second case was also a patient of over 60, who, in addition to ulceration of the mamma, bore a large abscess towards the axillary aspect of the mamma. She was ill and feverish, and obviously suffering from sepsis. I declined to operate unless this condition could be remedied or lessened. The abscess was freely opened and washed out with a solution of 1 in 1000 biniodide of mercury. The ulcer was mopped with carbolic acid. In a week the patient was much better; the temperature was only a little above the normal at night. The operation was proceeded with, and the ulcer and the whole interior of the abscess, with the margins of the incision which had been made into it, were charred with the cautery before any incision was made into the surrounding tissues. The case did not do perfectly well. Some slight suppuration occurred, with a patch of cellulo-cutaneous inflammation in the exact site of the abscess. Doubtless the contamination had passed even beyond the reach of the cautery.

A SERIES OF CASES OF MAMMARY DISEASE, WITH REMARKS.

On Implication of the Axillary Glands in Cancer of the Breast.

WITHOUT quoting "percentages," it may be safely said that by the time a mammary carcinoma is appreciable to the touch the axillary lymphatic area is infected, though perhaps to a small and not easily recognised degree. We must remember that if a gland contains infective cells, only to be recognised by the microscope, it is as surely diseased as though it proved a tumour the size of a pigeon's egg. Holding this in mind, it is easy to understand that the possibility of feeling or detecting enlarged glands in the axilla has little significance or value in cases of carcinoma. If they can be detected, indeed, prior to operation, the surgeon may assure himself that for one infected gland he can feel there are many others he cannot thus appreciate, and the contamination is far more extensive than he imagines. My own practice is to freely open the axilla in every case and thrust the fingers well under the pectoral. If the least sign of glandular implication be detected I at once remove the whole sternal part of the pectoralis major, cutting the muscle close to the ribs and humerus respectively. The pectoralis minor may be then divided if needful. Invariably in such cases I have found a chain of "shotty" glands extending upwards as high as the clavicle, the uppermost gland being near the subclavian vein. The extent of disease is far more than suspected, and only to be appreciated or detected by removal of the

muscle. I feel sure that in cases of glandular disease, operated upon after former methods, infected glands situated high up near the subclavian region remained undetected. The following example will show how dubious and uncertain are the signs of glandular infection.

In July, through the kindness of Dr. Selwyn Harvey, I saw a lady, aged 48, married, and the mother of a numerous family. She looked so well that it was difficult to believe she was the subject of a serious malady. The left breast, which was voluminous, was, however, affected with well-marked infiltrating carcinoma. The case might easily have been confounded with simple chronic mastitis, but at one spot the skin was distinctly "dimpled" and puckered, and the diffuse hardening was here more localised or concentrated. The most careful examination failed to detect any axillary gland implication. At the operation the axillary cavity was opened, and beneath the pectoral a gland the size of a small plum was at once felt. I therefore removed the pectoralis major, and now a chain of glands was at once detected, which reached as high as the clavicle. The highest gland lay in contact with the subclavian vein. The pectoralis minor was divided and all the glands and connective tissue removed from the axilla, leaving the vessels, nerves, and posterior muscles exposed. An enormous wound was the result, and the patient suffered a great deal during the earlier days of speedy healing. This case is only one of several which have convinced me that to detect diseased glands in the axilla an opening is essential, and I believe that removal of the whole lymphatic axillary area, is an essential step in the operation for all cases of known mammary cancer.

Tumour of Subclavian Triangle secondary to Removal of the Mamma. Difficulty of Diagnosis.

A single woman, aged 42, came to the Hospital for Women and Children in Waterloo Road in February, 1899. The right mamma had been removed for carcinoma by a

hospital surgeon three years and six months before. An extensive operation was performed. Two years afterwards a small nodule developed in the skin of the thorax; this was again removed. Her attention was drawn to the present trouble by a sensation of numbness and tingling down the right arm and into the hand. The limb was not œdematous, but the fingers were cold, and the radial pulse was markedly diminished in volume as compared with the opposite side. In the subclavian triangle was a hard, deeply seated, fixed tumour, the size of a small walnut. In texture, feeling, and situation it exactly resembled an exostosis. It was of bony hardness and absolutely fixed. The diagnosis was difficult and of importance. If this were a true bony tumour an attempt should have been made to remove it. If the growth consisted of hard cancerous glands, any operation could be of little utility. Compression of the vessels to such an extent by cancerous glands was certainly exceptional, and in favour of bony growth. Many diverse opinions had been expressed about this case. The Röntgen rays were applied, and it was at once evident that the tumour was not osseous. It was only represented by a fine "shade" in the skiagram, hardly to be discerned, and obviously not of that density and opacity which would denote bone. I have since lost sight of the case, but it seemed to me that it might have been possible to relieve the vessels from the growth by splitting the latter. Any attempt at complete eradication seemed hardly wise or feasible.

Chronic Abscess of the Mamma.

For the notes of the following case of mammary abscess I am indebted to Dr. Méchod, then resident medical officer at the Waterloo Road Hospital.

A married woman, aged 35, was admitted in July, 1899, for a tumour of the left mamma. She had noticed it for three months; it gradually increased, and had been painful at times. A tumour the size of an orange, obviously

elastic, was developed in the lower part of the mamma, below the nipple, which was not retracted. The skin over it was not puckered, and was slightly red. The swelling appeared as though fixed to the ribs beneath. This woman had five children, and suckled all but the last. She had never had a sore nipple or eczema. No evidence of a blow or other injury could be elicited. The situation of this swelling, and the manner in which it seemed as though fixed to the ribs beneath, were very suggestive of cystic carcinoma. The elastic feeling was also just what one might have suspected in a soft malignant growth.

On July 17th, with full permission to do what seemed needful, the swelling was incised, and proved to be a chronic abscess. Thinking that necrosis of a rib might be present, the swelling was laid quite freely open and some thick pyogenic membrane curetted away. The ribs were exposed, but not denuded of periosteum. The abscess was probably of tuberculous origin.

There can be no question that the majority of mammary abscesses are associated with lactation and the absorption of septic organisms from cracks and fissures of the nipple. The diagnosis of these abscesses and their leading symptoms are familiar to any practitioner. It is otherwise with chronic abscess, where the absence of a cause, and the non-association with suckling or lactation, often put us off our guard and lead to serious errors, both in diagnosis and treatment. The latency of pyogenic organisms in the tissues is a subject of which we know certainly very little.

It is a well-established clinical fact that abscess may arise in the site of an old inflammatory focus many years after the original inflammation. The activity of the process appears to be excited by a blow, exposure to cold, attacks of illness, as influenza, and other similar agencies. It will be found that a significant proportion of chronic mammary abscesses develop in breasts which have been the site of an ancient suppuration. This is not always the case, and the origin of many of these abscesses is shrouded

in complete mystery. The practical point to recollect is the extreme resemblance of a deeply seated abscess surrounded by thick walls to carcinoma, and the ease with which a mammary gland may be needlessly removed unless exploration is systematically carried out.

Enormous Subpectoral Abscess in a Male.

The following strange case came before my notice in December, 1898, by the kind recommendation of Dr. Cooper, of Hampton.

A very stout man, between 50 and 60 years of age, showed a large rounded swelling on the left side of the chest. He was "puffy," with a stout, thick neck and a red and congested face, as though he had some respiratory difficulty. For some two years he had been "ailing" with obscure thoracic pains and "shortness of breath." Abscesses formed and burst about the upper part of the sternum on the left side, and two unhealthy, livid sinuses still existed in this position. Much pain and uneasiness had been complained of about the left pectoral region, but the actual history of formation of the swelling which now existed was quite vague. There was no evidence of syphilis.

The case appeared at first sight to be a huge tumour of the left breast, but on closer examination it was obvious that the mamma was really heaved forward, the swelling, whatever its nature, being entirely retro-mammary. It had been aspirated by Dr. Cooper, and nothing but blood and serum was evacuated. The tumour felt elastic, and might easily have been a soft growth or a deeply seated chronic abscess with thick walls. There was no sign of aneurysm, such as pulsation or bruit, and the vocal cords moved naturally, as seen with the laryngoscope.

The patient was admitted into St. George's Hospital, and I was preparing to explore this swelling by incision, when the abscess, for such it was, suddenly evacuated itself in the night through one of the sinuses near the

sternum; the pus deluged the clothing and bed of the patient. He was obviously very ill and seemed in a pyæmic state, and I determined to make a more free opening for escape of pus. He was given the A.C.E. mixture with great precautions, and the anæsthetic was not closely pushed because of the dyspnœa and general congestion of throat and fauces. I laid open all the sinuses near the upper part of the sternum, cut away their edges, and scraped out unhealthy granulations. An opening large enough to admit the index finger was found close to the edge of the sternum, in the left first interspace. This led into the mediastinum. The back of the sternum was superficially carious, and it was obvious that the case was one of mediastinal abscess which had emerged from the chest beneath the pectoral muscle, and also through the first interspace, where spontaneous evacuation had occurred. The parts were tamponaded with iodoform gauze, and slowly but surely healed. The pus was very serous and watery and contained the pneumococcus in abundance.

As might be expected, the subpectoral abscess again slowly filled, and it was opened and drained by Dr. Cooper. He informs me that the sinus still sometimes discharges, but that the man is able to follow his employment, being almost entirely relieved of his old respiratory distress. Later reports state that he is almost quite well. Subpectoral swellings are often difficult of diagnosis. Abscess in this situation is almost invariably due to necrosis of the ribs or sternum; seldom, if ever, does it really originate in the mamma. Such abscesses, if opened, discharge indefinitely unless the necrosed bone can be removed. Other causes of suppuration in this locality are blows, and the discharge of an empyema or abscess of the lung.

A few cases of soft sarcomatous growths are recorded as originating beneath the mamma, and obviously the similarity to abscess of these serious affections would be very close. So, gummatous formations may occur in this locality, but in the cases I have seen the tumour was

obviously in the pectoral muscle, and rapidly disappeared under iodides. Lastly, it must ever be kept in mind that some thoracic aneurysms run a curious and deceptive course, and, becoming diffused, may form swellings which do not pulsate and which the best surgeons have mistaken for abscesses. The moral of the use of the aspirator in cases of doubt is here very important. In the case just related I am not satisfied as to the true cause of the malady. The pneumococcus being found in such quantities in the pus is interesting, and the caries detected on the sternum might readily have been due to the eroding action of pent-up pus, and not the cause of the suppuration.

The Difficulty of Diagnosis of Submammary Carcinoma.

When cancer, as is sometimes the case, attacks a deep pectoral lobule of breast tissue, its recognition may be very difficult, for the whole mammary tissue, the skin, fat, and fasciæ intervene between the examining hand and the growth, so that the usual diagnostic features of the latter are cloaked or concealed. These cases are peculiarly perplexing in the case of very fat patients.

A single lady, aged 40, was brought to me in June, 1899, for an opinion about the state of the left mamma. For nine months she had noticed "something wrong" with the breast. It was occasionally painful, and on examination a hardness was found for which advice had been sought. She had seen an eminent consultant, who gave no positive opinion. On examination the upper part of a very voluminous mamma gave all the evidences of chronic mastitis. On taking up the gland between the finger andt humb, irregular indurated areas of tissue could be felt. On careful examination with the flat of the hand no distinct tumour could be made out, though on account of the amount of adipose tissue this was difficult to certainly ascertain. The nipple had always been small and a little retracted, the axilla seemed quite free, and the

skin was smooth. The patient was the picture of health, but was very anxious, as she had lost two aunts from carcinoma of the mamma. I had little doubt that this case was one of chronic mastitis, and I strongly urged the removal of the breast, for I felt sure that it was in a morbid state, and that cancer was peculiarly liable to develop.

The operation was done a few weeks after, the whole gland, with the surrounding fat and the pectoral fascia, being freely removed, leaving a very large and deep wound. This speedily healed, with little pain or constitutional disturbance. Examination of the mamma after removal showed that it was tough and fibrous. At one spot, near its deeper aspect, the tissues were drawn towards a "knot" of suspicious hardness, and the microscope, to my disappointment, indubitably evidenced that cancerous change had here already commenced. The axilla, unfortunately, had not been cleared as it should have been. I felt very confident in this case that I had "forestalled" cancer. Nothing could show us more forcibly how very early operation is indicated in cases which admit of doubt. In all the cases of submammary cancer I have hitherto examined I have always been able to feel a hard lump deep in the breast. This lump, small and obscure, has always given rise to much professional difference of opinion. In the present case, however, no such formation could be detected on very careful examination. The fact, therefore, is clear, that in these patients with voluminous mammæ the only evidence of a nodule of cancer on the deep surface of the breast may be some hardening and infiltration of the breast substance over it, very like and perhaps indistinguishable from chronic mastitis.

A case equally striking is as follows. For the notes of it I am indebted to Dr. Méchod, then resident officer at the Women and Children's Hospital in the Waterloo Road.

A stout married woman had noticed a "lump" in the left mamma for six months. It gradually increased, with

very little pain. The patient was childless. The tumour, hard and indurated, with ill-defined margins, lay deeply above the left nipple, which was a little retracted. Careful examination revealed no elasticity; indeed, it seemed remarkably solid. No "glands" were to be felt. The breast was enormously large and fat.

In this case I must say that the similarity to carcinoma was complete, and only the rule I universally adopt of exploring mammary tumours made me avoid a serious error. I cut through much yellow fat and mammary tissue, and finally into the swelling. To my great surprise, out gushed a jet of clear fluid. The tumour was a cyst with thick walls and a cavity about the size of a walnut. It lay at a great depth. I swabbed it out with pure carbolic acid and stuffed it with iodoform gauze, ordering this to be withdrawn on the third day, when a tube was to be inserted, and the opening carefully kept aseptic. The mamma was saved, and the wound soundly healed.

Cyst of the Mamma simulating Cancer.

In July, 1899, I operated upon a nun, aged about 40, who had a tumour of the right mamma near the axillary aspect the size of a large walnut. It had been noticed for about four months and was painful. The nipple was stunted, not retracted. The mamma was obviously the site of mastitis, being granulated and thickened on examination with the fingers, while with the flat hand the tumour when palpated was readily to be felt. The axillary glands were not affected. The skin was not puckered. Near the axillary aspect of the left breast was a tough, indurated area which felt nodular at one spot. I much feared, from the heaviness and density of the tumour in the right breast and its apparent incorporation with the mammary substance round, that it would prove carcinomatous. The thought of the same process commencing in the other mamma in an area of chronic mastitis was not to be lost sight of. On July 11th I made

an exploratory incision, and the knife entered dense, hard, fibrous material, which might readily have been mistaken for carcinoma. Warned by previous cases, I continued to

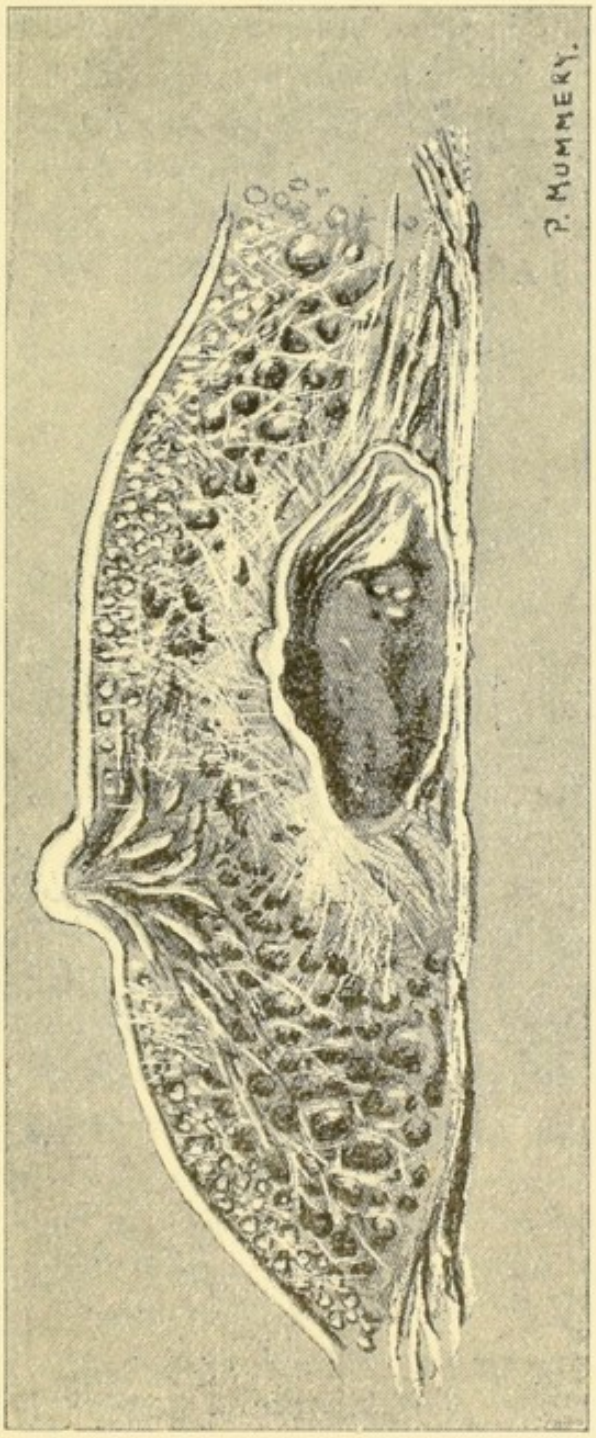


FIG. 13.

Deeply seated cyst of mamma simulating cancer.

deepen the incision, and a jet of clear fluid escaped with vehemence as a cyst of considerable size was opened. The cavity of the cyst was irregular, about as large as a

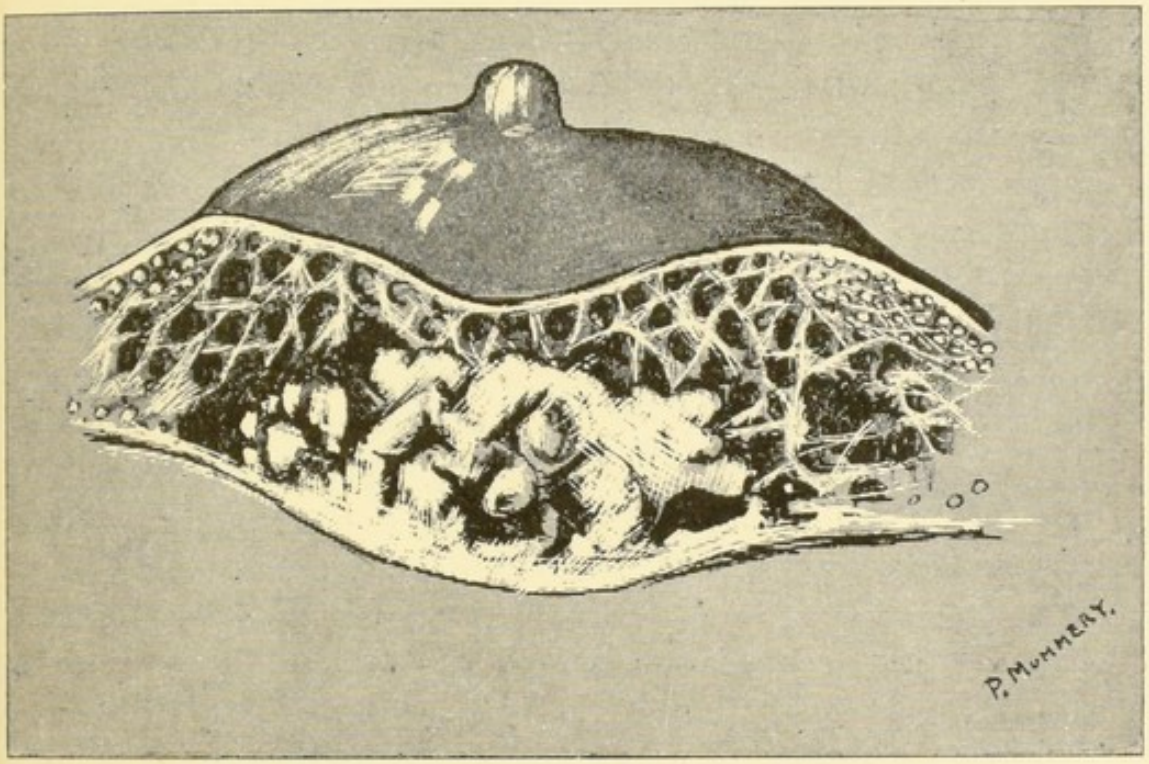
walnut, and it was surrounded by dense tissue at least half an inch in thickness. There was no trace of growth in its walls. I resolved to dissect away the cyst and save the mamma, but in doing so I opened numerous tiny secondary cysts, and it was obvious that the whole breast was diseased. I accordingly removed it. Subsequent examination showed no carcinomatous change.

The surgery of cysts in the breast is far from easy. In single serous cysts, where no growth exists in the cyst wall and the fluid is clear, the cyst itself may be dealt with by tapping and injection, or the dissecting of its walls away bodily. Most of these formations are found in chronic mastitis, and in my experience it is very exceptional to find the cyst really solitary. On section of the toughened mammary tissue round, other small cysts, of the size of a currant or small shot, are cut across, and it is obvious that the remainder of the mammary substance is really in a condition of cystic degeneration. If the gland is left, one or more of these cysts may slowly increase and become prominent, to cause future alarm and further discomfort. In that rare condition, galactocele, the milk-cyst can usually be safely treated by dissection, the rest of the mamma being left untouched.

But, after all, one of the most important and interesting matters connected with cysts of the mamma is the ease with which they may be confounded with cancer. A small, deeply seated cyst, surrounded by dense inflammatory material, may exactly simulate hard carcinoma and utterly confound and deceive a too positive diagnostician, who may, to his chagrin, find he has removed the breast for a simple condition which permitted of less severe treatment. The illustration of the specimen, well drawn by Mr. Mummery, shows admirably the conditions present (Fig. 13). From this excellent plate it will be understood how close the clinical resemblance between deep cysts and cancer may be. In the absence of exploratory incisions it is well for a surgeon not to be too positive in diagnosis. The colour of the fluid

in cysts of the breast is of great importance. Bloody fluid is commonly found in cysts connected with carcinoma or sarcoma. In addition such fluid is not watery, but glairy or colloidal. Dark-coloured fluids usually owe their hue to altered blood, and in many of such specimens some form of papillary growth will be found upon the wall of the cyst. Great difficulty may be experienced in estimating the correct treatment of cysts bearing papil-

FIG. 14.



Hard carcinoma in the deeper parts of mamma. The skin and nipple are not affected.

lary growths upon their walls. In cases of small cysts found near the nipple bearing one or more flimsy papillary processes, the cysts may be removed and the mamma saved. If the intra-cystic growth is abundant, and especially if the walls of the cyst itself be infiltrated, I feel convinced that removal of the mamma is the safest course to pursue.

Removal of Advanced and Ulcerating Carcinoma of the Mamma in an elderly lady, the subject of Chronic Bronchitis and Dilated Heart; suppuration; recovery.

In December, 1898, I first saw this patient, a spare and feeble lady, whose exact age was uncertain, but considerably over seventy. She had noticed a tumour in the left mamma for about two years, and this had been shown to eminent surgeons, who advised against operation on account of her age and feebleness. She herself was also extremely averse to operation under any circumstances. The tumour when I saw it was already livid, and its advancing red tubers could be felt under the skin, which was thinned and adherent. The axilla was apparently quite free, and the tumour moved on the pectoral. Quite appreciating the unfavourable nature of the case, I advised operation, seeing clearly the distressing local conditions which must ultimately ensue. About this time, however, the patient became so bronchitic and feeble that operation had to be postponed. Under the care of Dr. Symes Thompson she got safely through the winter, and I again saw her in the spring of 1899. Some axillary glands were now enlarged and the tumour was looking more formidable. Seeing it would soon burst through the skin, I strongly urged operation, which the patient again negatived.

Early in June the expected fungation took place, and the profuse bleeding and discharge terrified the patient, who now desired the operation to be done. The condition of the lungs had, however, improved, and, though she was extremely weak, it was obvious her condition would soon become desperate, and operation afforded the sole hope of relief. I determined to conduct the operation with the view entirely of affording palliation rather than radical extirpation.

For two days the skin of the axilla and thorax was purified with soap and water, ether, and a 1 in 500 solution of biniodide of mercury. The ulcerating part of the

growth was mopped before operation with pure liquefied carbolic acid. The operation was performed at 9 a.m. on July 11th. At 8 a.m. a nutrient enema, containing the yolk of one egg, strong beef-tea, and brandy, was administered. Dr. Hewitt gave the A.C.E. mixture to a light degree of anæsthesia. The operation was performed in the usual manner with all possible rapidity; the pectoral fascia, superficial layer of muscle, and all enlarged axillary glands were eradicated. There was marked weakening of the strength of the pulse when the mass, which was of great size, was being removed from the front of the thorax; but this soon passed away, and in half an hour the patient was placed in bed in the sitting posture, warm, and in good condition.

The dressing was maintained in position by a many-tailed bandage, as is my usual practice, and the tube was brought out through an opening in the posterior and lower aspect of the inferior flap. The patient made a good recovery. On several occasions attacks of cardiac weakness occurred. On the fifth day violent pruritus of the integument of the chest wall was complained of, and this was successfully treated by sponging with hot (1 in 20) carbolic lotion. On the seventh day, as might have been expected from the septic nature of the case, some suppuration occurred in the axilla. The pus was very offensive. Under drainage and frequent syringing with mercuric lotions this soon cleared up, and by the twentieth day the parts were soundly healed.

This case is one of some importance, because it is an example of a rather numerous class in private practice, where operation is refused or the growth concealed until the disease has advanced to a very serious extent, the patient being weak and anæmic. If old age, a dilated heart, and bronchitis are added, the circumstances are such as to call for anxious reflection. One of the first local conditions which negative operation in aged and feeble women with advanced cancer is extensive implication of the skin. If there be many "shotty" nodules

scattered about the skin of the thorax, or the integument be infiltrated with cancer, producing that condition known as "hide-bound" carcinoma, operations are hardly admissible. A large open wound the size of a soup-plate may have to be left, and the "Thiersch" grafts make other portions of the body sore, so that the stress of recovery is great, except for strong and well-nourished women. The second local condition which is of most unfavourable omen is fixity of the mass to the chest wall, especially below the pectoral. In an old and feeble bronchitic patient the extensive operations needful to deal with this condition will probably prove fatal.

A third unfavourable factor, one which was present in the case just related, is ulceration of the cancer. The discharge is of the most dangerous and infective description. It swarms with organisms, among which both streptococci and staphylococci are present. If the newly cut wound become contaminated, erysipelas is only too likely to arise, and death from septicæmia in these cases is not unknown.

I am sure that the safest practice in these cases is to utterly clear and destroy the whole ulcerating surface with Paquelin's cautery at the time of operation. I did not adopt this precaution in the case we are considering, on account of the fact that I had observed for some days that the whole mamma was inflamed and hot, and that septic action had doubtless spread far below the surface into the mammary substance. I therefore was content to freely treat the ulcerated surfaces with pure carbolic acid. The wound was repeatedly and strongly flushed at the completion of the operation with hot 1 in 1000 biniodide of mercury lotion. The greater bulk of it at once united, suppuration only occurring at one spot.

This case is of additional interest as showing that fixed rules cannot be laid down in surgery. I have no doubt that this was a case where the sternal pectoral ought certainly to have been removed and all the available lymphoid tissue dissected clean away from the vessels. One can

hardly perform this operation quite thoroughly under an hour, and I feel sure that such a feeble patient as this lady might have had her chances for recovery seriously prejudiced by the severity of an operation which, in a younger and more robust woman, would have been imperative for modern surgery to undertake. The matter of the anæsthetic calls for a passing comment. I believe that in this class of patient chloroform or the A.C.E. mixture are the best agents to employ. The anæsthesia should be slight, so that the aged and feeble patient moves a little or mutters.[1]

The shock experienced at the time great nerves are divided or the mass dragged away from the chest wall usually passes away spontaneously. It is customary to inject strychnia or give rectal enemata containing brandy when this symptom shows itself, but I question whether such means are really needful, or indeed advisable, except in extreme cases.

Significance of a small Induration in the Mamma in a Woman of over 30 years of age.

It would seem that the extreme importance of the early recognition, and especially the early treatment, of cancer of the breast is even now hardly appreciated by many of the profession. The following case well illustrates what is perhaps more common than it ought to be, the ignoring of a serious malady because its evidences are but slight and insignificant.

A lady from abroad, aged 42, was sent to me by two well-known medical men in this country, whose names I do not mention for fear of identification of the personality of the patient. This lady had always enjoyed good health; she was married, but childless. About a year before I saw her she accidentally noticed a slight hardness in the left mamma. She at once took alarm about it and consulted a medical man, who pronounced it to be

[1] This lady is now quite well, four years after the operation.

of no consequence. The lump remained, and, indeed, got larger, and she saw several surgeons in good practice in the colony in which she lived, who all were unanimous in considering the case of no consequence. One termed it inflammatory, and the usual remedies had been employed. At the end of a year she came to this country for advice, as she felt certain that the swelling had increased. The medical man she first saw here at once took alarm at the state of affairs, with the result that I saw her. On examination the mamma was very voluminous. Above and to the outer side of the nipple a distinct local hardness could be felt deep in the breast, and this could be appreciated by deep pressure with the flat fingers. A distinct abnormal formation was certainly present. The skin was not puckered, the nipple was unaffected, no glands could be detected in the axilla. I declined to give a positive opinion, but strongly urged the importance of at once making an exploratory incision, with full permission to act upon the appearances found as to the extent of the operation to be performed. This was done in April, 1899. The exploratory incision passed through a quantity of fat mammary structure and some hardened tissue, and opened a small cavity the size of a nut containing blood and colloidal material. The walls of the cavity were obviously formed by carcinoma. A free removal of the gland, fascia, and contents of the axilla was performed. The greater pectoral was also dissected away. No evidence of axillary infection could be found. She made a good recovery. Microscopical examination showed colloid cancer and dissemination throughout a considerable area of the mamma.

The great indignation and dissatisfaction that was expressed by the relatives with the opinions and conduct of the medical men who had seen this case in its early stages affords a text of warning which we all may lay to heart. It cannot be too widely known that the commencement of cancer of the mamma is very insidious, and not attended by any great pain or discomfort. If

a woman of the cancerous age gets an abiding patch of induration in the breast, such an induration, however small and slight and insignificant, is a symptom of most serious import which cannot be ignored. In nine cases out of ten it will prove to be cancerous. If it be not cancerous it will be inflammatory, or a small, deeply seated cyst, with thick walls. Exploratory incision, with permission to remove the mamma, is the right course to pursue in such a case. I fear the reason why many medical men persuade their patients that cancer in its early stage is "a mere nothing" is the tendency to avoid the most unpleasant duty of being the bearer of evil tidings. When, however, the case is more advanced, and the patient or her friends become dissatisfied, and another opinion is insisted upon, or sought surreptitiously, the truth comes out, and the first medical man is severely blamed; and, indeed, it is hard to defend him. These cases are always difficult; but it may be remembered that a surgeon will retain the confidence of his patients by acting towards them with strict integrity in the matter of serious maladies. As we get blamed for ignoring or overlooking serious disease, so we get praised for early detection of it and prompt treatment. There is another aspect of the question we all have to consider. It is in the early stages, the small beginnings, that operative treatment of cancer is alone hopeful. I have no doubt that if all cancers were removed in the early stage, and the neighbouring lymphatic area also, the results would be far better than we see them to-day.

If patients conceal their malady we are held blameless. But if a medical man, through mistaken motives of kindness, or objections to discuss his patient's case with others, or some other injudicious conduct, connives at the concealment of cancer until the disease has advanced to a hopeless stage, then retribution will certainly fall upon him, and his practice and local reputation may surely suffer. Many of the more awkward differences which occur between medical men originate in this way, and these

remarks may well be laid to heart by those who wish to study their patients' welfare in conjunction with their own reputation and interests.

One of the most inexplicable matters concerning carcinoma of the breast is the slow growth and quiescence of the disease in certain individuals. The following are examples of it:

On December 12th, 1898, I saw a patient of Dr. Stokes, of Onslow Square, who was 70 years of age, and had borne a carcinoma of the mamma for no less than fifteen years. She had suffered no pain. The general health was quite unaffected, and she was florid and well-nourished,—just the sort of person, indeed, in whom one might have supposed that carcinoma would have grown rapidly. The axillary glands all this time had remained quite unaffected. Just beneath the left nipple was a hard, puckered tumour the size of a small orange. The nipple and skin near it were drawn down and attached by hard, puckered cords, the parts having a strangely contracted appearance. The tumour was not adherent to the parts beneath.

The second case was as follows:—A widow, aged 67, noticed a tumour in the left mamma twenty years ago. It has caused her no inconvenience whatever. In the last two months there had been slight ulceration of the skin, for which she came to the Waterloo Road Hospital and sought advice. There was an obvious secondary growth in the sternum, which was thickened, and one enlarged gland was to be felt in the axilla. The general health was good.

It must be clearly understood that these cases are quite exceptional, and no one can count on a case of cancer of the breast taking this course. The usual and ultimate result of cases of atrophied cancer is dissemination through the osseous system and fracture of the bones. In a fracture of the femur, for instance, occurring from a slight cause, in an elderly woman, scirrhus of the mamma will often be found small, quiescent, and quite unsuspected.

The method of treatment of these cases is still a vexed

question. Generally the patients decline to have the disease touched, and the usual counsel was to leave these cases alone. In old or feeble persons I should still be inclined to follow this advice. The results of operations for radical extirpation of atrophied carcinoma would probably be very good, but they are performed for a condition which in certain individuals is scarcely at all inimical to the general health or to longevity. Whether extirpation of an atrophied cancer which had existed for many years would prevent subsequent osseous metastases is at least very doubtful. It is probable that the medullary tissue of bone is infected in these cases far earlier than is generally believed. I may conclude by stating my belief that there is no evidence now before the profession from trustworthy sources that life is prolonged by operations on atrophied cancer.

Hæmorrhage from the Nipple.

In April, 1899, I saw a very stout lady, aged 65, who gave the following history:—For four months she had noticed bleeding from the nipple. It varied in amount, but was almost invariably present to a greater or less degree. Lately the blood had squirted out in such quantity that it soaked her clothes. She had ceased to menstruate for some years.

On careful examination of a very fat breast, a slight but distinct swelling, the size of a small bean, could be felt below the nipple. Firm pressure upon this with the finger caused blood to exude in a stream from the nipple. Some of the fluid was collected. It was rather a highly albuminous serum than pure blood. The diagnosis of this case was clear—a small, deeply seated cyst of the "duct obstruction" type containing papillomatous growths.

By the singular coincidence which we observe in cases of interest, I saw an exactly similar instance of this affection in an elderly woman at the Waterloo Road Hospital in April of this year. Bloody serum flowed at

intervals from the nipple, soaking her clothes, and a fairly marked oval swelling about the size of an almond occupied the breast near the nipple. This could be distinctly emptied by pressure, and was evidently a cystic dilatation of one of the larger ducts. In neither case was any treatment permitted.

There can be no doubt that in cases where bloody fluid is discharged from the nipple, the common, usual, and important cause is the discharge from a cystic dilatation of one of the larger ducts. This fills up from time to time, gets tense, the obstruction is overcome, and a discharge from the nipple occurs. The source of the hæmorrhage is almost invariably one or more small primary papillomatous growths on the cyst wall. The symptom is of serious import, for often enough these cases become carcinomatous, the proliferating epithelium infiltrating the wall of the cyst and the mammary tissue around. These papillomatous cysts in the breasts of elderly women may be looked upon as potential carcinomata. We may regard them with the same clinical suspicion as a wart upon the face of an elderly person. In both cases the patient may carry the affection for years unharmed; yet we never can tell when serious pathological changes are going to occur. There can be no doubt that the correct treatment for these small cysts is to freely dissect them out with a liberal allowance of mammary tissue around. The exact position of the cyst should be marked on the skin in indelible pencil before the operation, when the cyst is tense and easily to be defined. If the wall of the cyst be thickened and the mammary substance round indurated, free removal of the whole mamma is decidedly to be urged, with the fasciæ and lymphatic contents of the axilla.

Vicarious menstruation from the nipple is exceedingly rare. Undoubted instances of it are recorded, and it is diagnosed from the cause above mentioned by the periodical and profuse nature of the flow in a young girl or woman. A good instance of this rare phenomenon is recorded by Dr. Robert Barnes in the 'Medical Press and

Circular' for 1886. In some of the recorded cases occurring about the menopause I feel sure that the observers have overlooked a small, deeply seated cyst, which, as I have pointed out above, may be very faintly marked.

Lastly, it may be mentioned that in suckling women blood sometimes flows with the milk. I have only seen one such case, and this was undoubtedly due to rupture of some small vessel in the walls of the duct, from the dragging upon the nipple by the infant. The patient was a pale and delicate woman, and her skin bruised easily. She afterwards got an ecchymosis upon the wall of the chest from a slight blow from the infant's head.

Acute Mania after Removal of the Mamma, probably due to Iodoform Poisoning.

In April, 1899, I operated upon a spare, thin woman, aged 50, a patient of Dr. Wynne, of Limpsfield, for hard and advanced carcinoma of the right mamma. The patient had noticed the disease for eighteen months, but I was of opinion it had lasted longer. The breast was converted into a cancerous mass and fixed to the pectoral beneath; the glands in the axilla were much implicated. Her mother, it was stated, died of cancer of the uterus. There were other suspicious symptoms about the case. Lumbar pains were complained of, radiating down the lower limbs; also a sensation of numbness in one great toe. These signs were very indicative of a secondary deposit of carcinoma in the lumbar spine, and I so regarded them. On the other hand, operation was much desired and the local conditions threatened to become very distressing, so I consented to operate, but with some misgiving as to whether I was acting for the best interests of the patient.

The operation was a very extreme one, the mamma and much skin, with the whole pectoralis major muscle, being removed. A large mass of diseased glands was taken from the axilla, and, so far as could be ascertained at the

end of a tedious proceeding, the whole disease seemed to have been removed. There was some difficulty in getting the skin to cover the extensive wound, and lateral incisions were made in several places to relieve tension. The wound was painted over with rather a strong solution of iodoform in collodion, and the axilla packed with iodoform gauze. To this I attribute the unfortunate result which occurred.

On the second day the patient became acutely maniacal, and the temperature gradually rose to 104°. The wound, which had been drained, was at once inspected, but it appeared healed. Notwithstanding stimulation, antiseptics, and cool sponging, this patient sank on the fourth day. I regret that the urine was not examined. The leading features of the case were uncontrollable delirium and a high temperature. The examination of the body showed absolutely nothing to account for death. The wound was healed and the cavity filled with firm, plastic lymph. The axillary vein contained a post-mortem clot. There was an entire absence of blood extravasations, mottling, or any of the usual signs of septic action. The lining membrane of the heart and great vessels was not stained. The examination was conducted too long after death for a reliable bacteriological examination of the tissues to be made.

Notwithstanding the unfavourable termination of this case, I have thought right to report it, because it illustrates the important truth that no surgical operation, however generally successful, is quite free from risk. This is the first case I have ever lost after amputation of the mamma. The operation was done with every precaution, the instruments and skin being disinfected with scrupulous care by Dr. Méchod, who assisted me. I much fear that the liberal use of the iodoform emulsion was the cause of the disaster. In connection with this it may be remarked that Mr. Pridgin Teale has experienced just these symptoms in breast cases after the use of iodoform.[1] In the year 1894 I injected three drachms of iodoform emulsion

[1] Author, 'Diseases of the Breast,' p. 427.

into a large psoas abscess which had been opened in the loin, flushed, and scraped.

The operation was a very extreme one; the symptoms of hyperpyrexia and delirium followed, so that I feared septic absorption. The patient was with difficulty saved by free stimulation and the administration of strychnine. The symptoms suddenly ceased on the fifth day, and he made a good recovery. I have known of two fatal cases which have not been reported in London practice in the last two years. In the one iodoform was used in an amputation, with a fatal result certainly attributable to the drug. There is no doubt that certain patients are peculiarly liable to iodoform poisoning. In the majority of instances the drug may be used freely and nothing happens. The danger is, however, a real one. In cases where slough exists, or about foul intestinal abscesses, I should not hesitate to use iodoform freely. In fresh wounds, and about freshly made incisions, it is perhaps better to avoid its use.

ACUTE AND CHRONIC ILIAC ABSCESS.

Lecture I.[1]

I am going to speak to you to-day about a very important practical subject—namely, abscess in the iliac region; or, as it is commonly spoken of in text-books, iliac abscess. The definition of iliac abscess, I am afraid, is rather vague. Some authorities seem to consider that it is identical with what is termed psoas abscess, while others describe it as abscess found in the iliac fossa, beneath and bound down by the firm iliac fascia. Again, others speak of pus-formations in connection with the hip and with the glands of the groin as iliac abscess. Therefore the term is hardly a very definite one; but I wish to treat this afternoon of abscess in the region of the iliac fossa pointing above or below Poupart's ligament, or forming palpable swellings both in the iliac fossa and the groin.

Before proceeding further it will be well to remind you of the anatomy of the iliac fascia. You will remember the connections of this structure. It is attached along the sides of the spine by little tendinous slips to the margins of the vertebræ, transverse processes, and intervertebral discs, and above to the ligamentum arcuatum internum, a band of fibrous tissue passing from the body of the second lumbar vertebra to its transverse process, from which the diaphragm takes origin. This arches over the psoas muscle, and thus an abscess may be conducted into the groin from even the upper part of the

[1] Delivered at St. George's Hospital, January 8th, 1900.

dorsal spine, from a distance, indeed, which seems quite impossible. Externally the iliac fascia passes as a strong sheath over the psoas muscle and blends with the fascia lumborum. As it passes downwards towards the pelvis it is attached to the whole length of the inner lip of the iliac crest and the outer half of Poupart's ligament. Where the femoral vessels pass into the thigh the fascia sweeps behind them, forming the posterior wall of the femoral sheath. Here it is continuous with the pubic portion of the fascia lata, and blends with the femoral capsule, sending down a septum between the pectineus and psoas. At the brim of the pelvis it is attached to the linea-ileo pectinea.

These are the principal anatomical attachments of the iliac fascia. A large number of abscesses which descend from the pelvis and point below Poupart's ligament are formed by collections of pus which have their origin behind the attachments of the iliac fascia, and this is the first important point to which I wish to draw your attention. When collections of pus form slowly behind this fascia, they are due, as you may easily imagine, in an unfortunate majority of cases, to necrosis of bone. Commonly the spine is affected, or the ilium, or even the hip-joint, the pus burrowing through the floor of the acetabulum. This latter condition I have several times seen in young children. If pus gets behind the iliac fascia and tracks down the psoas muscle, it passes into the thigh external to the femoral vessels and then beneath them, pointing as a large, fluctuating swelling somewhere on the inner side of the thigh. I here show you specimens of caries and necrosis of the spine and of the ilium in the neighbourhood of the sacro-iliac joint, and these are the conditions you must mentally depict as too often connected with large chronic abscesses in the pelvis, or passing into the thigh. You can remember as a general rule that iliac abscesses beneath the fascia are due to necrosis or caries of the spine or pelvis. In some instances they are dependent upon breaking down of tubercular material,

or follow strains or other injuries, the reason being very obscure. In a few cases they are associated with deeply seated glandular mischief. Before we go any further I must point out to you that, although it is true that almost all abscesses which are beneath the iliac fascia are dependent upon disease of bone, some are due to pus getting through the fascia from other parts. Thus, for instance, in rare cases an empyema will actually come down from one or other of the pleural cavities, get into the sheath of the psoas muscle, and point nearly down to the groin. I have seen cases of empyema where a patient has coughed up pus, and where an abscess has been opened in the iliac region, so that the patient had practically a suppurating track almost through the body. Then ulcerations and injuries of the duodenum have caused an abscess pointing in the iliac region. I have known of a collection of pus pointing in the iliac fossa, which was found to be due to suppuration about the transverse part of the duodenum, where there was a small laceration. The pus formed about the right kidney, causing a perinephritic abscess, which finally pointed in the groin. Thus, in exceptional cases, the source of suppuration may be very remote indeed, and so obscure as to baffle diagnosis.

A very important kind of abscess in the right iliac fossa is the well-known fæcal abscess, the pus having a most offensive and characteristic odour, which is generally due to a perforation in the appendix vermiformis. As future practitioners, especially remember this variety. It is unusually acute, and it is certainly one of the most important abscesses for you to recollect in practice. Abscesses may also form in the cellular tissue in cases of pyæmia, particularly when there is a local cause, as an operation on the bladder, or a bad gonorrhœa with extensive urethral lesions, or an operation on the neck of the uterus which has been allowed to become septic.

Abscess in the iliac fossa may be a sequel of parturition. It is very rare now, in these days of cleanly midwifery, but it used to be common enough. You will

hereafter find that sometimes a fortnight or three weeks after a woman has been delivered, her temperature will rise, with rigors and sweats. Great induration and tenderness are found on one side of the uterus, and ultimately a large abscess forms in the iliac fossa. This is no doubt due to the absorption of septic products from an imperfectly cleansed uterus into the cellular tissue of the pelvis, through the veins, or lymphatics, or both. So also one has known acute iliac abscess to occur after operations on the bladder. The old operation of lateral lithotomy was, for instance, sometimes followed by large abscesses in the iliac fossa.

The last and most important cause I will mention is cancerous disease of the intestine. You will hereafter find that, supposing you get a case of cancerous stricture of, say, the sigmoid flexure, or near the cæcum, some ulceration may occur about the cancer, leakage of fæcal material will ensue, and a large fæcal abscess in one or other fossa is the result. If in an elderly person you get unexplained iliac abscess obviously connected with intestine, you will find a significant number of such cases are due to cancerous disease of the bowel, which has allowed a leakage of septic material. Hence prognosis should always be very guarded.

I have said enough to show you that cases of iliac abscess may be divided into two great classes, acute and chronic. You will see at once that the acute cases are almost universally due to definite sources of sepsis, such as from a perforated vermiform appendix or a diseased uterus; whereas the chronic cases are commonly associated with tuberculous bone disease. I wish, too, to point out that pus burrows in an extraordinary manner, and that sometimes abscesses are found beneath fascia which really originate in front of it, so that definite anatomical explanations are not always possible.

Contrary to what you might expect, the acute abscess is really far and away the most simple in its diagnosis and treatment. Also, I may add, its prognosis is usually more

favourable than the chronic variety. And the reason of this is not far to seek, because in the acute abscess there is some definite source of sepsis, which you get rid of when you open the cavity and effect evacuation of the purulent contents. Chronic abscess, being so very often due to bone disease out of reach of operation, is less favourable, and it is far more perplexing and dangerous to treat than is the case with the acute variety. The diagnosis is also more difficult.

These remarks which I have made as to the causation of abscesses in the iliac fossa are general. I will now say a few words with regard to the case which has suggested this subject to us.

There is in the Harris Ward a pale and rather delicate-looking man, aged 26 years. He is a coachman by occupation, and I may say there is a vague history—so often found in these cases—of exposure to wet and cold, and also of slight injury while following his occupation. The history he gives is as follows:—He had a swelling in the right groin (three weeks before applying at the out-patient department) in the month of June, 1899. This swelling in the groin followed, as he says, a "dry sore," which occurred on the base of the glans penis. An incision was made, under gas, when "matter and blood came away." In July another abscess formed in the site of the wound, and this was opened. So that here we have a definite history of suppurative glandular mischief. After this the patient was quite well until the end of October—that is to say, three to four months,—when he felt an aching pain in the right groin. This pain was followed by the gradual formation of a fresh swelling about the situation of the primary wound. This the patient had been poulticing three weeks before his admission on Saturday, December 30th. He has had no other diseases or maladies of any great import. The patient has had the right index finger amputated at the first phalangeal joint, but for what reason is not stated; probably because of an accident. The temperature is raised at nights about

half a degree above the normal. Above and below Poupart's ligament in the right groin there is a large fluctuating swelling, fluctuation being transmitted from hand to hand on deep palpation. The swelling below Poupart's ligament is slightly internal to that above. There is deep fluctuation and slight swelling all along the front of the abdomen as far as the anterior superior spine. The swelling in the thigh has an impulse on coughing, and is reducible. There is no redness of the skin, and nothing can be felt *per rectum*.

As often happens in these cases, the history is very vague. But there is one point which is of great importance. The man has had, on several occasions previously, glandular abscesses in the groin, which makes us think in this case that the enormous abscess which I opened the other day may possibly be due to glandular disease—to disease of the deep glands of the thigh and pelvis. This is an obscure and, on the whole, a rare cause of abscess in the iliac fossa.

The abscess, having formed slowly since October, may well be classified as of the chronic variety. I shall speak about the diagnosis and treatment of the chronic variety of iliac abscess later on. You have seen the method adopted, and we shall be the better able to discuss it when the result is known. I must first speak about iliac abscess of the acute variety.

Let us take, for example, two very common varieties —namely, abscess in the iliac fossa after confinement, and abscess in the same region in appendicitis. We will speak of the last of these first—namely, the acute suppuration that accompanies the injection from a perforation about the apex of the vermiform appendix. This is an abscess which you will find very common in practice. It is really very easily treated, and woe betide you if you neglect the symptoms or allow a patient suffering from it to "slip through your fingers." A patient, generally a young girl or a young man, will call you in one day, complaining of very sudden and

violent acute pain in the right iliac fossa. Likely enough this has followed some sudden exertion, as at golf or foot-ball. The pain may be so bad as to cause the patient to cry out. Moreover he will speedily vomit, the vomit being of a greenish colour; the temperature may be raised and the pulse very quick and hard. Tenderness in the iliac fossa will be so great that the patient will complain if you touch the part. The muscles are rigid and "board-like." He will lie in bed with the thigh somewhat flexed. Severe pain may be experienced down the cutaneous nerves of the thigh and towards the end of the penis. As the case progresses you will find that a large inflammatory mass will form deep in the iliac fossa, its limits being in the position I will show you on the diagram on the board. This somewhat oval swelling will be hard and exquisitely tender, the abdominal walls being rigid and resistent. The patient meanwhile has high fever, a red and dry tongue, while his pulse will continue rapid. He is very apt to vomit almost everything he takes, because the intestine about the cæcal region may be inflamed and paralysed and thus really obstructed from loss of contractile function. The condition of the bowels varies. Very often if an enema is given a certain amount of fæcal material or flatus may pass away, giving great temporary relief. Now as the case goes on, if you leave it alone and do not operate you will find that the skin over the iliac fossa will become of a dusky red colour; and, moreover—this is a very important matter,—it will be œdematous, so that if you place your finger over the red swelling and exert a little pressure you will find definite "pitting." It is one of the fatal mistakes of practice to take this redness and œdema as an indication of superficial erysipelas, and to make small incisions, leaving a foul abscess undetected underneath. If the patient should survive, the abscess may cure itself by bursting into the intestine. In the olden days, when these abscesses were hardly ever touched, or operated upon with great reluctance, bursting of the abscess into the intestine was one of the methods by which

they were expected to get well. Rarely the abscess used to burst into the bladder, and for many weeks the patient might pass pus, or gas, or fæcal material in his water. The pus also found its way externally, and unfortunately sometimes into the peritoneal cavity. Frequently the sufferer died from sepsis and exhaustion. The treatment of these abscesses by what is called "the expectant plan" is, therefore, hardly to be considered a successful one; it means, in plain English, leaving things to chance, and taking the credit if the patient happens to live.

I have told you that these abscesses are generally associated with high fever, very great pain, a quick, hard pulse, and all the signs of an acute, deeply seated suppuration. But there are exceptions to every rule, and it is a most curious fact that iliac abscess connected with disease of the appendix may not be associated with high temperature. The patient may have scarcely any fever at all. I wish especially to point this out to you, because it is not sufficiently known in practice. On several occasions I have met medical men over these cases and pointed out that there is a great brawny swelling in the iliac fossa which has been there for days, and that there must be pus deeply down beneath the fascia. I am nearly always met with the answer, "But there has been no rise of temperature." These abscesses are generally associated with quickness of pulse, something like 110 to 120 per minute, and this is always a suspicious and grave sign of suppuration when an inflammatory swelling in the iliac fossa can be also felt.

Again, let us take another important variety of iliac abscess—namely, those associated with confinements or uterine operations. A woman, perhaps three weeks after delivery, will begin to have shivering fits and rigors, and her temperature rises, her pulse gets quick, her tongue foul, and she will perhaps vomit. There is great increased heat and local tenderness in one or other iliac fossa. Finally, a swelling can be plainly felt to one or the other side of the uterus, and this soon becomes perceptible as

a brawny swelling above Poupart's ligament. In such a patient the inflammation goes on, and perhaps an abscess will form in the iliac fossa, the swelling being at first hard and brawny, and finally red and œdematous superficially, the appearance being very similar indeed to that connected with disease of the appendix. These abscesses may get under the iliac fascia, or may be situated in front of it. You cannot be quite sure what direction the pus will next take.

Once more let me warn you not to mistake such abscesses for cellulitis, which will lead you to make incisions into the superficial parts, under the impression that they are due to erysipelatous inflammation of the soft parts. A swelling coming on like this in a few weeks can hardly be anything else but an acute iliac abscess. I say it can hardly be anything else if the history be reliable and accurate. But history is too often deceptive, and you have to remember the possibility of actinomycosis and an inflamed sarcoma. Either of these conditions would, of course, simulate such an affection as an acute abscess very closely. They are excessively rare, and you are not likely ever to meet with a case of the kind. Rapidly forming swellings in the iliac fossa, with pain, tenderness, fever, and redness of integuments, are almost sure to be abscesses.

Now as to the treatment of acute iliac abscess. You will, every one of you, encounter these cases in practice; you have to remember that the all-important thing is not to let them alone too long without operation. You are aware that neglect in this respect has led to trials at law, and has caused grievous trouble and expense to medical men, besides grave loss of local reputation and of practice. The mistake is more readily made because very often medical men imagine that in these cases you have to wait for the signs of fluctuation. You have observed, and perhaps have thought it curious, that I have not mentioned fluctuation in connection with acute iliac abscess. If you wait until you get anterior fluctuation you have

waited until the patient is on the brink of dissolution; you have waited until the fascia and muscles are destroyed by the abscess, and most extensive burrowing has taken place; perhaps the abscess has gone as high as the diaphragm and also down into the pelvis. You have tarried too long. Even if such an abscess is opened, the patient too often sinks from exhaustion and sepsis. There is only one situation where you may early find fluctuation, and I will draw special attention to this. You may discover fluctuation in an acute iliac abscess through the vagina or rectum. Always make a rectal examination, and, with one hand above and the other below, you may detect elasticity or signs of fluctuation through the rectum or vagina when you will not appreciate it through the soft parts above. If you wait for the pus to burrow through all the abdominal muscles and fascia in front, think what destruction of the parts there must be before fluctuation can become evident. It is also most dangerous to mention fixed periods of time as guides to the opening of these abscesses, because what may be justifiable in one case may be highly risky in another. Progression of the symptoms and increase of the swelling after the third day usually mean the formation of deeply seated pus, and if you are in doubt you had better operate. The exploratory operation for pus in the iliac fossa is easily enough accomplished. This is an operation of emergency. Some, perhaps all of you in active work hereafter will certainly be called upon to undertake these cases, especially if you practise in districts away from the aid and advice of hospital surgeons. The way these abscesses are opened is as follows. The old-fashioned plan was to take a large trocar and cannula, and push it into the swelling. This is a method advocated even now; but it is one I do not like, for the simple reason that you never can be sure of the position of the intestine with regard to the abscess walls. By the diagram I have put on the board you can see that coils of intestine are glued together and to the abscess cavity, and there is only a thickened layer of plastic lymph which shuts off

the pus from the peritoneal cavity. Now if you take a trocar and push it into the swelling you may very readily wound coils of intestine; and I have no doubt this used frequently to be done.

The right way of opening an acute iliac abscess is to make a curved incision near Poupart's ligament, well over the inflammatory swelling. This is like the usual incision which is made for tying the external iliac artery; it comes well below the dome of the abscess. You have cut through the abdominal muscles layer by layer. You will find them very œdematous. If you can distinguish the peritoneum, strip it upwards with the finger, and as you are doing it your finger will suddenly pass into the abscess cavity. Often you will reach the pus before going so deeply. Out will come "matter" of such a horribly offensive nature that it will almost cause you to be sick, and, if in quantity, the odour will pervade the whole room. The stink of a large fæcal iliac abscess is well known, and usually such communicates with the bowel, but not always. The pus is highly septic and dangerous, being full of the *Bacillus coli*, and also other organisms of suppuration. All sponges and other such materials used should be at once burned, and instruments most carefully disinfected afterwards.

Now when an abscess is opened you have merely to tear with your finger the fascia, and enlarge the opening sufficiently to put in an irrigator, and wash out the whole abscess cavity repeatedly with hot water and an antiseptic solution. I know of no better antiseptic solution than biniodide of mercury, which can be used to the strength of 1 in 2000, or 1 in 4000 if the cavity be very large. The solution is made readily by dissolving the well-known tabloids in warm water. You should go on flushing for some time, until the fluid returns fairly clear. Then you should insert two large drainage-tubes. The tubes generally used for this purpose are far too small. They should be at least the diameter of one's thumb, and secured externally with safety-pins to ensure that they do not slip

into the abscess cavity altogether—a very awkward accident, which happens more readily than you think. An abundant dressing of wood-wool and cyanide gauze must be applied, and frequently changed, as it gets sodden with profuse discharge. Many of these patients who have not been operated upon until the abscess has assumed a huge size are already exhausted by sepsis (auto-intoxication). They are apt to die of exhaustion after the operation, especially at night or towards the very early morning. Good food and stimulants are therefore necessary for their support, and I am most urgent that a nutrient enema, with brandy, should be given about 2 a.m. Over the patient's bed an irrigator should be suspended. In a private house away from London a large bucket or slop-pail is as good as anything, and it should be filled with warm biniodide solution (1 in 4000), and the nurse should be directed to put the nozzle of the irrigator into one of the tubes, and wash the abscess out by the other every three hours. The secret of successful treatment after the operation is to support the patient's strength and constantly irrigate the abscess cavity. A goodly number of these cases will get well. The patient may be in the "typhoid condition," with a dry, cracked tongue, very febrile, and half dying. But he is, fortunately, generally youthful, and when one of these abscesses is opened he will make what his friends almost consider to be a resurrection, and will in time get well.

I strongly advise you, in large acute abscesses in the iliac fossa, with a patient almost dying of sepsis, never to investigate too far for the cause of the suppuration at the time of operation. It is seldom or hardly ever right, for instance, to try and remove a diseased appendix under these circumstances. If you work about with your fingers to try and find a diseased appendix, the digit is very apt to slip through the feeble boundary of plastic lymph and to enter the peritoneal cavity, which then may become infected with foul pus, and the patient die of general peritonitis. Moreover these patients are often too ill to

bear prolonged operations of any kind. It is, therefore, generally quite sufficient to be satisfied with opening the abscess freely and irrigating it, without trying too persistently to find out the cause, or to remove any offending material. The tubes should be slowly shortened, and withdrawn inch by inch. A sinus may long remain, but it usually ultimately heals, even if fæcal matter should pass.

Having spoken about flushing and the insertion of two large drainage-tubes, and the excellent results this method usually gives, let me once more caution you regarding the prognosis of these conditions in elderly people. If an old person gets a large fæcal abscess you must be very cautious that it is not due to cancer of the intestine. If you say everything will now do well, and after a few months a cancerous growth shows itself, you will be held to have made a grave mistake in the case.

Having dealt with acute iliac abscesses, which, after what I have said, I think you will know how to diagnose and treat, we come to a very different matter—namely, chronic iliac abscess. Remember, when I say chronic, I mean an abscess which has taken months to manifest itself. The history of onset of a chronic abscess about the iliac fossa, or about the groin, is often measured by months and not by weeks. These affections are, indeed, extremely insidious in their onset, and the earlier symptoms of the formation of chronic abscess about the pelvis or spine are dubious and doubtful beyond belief. I will try to describe to you what usually occurs.

First of all the patient almost invariably suffers from ill-health of a vague kind. Instead of being active, if the subject be a child or young adult fond of play, he mopes; and if the patient be a man who is accustomed to play at football, or to cycle, or golf, he finds his health begins to fail; he tires very soon, and has aching pains about the back and loins of a vague nature. He may come in after a cricket match, for instance, and say, "I shall not play at cricket any more; I feel so seedy, and I have a constant

aching pain about my back and thigh." The next group of symptoms in these cases is of still greater obscurity; I refer to nerve symptoms. The nerves are worried or irritated at their roots, and the pains are felt by the patients somewhere in the wide area of skin they supply. There is no diagnostic point of greater importance than this. As the abscess forms, it presses more and more on the roots of some of the nerves which come off about the diseased spine or carious pelvic bones. And thus a patient will begin to complain of obscure "shooting or burning" pains about the front of the abdomen, about the crest of the ilium, and over the buttock, and especially about the front of the thigh and testes, and down towards the back of the knee, in the distribution of the obdurator nerve. Severe sciatica is found in some cases, especially when the pus burrows towards the sciatic notch. Unfortunately these pains are almost invariably put down by medical men to that diagnostic refuge—rheumatism. If the patient is a boy, such symptoms are attributed by well-meaning but ignorant friends to "growing pains"—whatever this may mean,—and, unfortunately, this opinion is sometimes endorsed by the medical attendant. And so the case goes on, with pains and numbness and other queer phenomena, towards abscess formation. I must not forget to mention that you may also find anomalous bladder or rectal symptoms in these obscure cases. Sometimes the nerves of the bladder get implicated, so that you may get irritability of that viscus, or curious burning sensations about the rectum, and difficulties in the process of defæcation. Such symptoms, often with very good reason, puzzle us all. One says they are due to rheumatism, another pronounces in favour of ataxia, and another that the patient is "hysterical," or actually malingering. If he is an old soldier or a policeman, he may get severely treated on the latter hypothesis. If he be a schoolboy, he is often held to be deceiving with the object of shirking his work. I knew the son of a surgeon who suffered much from these vague symptoms. He could not work or play; he used to

mope about. He had obscure pains in the back and limbs. He was held to be malingering, and he was treated with extreme "firmness" by his father, sometimes amounting to corporal punishment! Several surgeons of eminence failed to diagnose any disease. The end of this case was that after about a year of massage, cold douches, electricity, and harsh treatment, a large abscess suddenly showed itself in the iliac fossa and thigh, and then the case was only too clear. Ultimately a slight curvature appeared in the dorsal spine. I mention all these insidious associations of commencing early iliac abscess to point out and emphasise the cardinal rule in practice—namely, that if a patient should exhibit such symptoms, examine the movements of the spine, the regions of the sacro-iliac joints, and especially of the iliac fossa, by deep pressure. Have the morning and evening temperature taken with regularity and great accuracy. Do not pronounce rashly that there is nothing the matter. It is far better to say that you fail to find a cause for the symptoms, and must watch the progress of events.

When the abscess at length appears, it usually does so with suddenness. This seems curious, but a moment's reflection will enable you to see why. During its early formation the pus is bound down by a thick fascia. It gets through under Poupart's ligament and expands in the thigh, simulating a hernia. A man with an iliac abscess pointing in his thigh will tell you, for instance, that he was lifting a heavy weight, and all at once the swelling appeared. This, I fear, is used by those who rely too much upon patient's history as a diagnostic test of hernia. The student goes to a patient with that unfortunate tendency to rely upon questions, and says, "Did it come down suddenly or gradually?" The patient replies, "It came suddenly, when I was lifting a weight." The student at once concludes it is a hernia. These abscesses point generally below Poupart's ligament, to the inner side of the vessels. They do not commonly reach to the tendo Achillis, though one or two famous cases have been quoted!

There is very little pain or tenderness about them, and there may be little or no fever. If you look at the temperature chart of the case we are observing, you will see it has been scarcely ever more than 99° to 100° in the evening. Indeed, in the more cold and chronic variety of these abscesses there is no high temperature at all. So you have a fluctuating swelling passing out from under Poupart's ligament, which has an implulse on coughing, which is reducible, which you can press back into the abdomen, filling the iliac fossa above. Therefore you are exceedingly likely to mistake it for hernia, and this is the error which is commonly made by students and in examinations.

The diagnosis of this condition from hernia is very simple if you will only remember one rule. I always try to draw your attention to the reliable diagnostic points of cases; and there is one test which infallibly tells you whether you are dealing with a hernia or with an iliac abscess. If the abscess comes out by a narrow neck, passes under the femoral vessels, and bulges out into the hernial region as a swelling of the thigh, you have only to place one hand above Poupart's ligament and the other below, and press deeply and firmly alternately, and you will then find that the iliac fossa is filled, and fluctuation from hand to hand can be plainly appreciated. In hernia the iliac fossa is empty, the rupture goes back suddenly, but no swelling bulges against your hand above. Other tests given in the books are as follows:—Firstly, that a hernia will be resonant on percussion, and an iliac abscess will be dull. This is a test which is not always easy to apply. It is not always possible to percuss a small hernia, especially before examiners, and iliac abscesses sometimes contain gas, and may therefore be resonant. Thus this method may only introduce doubts and difficulties.

Another test mentioned is this. If you reduce the swelling and make the patient stand up, and then put your finger over the opening, pus will run down, but a hernia will not. This method has an objection that it is

very difficult to apply in practice, and is not advisable in the case of females.

Another distinctive sign which is given between hernia and iliac abscess pointing in the thigh, is the method of reduction. The books say that a hernia goes back with a gurgle, while pus goes back slowly without a gurgle; but herniæ do not always contain gas. Therefore the test I mentioned to you first is the only certain means of differentiating between the two conditions. In the iliac abscess you get a full iliac fossa and fluctuation from hand to hand, and in hernia you do not.

The next condition which has to be diagnosed from these chronic abscesses is very rare, but also very important. I refer to a retro-peritoneal, soft, sarcomatous growth, filling the regions by the side of the spine, and the iliac fossa. A very soft, brain-like sarcoma, originating in the bones of the pelvis or spine, may be very like an iliac abscess. The temperature is often raised in these cases. I have known very high nocturnal fever occur, and this is naturally taken as a sign of the presence of pus. "Nerve pains" in these cases are severe and of a shooting, lancinating nature. Such pains always make me suspect the presence of a growth. Six months ago I received a letter from a medical man near London, asking me to come down to operate on a case of iliac abscess that he had in his practice. When I went down I found a woman of about fifty, with a large fluctuating swelling of the iliac fossa, which had also pointed on the buttock; and it was thought that the pus pointed both above Poupart's ligament and also had passed out through the sciatic notch, as sometimes happens. The swelling was a very tempting one to open; the temperature was raised, and the skin thinned and red. But she had one sign which is not generally found in these chronic abscesses. There were in the abdomen one or two hardened masses, which I could feel on deep pressure, and which aroused my suspicion. However, I did what I advise you to do in the case of such dubious fluctuating swellings—I aspirated with

a very fine needle. To the great surprise of several, we obtained nothing but bloody fluid. Having drawn off a bottleful of glairy, sanguineous fluid, I pronounced the case to be one probably of sarcomatous cyst, and accordingly did nothing more, giving a very unfavourable prognosis. The patient gradually wasted and died. A partial post-mortem examination discovered an enormous brain-like sarcoma, full of cysts, which had nearly destroyed the bone. I must emphasise the fact that this is a rare condition, so please do not think that every patient with a swelling in the iliac fossa has a soft sarcoma of the pelvic bones. I had not seen an exactly similar case before in my life. Still, the fact remains that I was called to operate on an iliac abscess, and if I had not been cautious I should have landed myself in serious disaster. If you make an incision in such a case as this, hæmorrhage will ensue most difficult to arrest, and the wound will go on oozing till the patient sinks. Therefore please recollect that the certain differential diagnostic signs between a soft, brain-like, deeply seated sarcoma and an iliac abscess are founded on the results of aspiration, and in cases of doubt always adopt this measure.

I wish to draw your attention to the fact that there are exceptional cases of diffuse aneurysm of the iliacs or aorta which may closely resemble chronic abscess. These are exceedingly rare, but a mistake in such a case is so dreadful that I cannot help drawing your attention to it. Here is a remarkable specimen, showing you exactly the condition I refer to. An aneurysm has eroded the vertebræ, forming a swelling by the side of the spine. When such an aneurysm becomes diffused, you get some signs of psoas or iliac abscess. One finds "nerve pains," achings in the back, and then a swelling will show itself with more or less suddenness in the iliac fossa, which means that a crack has occurred in the coats of the aneurysm, and that the blood has extravasated down behind the iliac fascia, forming a large swelling in the iliac region. How are you to diagnose this serious condition? It is fairly

simple if you recollect this: that the pain and distress in the formation of aneurysm is far greater than it is in abscess, and diffusion is associated with sudden severe pain of a very marked nature. In such a case, if you suspect aneurysm, which you would if you listened over the swelling, for you would hear a bruit, you must on no account make an incision. But mistakes have arisen, and in several cases patients have bled to death suddenly from an incision which has been made into the supposed iliac abscess. Such errors may be unavoidable. I have known such a swelling cut into from behind through the loin, and the operator, finding layer after layer of laminated clot, recognised his error and closed the wound.

I shall continue the subject of chronic iliac abscess in the next clinical lecture. And after speaking further of the diagnostic difficulties between iliac abscess and other conditions, I shall spend some time in detailing to you the treatment of these chronic abscesses in the iliac fossa, especially when they point in the thigh. Personally I have found it full of difficulties, and it has to be undertaken with much circumspection if avoidance of blame, and ultimate success is to be obtained.

Lecture II.[1]

You will remember that the last time we met we considered the causation, diagnosis, and treatment of the more acute kinds of abscess in the iliac fossa, and I then had only just time to commence the subject of chronic abscess. You will recollect that I told you about the diagnosis of chronic abscess passing from the iliac fossa into the thigh from femoral hernia, and that I spoke to the effect that chronic or subacute abscesses, which pass down behind the peritoneum into the iliac fossa, and sometimes into the thigh, have also to be distinguished from other affections, which may, indeed, closely resemble them.

[1] Delivered at St. George's Hospital, February 6th, 1900.

I mentioned to you diffuse aneurysms and soft growths as retro-peritoneal sarcoma. More rarely still, great hydatid cysts or huge bursal swellings about the hip-joint might give diagnostic trouble. Lastly I must mention that disease, which I daresay you have all heard of, but not often seen, dependent on the growths of the "ray fungus"—actinomycosis. Recollect that all these various conditions are rare, but at the same time to mistake one for the other may be so serious that you are bound, in the diagnosis of chronic abscess in the groin and iliac fossa, to take them into consideration.

I have already spoken about the difficulties of diagnosing these abscesses from a soft sarcomatous growth. On this subject I would say a little more. Soft sarcomatous growths behind the peritoneum may originate in the bones, in the kidney, or supra-renal capsule, or be secondary to a growth below, more especially perhaps in the testis. One of the most remarkable cases of retro-peritoneal sarcoma I have ever seen was secondary to a small nodular growth in the testis. The diagnosis of sarcomatous growth behind the peritoneum usually depends on the following circumstances: —Firstly, the increase of the swelling is progressive, and the nerve pains are, as a rule, far more severe than they are in abscess. If ever you have a slowly forming, dubious swelling behind the intestines, with very severe pain, especially pain shooting down the course of the last dorsal or along the ileo-inguinal nerves, it is more likely to be sarcoma than abscess. The pains attending the formation of a chronic abscess are troublesome, but they are often vague and slight, very likely to be ignored or mistaken. Chronic abscesses are not associated with the "flashes" of agony which cause the patient to moan, or cry and clamour for morphia. And this is often the case in sarcomatous growths about the front of the spine. If doubts exist — they often do in matters of such diagnostic difficulty—you will find that an aspirator passed into the swelling in the case of sarcoma will bring out bloody or glairy fluid and oat-shaped cells, and not pus. The

aspiration should be done from the loin. Sooner than aspirate through the abdominal cavity I would advise

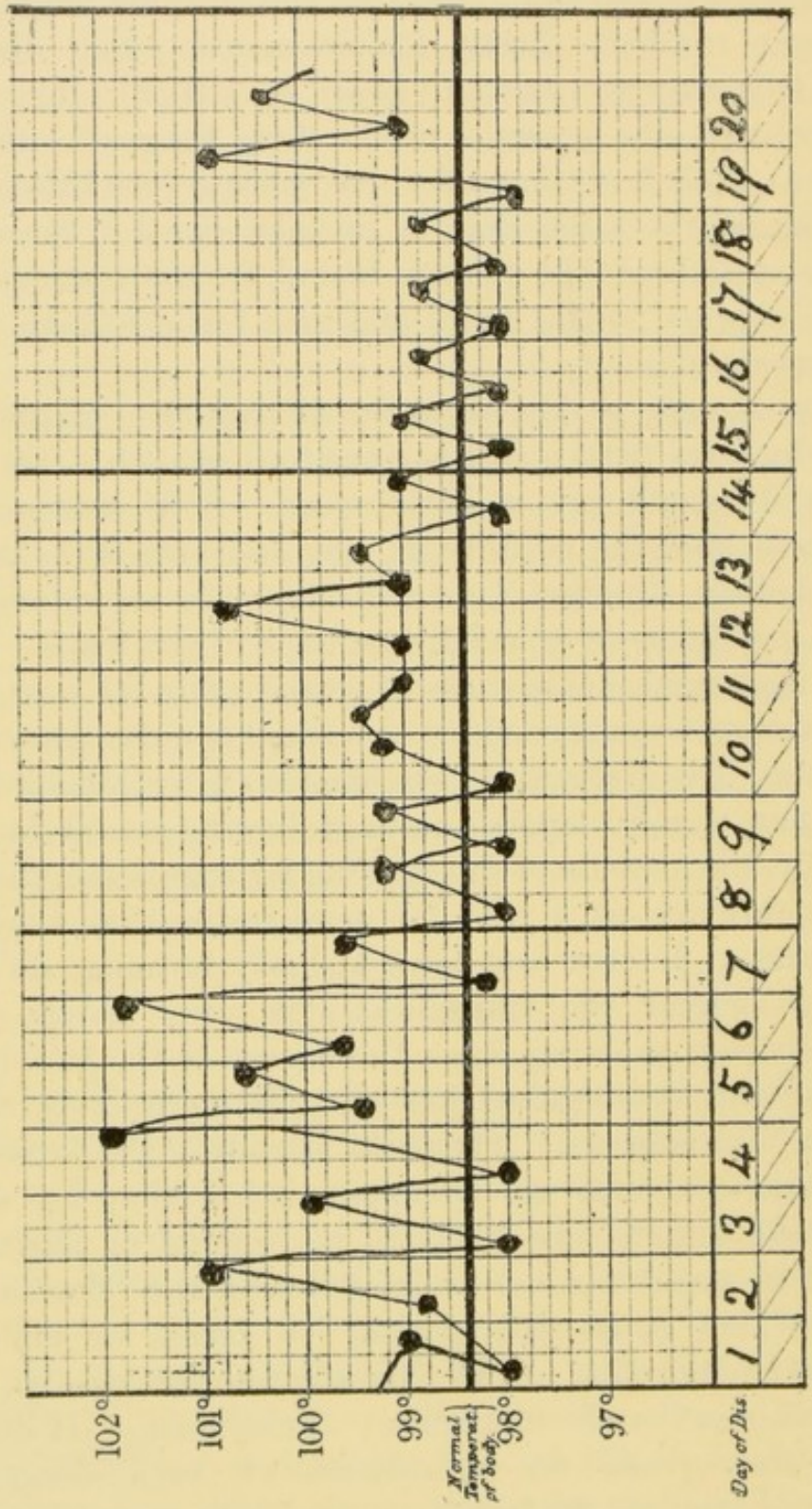


FIG. 15.

Temperature chart of a case of retro-peritoneal sarcoma, with multiple venous thrombosis.

exploratory incision. It is far safer. The temperature does not settle the question of the diagnosis between sar-

comatous growth and deeply seated abscess. On the contrary, in a soft, brain-like sarcoma progress of the disease is often attended with rises and intermissions of temperature, and rigors, and sweats, and all the signs which we are accustomed to look upon as indicating suppuration. Attacks of phlebitis and thrombosis of the femoral or other vein often also come on. Here is a twenty days' temperature chart, taken from a patient of mine, a young man aged thirty-five, who died from a retro-peritoneal sarcoma, secondary to a growth in his testicle. You will be surprised when you look at this chart, because you may think that with such a temperature suppuration must be associated. You are generally right, yet not always. And in some cases of malignant growths, especially when of very rapid growth, some material enters the blood which gives much the temperature of sepsis. I want specially to call your attention to this point, because otherwise you might readily mistake the case for one of deeply seated abscess. I may here state that I cannot explain the *materies morbi* shed into the blood in these growths which produces fever. I know positively that the growths need not be ulcerated or septic to cause the phenomena of fever.

Finally, recollect that these cases are exceedingly rare, and diagnostic difficulties only occasionally occur, and you may go through a long period of practice without ever seeing instances of such obscure maladies.

I need not speak of the differential diagnosis of hydatid cysts and large bursal cysts in connection with the hip. You may possibly never meet with such cases. If you do, the certain diagnosis from a large chronic abscess is only to be made by careful aspiration. In the case of a huge bursa this must be done with the most elaborate cleanliness.

But I would say a few words about the affection known as actinomycosis. This disease is probably more common in the right iliac fossa than has generally been credited. The growth develops in the cellular tissue around the

cæcum. Probably the parasite is swallowed, and may lodge in the appendix. In one case I know of, the patient was constantly in the habit of sucking straws when he visited his stable. Actinomycosis produces a very curious condition, and the only way in which you can diagnose it from chronic abscess or sarcoma is by observing whether there are any of the yellow, sulphur-like granules in the discharge, which present the well-known rosette-shaped structures under the microscope. Now in my experience these granules are often absent, or so few that any one may miss them, even on close inspection. The way in which I may best sum up the diagnosis of actinomycosis is as follows:—If ever you have a case of swelling in the right iliac fossa, which one week or one month you take to be an abscess, and another time you pronounce to be sarcoma, such a case will probably turn out to be actinomycosis. This disease is essentially suppuration associated with soft neoplastic growth. You find in the iliac fossa a great mass of soft "granulation" tissue, like sarcoma. Such you will probably pronounce it to be. Then one fluctuating spot appears and a quantity of pus comes out. Next you probably think the case is one of abscess. But if now the discharge or portions of the caseating tissue are examined with the microscope, the "ray fungus" will likely enough be found. A significant number of cases of actinomycosis around the cæcum have been recorded; and you will please to remember that the disease is important to recognise, because, if you do identify it, curetting with a sharp spoon and giving large doses of iodide of potassium may possibly cure.

It is not needful to say any more about the diagnosis of chronic abscess. All caution has been inculcated, and with care you seldom go wrong.

Now we must pass on to the all-important question of treatment. You will recollect at the last lecture I told you that the treatment of acute abscess in the iliac fossa was generally satisfactory; that you merely had to make an incision, evacuate the pus, and wash the abscess out

freely ; and that such cases generally got well, because they were dependent upon a definite source of sepsis, which was removed by the operation. Such instances are suppurating appendices, or suppuration in the cellular tissue of the pelvis following parturition. But the treatment of chronic abscess, on the contrary, is fraught with difficulties, and particularly for the reason that a large number of these formations of pus are associated with caries and necrosis of bone. This is a source of great trouble. The carious bone is often deeply seated. It may be in the neighbourhood of the sacro-iliac joint, or in the lumbar or dorsal vertebræ—in situations, indeed, where extensive operating is out of the question. Therefore recollect that if you open one of these abscesses in the ordinary way, evacuating the pus and putting in a tube, you are immediately placing yourself in a grave and responsible position. I speak very forcibly to you about this, because these abcesses are very tempting things to open. You may hereafter have a young patient or a child under your care who has a large fluctuating swelling in the groin, passing under Poupart's ligament. It increases day by day, perhaps with a certain amount of fever, and the skin over it will get reddened, and it will almost "point." It is very easy to give that young person or child a little chloroform, and open what you feel sure is an abscess. A large amount of pus will flow out, and your cleverness will probably be estimated by the ignorant relatives in due proportion to the amount of pus they see carried downstairs. The more pus the more wonderful the doctor ! The quantity of pus will shortly be magnified into pints, and so in a short time you will be considered the most learned doctor in the parish ! But wait for a few weeks, and you will find that the opening which you have made, and into which you have put your tube, will not close ; that the discharge comes through it day and night, effectually soaking your dressings and breaking through your feeble antiseptic barriers. The patient will begin to waste, the temperature will get hectic, and you become perfectly tired of perhaps a

long drive and dressing the wound day by day for weeks or months. The end of the case is that the patient succumbs, either with tuberculosis or bedsores, or becomes the victim of lardaceous disease. You will then unfortunately find towards the end of the case that you will be blamed as bitterly as you were praised at first. In our profession undeserved praise and unjust blame go hand in hand. Everybody will finally say that the child has been worse since the operation, and gradually sank after it. This is not an exaggerated history of what generally happens in the opening of one of these chronic abscesses connected with carious bone in the spine or pelvis, and putting in a drainage-tube. If, therefore, you are going to treat these cases by the open method and drainage-tube, you will have to be elaborately careful about antiseptics and dressings. The strictest antiseptic precautions will have to be observed at the time, and kept up with pertinacious care afterwards. You may have to dress the case and wash out the sinus daily for months. Even then, too often, error creeps in. As a fact, it is a matter of immense difficulty to keep these large abscesses aseptic if they are opened and drained near the groin or inside of the thigh. If you do not credit what I say, you have only to go into any hospital and watch the results of chronic spinal abscess treated in this way. When once the cavity of these abscesses gets septic, the death-knell of the patient is too often sounded. I, therefore, do not at all approve of the open method of treating these abscesses, and I think you will do far better to avoid it.

The next treatment which I shall mention is far more satisfactory—namely, aspiration. Aspiration, though properly carried out, will, unfortunately, rarely effect a cure. On the other hand, it will seldom lead to the disastrous train of circumstances above mentioned. The worst that can happen is the refilling of the sac. An abscess has to be aspirated with great care, and also it is wise to put the patient under an anæsthetic, as gas and oxygen. It is not very pleasant for a timid child or a young man to

have an aspirator needle thrust deeply into his groin. It is alarming to anybody, to say the least of it, and it is, of course, also temporarily very painful. The skin should be carefully washed and prepared in the same way and with the same care as for a large operation, and the aspirator needles and tubes should be scrupulously clean. This is a point of very great importance. There is no instrument more likely to be dirty and dangerous than an aspirator needle. Perhaps it has been previously used for an empyema, and the tubes and cannulæ may be full of dried pus and every kind of virulent organism. Remember the aspirator needles and cannulæ should be new or especially cleaned. They should be carefully and thoroughly boiled, and then some strong biniodide of mercury solution, 1 in 500, should be run through them. Then with a fine sharp tenotome make a tiny incision through the skin, and pass the needle and cannula deliberately into the most prominent part of the swelling. After all the pus is evacuated cover the opening with iodoform wool and collodion, and put on pressure by packs and elastic bandages. The case then usually does well. But you can never ensure against the abscess filling up again, and this is likely to occur if diseased bone be the exciting cause of the purulent collection.

I will next proceed to discuss the mode of treatment which I believe, on the whole, is the safest and most likely to result in cure in these very perplexing cases. It consists essentially in the evacuation and flushing of the cavity and subsequent closure of it. This is what I did in the case spoken of in our last lecture, and hitherto it seems to promise well. The operation is done in this way. An opening is made into the abscess with the strictest aseptic and antiseptic precautions, in a position, as far as possible, close to the presumed seat of the focus of disease. For instance, in an abscess connected with spinal caries which bulges in the loin, make an opening behind, close to the side of the spine. If the pus swells up markedly above Poupart's ligament, you may make an opening

internal to and below the anterior superior spine. This perhaps is the best position to adopt in the majority of cases. The opening should be as far from the perineum, or inside of the thigh, as possible. A very small opening is made—¾ inch to 1 inch in length—and the pus allowed to flow out. The cavity is repeatedly washed out with a powerful stream of hot sterilised water. I also very commonly in these cases use mercurial solutions—biniodide of mercury 1 in 4000, or perchloride of mercury of the same strength. The flushing out must be done with a douche repeatedly and thoroughly. Thirty or forty minutes is not too much time to occupy in executing it. The fluid should at length return nearly clear. Meanwhile the cavity is kneaded about so as to get rid of the fibrinous masses and loose pieces of membrane which adhere feebly about the walls of these abscesses. Such substances should be squeezed out as far as possible, and then some iodoform emulsion should be thrown into the cavity. Iodoform emulsion, or any other such strong chemical, is rather dangerous. The quantities advised by many surgeons are, I think, rather too large to be safe. I never throw into abscesses more than ten grains of iodoform, my common formula being to suspend this quantity or less in half an ounce of glycerine, mix it up thoroughly, and inject into the abscess cavity. I have never seen any harm result from such small doses, but I have seen dangerous symptoms of iodoform poisoning when a drachm of the drug has been used in this way. You never know how a given patient will bear iodoform. The cavity should again be gently kneaded, the emulsion prevented from escaping by holding the edges of the wound together. This brings the iodoform into contact with the abscess walls. The next step is to accurately unite the wound that you have made, and put on firm pressure by means of pads of wool secured by an elastic bandage. The application of an elastic bandage for a full week is very important, and it must not be put on too tightly. A long splint applied for a few weeks is also a most useful

adjunct. You will find, to your great satisfaction, that this proceeding will cure definitely a number of these chronic abscesses. Any of you who have watched the case operated upon in the Harris Ward by this method, and spoken of at the last lecture, will see that the result is eminently satisfactory. The whole of the great abscess sac in the thigh has coalesced, and the part above Poupart's ligament seems "not inclined to refill." The small incision above the ligament has yielded at one spot, and there is a scanty discharge, getting daily less, of turbid serum. The temperature throughout has remained normal. The small sinus is washed out daily with mercurial lotion, and iodoform emulsion is injected. It is now nearly closed. I expect in this case that definite cure will result; but I would not be positive, and intend to watch the case for some months before speaking with certainty.

But if the mischief is caused by bone disease, and the latter is at all active, this method will not succeed. Such abscesses will fill up again and again and discharge through your carefully joined incision, and may in the end become septic. There is a method of treatment largely adopted in these cases and advocated in many of the text-books—namely, scraping the wall of the abscess and flushing away the pyogenic membrane thus detached. This proceeding is useful in abscesses connected with disease of the hip, where bone can be reached with the scoop, and where the abscess is not too large. I think it is a risky practice in very large chronic abscesses, and principally for this reason. In scraping away the pyogenic membrane, the walls of the abscess being extremely vascular, you get profuse bleeding into the cavity of the abscess; in large abscesses the blood thus gradually oozing may amount to many ounces. This is a serious matter for a weakly patient. Moreover a blood-clot like this is a very convenient nidus for development of organisms. The abscess wall is sometimes thin and poorly protected, and actually scoops have been so vigorously used in these cases that the peritoneal cavity has been opened. A

certain number of authorities have advised that sulphur should be put into these abscesses. The objection to sulphur is its destructive power. This results in a considerable disintegration of tissue. It is a powerful remedy and must be used very cautiously. Sulphur is useful, for instance, to put into the middle of a large carbuncle or a carious cavity of a bone, because it causes marked destruction of tissue, and much disease is destroyed. I would never advise its introduction into large chronic abscesses.

Those, I think, are most of the methods of treatment which are adopted in chronic iliac abscess. Now I think it right to tell you that in large chronic iliac abscess connected with disease of the spine or ilium, no known method will certainly result in cure. In a certain number of my cases I have been disappointed with the ultimate results. I fear those surgeons who claim universal successes in these cases do not watch them long enough to justify their optimistic attitude. Several of my patients have gone on well for two or three months, and I might easily have added these cases to a statistical table. But at the end of three months or more I have known the healed wound to get thickened and livid in colour, to gradually soften, burst open, and discharge take place again. In fact, it may become converted into a septic sinus, and the edges of the wound become impregnated and infected with tuberculous disease. It is easy to see how a freshly made wound, bathed in pus, becomes infected in this way, and it is a danger difficult to obviate. What are you to do in such a case? Remember such instances will occur to all surgeons who are not fearful of telling the truth about their results. I always advise to open and wash the cavity out again in just the same way. If small, the curette may cautiously be used. The diseased edges of the incision must be cut away, a tube inserted, and daily flushing carried out.

I am now going to mention a point of vast importance, far too much neglected in practice, as useful as the gouge

of the heroic surgeon. If these patients can be sent to the seaside a vast number of them will ultimately get well. I believe the air of Westgate or Ramsgate to be especially good. Such cases should be kept in the air by night as well as by day. In the summer they may be under the shade of a tent in perpetual sea air. The prone couch is a most advantageous adjunct. The wound should be flushed daily with 1 in 4000 biniodide of mercury lotion, and dressed with antiseptic applications. In addition to this the patient's strength should be supported by the best of diet. For medicines nothing is better than fatty material, such as Scott's Emulsion of Cod-liver Oil, or cream and malt, and good bottled stout with dinner. Under these circumstances I have known desperate cases ultimately get well. At all events, they so improve that operations can be attempted for the removal of diseased bone. I hope you will not always have poor persons as patients, and you must not think that a degenerate Londoner lying in bed in bad air and poor surroundings is the type of what may generally be expected in practice. Please, then, do not forget the importance of perpetual and continual sea air in the treatment of these conditions. The flushing of a sinus is best carried out by suspending above the patient's bed a large vessel in which are put several quarts of tepid biniodide of mercury solution (1 in 4000), with a tube running down terminating in a glass nozzle, throwing a powerful jet of the lotion into all the depths of the abscess. It is of no use trying to syringe these cavities, as is too often done, with a little glass syringe bought for a shilling at the nearest chemist! Imperfect cleansing and dressing is responsible for many a death in such cases.

What do these patients generally die of, supposing we cannot remove the cause or induce the discharge to dry up? After months or years of suppuration, gradual exhaustion and emaciation will eventuate with bedsores. Such conditions would be most likely accompanied by lardaceous disease of the viscera. The urine will become

albuminous, and the liver smoothly enlarged down to the umbilicus. The temperature will remain of the hectic type, and there will be noted that wax-like complexion which is known to be an accompaniment of lardaceous degeneration.

Another condition is tuberculosis, which may be acute or general; or tubercle may grow in the brain, lungs, peritoneum, or genito-urinary system, including the prostate, testes, and especially the supra-renal capsule. Tubercle of the testis is not an infrequent association of old spinal disease and psoas abscess. Tubercular meningitis is often very puzzling. You will find a patient in whom one of these big tuberculous abscesses has been opened will one day complain of severe headache, will vomit, and squint, and become queer and delirious in manner. I have known such symptoms pronounced "hysterical." Optic neuritis will be present, and the patient will get worse and worse. Coma will come on, with Cheyne-Stokes breathing and alterations of pulse-rate; and the patient may lie for days emaciated and wretched, with a shrunken abdomen, yet occasionally getting better and causing delusive hopes of improvement. At the post-mortem examination the base of the brain will be found studded with small tubercles, which extend along the Sylvian fissure. The parts will be hyperæmic and the fluid in the ventricles much increased. Furthermore this complication is found in adults as well as children, and I have often found such cases misinterpreted. When the supra-renal capsules are diseased the patients complain of great epigastric pain and tenderness, and they become gradually bronzed and emaciated. I have seen several spinal cases die of disease in the supra-renal capsules. A very rare cause of death is hæmorrhage. This, however, sometimes does occur from the large vessels, such as the aorta or the iliac, giving way into the abscess cavity, their coats being ulcerated by constant attrition against carious bone.

I now go on to mention what one may term the last resort in curing an iliac abscess, supposing all things have

been tried and have failed, and the patient still goes downhill in spite of sea air and all care, or the discharge still proves inveterate. In such a case you have to reflect very carefully whether it is possible to remove the diseased bone which is probably the cause of the trouble. In a desperate case of this kind very grave and perilous operations are justifiable, because you have to recollect it is the patient's only chance. If, for instance, you estimate that the disease was in the front of the bodies of the vertebræ, but below the diaphragm, it is right to cut down by a longitudinal incision to the spinal muscles, to the sac of the abscess, to see if you can curette the disease away from the front of the bodies of the vertebræ. It may also be right in such cases, after careful consideration, to trephine the spine from behind, and to perform laminectomy, and see if you can attack the source of the suppuration. I doubt if this operation is done early or freely enough. It is also justifiable to trephine the sacro-iliac joint from behind, and so drain an abscess or remove carious bone. I have saved from death two patients in this way, who were afflicted with chronic abscess associated with iliac disease. On the other hand, I lost a case from hæmorrhage, and the treatment must always be risky. If the disease is found situated in the ramus of the pubes or the ischium, removal is by no means hopeless. I have operated on several of such cases. The patients were dying with very chronic sinuses which failed to close. The probe struck diseased bone near the tuberosity of the ischium. These cases were operated upon in the following way:—The lithotomy position was employed, and a free incision was made on one side of the perineum. The adductor muscles were cut away close to their origins—namely, the adductor longus, the adductor magnus, and the adductor brevis. In two cases operated upon I found that the whole extent of the ramus of the ischium and pubes was diseased, and therefore, with powerful bone forceps, I cut the whole mass away. The first case was in a negro, a patient at Charing Cross Hospital many

years ago. He was quite willing to have any operation attempted which was possible, and I did upon him an operation which I recollect at the time obtained some adverse criticism. However, it was justified by the fact that the patient got well, and I am sure he would never have so recovered if he had been an important private individual, because all would have considered the risk too great to be undertaken. I did the second case in this hospital, the patient being a little boy with a large chronic abscess in the iliac fossa, which I treated with all care. But ultimately the sinus opened and it went on suppurating, and nothing would stop the discharge. I found necrosis of the symphysis pubis and ascending ramus of the pubes. A most extensive operation was performed by dividing the adductors. This boy made a perfect recovery. I have mentioned these cases to show you that in cases of chronic suppuration dependent upon bone disease, do not give them up and let them die, if there is any possibility whatever of getting away the bone by operation, even of a great and perilous extent.

Let me finally ask you to remember that when you get chronic abscess in the iliac fossa and thigh—in practice no doubt you will meet with such cases—do not look upon them as light affections and open them, and think you are doing a very clever thing. There are no cases where doctors get into such trouble as in these. The opening of the abscess may be the beginning and exciting cause of a long illness and of death. The doctor is often unjustly blamed, and seldom gets adequately rewarded for months of anxious attendance. When all arrangements have been made for operation, and the case has been well explained to parents and relatives, recollect that your prognosis should be very cautious indeed. Tell the patient or the parents there is a deep abscess depending possibly upon bone disease, and that such may be very serious. Then the parents will demand a consultation, and your opinion or treatment will be backed up by that of somebody else. If the case has ultimately an unfavourable

result, you will not have to bear all the blame. It is for this reason I have brought this subject before you. Time after time I have seen these errors made. If you recollect this lecture in after life, it will save some of you from getting into very awkward scrapes when you meet with these troublesome and responsible cases in practice.

THE MODERN TREATMENT OF FRACTURES.

"The treatment of fractures as it exists at present is a disgrace to surgical practice." This statement, made by a responsible officer in a clinical lecture to students at Guy's Hospital, appears to me to be one of much gravity; and, forming the conclusion of a discourse on a novel method of treating fractures, in 'The Clinical Journal' for April 17th, 1895, affords a useful text for a short article designed to consider some of the points raised. Mr. Lane's arguments may fairly be summed up under the following headings:

1. That changes take place in the joints in the vicinity of a fracture due to the alteration in the direction of transmitted force.

2. That the shortening in a fracture is not due to spasmodic contraction of the muscles so much as to hæmorrhage and effusion.

3. That the immediate treatment of fractures by plaster of Paris is not advisable.

4. That the results of the ordinary treatment of fractures is so bad that operative measures should more widely be adopted.

Taking the first point, any practical surgeon knows that the condition of the neighbouring joints after a fracture usually gives as much, or more, trouble than the injury itself. This is due to a variety of causes, but to none less than the important fact that joints frequently get severely injured when a bone is fractured. Nothing is more common than to find great effusion into the knee in fractures of the femur, or into the wrist-joint in Colles'

fracture. Some of these effusions are due to mere sprains; others to injuries of the synovial membrane by the broken bone. The long-continued rest insisted upon in the treatment of fractures leads, when the joints are injured, to adhesions with all their troubles. As Mr. Lane points out, in a predisposed person chronic affections of a rheumatoid type may arise. That these changes are more due to injury than to errors of transmitted force appears to me to be very probable. I strongly hold that joint changes in the vicinity of a fracture are largely to be avoided by the plan of treatment I shall presently describe. The alterations in the shape and direction of articular surfaces depicted in Mr. Lane's figures are rather of a compensatory than of a degenerative nature, and the attendant lameness would seem due to the faulty union of the fracture rather than to articular changes.

Mr. Lane's second point, that the shortening is due to hæmorrhagic effusion and inflammation rather than to muscular contraction, seems to me hardly proved. Indeed, I cannot but hold that the contrary is the case, seeing the remarkable manner in which great shortening and deformity can be reduced under deep ether anæsthesia. This I have witnessed so often that I cannot be mistaken. Should the parts be left displaced for weeks or months, until structural shortening of the muscles occurs from the organisation of inflammatory material, I can then easily understand the "immense resistance" encountered by Mr. Lane. But this with ordinary careful treatment should not occur. Although muscular contraction may have been overrated in producing the deformity of fracture, I feel sure that consideration and treatment of it in practice are of the greatest importance.

With regard to the third point, the immediate application of plaster of Paris, I am aware that opinions differ, but I do not hesitate to cordially agree with Mr. Lane that, unless for very slight fractures with little displacement or swelling, the immediate application of plaster of Paris is bad. The swelling may conceal displacement,

which afterwards escapes detection, and the method certainly fosters the local neglect of fractures, which is now so marked a feature among dressers and junior qualified men.

The after-application of plaster of Paris, on the contrary, to fractures about certain joints, I hold to be very valuable. I have long practised it, with the best results.

With regard to the fourth point, that the modern treatment of fractures is bad, I partly agree with Mr. Lane, I partly differ from him. And here I would draw attention to a very important consideration, which cannot be too widely recognised by all surgeons, cannot be too thoroughly laid to heart by every medical student. Any students who have attended my classes at Charing Cross and St. George's Hospitals will be ready to bear testimony to the fact that they have had many a quiet smile at my expense on hearing me speak with some energy on the subject of fractures, which I have affirmed again and again will give a surgeon more trouble in private practice than almost any class of cases he is brought into contact with. The technical difficulties of dealing with a bad fracture are almost too numerous to mention, but I will support Mr. Lane when I fearlessly assert that the majority of students and medical men ignore the subject, or give it such scant attention that the ultimate results of fractures are too often deplorably bad. Actions for malpraxis in the treatment of fractures are still too common, and a badly united "broken leg," leading to lameness and deformity, is a sorry and lasting advertisement of incapacity to the surgeon who is so unfortunate as to be responsible.

This is largely due to the tendency of modern surgical examinations, where it is thought more desirable for a young man beginning practice to know the varieties of aneurysm, or the latest operation upon the intestines, than to be an adept at the treatment of the common accidents and maladies of surgery, which form the bulk of practice! Students now seldom perfect themselves in the minutiæ of bandaging, splints, and position, so essential in the successful treatment of fractures.

The neglect of fractures by students is also much assisted by the immediate application of plaster of Paris, which saves trouble, and the fact that they do not see the ultimate results of their cases. The labourer who, in five weeks' time, is discharged to a convalescent home, with his discharge sheet marked "well united" by a cheerful clinical clerk, is never seen again! He bemoans his swelled leg and stiff joints in the public-house, or in the silence of his poor home, and nothing more is heard of him. A very different tale will be told by the fussy and opulent county magnate, who has to get "quite well," and who will certainly blame his surgeon for any slight stiffness or deformity! If infinite pains and trouble be taken over even oblique fractures, the results are far different to what Mr. Lane would lead us to believe; and the results of private practice treatment by careful surgeons would probably show, in the vast majority of cases, excellent results, without any operative treatment. I here speak largely from my own experience. It has been my good or bad fortune to have to treat several exceedingly bad cases of fracture in private individuals. These included: (1) fracture with great displacement of the surgical neck of the humerus, in a man aged 70; (2) oblique and comminuted fractures of both legs caused by direct violence (railway accident), in a man aged 62; (3) fracture of the shaft of the humerus caused by direct violence, with comminution and great displacement; (4) two cases of bad Pott's fracture, with great swelling and eversion. In all these cases, which were typically bad ones, the ultimate results were very good, but only attained by vigilant care, supervision, and after-treatment, extending over many months—such infinite pains and trouble, indeed, as could hardly have been bestowed on individuals less fortunately circumstanced, who are not able to give up time and care to their treatment.

It seems to me that where the treatment of fractures in hospitals and among the poorer classes seems to fail is in what one may term the after-treatment. It is generally

the practice, so soon as the bones have united, to put up the limb in plaster, gum, silica, or some equally abominable and rigid apparatus. The consequence is atrophy of muscles, from pressure or disuse, stiffness of joints, and general weakness and insecurity of the limb. The long-continued œdema noticed in bad fractures is, I feel sure, due to thrombosis of the deep veins, which are lacerated by the broken bones, or direct crushing violence. I have verified this by post-mortem examination of fractures in those who have been killed in accidents. Mr. Lane seems of opinion that the œdema is due to the stiffness and rigidity of the muscles of the limb. Disuse of muscles, of course, retards the venous circulation, but I believe the true source of that persistent œdema found after fractures is deep venous thrombosis. Mr. Lane has entirely ignored this important point. I cannot see that operations of any kind would benefit this condition. It is my deliberate opinion that the practice of keeping the muscles disused and the joints stiff, after a fracture is united, is responsible for many troubles. It is essentially bad and illogical.

I may now give a sketch of how I believe a fracture should be treated, and will take as an illustration a bad case of oblique fracture of the leg. In the first place I long ago learned from the practice of a distinguished surgical baronet the folly of attempting at once to fix a bad fracture in accurate position. The "setting," as the public persist in calling it, should be postponed until the inflammatory effusion has to some extent subsided, and the blood is beginning to be absorbed. The spasmodic contraction of muscles, so marked at first when they are irritated and partially lacerated, subsides markedly in a week or ten days. Hence I should place the limb upon a comfortable back splint, with side splints, and sling it in a Salter's cradle. The seat of fracture should be exposed, and a cold lotion, composed of spirit, lead, and water, constantly applied on strips of lint. Bullæ should be at once pricked with a fine needle. Tight splinting and rigid confinement with bandages should be avoided. In a week

or ten days I should, under ether, get the fracture into good position, and this would be greatly aided by having the knee well bent and making extension from the foot. Splinting should be most carefully carried out, pads being introduced where needful, and the limb should be inspected daily, the most scrupulous care as to application of the splints and position being observed. In a month or five weeks leather splints with straps and buckles should be applied. These must be made by a skilled instrument maker. Towards the sixth week the bones will be firmly uniting, and the limb should be daily taken out of its leather case and gently massaged. The ankle and knee should receive especial attention, being rubbed and moved; as union progresses massage and movement are executed more vigorously. It is especially important that *all movements*, as those of abduction and adduction of the foot, should be carried out. This necessitates the movement in their sheaths of the tendons round the ankle. Hot douches of sea-water are also most beneficial. In bad cases massage has to be kept up for at least six weeks to two months, and I affirm very strongly that in the after-treatment, which is generally quite ignored, lies largely the successful results or otherwise of bad fractures.

Should the ankle or knee be stiff, movements under gas should be at once instituted. In a fracture near a joint, such as a bad Pott's fracture, the treatment is essentially the same, except that about the fourteenth day the foot is encased in a carefully applied plaster apparatus, the patient being deeply anæsthetised and the parts held in proper position by an assistant until the plaster is firm. The foot must be at right angles to the leg and a little inverted. At the end of the fifth week leather supports are substituted, and prolonged massage insisted upon. In all fractures in the vicinity of the joints, except the hip, I have found the plaster apparatus applied under an anæsthetic, after the swelling has subsided, the most advantageous. It will be noted that I have laid no stress upon the oblique foot-piece, as so strongly advocated by Mr.

Lane. I have had such good results with the vertical foot-piece, taking care that the great toe, patella, and anterior superior spine are in the same line, that I see no reason to alter this method. It will be thus seen that I estimate, to get a good result, that the most watchful and jealous personal care of the surgeon is needed over a period of some two months or more. Contrast this with what is generally done and taught! Besides, I would strongly maintain that much of the success obtainable is due to the mechanical skill of the surgeon, especially to the celerity and ease of his bandaging, to his care in padding, strapping, and such-like small details, of which the least is often the most important.

Supposing the last and most careful treatment to be carried out, I candidly allow that there are some very oblique fractures, especially of the femur and leg, where the results will still be unsatisfactory. I know that such cases occur, and I do not hesitate to state that for such I believe the treatment advocated by Mr. Lane to be the right one, *i. e.* the mechanical fixing of the fragments together by wire or screw. My experience of such operations is limited to two cases. Both of them were compound fractures, and I was much impressed with the difficulty of the operation. A long incision had to be made and several muscles divided before the bones could be drilled and wired. The after results were excellent, and a posterior opening for drainage seemed very advantageous. I feel sure that in compound fractures this practice is sound and good.[1]

But the difficulty of these operations, attested by Mr. Lane when he speaks of extensively dividing muscles and skin, and of using powerful elevators and Lion forceps to get the parts into apposition, in my judgment, does away with their general utility. Broken limbs are the common accidents of life, and have to be treated by medical men in all parts of the world. I venture to believe that if

[1] My experience of wiring simple fractures is now more extensive. I reserve the treatment for exceptional cases. (April, 1903.)

anyone undertook the treatment of an oblique simple fracture by operation, without a most thorough practical knowledge of aseptic surgery and of operative proceedings, he would probably land his patient and himself in grave disaster. What we want in common injuries is not to advise operations, but to obviate them, and I feel sure this is to be done by giving far more individual care and attention to fractures than is usually the case. In my judgment we should constantly impress upon our students the importance and difficulty of the local treatment of fractures, rather than advise them to undertake operations of gravity. The comparison between osteotomy, which Mr. Lane perhaps rather too strongly speaks of as "mutilation," and the fastening together of a simple fracture hardly holds good. In Pott's fracture, which is more troublesome and difficult to treat than any other, I trust that Mr. Lane will give us more information regarding the operative treatment. I cannot see how the replacing of the fibular fragments through an incision "a little more than an inch in length" quite deals with the whole displacement. I imagine, to make the operative proceedings complete, the broken internal malleolus (for it is usually broken) would have to be drilled and wired. This would open the ankle-joint, and much increase the responsibility of the surgeon.

Although I widely differ from Mr. Lane in many points, I believe he has done good service in drawing attention to this subject. Anyone who carefully reads his lecture will see that he defeats his own recommendations, and demonstrates that the operation of screwing together simple fractures should be reserved for a few exceptional cases, and always be performed by very skilled surgeons.

SOME GENERAL POINTS IN THE MANAGEMENT OF CASES OF SO-CALLED SIMPLE FRACTURE.[1]

Among my prescribed duties in the demonstrations on practical surgery is an endeavour to describe to you the treatment of fractures by splints or other apparatus. The varieties of these injuries, their symptoms, and the process of union will be dealt with by others, and I do not propose to discuss them. You will find in your future career that the surgery of general practice is not entirely confined to the abdominal cavity, or to great and rare cases. Although I recognise with regret that anything of so common and practical a nature as the treatment of fractures does not commend itself to the minds of some modern students, I think this subject so difficult, so fraught with importance, bristling with so many "side issues," which gravely affect the character and professional reputation of medical men, that I must draw your close attention to it with all the force and earnestness at my command. Before attempting to illustrate and describe to you the various splints and apparatus in vogue, and their methods of application, I wish to make some general remarks, which, however unusual, may usefully serve as an introduction to more formal instruction. What I shall say will help you perhaps little in surgical examinations, but it will be of material assistance to you in the far harder examinations so many brilliant prizemen and scholars fail to pass—the critical, and too often unjust, examination of the public and your fellow-practitioners.

Firstly, you have to recognise that fractures are among the common accidents of life. You will all have to treat

[1] A lecture delivered in the Course of Practical Surgery at St. George's Hospital.

them if you engage in general practice, especially in rural or manufacturing districts. The more remote the district, the more will these cases be thrust upon your care. Generally speaking, you are not always compelled to operate upon a dubious abdominal tumour, or tie the subclavian artery. But you must treat a broken thigh or leg or arm, perhaps in a rough district, with poor appliances, with unskilled nursing, in an alcoholic and unruly patient. I can tell you truly that such cases are amongst the most anxious trials of a medical life. When, with many doubts and misgivings, you invest "your all" in a practice or partnership, perhaps your first case will be a bad fracture in some person of local importance. I hope that such will not be your fate. If it so befalls, and you mismanage the case, surgically or otherwise, a loss of local reputation will ensue, which, encouraged by unscrupulous rivals, may half ruin you, and years may elapse before you can live it down. A badly united or non-united fracture, which you have personally attended, is not a pleasant sight to meet constantly limping along the streets of your country town; and such persons, especially if evil and malicious, may serve as evidences of your supposed want of skill for many long years, perhaps for the rest of your life.

The grave risk which medical men run in treating fractures has been forcibly impressed upon me by the proceedings at the Council of the Medical Defence Union. What there occurs has often illustrated to me what a wide difference there is between the surgery useful for examinations and the surgery essential for practice.

It is a matter of surprise and regret to see how little importance students, and especially junior practitioners, pay to the practical study of these common accidents. I know if I were going to "put up" a fracture of the leg in the Oxford Ward to-morrow, my audience would be composed only of those whose duties compelled them to be present at so distasteful a task. I know equally well that if I were going to tie the iliac artery, or remove a tumour of

which three previous specimens had been recorded, I should have nothing to complain of for lack of audience. It is the same in medicine; obscure maladies, which usually terminate in pathological investigation and speculative methods of treatment, fascinate the modern student more than the treatment of pneumonia and infantile diarrhœa. All must fly before they can swim. I regret to say that one cannot excuse teachers and examiners from being altogether free in fostering this hollow and foolish tendency in modern clinical education. It is most detrimental to after success in practice and reputation.

The drift of these remarks is clear. I entreat you to lose no chance of observing and treating fractures when you have the opportunity. Take notes of one case of fractured thigh, observe his treatment in the hospital, and especially his progress after he leaves it. Communicate with him, and mark his frequent grumbles and discontent. You will by this have learned more of the unpleasant truth about fractures than I could communicate to you in lectures or pages of writing. To many of you the treatment of a fracture ceases when the patient is conveyed to the convalescent hospital at Wimbledon. It is far otherwise in private practice, where you have to see and be responsible for the final results of your treatment. This is one of the many reasons why, after qualification, you should engage in hospital appointments or assistantships before embarking for yourself in practice for which you are really not practically prepared.

The decline of note-taking is lamentable. The bustle and hurry of your lives, the multitudinous examinations, and the crowding out of clinical study by smatterings of science, leave you no scope for cultivating the process of accurate thought and observation. I stand before you here, and tell you, to the best of my knowledge, how such and such a fracture is to be treated. It is for you to practise constantly the application of splints and bandages. Unless you do this often and persistently you will never obtain neatness and readiness in the appli-

cation of apparatus. The splints are constantly "too tight" or "too loose." The strapping or bandage "has slipped a little." "The patient ought to have told me it hurt." All such explanations are often made by those who have not learned to use their hands; and no number of gold medals will excuse you to your patients for clumsiness of manipulation!

I cannot help thinking that it is nearly time the surgery of fractures was re-written. The introduction of the X rays has worked almost a revolution in their diagnosis, and is a valued aid in their management. The question of operative treatment, especially in compound fractures, receives strong support, and must be taken into consideration, while the application of massage early, and during the process of union, receives warm recommendation from many able surgeons.[1] Although in the text-books fractures are described as being of certain kinds, and occurring in various situations, all such descriptions are, at the best, but rough guides. The Röntgen rays show us that "simple" fractures are often most serious and complicated injuries, and that the bones are splintered and cracked in all sorts of irregular ways, so that, until the skiagraph is completed, you can hardly tell what has actually happened.

I hope I may hardly remind any of my audience that, when first called to a case of fracture, they should do all in their power to prevent additional suffering. The patient will be pale and terrified, likely enough semi-intoxicated with brandy, and surrounded by an excited crowd of panic-stricken friends and onlookers. Under these circumstances I have known members of our profession to become as "fussy" and foolish as the laity. Your first care must be to keep yourselves absolutely cool and devoid of anything like flurry or excitement. This bearing will at once give you command of the situation. If you find another medical man in charge you had better retire, unless he should ask you to assist him. Rely upon it, you do not lose much in the end, if a bad fracture falls into

[1] I now apply massage as early as the first week.

other hands. The clothes should be removed by cutting up the seams, and a temporary splint must be at once applied should the fracture threaten to become compound, or if a long and rough transit has to be undertaken. The movements of the patient must be conducted with all possible care. Any method of transit which necessitates jolting should, if possible, be avoided. When called—remember, some of you certainly will in the future—to a case of fractured thigh upon the hunting-field or race-course, it is best to lay the sufferer upon a door, or gate, or hurdle, and have him carried by relays of men, unless the distance to some place of refuge be very great. In the majority of instances a glance at the parts will tell you that the bones are broken, and you need not go through the cruel formality of obtaining "crepitus"—a relic of barbarous treatment from which you learn little or nothing, and which gives the patient an additional torture, which he will never forget, and, perhaps, not forgive.

When I say that the diagnosis of fractures is generally easy, there are plenty of exceptions. A fractured fibula, a cracked rib, may be most difficult to detect, and fractures near joints, as the shoulder, elbow, and hip, are notoriously uncertain and dubious in the symptoms they display. I may at once say that the accurate diagnosis of such injuries without the aid of the X rays is too often mere surgical speculation. I have known many cases which prove this. For instance, a patient came to London this spring with an injury to the shoulder. It had been diagnosed as a dislocation. One eminent surgeon pronounced in favour of this opinion; another was equally sure it was a fracture. Both were wrong, and both were right. The skiagraph showed a fracture of the humerus high up, and the head of the bone was also thrown right out of the glenoid cavity. Imagine the insuperable difficulty that must attend the diagnosis of such injuries as these through thick muscles and effused blood. In these days, then, your first duty must be to obtain a skiagraph, and, if you are in a remote country district, you had better send your

patient to the nearest public hospital, if he cannot afford the services of an expert with the requisite apparatus. When you see the skiagraph you know exactly "where you are," and whether you are able to treat the case without further professional aid. On no account guess at the nature of complicated fractures near joints. If your guesses are not accurate you will be landed in great disaster. The assumption of knowledge not possessed is a common failing of our profession. If once patients detect it, your reputation and good position with them is gone for ever. If it be impossible to obtain the X rays, the next best thing to do is to examine a complicated case with an anæsthetic. Here, you must remember two things —firstly, there have been chloroform disasters in these cases; and secondly, the stomach must always be emptied, by nature or emetics, before you anæsthetise.

In a drunken man, with his stomach full of alcohol and food, this precaution is especially important.

I have one more caution to give you before leaving the subject of diagnosis of fractures. Do not overlook them in infants and young children. I cannot tell you the unpleasantness I have known arise between doctor and patient over this. In a bad midwifery case, especially in difficult presentations of the breech, examine the limbs carefully after birth, and do not wait for the mother or nurse to point out to you that the infant has a fractured humerus! Again, children are often dropped by the nurse, and nothing said about it. If a child cries on being handled without obvious cause, examine carefully its clavicles and long bones, and remember the fractures are often "green-stick," and not complete. A little child is very likely to get one of these injuries from a slight fall, and you are only too apt to overlook them; a lump of callus gives the first indication of the truth, and then the patients usually change their medical adviser. So much for the great and patient care and the caution you must exercise in diagnosis. It is impossible to over-estimate or exaggerate their importance.

We pass on to some further general points regarding the treatment. Reflect very carefully whether you had better undertake the case without further aid. I am speaking now of practice in populous and civilised parts. A poor patient with a very bad fracture is better off in the nearest hospital than in a cottage, and you will be saved endless worry and anxiety, and probably much subsequent ingratitude and reproach. In putting the patient to bed, mind the latter is prepared properly. Elaborate "fracture-beds" are not to be obtained in provincial practice, but the patient should not be placed on a feather bed or soft mattress, as is too commonly done. It is impossible to treat a fractured thigh or leg properly under such circumstances.

Get the carpenter to make some broad, flat boards, and place them under a mattress, so that the patient lies absolutely straight and flat. A door laid under the mattress is a good substitute. Whatever splints or appliance you determine to use must be put on with all possible gentleness. You may not be able to avoid hurting the patient a little, but he will be grateful to you for avoidance of roughness in your manipulations. Gentleness and kindness, which you cannot assume unless you naturally possess them, will do more to win your patient's confidence than anything else. Anæsthetics are valuable aids to the reduction and "setting" of fractures, and I advise you generally to employ them. When you have done all you can to put the broken bones in good position, you will next be asked for a prognosis, and here one of your principal difficulties will arise. I can only tell you this, with practical experience of the management of fractures, extending now over many years, I never diagnose or treat a bad fracture, especially near a joint, without suggesting a consultation with some hospital surgeon of experience and good repute. Having heard me say this, you may act for yourselves in the future. The ultimate results of such injuries as a bad "Pott's" fracture, fractures of the upper or lower end of the femur, fractures into the elbow-

joint, especially in old or rheumatic persons, are often very unsatisfactory. Some deformity, some lameness, some loss of mobility of the articulation persists, and may persist permanently, even with the best of skill and care. A man will break his thigh or leg in the worst possible manner, and he cannot be made to understand that the subsequent deformity or lameness is due to the severity of his injury, and not to lack of skill in treatment. The patient, if a foolish or cantankerous person—and there are many such,—naturally wishes to blame someone for his trouble, and the person he will blame will be you. His friends and relations will do likewise, and the aid of the law may have to be invoked for protecting the unhappy, but probably injudicious practitioner. The lamentable result of non-union may occur. It is a sad calamity for the patient, and though it is true that this is usually the fault of the patient, and more rarely of the treatment employed, neither may be to blame. In some persons simply no reparative material is thrown out, or the effusion is poor and feeble, and no true calcification takes place. You never can tell when this distressing termination may eventuate, and, oddly enough, it is not unknown in the long bones of children, where you would naturally expect union to be speedy and sound. Only last year an action was brought against an old student of this hospital, who occupies a justly respected position in a large country town. He attended a man for a broken tibia in the local cottage hospital, and the bone failed to unite. The operation of wiring the fragments was afterwards done in London, and the patient showed his appreciation of the gratuitous treatment he had previously obtained by entering a claim for £800 damages against his medical attendant. When I tell you that the latter had the good fortune to belong to the Medical Defence Union, a necessary qualification for the treatment of fractures on modern principles, you may understand that the action speedily collapsed. Another perfectly unavoidable result, especially of bad fractures of the humerus or forearm, is injury to the main

nerves; and here, again, unless the greatest circumspection is used, severe blame may unjustly be thrown upon the attending practitioner.

Again, union, at first firm, may afterwards soften, and bending and distortion take place. This is, fortunately, very rare, yet I have experienced a most annoying instance of it. The lady who was the sufferer was a very sensible and pleasant patient, and no unjust reproaches were heaped upon my head; but I may confess to you that I used to hear the sound of her crutches approaching my consulting room with anything but feelings of pleasure!

I have often, in this theatre, heard the late Mr. Pollock speak of fracture of the neck of the thigh-bone in the aged, and how such an injury was often followed by fatal consequences, and generally by non-union. You are not to think that these disastrous consequences are going to happen in all cases. They are very exceptional, but still they do occur, and no one can certainly tell when or how; and these home-truths, perhaps, hitherto have not been made as public as they should. Now, bearing all this in mind, it is always my practice to write an opinion appropriate to the case, and sign it, and keep a copy of the letter by me. I need hardly say that such letters must be carefully worded. The following is a fac-simile of an epistle of this nature, and may serve as a guidance to you in the future:

"Dear Mr. ———,

"The skiagraph of your injury shows that you have a fracture into the elbow-joint of a complicated nature. I regret to have to say that when the reparative material is thrown out, and new bone is formed, the future functions of the joint must be impeded, and stiffness and loss of motion will be the consequence. I will do all in my power to obviate this, by proper and persevering early movements of the joint; but recovery will be difficult and tedious, and some impairment of usefulness must ensue—it is impossible now to say to what degree. I tell you this because, if you or your friends should desire some surgeon of repute to see your case, and advise concerning it, now is the time, before the bones have joined. I should be sorry to receive blame afterwards for what is really unavoidable from the nature of your injury, and, if you are at all in

doubt about what I say, you had better call in additional aid. Please keep this letter by you.

"I am, dear sir, etc.

"P.S.—I enclose names of surgeons of eminence for you to select from, in case you desire, as I do, consultation upon your case."

You can at once see how the production of a letter of this kind in a law court would protect your interests and reputation.

In the majority of cases, I am glad to tell you, the prognosis of fracture is distinctly cheerful; but remember that the recovery of the patient is not quite the same thing as the union of the fractured bone. A broken femur will unite in six or seven weeks. But then the union is not firm enough to allow the patient to bear his weight upon it; if he tries, the bone may break again! The torn and lacerated muscles have to be repaired, and their action slowly accommodated to the altered position of the bones. The stiff and painful knee and ankle have to be reckoned with. A long period of treatment by massage, movement and rubbing must be instituted, and this is an insuperable objection in my mind to putting up fractures in immovable apparatus, as plaster or silica, after the bones have joined. Again, a common accident, like a Colles' fracture, may take many weeks before restoration of the function of the hand and wrist is complete. The recovery from fractures is gradual, not sudden; you may tell your patient the average time it takes the bones to join in healthy persons, but you had better not tell him any more, unless you wish to see your predictions rudely falsified. Very seldom will you find a patient, who has been treated for fracture, grateful. If it be true that the love of money has its seat in enlargement of the prostate gland, it is certainly true that ingratitude dwells in the shafts of the long bones![1]

Much will depend upon the type of patient you have to deal with. You may refuse to operate upon a diabetic, a paralytic, or a man suffering from ataxia; but you will have

[1] Statement by a lecturer on anatomy at one of our largest hospitals.

to treat bad fractures in these persons if they sustain them. The subjects of fractures may be very bad and unhealthy individuals. Consider what occurs in a case of a broken thigh or leg. Here you have a man, previously in full enjoyment of his bodily powers, suddenly struck down by a terrible accident; his occupation, or important business, rudely interrupted, all his arrangements disorganised, perhaps his livelihood temporarily gone. In addition to severe bodily suffering is commonly superadded the trouble of mental worry. He is likely enough a strong, healthy man, who has never been confined to his bed in his life before; but, unfortunately, he may be a hard drinker, and this induces a complication which I must especially treat of. The pain, the terrible irksomeness of lying in bed in one position night and day, will naturally make a man miserable and fretful. His digestive functions are all impaired, and, if gouty, an acute attack of this disorder may appear for the first time. If he be naturally passionate and irritable, and has anxious and fussy friends, you will have burdens laid on you hard to bear during the first few weeks of his illness. The rule I apply here is to imagine how I myself would behave under the patient's circumstances, and I am then generally able to make all allowances for the complaints and whims of the most fractious patient! In hospital practice you see nothing of all this. Most of the troubles of these cases fall upon the shoulders of those patient and overworked ministers to the sick—the nurses. But you will have to take your full share of them in private practice, and they will come upon you as a great and disagreeable surprise, for which your previous education has not fully fitted you. One of the first symptoms you have to combat is pain and sleeplessness. I fear most of you will at once fly to that abomination of modern practice, the morphia syringe. Time and space will not allow me to tell you of the horrors induced by it, or of the catastrophies engendered by its indiscriminate use in what are termed "neurotic" individuals. I never employ

morphia unless to combat absolute agony, and then only in the form of suppository, not allowing the patient to know what is administered. It seems hard to say so, but it is ultimately best for these patients to sleep as the result of pain and weariness than from powerful sedative drugs. I have several times in the last few years been asked to allow hypnotism to be employed. I cannot see that this process would combat really severe agony, though in certain individuals it undoubtedly soothes the exaggerated pains of an overworked nervous system. I would never advise hypnotism, for it deals with factors beyond our control, and if patients or their friends insist upon it they must take the responsibility of damage to the mind or will of a probably already feeble-minded person. The next trouble, which bothers healthy and sensitive people in a way you little imagine, is the action of the bowels and bladder.

Retention of urine may occur, necessitating the careful use of soft catheters, or the reverse condition, constant dribbling of urine in the feeble or aged. This is a most awkward and serious complication. Nothing is more likely to produce excoriation of the skin and bedsores, and it calls for elaborate care in the use of the urinal, and in changing the draw-sheet. The mere fact of having to keep the recumbent position in aged persons may lead to cystitis and alkaline, offensive urine, so that you have to wash out the bladder daily, and administer appropriate remedies by the mouth. Constipation very commonly occurs, and if the patient suffers from hæmorrhoids they are very likely to become inflamed, and to give great trouble. The very introduction of the hated bed-pan seems to inhibit the action of the bowels in a man who is suddenly confined to bed. The practice here is to regulate the dietary, and to give every other night some mild laxative, with an oil enema in the morning. An appropriate bed-pan must be slipped under the patient, who may raise himself by a pulley suspended above the bed, and by the hands of attendants placed beneath the back

and buttocks of either side. If he be a fat, heavy man, the difficulty connected with the bed-pan is very great, and it is a matter which gives the patient more misery and uneasiness than you generally imagine. An excellent fracture bed is made, where a portion withdraws from beneath the buttocks, for the evacuations. The drawback of all such appliances is this—they are not obtainable in provincial practice, and even in London I regret to say that the arrangements for obtaining proper apparatus for bad fracture cases are very incomplete. A serious abdominal complication of fractures of the lower extremity is distension of the bowels with flatus. This is very prone to occur in the obese and feeble, whose weakened abdominal walls hardly move on respiration. You may find such patients blown up and distended, with a weak pulse, and blue, cyanotic faces. The administration of a turpentine enema, and the administration of carminatives by the mouth, is usually followed by great relief. All through the process of union of a fracture the greatest care should be exercised to keep the urine acid by the administration of mineral acids by the mouth ; phosphoric acid is a favourite remedy of my own. Patients with ununited fractures commonly have alkaline urine. Much that I have said applies to fractures of the lower limbs. In fractures of the upper extremity all such troubles are generally avoided. The patient, even if old and feeble, should be kept sitting up in a chair, and never allowed to take to his bed. If you allow a very old and feeble person to lie in bed with, say, a fractured humerus, his case will likely do badly. All the troubles of nursing, dressing the back, and managing the urinary organs and rectum are enhanced in the case of extremely heavy and fat people, and with the best care bedsores may occur. This is a very disastrous complication, and may prove fatal. In a country house you must regularly teach the men employed in the garden, or otherwise, to help lift or move the patient, while the nurse dresses and cleans the back. The strength of one or even two nurses is seldom

equal to these tasks. Indeed, good nursing is of the first importance in fractures of the lower extremity, and its value cannot be over-estimated. An air or water pillow may, with advantage, easily be placed under the sacrum. It should be flat, and not high enough to interfere with any splints employed.

Finally, in connection with this subject, it will be an excellent lesson to all of you if you will momentarily unbend and learn how one of these cases is nursed, see the draw-sheets changed, and watch the application of the bed-pan, and how all such minutiæ are managed. I repeat that, in a private patient, you will have to direct how all this is to be done, and to supervise it. Unless you do this properly complications will certainly arise, which may lead to very disastrous consequences. While a student will talk glibly about the process of union of fractures, the nature of the cellular products, and the process of ossification, he will be quite ignorant of the methods of "nursing" a bad fracture, which, to the patient at least, is perhaps of more consequence.

Perhaps the most awkward and distressing complication of fractures of the lower extremity is delirium tremens. Difficult enough to manage in a well-equipped hospital, in private practice the difficulty is enhanced, and, indeed, is so great that for the patient to recover with serious deformity is quite a common thing. In compound fractures many bad cases of delirium are really septic in nature, and the distinction between the delirium of sepsis and that of alcoholism is not easy; and, indeed, these two causes may be combined. The ideas of undue quantities of alcohol vary very much in different localities of the British Empire and in different persons. The "fiery-faced" hunting man, who consumes a good many brandies and sodas in the course of the day, with a maximum of brandy and a minimum of soda, would be very indignant if he were told that he drank too hard! Indeed, he often holds himself up as a pattern of abstinence to his neighbours, and if he breaks his leg, and gets delirium tremens, his friends will be very

indignant at your diagnosis; and perhaps it is better to be content with the term "delirium," which will be quite sufficient, and, indeed, is very obvious. On the third or fourth morning, perhaps, after the accident, you will begin to notice that your patient is queer in manner, rambling, and incoherent. Frequently he announces his intention of getting up and going to his club, or to the market town. He assures you that he is "all right," and sometimes indulges in merriment and self-complacency, very different from what you would expect in a man who had suffered from a bad accident. The night following he may be raving, and the terrified, inexperienced servants and relations utterly fail to restrain him. You will find him sitting up in bed, covered with moist sweat, and picking at the bedclothes with tremulous hands. His delirium will have the characteristic of being connected with his usual avocations. If a racing or hunting man he will talk incoherently about his horses or stables, and may cheer on the hounds with shouts. You will find, to your consternation, the bandages undone, the splints displaced, and the ends of the broken bones poking against the muscles, the fracture seriously threatening to become a compound one; indeed, the whole situation is difficult and distressing beyond belief or description. I must here once more most seriously warn you against the dangers of the morphia syringe. There is a natural tendency to use it, for you feel driven to your wits' end. But remember that many of these patients have deeply congested lungs and fatty hearts, and diseased or badly acting renal organs, and an injection of morphia may prove fatal. The patient becomes cyanotic and passes into coma, with stertorous breathing and flapping of the cheeks. Such symptoms are conveniently called uræmic! I warn you regarding this matter seriously; I do not speak from hearsay.

The treatment of delirium tremens is too large a subject for me to enter into to-day. Some of you know my own practice is to administer full doses of bromides in small quantities of good stout. The success of the case will

largely turn on the care of the attendants. Unless the patient is able to obtain the services of good, trained, male nurses, disastrous results are very likely to follow.

You must at once decline any responsibility of what may happen to the fracture in these cases. They are always associated with risk to life, and if faulty union or non-union occurs the condition of the patient is serious. You will do well to make this very clear to the friends and relations.

Nevertheless do what you can. Bulky sand-bags, with a heavy weight of seven to ten pounds, upon the foot and leg, in a case of fractured thigh with delirium tremens, are of the greatest use ; one large bag is placed on either side, and another across the fractured limb. Nothing, however, is so good in these cases as the plaster-of-Paris apparatus, and I have brought several cases of delirium tremens, with bad fractures, safely through with it. The careful administration of chloroform is very useful in checking or subduing the delirium, and while the patient is under its influence the limb may be carefully secured in plaster-of-Paris bandages.

Here you are especially likely to come to grief unless you are well versed in such apparatus. The bandages will be too tight or too loose. One thing you must be careful of, and that is that your bandage is not too tight, and that the limb below is also carefully bandaged to prevent swelling, leading to constriction, and risk of the dreadful complication of gangrene or sloughing. If you have any doubts as to this, the plaster may be slit up the centre and bandaged round. The immovable plaster case has this great advantage, that the patient cannot pick or tear it off; and he may roll about as he pleases, yet no serious displacement of the bones may occur. I have only given you a sketch of the difficulties you incur in these cases ; and the two principal indications are good attendants and the immovable apparatus. The former are most difficult to obtain in country practice, and you have to put up with labourers, gamekeepers, and the like, who generally become afraid of the delirious, and restrain them by

violent means, and sometimes require so much alcohol to sustain their own strength and nerves that they may become almost as bad as the patient!

Much has lately been written about the treatment of fractures by massage. Many of the worst results of "simple" fractures, as stiffness and adhesions in the neighbouring joints, implication of bones in inflammatory material, and the adhesion of tendons to their sheaths, are due to the long confinement and the undue interference with the circulation by the pressure of splints and bandages. Accordingly in these cases of fracture, where no great displacement occurs, as is notably the case in some fractures of the tibia and femur, daily massage may be employed with great advantage. Personally I would not advocate commencing before the end of the first week, for the danger of disturbing the newly-formed venous clots, though remote, must not be ignored. In very oblique fractures, however, that start out of position when restraining splints or bandages are removed, I question whether this method can be safely employed until some union has occurred. Nothing is so important as the methodical and careful use of massage and movement in fractures so soon as ever the bones have united. Much of the dissatisfaction that occurs as the result of treatment is due to neglect of this most important consideration. The surgeon should see to this himself, and not leave it entirely in the hands of "rubbers." I have several times had occasion to treat painful joints after fractures by movement under anæsthetics. An unexpected adhesion gives way, and the functions of the joint are restored as if by magic. It is better to do this for yourselves than allow the nearest bone-setter to shame you by doing it for you! If a joint is painful and insecure after a fracture, there is generally an adhesion in or about it which needs "snapping."

The treatment of simple fractures by the operation of wiring, or screwing the fragments together, must next engage attention. I have elsewhere drawn attention to this method, and I may only point out to you now why it

can never be of general utility in practice. In the first place the operations are not easy in their actual performance. The few cases I have done I have found difficult. If any error occurs in the aseptic technique of an operation demanding large incisions, the opening of lacerated tissues sodden with effused blood, and the exposure of the medullary canal of bone, very serious consequences may readily ensue. We are all human, and, if the truth were told, occasional failures to maintain perfect asepsis occur in the practice of the most careful and methodical. In country districts, however, the patients will solve the matter for you. They are not likely to submit to operations for fractured limbs without great persuasion and difficulty, and the doctor who advocates such treatment is not likely to be very popular. In my opinion, therefore, operations for the union of fractures should be confined to cases of simple fractures when the obliquity of the fracture, or its position, renders it peculiarly difficult to manage. Even then the operation should only be undertaken by a hospital surgeon well versed in the technique of aseptic and operative surgery.

The so-called green-stick fractures in children present a special difficulty in their treatment, not universally alluded to in the text-books. The bone is bent, not broken. If you merely put on splints you fail to restore the straight line or natural curve of the bone, and the patient recovers with his forearm, let us say, bent at an obtuse angle. Several instances of this have been brought to me by angry parents. I believe that time greatly rectifies many such displacements, but they look very ugly, and this is how you are to avoid them. Give the child an anæsthetic, and remember that chloroform is not an absolutely safe anæsthetic in children, as usually taught. Then forcibly bend the bone the reverse way; often you hear a crack, and the solution of continuity becomes complete; you have brought the axis of the bone straight, and now merely have to apply splints. But, if you hide the deformity beneath splints and wool, it will dawn upon the parents, when the

splints are taken off, that the case has not been managed well, and then the trouble begins. The late Mr. Pollock used to tell us in his lectures the story of a parent who adopted the sign of "The Crooked Arm" over his public-house! This was to annoy the doctor, who had a bad result in treatment of the fractured arm of one of the publican's children. The medical man endured such unpleasantness that he had ultimately to leave the town.

I must not omit to call your earnest attention to one or two matters in connection with the treatment of fractures, of indirect association with the treatment, but of great importance. It is likely enough that you will be asked to meet several surgeons or practitioners in consultation, if the case is a bad one, and the parties concerned foolish and importunate. I make it a rule never to refuse meeting anyone whose name is on the Medical Register, if the patients wish me to do so.

If a man's style of practice is so irregular and bad that, in the judgment of many, he should be professionally tabooed, then it is the fault of the powers that be, that he is on the Register of the profession at all. As the good of the patient is your first thought, so you should try and guide him and his friends to select consultants who you feel are really able to help you in the case, and, perhaps, to shed more knowledge upon it than you may possess.

But if the patients choose otherwise you cannot help it. You must never take offence at being asked to meet a man junior to yourself, or in an inferior professional position; and the unfailing rule of doing to others as they should do to you will help you over many difficulties. It is otherwise if the patients insist upon employing an irregular practitioner, a bone-setter. In certain country districts this is common enough, and I have known surgeons of the highest grade and reputation ousted by these vulgar pretenders. The new Medical Bill to abolish unqualified practice, which is the crying need of the profession, is as yet only flickering upon the horizon, and some of you may experience this trying and annoying

ordeal. Your duty is simple. If the people are so ignorant as to call in an unqualified man, you must retire from the case, and state your reason in writing for doing so; all these points are very disagreeable and embarrassing, and you will do well to lay the matter before someone you can trust for counsel and advice.

Next, be sure you take careful notes of the progress of your case—the date of applying splints, of altering them, of taking them off. The dates of unusual complications, as the onset of delirium tremens, should all be carefully noted; you will find these notes of the greatest help in the event of legal troubles afterwards. Nothing gives a worse impression in a court of law than for a doctor to have to confess that he has taken no notes of his case. I must honestly say that the difficulties and troubles I have seen in the management of many cases of fracture make me feel very charitable for the want of success of others; and this brings me to speak of another point which I wish, for our own credit, I could leave unnoticed.

I have almost invariably found that when unpleasantness arises about the management of fractures, or the results of treatment, the explanation is generally to be found in some disparaging or ill-natured remark of another practitioner in the same town or district. It is almost an aphorism with me that the troubles of the profession originate in the profession itself, and it is so here. If you are ill-natured enough and foolish enough to say that Miss H—'s clavicle would not have had that lump upon it if the fracture had been treated by yourself, or by such and such a method, you have put the match into the tinder, and a blaze soon occurs! You may have mentioned this in strict confidence to supposed discreet individuals, leading persons in your district; but they pass it on to their wives, and your remark is the common talk of every tea-table in the town in twenty-four hours. I fear the acute rivalry of practice in country towns fosters these un-

sociable exhibitions of petty jealousy! I only mention such disgraceful doings to you in the sincere hope you will ever avoid and shun them!

In conclusion I may urge upon you the great importance of close attention to detail in managing a case of fracture. No pains or care must be spared in doing everything for the welfare of the patient, seeing that the splints are properly padded, preventing the skin from getting chafed, relieving pressure by pads and pieces of cotton wool, and leaving nothing undone that ought to be done. If, with all your care and pains, a poor result ensues, you will be held blameless; it can be proved that you have exercised all ordinary skill and care. When I say this I must warn you against running into the opposite extreme. Some surgeons, in their anxiety to obtain perfect apposition of the bones, are always pulling these cases about, giving them anæsthetics, altering the splints or apparatus constantly, and so on. These well-meant endeavours are very apt to defeat their own object, and I believe I have known non-union result from such ill-judged interference. Nature is very kind to us if we give her a chance.

You are not to suppose that every case of fracture you meet with is going to give you great trouble and anxiety. The majority are easy and plain enough, provided you bestow upon them elaborate care and attention. I do not certainly know who was primarily responsible for the unfortunate and misleading term, "simple fracture." The public do not naturally interpret the word in the surgical sense, and, if a fracture is said to be simple, the patient and his friends regard it as easy to manage, of no grave consequence, whereas, in truth, I think you will gather that a number of simple fractures are among the most difficult and complicated cases that we have to contend with. I wish the ancient author who invented the term could have heard this lecture. I think you will agree with me that he might be inclined to modify the nomenclature for which he is responsible.

A CLINICAL LECTURE ON HYDROCELE.[1]

I PROPOSE to lecture to you to-day on some of the principal points concerning the pathology, diagnosis, and treatment of hydrocele of the tunica vaginalis testis. The subject is an extensive one, and you must supplement the brief remarks I have time to make by your own observations and reading. I have selected the subject because there has recently been in the Fitzwilliam Ward a man with a large old hydrocele, upon which the method of radical cure was carried out by operation, as the injection treatment had on two occasions failed.

Hydroceles form a large proportion of all scrotal swellings, and of the cases at surgical examinations. A good deal of difficulty is often experienced in their recognition by students who do not consider how much can be learnt in the diagnosis of such affections by the appearance to the naked eye and other common-sense methods of examination.

But before discussing the diagnosis of hydrocele we may say a word about its causation. This is summed up at once by declaring that in a large number of cases of hydrocele no certain cause can be assigned for the disease. The books will tell you that hydrocele is due to a loss of the balance between the absorption and secretion of fluid in the tunica vaginalis. This is the stock answer given at examinations. To my thinking it is only a convenient way of expressing ignorance. The fact remains that in a considerable number of cases of hydrocele the sac of the tunica vaginalis is distended with fluid without

[1] Delivered at St. George's Hospital.

any rational cause being assignable. A very suggestive point is as follows:—A certain number of cases of hydrocele are associated with definite disorders of the testicle. Thus in syphilis of the testicle, concomitant hydrocele is familiar. In tubercle of the testicle, malignant disease of the testicle, chronic orchitis, and epididymitis due to catheterization, hydrocele is also found, though far more rarely. Thus a certain number of cases of hydrocele are undoubtedly caused by the spread of inflammation to the tunica vaginalis from the testis, or rather from the epididymis. This suggests that hydrocele is usually inflammatory in origin. I need hardly point out to you how important this is in the matter of treatment, for the method of curing hydroceles dependent upon syphilis, or tubercle of the testis, is largely bound up in the treatment of the testicular affection which causes and underlies the hydrocele. In some hydroceles a small pedunculated body is found near the head of the epididymis. This is a fœtal relic, and I have found it in the tunica when no hydrocele was present. I have often wondered whether the rubbing of this substance against the serous surface might produce excess of secretion. The analogy of serous exudation in the knee, due to the rubbing of a pedunculated body from the edge of the cartilage, seems very close.

Next we will talk about the symptoms of the ordinary hydrocele of the tunica vaginalis, such as you often meet with in the out-patient department of a hospital or in private practice. The symptoms of this disease are really exceedingly simple. First of all the shape of the swelling at once tells you that it is a distended tunica vaginalis. I cannot too much impress upon you to use your eyes in the diagnosis of scrotal tumours and swellings. Here I show you a drawing of a typical ordinary vaginal hydrocele. The swelling is pear-shaped and the neck of it is narrow, so that the cord can be distinguished above the swelling by the pressure of the thumb and finger, showing that no hernia exists, and that it is definitely isolated from

the abdominal cavity. Large hydroceles have often a slight constriction about their centre, "hour-glass contraction," which is also very characteristic. There is no impulse on coughing, the swelling cannot be reduced into the belly, and it is very generally translucent. And here, I may remark, you should lose no opportunity of practising the translucency of a hydrocele before you present yourselves in the examination room. First learn to make the swelling tense by pressure with the hand behind it, and then, by "shading" it with the other hand, translucency is readily produced. A strong, bright light, like an electric lamp, is most useful. But the method requires practice, and practice alone will make perfect. In the vast majority of cases of ordinary hydrocele the position of the testicle is what I have shown here in a diagrammatic manner—namely, behind the collection of fluid. As a rule the patient is able to distinguish testicular sensation when this part of the swelling is squeezed. I advise you never to carry out such an examination, for you can rarely depend upon patients' statements as to their sensations, and a careful examination by transmitted light will usually show you the position of the testis by the opacity produced. In a large hydrocele, moreover, the volume of the fluid is so great that it is generally impossible to feel the testis at all, still less to squeeze it. You may recollect, then, that as a rule the testicle is behind in a common hydrocele, so when a trocar is entered in front it is clear of the organ. But there are exceptions to every rule. In a few instances of hydrocele the reverse is the case, the testicle being in front of the hydrocele. This unusual circumstance may be due to malposition of the testicle, the epididymis being in front instead of behind. It may also be caused by the "anchoring" of the testis to the front of the sac by inflammatory adhesions. Thus this condition is found in old hydroceles which have been tapped many times, and perhaps fruitlessly injected.

The fluid which is contained in hydroceles is highly

albuminous, and is generally of a pale straw colour. In some cases of old hydroceles, which have existed for many years, the fluid becomes more opaque and mixed with cholesterin, the colour of old ale, which may greatly mar the certainty of the "translucency" test. Hydroceles associated with sarcomatous testis may contain bloody fluid. It would be more correct to call them hæmatoceles, except that the serum is often in great excess of the blood mixed with it.

Lastly, the fluid in a hydrocele is, as a great rarity, chylous. I have never seen a case of chylous hydrocele originating in this country, but I have seen one which came from abroad, and the presence of filaria in the lymphatics was suspected by experts.

All hydroceles are not translucent. Those which have existed for a great many years, and have perhaps been tapped many times, and have become chronically inflamed, are notably not transparent. The sac in such cases, from repeated inflammatory attacks, may attain to a great thickness, as you will readily understand. This diagram represents an ancient hydrocele with a thick sac full of inflammatory lymph containing particles of cholesterin. Such a swelling will be non-translucent, and the diagnosis may be puzzling enough unless you obtain a clear history, of long duration, and frequent tappings. "Histories" are very deceptive, and sometimes these cases can only be cleared up by exploratory incision. How, then, are you to certainly diagnose these elastic, opaque, scrotal swellings? The only way of certainly diagnosing hydrocele with thick walls is by an exploratory incision. It is impossible, for instance, to distinguish a hydrocele with thick walls from an old hæmatocele except by cutting into it; you have little or nothing to guide you except the history so apt to be fallacious. A swelling may be a hydrocele at one tapping, a hæmatocele at the next, the trocar having pierced a vein, which slowly oozes into the cavity. In these opaque swellings, too, the position of the testis is very problematical. There are frequently inflammatory

adhesions, which displace the organ. Hence incision is safer than the trocar, for the latter may pierce the testis and lead you to the erroneous conclusion that you have a solid tumour to deal with.

Confusion between ordinary vaginal hydrocele and soft sarcoma of the testicle ought, in reality, never to occur. Soft sarcomatous growth of the testicle is, on the whole, rare. Hydrocele is very common. Soft sarcomatous growth of the testis is non-translucent; it is heavy when lifted up on the hand. It feels solid in some parts, fluctuating in others. The scrotal veins are much enlarged, and the cord above is thickened. Of course an exploratory incision immediately clears the matter up, because instead of opening into a cavity containing fluid you come upon a vascular, brain-like tumour. Nevertheless confusion between these affections is possible. You may reflect that non-translucent hydrocele will have existed for years; soft sarcomatous growth of the testis will probably have existed for months, and will have progressively increased. Exploratory incision may be the only means by which the matter can be certainly cleared up. I warn you not to take into account the appearance of the patient. Large malignant growths of the testis may be found in persons who have the appearance of perfect health. Confusion between these two affections is very disastrous, both for the patient and your own reputation.

I have said very little about the diagnosis of ordinary common hydrocele from hernia. Ability to feel the elements of the cord above the swelling is the main differential symptom on which to rely. But I will mention, as I am dealing with the subject, that the shape of the neck of a hernia is different from that of hydrocele. In hydrocele the swelling is definitely cut off from the abdomen at the external abdominal ring; in hernia there is a wide neck which passes up into the abdomen distending the inguinal canal, so you can see at a glance the distinction between the two conditions.

The treatment of hydrocele is very variable. In a large

number of instances, especially in private practice, you will find that the patients will be satisfied with the swelling being tapped at certain periods. This is termed the palliative treatment of hydrocele—namely, performing paracentesis when the swelling gets inconvenient from its bulk. This operation should be done with an exceedingly fine and sharp trocar and cannula. The patients will appreciate the use of a fine instrument. The hydrocele trocars sold in the shops are often too large for use by a sensible and humane surgeon. The skin of the scrotum should be carefully cleansed, and the instrument boiled before and after using. The sac should be made very tense by the pressure of the left hand before the trocar is introduced, and a spot should be selected free from veins. As I have said, you will find a large number of patients affected with hydrocele to be content with this palliative tapping, and this is especially true in elderly men engaged in business or occupations which preclude them "laying up." Such patients are acutely critical, and if any bungling takes place in the little operation they will not visit the surgeon who is guilty a second time! Now, reflect, you would not attempt radical cure of hydrocele which was dependent upon disease of the testicle. Under such circumstances it would be very unwise to undertake, for instance, the injection method. The diseased testis would be left, and perhaps the mischief in it aggravated by the irritant fluid. Tapping is often employed in hydrocele associated with testicular disease, and, indeed, is sometimes essential in diagnosis. Not until the fluid be withdrawn can the surgeon properly feel the enlarged testis and estimate its nature.

The next class of case where you would not attempt the injection cure is where there is a very thick sac. If you were to inject iodine into a hydrocele with very thick walls you would only make matters worse. Again, radical cure by injection should never be attempted where there is communication between the sac and the abdominal cavity. Such hydroceles are found in young infants and boys (congenital hydrocele), but many hydroceles in the

very young are quite ordinary, and do not communicate with the belly; this fact students seldom appreciate.

One of the objections to radical cure by injection of iodine is its uncertainty. It has been computed by some authorities that 20 or 25 per cent. of the cases of hydrocele treated by injection are not cured. Another objection to injection, especially with iodine, is that the epididymis is generally inflamed by it, and so you get for weeks after the injection a painful, indolent swelling of the testis and epididymis, which has been set up by the injection. The injection is very painful when the iodine enters the tunica vaginalis. Patients have been known to faint not infrequently. Still, injection of iodine is a remedy which is practised largely, especially in hot countries like India, where hydroceles are very common and very large; and you should know how to do it.

Firstly, your trocar and cannula should be rather larger than for ordinary tapping. You should see that the cannula and syringe fit properly, so that you may rely on throwing the iodine into the tunica vaginalis without a hitch. You should draw off all the hydrocele fluid; do not leave part of it in the sac. A very common error is to leave several drachms of hydrocele fluid in the sac, and thus when the tincture of iodine is thrown in it gets diluted. I believe that many of the instances of "recurrence" after injection may be explained by some faulty procedure on the part of the operator. You throw into the cavity of the sac one to two drachms of the Edinburgh tincture of iodine, which is rather stronger than the usual preparation. The next step is to shake the sac well, so that the iodine is diffused all over it. I have told you how acutely painful this may be, and it is wiser to perform the operation with the patient lying down on a sofa. Some surgeons make a practice of previously throwing into the sac of the tunica vaginalis a 2 per cent. solution of cocaine. Not more than a quarter of a grain should be introduced. This certainly diminishes the smarting caused by the iodine. When you see the patient

the day following the injection you will find the scrotum swollen and red, and the epididymis inflamed and tender. The patient will sometimes complain of very great discomfort, so that he has to be kept in bed for a few days, though this is unusual. As a rule there is more or less epididymitis, and a chronic indolent swelling results, which only slowly subsides.

An injection which is perhaps becoming more popular than iodine is carbolic acid. This is at least as likely to cure as iodine, and it is very much less painful. You take a mixture of equal parts of liquefied carbolic acid and glycerine, and, having emptied the hydrocele, you throw into the sac ɱxl to a drachm of this solution. This was the method I adopted in the out-patient department of this hospital for several years, and I have every reason to be satisfied with it. We had ten consecutive cases of cure, so far as I could ascertain. There were other cases "lost sight of,"—so common in hospital practice. The scrotum is shaken after injection, so that the whole sac comes into contact with the remedy, and a cure is generally the result. Carbolic acid does not, in my experience, inflame the epididymis to the extent that iodine does; neither does it cause such severe pain, so I think it is a preferable preparation. There are various other fluids recommended for injection into hydroceles. All of them, however, are inferior to iodine and carbolic acid, and carbolic acid is, I believe, superior to any. Before leaving the subject of the injection treatment, I may mention that the Indian medical officers especially have had good success with it, and that in certain cases it may with advantage be tried. For large old thick hydroceles I doubt its advantage.

The method of treatment which most modern surgeons perhaps advise for hydrocele is the radical cure by operation. It is an excellent proceeding in boys or young men who have to enter the services of the army and navy. If the radical cure by excision of the sac is performed it necessitates resting in bed or on the sofa for upwards of a

fortnight or three weeks; but it is a method I always like to adopt, because of its certainty to cure the patient. The operation is done in various ways. The first is the simple incision method. The hydrocele is incised, and the interior of the sac is lightly rubbed over with carbolic acid with a strength of one in ten; a drainage-tube is then put in, and the incision sewn up. This is a good method for small hydroceles in boys. I do not care for it when the sac is large.

Then there is the method of excision of the sac, which is the course I myself prefer, as being the most certain. The sac of the hydrocele is exposed, and a considerable portion of the parietal layer of the tunica vaginalis is cut away with sharp-pointed scissors. The remaining portion, which covers the front of the testis, is lightly touched over with one in ten carbolic acid, or with a solution of nitrate of silver, twenty grains to the ounce; a drainage-tube is put in, and the parts sewn together. The tube is withdrawn in twenty-four hours, and the part carefully dressed and elevated. A certain amount of inflammatory epididymitis will ensue. Especial care must be taken in replacing the organ in the scrotum that the cord is not twisted. This is easy enough to do, and it may lead to very unpleasant after-consequences. In both these procedures the strictest asepsis must be maintained in the dressing, and elevation of the part must be carried out carefully. An important precaution is to be on your guard against secondary hæmorrhage. You know that in a big hydrocele the little vessels are very much stretched by the pressure of the fluid, and are diminished in calibre. As soon as the fluid is let out the vessels become engorged. Sometimes a little artery or vein will bleed very persistently into the loose scrotal tissues in these cases. You must patiently tie every single bleeding point before you unite the wound, and send the patient back to bed, using ligatures of the finest catgut. If this is not done you may have troublesome secondary hæmorrhage into the scrotum, which becomes "blown up" and

bluish in colour. Quite lately another operation has been practised—namely, inversion of the tunica. After incising, the sac is turned inside out, so that its serous surface becomes external. The results are said to be excellent. It is an operation I have not yet personally tried, and in the case of a large or thick sac I should think the excision method is preferable.

Such are the principal modes of carrying out the radical cure of an ordinary hydrocele of the tunica vaginalis.

I must now say a word about a very important practical matter—namely, the treatment of hydroceles in little children. Male infants sometimes get hydroceles like their seniors, and the greatest alarm is manifested by the anxious female relatives. I fear what you see in the out-patient department gives you little idea of the anxiety and trouble manifested about a simple hydrocele in the first-born of an important family. Remember that the symptoms of hydrocele in a baby are exactly the same as those in the adult. You observe a little pear-shaped swelling, which is readily translucent, light showing through it as a red glare. One of the first things you have to determine is whether the swelling is a congenital hydrocele, and if the fluid can be reduced into the abdominal cavity. Having ascertained this is not the case, and that the swelling is an ordinary common hydrocele, how are you to treat it? I want to dwell upon this part of the subject, because I find medical students generally have an idea that the hydrocele of a baby boy can be treated in the same way as that of an adult. The answer one generally gets in examinations to this question is that the hydrocele of a baby may be injected with carbolic acid or iodine. Now if you inject iodine or carbolic acid into the hydrocele of a little child, the scrotum will inflame and may possibly slough, and the life of the infant may be endangered. This is not a fanciful danger. The mistake has been made in practice, and I know of one most unfortunate case where great trouble ensued both to the little patient and the reputation of the doctor!

How, then, are you to treat these swellings in the young? In the first place, the ordinary hydrocele of infants will not infrequently go away if it is left alone. This will seldom satisfy the parents; they demand some active treatment. The first measure to adopt is to paint the outside of the scrotum persistently with a slightly irritating lotion, such as chloride of ammonium. I use a strong solution, a saturated solution of the drug in rectified spirit and water. I am under the impression that this remedy really cures very few of these cases, but it is harmless. I have seen it succeed, but I have been uncertain whether the hydrocele would not have subsided without it.

The next method is acupuncture. The scrotum is made tense, and a fine, sharp needle is passed into the hydrocele in various situations; the fluid exudes in drops and passes into the cellular tissue. This method is advocated in the text-books. I may tell you it is not a certain cure. I have for a number of years practised this operation, and always with success until last year, when I had two cases in which the fluid returned, much to the disappointment of the parents. It shows us how increased experience is apt to falsify any one "certain" remedy or panacea for disease. Therefore recollect that acupuncture, though a good method, may sometimes fail you. Were I called in to-morrow to a large hydrocele in an infant, especially if it had resisted other treatment, I should incise it. You have only to let out the fluid and rub the interior of the sac with a solution of nitrate of silver, 10 grains to the ounce, or 1 in 20 carbolic acid. This may be done by dipping the end of a probe into the "irritant" and passing it lightly over the surface of the tunica vaginalis. A small piece of gauze is inserted for the first twenty-four hours. If the sac is very large you can excise a portion of the parietal layer, just as in the adult. The most careful asepsis must be maintained. This is practically very difficult. I employ soaking in a warm boric bath very constantly in these cases. There is another point

about hydroceles in infants; it is as follows:—In certain hydroceles in little babies the sac goes a long way up into the inguinal canal, distending it and simulating hernia. This is due to failure of obliteration of the lower part of the funicular process. This variety is called infantile hydrocele. A mere septum may separate the fluid from the abdominal cavity, and careful examination is needful for you to assure yourself that the rupture is not really of the congenital variety, and that the fluid cannot be pressed slowly into the belly.

So much for ordinary common hydroceles in adults and in children, and their radical cure. Now we must go on to say a word or two about a form of hydrocele which occurs generally in adults, so-called encysted hydrocele of the testis, or, more properly, the epididymis. You see from the diagram that the testis is below, and if the hydrocele is of very large size the testis may be altogether in front and below, the scrotum presenting a peculiar appearance. These encysted hydroceles of the epididymis are said to have their origin in dilatation of some of the fœtal tubules which are found in that neighbourhood. The cysts do not, as a rule, attain to large dimensions. You find them about the size of a hazel-nut or a walnut. They are tightly distended with fluid, and often mistaken by students for solid swellings; indeed, the sensation to the hand is exactly like a double testicle. Whenever you find what seems to be a double testicle on one side you may be sure the case will turn out to be an encysted hydrocele; and when you manage the light properly you will be able to see that the supposed solid tumour is translucent. These remarkable swellings contain perfectly clear fluid, which is non-albuminous, and a large amount of phosphates and carbonates. On the addition of nitric acid effervescence occurs. But inasmuch as a seminal tubule frequently ruptures into them, they become full of spermatozoa, which may give them a milky appearance and spoil their translucency. Then the fluid, of course, becomes albuminous. The walls of these cysts may also

be thickened, and this prevents translucency, and the exploratory incision may be needful to establish a certain diagnosis.

They are treated in the same way as other hydroceles—namely, by injection, or radical cure by laying them open. Owing to their close connection with the epididymis, the cutting away of a portion of the sac is, in my judgment, far the best method to adopt.

Now we must consider the treatment of congenital hydrocele, which is found in boys and young children, where the fluid can be reduced into the abdominal cavity. When the child cries the fluid comes back again, very like a hernia. The extreme translucency will tell you that you have a hydrocele to deal with, and the sensation of reduction is very different from that of a hernia, "gurgling" being always absent. At the beginning I pointed out to you how risky it would be to inject these swellings, for the fluid might find its way into the peritoneal cavity and set up grave inflammation. It is difficult for me to advise you regarding the treatment of congenital hydrocele. Great difference of opinion exists. Many surgeons recommend a truss, and state that the pressure of the pad obliterates the opening. This is always a dubious and tedious method. I think it far better to perform an operation like that for radical cure of hernia, tying the neck of the sac high up and sewing together the pillars of the ring. I make the incision longer and lower down, and at the same time excise the front wall of the sac.

Finally, I will make some remarks about complicated cases of hydrocele. First the combination of hydrocele with enlarged testis, so-called hydrosarcocele. This is often a very puzzling condition to students in a clinical examination. Hydrosarcocele is differentiated at once from hydrocele by the fact that when you lift the swelling up you find it extremely heavy, and when you begin to palpate it your fingers will displace fluid and come down with a sudden impact upon the solid mass inside. The sensation is very similar to what is probably familiar to

you in the medical wards in the case of dropsy with a cancer or cirrhosis of the liver. As you displace the ascitic fluid your finger will suddenly come upon the hard liver beneath. Hydrosarcocele may be non-translucent, except to a very limited degree in front. In the great majority of cases these sarcoceles are syphilitic, and are often bilateral. And the hydroceles may take very irregular form, being, indeed, mere collections of fluid limited by adhesions and false membrane. You may find hydrocele associated with tuberculous disease of the testis. The hydrocele effusion is often very acute, and you may take this important clinical hint from me, that if a young man comes to you with hydrocele which he assures you is painful and has formed within a month or six weeks, it is almost always sure to be due to some disease of the testicle. Always tap such hydroceles, and carefully palpate the testicle before giving a complete opinion or prognosis. On several occasions, after tapping in such cases as I am alluding to, I have felt the peculiar nodular enlargement of the epididymis so significant of early tuberculous disease. In certain exceptional cases you get large collections of fluid surrounding malignant disease of the testicle, and the fluid may be bloody. Incision will clear the diagnosis up. Again, old men who use the catheter often get chronic epididymis and orchitis, and this condition may be associated with hydrocele.

In the treatment of hydrosarcoceles there is no objection to tapping if you do not wound the enlarged testis inside. The patient will be considerably relieved by the withdrawal of the fluid. It is not much good doing anything else until the testicle is radically treated. After drawing off the fluid with a fine trocar, if it is syphilitic, you strap the part with blue ointment and give iodide of potassium internally. In hydrosarcocele, when the testis is tuberculous, you remove at the same time the disease which causes it, and that cures the whole condition.

In old hæmatocele the consistence and shape of the swelling may be exactly like an ancient hydrocele. The

patient may or may not tell you he has had a blow in that region; but it is a very important fact that many hæmatoceles are manufactured out of old hydroceles,—that is to say that the gentleman who taps the hydrocele wounds the front of the testicle, or runs his trocar into a little vessel, and from that blood trickles slowly into the sac of the tunica vaginalis and gradually distends it. Thus what was formerly a hydrocele becomes converted into a hæmatocele. You will be quite safe in telling an examiner that it is impossible to diagnose between an old hæmatocele and an old hydrocele with thick walls except by an exploratory incision. When you incise it and you find thickened walls and altered blood and cholesterin, you cure the patient at the same time that you arrive at a diagnosis. I know that at examinations these cases give rise to trouble. The students cannot see through the swelling, and become confused, and the refuge of exploratory incision is not enough present to their minds.

The history of sarcoma of the testis will be very different to that I have just related. Here there is a progressively increasing swelling, which has probably dated from six months to twelve months before, and it will be non-translucent. The story of a blow or "squeeze" is common enough. In addition, the veins over the scrotum are markedly enlarged, and there are frequently nodules of growth in the cord, and to the hand the swelling is very heavy, and as soon as incision is made into it the nature of the growth is determined.

That is practically all I have time to say to-day about hydroceles. My final word is for examination purposes. Remember that hydroceles are the common affections which produce scrotal swellings. You must not mistake them for solid tumours because they are hard and heavy. A hydrocele which is very much distended with fluid feels like a solid swelling. If you use your eyes and notice the shape of the swelling, this always tells you what you have to deal with, and many of your difficulties of diagnosis will vanish.

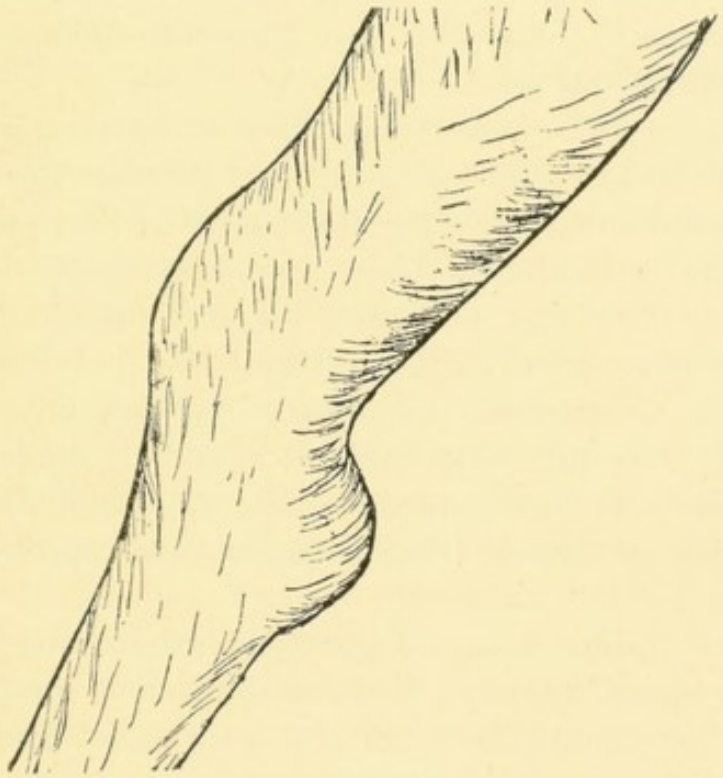
TREATMENT BY EXCISION OF BURSAL CYSTS IN CONNECTION WITH THE KNEE-JOINT.

In general terms it may be stated that bursal formations about the knee are met with in the following situations :— (1) Over the lower part of the front of the patella and its ligament ; (2) beneath the ligamentum patellæ ; (3) on the inner aspect of the tibia in connection with the insertions of the hamstring tendons ; (4) beneath the quadriceps extensor muscle. Of this group, though often enlarged, I do not propose to write. It is in the ham towards the inner or outer aspect that these formations give the greatest trouble in treatment, though, as a rule, their diagnosis is tolerably simple. Opinions differ as to which of the popliteal bursæ is most frequently affected. Usually the enlargement affects one of the inner group. The practical consideration remains that any one of them may be enlarged, or, indeed, several may be simultaneously affected. Frequently found in arthritis of the joint of the so-called "rheumatic" variety, these swellings are also met with in conditions in which the joint moves readily and painlessly, without creaking and other signs of articular degeneration. In a minority of cases signs of ataxia will be found. Huge cysts, filled with synovial fluid and "melon seed" bodies, may be found near the knee, shoulder, or hip in the arthritis of tabes. The slow formation, painlessness on manipulation, the elastic feeling, the tendency to reduction into the joint on bending the limb, are all well-known and classical signs. As regards the reduction into the articulation, this may be so

free that fluctuation is obtainable from the cyst into the joint, which can plainly be felt to distend in the fluid on pressing upon the cyst.

On the other hand, it may be commonly enough noted that the bursal formation occupies a situation quite apart from any constant anatomical position. One of these peculiar examples is the upper part of the calf, the centre, the inner, or the outer aspect. It is difficult to believe, at first sight, that a fluctuating swelling in the calf of the leg may be a bursa connected with the knee-joint. The

Fig. 16.



temptation to assume that the swelling may be chronic abscess is great. A "lancet" is introduced, some turbid synovial fluid escapes, and the incautious operator is confronted the next day by a violent inflammation of the knee-joint; he is fortunate if the case does not end in amputation. That this is no fanciful sketch may be proved from the disastrous case quoted in Mr. Morrant Baker's classical article in vol. xiii of the 'St. Bartholomew's Hospital Reports.' A similar case happened at St.

George's Hospital many years ago, and the accompanying rough sketch was taken from it. The patient was a soldier, and the swelling was explored outside the hospital by the introduction of a grooved needle. In this case destruction of the knee also ensued. Indeed, the exploration of swellings near a joint by the grooved needle is now hardly justifiable. In a doubtful case, if tapping be resorted to, a fine aspirating syringe should be used. The skin, as a preliminary, must be rendered aseptic by prolonged scrubbing with soap and water and the application of a spirituous solution of 1 in 500 biniodide of mercury. The needle and barrel of the apparatus must be scrupulously clean, the tiny puncture being at once closed with collodion.[1]

Nothing is more uncertain in my experience regarding these cysts in the popliteal space or ham than the evidence of their communication with the cavity of the joint. On flexing the articulation they may apparently lessen or disappear. Yet this may not be real, and often the rounded contour of the cyst may still be felt lying deep in the tissues on careful palpation. So, too, a cyst which apparently does not reduce at all may be connected with the joint by a devious and narrow track, which is not the less capable of transmitting a septic inflammation to the interior.

It is, I think, a sound practical rule to observe that, surgically speaking, any of these cysts may communicate with the joint, and they should be treated accordingly with elaborate care and circumspection.

The following plans of treatment have been adopted in these cases:

1. Blistering and pressure.
2. Tapping with or without injections of iodine or Morton's fluid.
3. Removal.

[1] The late Mr. Greig Smith aptly compared aspiration, as too often carelessly done, to the introduction of pyogenic organisms into a cultivation medium.

Regarding such measures as freely opening and stuffing the cyst, the passage of setons and the like, they are obsolete and dangerous, and should not ever be employed.

The first measure is devoid of risk, but is seldom soundly curative. It may be adopted when the cyst is not very tense, and especially when relief, rather than cure, is aimed at. It may be remarked that the blistering should be severe; the ordinary pharmacopœial blisters are in my judgment far too mild for good effects.

If vesicating collodion is made up of double the ordinary strength, it is a good and reliable preparation. After the blistering, methodical pressure should be employed by means of elastic bandage.

In 1895 an elderly gentleman was brought to me by Dr. Norton, of Queen Anne's Mansions. He had chronic arthritis of one knee, and a large, rather flaccid tumour in the lower part of the popliteal space. The whole articulation was the seat of aching and tenderness. The swelling obviously contained fluid, but could not be reduced into the knee-joint. The part was severely blistered, and afterwards pressure was steadily employed. The iodides of sodium and potassium were administered internally. Under this treatment the bursa gradually shrank, and finally became insignificant in size, giving rise to no further trouble, and the joint symptoms greatly improved.

I have seen tapping and injection of iodine resorted to with success. I have also seen it fail, and I have witnessed severe synovitis of the knee follow this treatment on more than one occasion. The objections to the injection are the many uncertainties which surround it. If the communication with the joint be very free, one can hardly expect cure. For these reasons injection is not to be advised unless the patient should strongly object to any more definite operation. Here, again, it may be pointed out that the syringe should never have been used for exploring abscess or serous effusions. Too often, far too often, the same syringe is employed for injection of chemical agents and withdrawal of animal fluids. Some of the latter hang

about the barrel of the syringe, and becoming putrid, are actually injected into the healthy tissues. The carelessness of dressers and some surgeons and practitioners regarding this vital point necessitates my calling forcible attention to it.

It commonly happens that with very tense or thick-walled cysts blistering is of little avail, or the relief given is only temporary; and the question arises, what next shall be done? In persons who lead an active life as sportsmen, officers, sailors, and those who need to use the lower limbs much in riding, walking, or athletics, cure is essential. Increase of secretion within the bursa leads to aching and pain, and there is often a sense of pain, weakness, and strange insecurity about the joint, which is out of proportion to the size of the bursa. The sense of pain and aching is especially increased on exertion, so that the sufferers may be quite incapacitated for any active life.

The operation of aseptic excision, if carefully done, is free from risk, and the results are generally more satisfactory. It is an operation by no means easy to perform well, owing to the extremely thin nature of the parietes of the cyst and the difficulty of extirpation should the cyst be opened before its capsule is properly isolated. Having experienced these difficulties personally, I will now describe the operation I have found most advantageous in these cases.

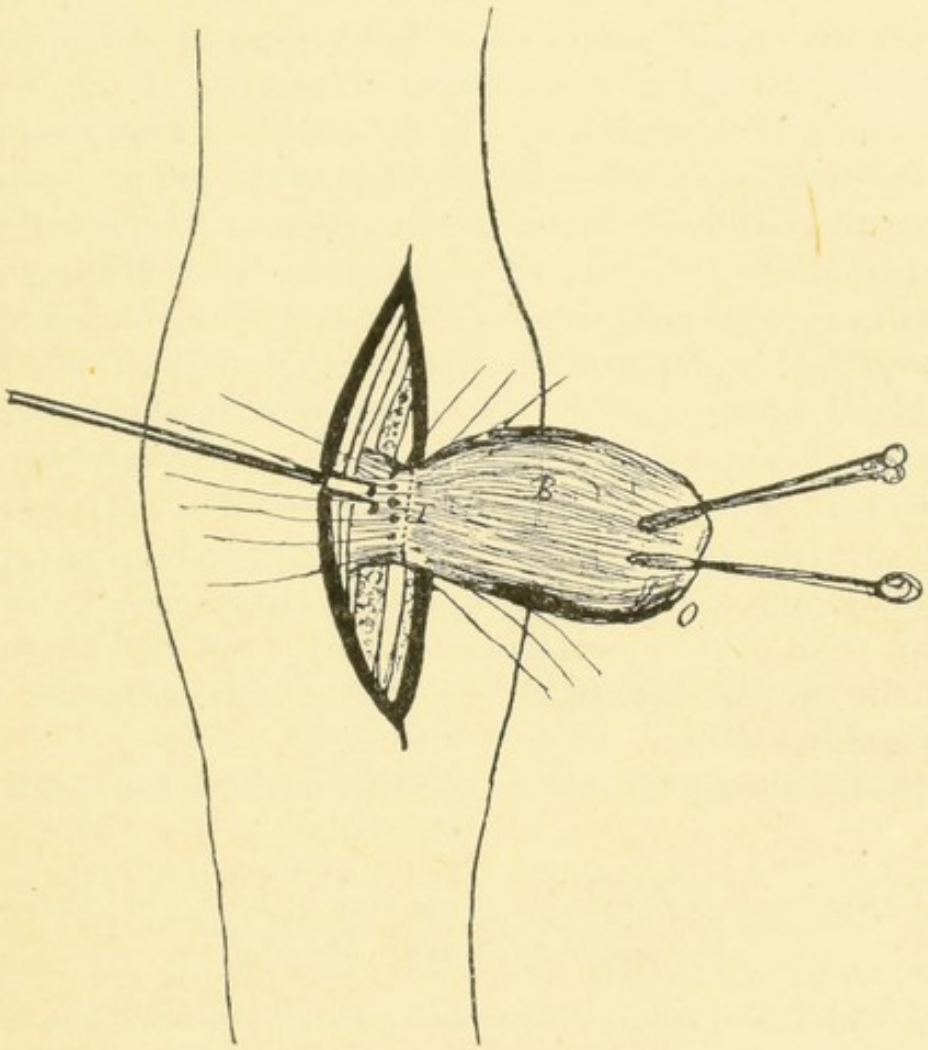
Twenty-four hours is given to the preparation of the skin. The parts are first washed with ether, and then scrubbed with hot soap and water. This is followed by the application of a spirituous solution of biniodide of mercury, 1 in 500. The morning of the operation, the parts are again bathed with the biniodide and enveloped in a dressing of cyanide gauze. The instruments are boiled and placed in a solution of 1 in 20 carbolic lotion. The hands and nails of the operator and assistant are scrupulously cleaned in the usual manner.

The parts are rendered bloodless by Esmarch's method, but a boiled bandage soaked in 1 in 20 carbolic is used

instead of the usual elastic bandage, which is very apt to be soiled with dust or filth.

An incision is made over the swelling, and this is deepened until the actual capsule is exposed. The capsule is covered with numerous fibrous laminæ, and if these be mistaken for the cyst itself the operation is very tedious, and the dissection is apt to lead into dangerous regions.

Fig. 17.



With the spring forceps the laminæ can easily be dissected away, and the true capsule of the cyst springs forward, and is known by its clear translucent appearance. The contained fluid can be readily seen. The utmost pains should be taken to expose the actual capsule and not to open the cyst itself. Now with a blunt separator the

cyst should be shelled out as far as possible. It readily separates as a rule, if the superficial incisions have been made free enough to reach its limits. Having enucleated as far as possible, a small incision is made at the summit and the contents evacuated.

Two pairs of pressure-forceps are now placed upon the collapsed sac, and it is drawn out, the separator being again used to free the irregular projection of the sac from surrounding parts. It will usually be found that a neck or process of the bursa passes deeply among the tendons towards the joint. A series of sutures of the finest chromic catgut, soaked in 1 in 20 carbolic lotion, are now passed, and when these are in position the sac is removed by cutting with scissors in the direction of the dotted line in the diagram. A little iodoform is dusted in, the sutures rapidly tied and cut off, and thus the communication with the joint is at once permanently closed.

The wound is united. No drainage is employed, and a dressing is applied with firm pressure. A splint may be worn for the first three days. The results of this operation are very satisfactory, and it may well be applied to other joints than the knee where bursal enlargements exist. No novelty is claimed for the operation of excision, but the present method is one that greatly simplifies the proceeding.

The following cases illustrate this mode of treatment:

1. *Large synovial cyst on inner side of knee; no obvious communication with the joint.*

A labourer, aged 48, was treated in St. George's Hospital in August, 1895, for an affection of the left knee. The articulation was weak and painful, especially after work or in wet weather. He stated that a swelling had existed over the inner side of the joint five years ago, but gradually lessened in size. Twelve months ago the swelling again enlarged, and in using the shovel he constantly rubbed it against the painful lump.

The patient was a healthy-looking man. The knee-joint moved well. There was no excess of fluid, but slight creaking or grating on movement. Over the inner side of the right knee, near the insertion of the sartorius, a swelling existed the size of a lemon. The notes by Mr. Baldwin, then registrar, state that there was no evidence of communication with the joint, the swelling being quite irreducible, but elastic and obviously containing fluid. On August 23rd I operated after the manner above described. The cyst was filled with jelly-like fluid. The saphenous nerve was stretched over it. A prolongation of it, the size and shape of an ordinary varicose vein, ran deeply round into the ham beneath the semi-tendinosus. I have little doubt that this channel communicated with the joint, but did not "probe," or otherwise examine to make the point certain. Fourteen days after operation the wound was soundly healed, and the patient could move his knee. He had lost all pain and tenderness.

2. *Two cysts near the knee associated with chronic arthritis of the articulation; excision; cure.*

A labourer, aged 41, injured his right knee five years ago. He was treated as an out-patient at St. George's Hospital, but his knee never got quite well. Swelling and pain occasionally occurred ever since.

On examination there was obvious arthritis of the right knee. It creaked and grated on movement, and the margins of the articular ends were thickened and lipped. On the outer side of the joint, near the head of the fibula, was a tense, elastic cyst of elongated form, the size of a man's thumb. It closely resembled a large pouched varicose vein. This had existed for nine months. On the inner side of the popliteal space was a second cyst about the size of a small orange. This obviously communicated with the joint, being easily reducible. At the operation, on August 20th, the external cyst had a narrow sinuous

neck which passed deeply beneath the biceps tendon and was there sutured. The posterior and internal cyst freely communicated with the joint by a pouch-like opening. Both cysts contained slightly turbid synovial fluid. The wounds rapidly healed. Three weeks afterwards the patient could walk easily and well.

3. *Large cyst near the head of the fibula; excision; recovery.*

A gardener, aged 40, had a swelling near the head of the fibula for about four years. It had become gradually increased, and so tender and painful he could not work or use the limb.

On examination there was no grating or creaking of the joint. To the inner side of the head of the fibula was a large, tense, elastic cyst, very irregular in outline, for it also bulged anteriorly in front of the insertion of the biceps tendon. On flexing the knee and making pressure, the cyst obviously lessened in size. At the operation the bursa was found to pass very deeply into the popliteal space; numerous lobe-like prolongations of it were enucleated, and a broad neck seemed to pass deeply in the direction of the popliteus tendon. The real depth of the cyst disclosed at the operation was in striking contrast to its apparently superficial situation. The neck was sutured, and uninterrupted convalescence followed. In this case the patient rapidly gained the use of his leg. I have since operated upon three other cases with good results. One of the cysts was of very large size. There was nothing unusual in the progress of the cases. They made an easy recovery.

In conclusion I wish to point out that removal of bursal cysts from the neighbourhood of any large joint, as the knee or elbow, are not simple operations. They are associated with the inevitable risk of sepsis, and the responsibility of the operator is very great. Occasional disasters occur to operators of the greatest care and

experience in the surgery of the knee. This teaches us two things—firstly, that the perfect technique of an aseptic operation can only be acquired by very scrupulous care; secondly, that the doctrine of auto-infection has perhaps more to do with the failures of aseptic cases than is generally believed.

When we know that a blow upon a bone of a young lad may be followed by acute infective periostitis, it is rational to assume that an operation might in such an individual result in pyogenic inflammation, though performed in quite an aseptic manner. For these reasons, it is well before operating upon a popliteal bursa to correct any faulty method of dietary or living on the part of the patient, especially alcoholism. If the parts are inflamed already, as by a careless puncture or injection, the operation ought certainly to be postponed.

ULCERS OF THE TONGUE.[1]

THERE was a patient in Fitzwilliam Ward about a month ago who had half of the tongue removed for epithelioma. Some of you may remember the case. At all events I thought the notes would prove a useful text for the consideration of a very important subject—the different sores which occur on the tongue, and their differential diagnosis and principles of treatment. When speaking of sores on the tongue I would include the whole of the organ, the sides and the floor of the mouth ; in fact, the neighbouring parts in immediate contact and relation with the tongue itself. There are a large number of ulcers which may affect the tongue : some of them are of secondary importance, I mean in so far as regards their power to destroy life ; others are carcinomatous, one of the most serious and dreaded diseases which can afflict humanity.

Now I suppose that if I were to consider and classify ulcers of the tongue in order of frequency, the first variety I should bring before your notice would be the lesions of syphilis affecting that organ. Syphilis affects the tongue very variously, far more so perhaps than books would lead you to expect. The first variety of syphilis of the tongue is the primary sore, the so-called Hunterian chancre. It is rarely ever seen in this country, and is of minor importance. I can only recollect to have seen one case. But when primary syphilis does affect the tongue it is marked by the usual characteristics of a rapidly forming sore of peculiar appearance, with enormous swelling and indurated

[1] A clinical lecture delivered at St. George's Hospital, June 10th, 1902.

glands under the jaw, with a copious dusky rash upon the skin. You will probably never see a case of the kind.

The other varieties of syphilis affecting the tongue are found in all stages of the disease, and, indeed, a bad syphilitic tongue may last a patient his lifetime—sometimes better, sometimes worse, never quite sound and well. Syphilis is often found to affect the tongue about three to six months after infection, when the rash is fading upon the body, and when infectious "mucous patches" are so frequently found around the anal orifice. The great characteristic of secondary syphilis affecting the tongue is the formation of white patches of epithelium, with small superficial ulcers, always made worse by rough and jagged teeth. The friction of the tongue against rough teeth leaves painful excoriations on the organ, and these eventually give rise to ulcers. Early syphilitic ulcers are almost invariably multiple, and are found especially on the side of the tongue. They are commonly associated with ulcers on the side of the mouth, the tonsils, fauces, or soft palate. You will observe in all these ulcers the same characteristic —the epithelium is thickened and white in patches. In fact, I might say that you never get syphilis affecting the tongue without the epithelium being thickened and diseased; it is one of the great characteristics of the malady.

In the later stages of syphilis comes another variety of lingual disease, the so-called gummatous disease of the tongue, common, and often very difficult to diagnose from cancer. As regards gummatous disease of the tongue, it may occur very many years after the primary infection. The latter may be completely forgotten, and the patient often is a man of undoubted respectability, whose social position may seem to defy your diagnosis. This form of disease of the tongue usually commences as a hardish, painful lump in the substance of the organ—I am speaking of a typical case,—and afterwards disintegrates, forming a deep ulcer, the base of which is "foul" and sloughing. But the edges, the base, and surrounding parts lack the excessive hardness which is so characteristic of cancer.

Here, again, the epithelium in the neighbourhood of the ulceration is seldom or ever healthy; you almost invariably find whitish patches and deep fissures, and these signs point out quite clearly the true origin of the malady. I have never seen a case of syphilis of the tongue with healthy surrounding surface. I look upon the thickened white epithelium with cracks and fissures as one of the most important diagnostic features of syphilis of the tongue. The presence of scars of healed ulcers on the tongue or throat is significant, and the parts should be narrowly scanned under a good light. You will often read that gummatous disease of the tongue first attacks the centre of the organ. This is true, but the situations of ulcers of the tongue are absolutely no certain guide as to their true nature. A deep syphilitic ulcer may occur in any part of the organ.

In all these various affections the question of history is often one of great importance. But when the ulcers occur, as such affections do, in persons of the upper class and in all positions of life, you must be guided by what you observe on the tongue more than by anything the patient will tell you; because a man of undoubted probity may have suffered from syphilis early in life, and may absolutely have forgotten that he ever had anything of the kind the matter with him. Be guided, therefore, far more by what you see than by what you hear.

These are some of the main diagnostic characteristics of syphilis of the tongue. I must just mention that very often cases occur which are extremely difficult to diagnose, especially cases of gummatous ulceration, even though you try the microscopical test or apply the treatment for syphilis and await results. As regards the microscopical test, I advise you at once to disregard all statements made as to the appearance of "scrapings" of these ulcers. It used to be the custom to scrape the base of the ulcer, and some people pretended that they could recognise so-called cancer-cells. But this test is quite unreliable. Perhaps a better mode is to take out a small portion of the edge of

the sore under cocaine, and examine it under the microscope; but even then the appearances are often exceedingly obscure and vague. The changes which occur in epithelium in chronic inflammation at the borders of old ulcers are closely akin to epithelioma, and difficult, if not impossible, to differentiate. Therefore the microscopical test does not give you the help that you would expect. As regards the treatment test by iodides, it is of some value, but I think should seldom be persevered in for more than three weeks. A truly syphilitic case will show manifest improvement in that time. So much, then, for the syphilitic ulcers of the tongue.

And finally remember that syphilis is so frequent a cause of ulcers of the tongue that you must ever think of it, even in the most unlikely individuals, when such cases are presented to your notice. Syphilis is a strange disease, and curious stories concerning it occur in human lives. A man or woman in any station of life may have syphilis, and it may affect the tongue or it may not. I speak strongly with regard to this clinical fact, but not too strongly.

I will next speak of that variety of ulcers of the tongue generally described in books by the name of dyspeptic, or aphthous, or herpetic. Perhaps the most appropriate name is "dyspeptic." As regards these ulcers, even now the true pathology of them is hardly understood. In people who are out of health, very much run down, overworked, and suffering from chronic indigestion, it frequently happens that small, multiple, painful ulcers form on the tongue, resembling very much herpetic ulcers on the skin. They are excessively tender, far more so than syphilitic ulcers. I have seen several cases which I believe support the idea that these ulcers are really due to contagion. You know it is very common for people to get small ulcers on the lips. A little herpetic rash forms on the lips, and it afterwards scabs. I have seen several cases which lead me to believe that these so-called "dyspeptic" ulcers of the tongue are really produced by contagion from one person to another in the act of kissing. The great

diagnostic sign of these ulcers are their multiplicity, their rapid formation, and extreme painfulness. They are very small, seldom larger than a No. 1 shot.

I pass on to a form of lingual ulcer which is of surpassing importance, because it is so often overlooked in practice—I mean the traumatic ulcer of the tongue. Nothing is more frequent than for an ulcer of the tongue to form from injury, and that injury is almost invariably produced by a "jagged" tooth when part of it has been broken off, and the tongue is perpetually abraded by the rough edge. A badly fitting tooth-plate is as serious. This injury may develop into an ulcer so like cancer that it is very difficult to diagnose between the two conditions. In elderly people such ulcers, if neglected, almost invariably become cancers. Rarer forms of traumatic ulcers of the tongue are those produced by scalds from hot fluid, or wounds from pieces of fish-bone and the like, which have injured the tongue. The burning and friction caused by the stem of a clay pipe may act in the same injurious manner. A characteristic of these ulcers is their position at the side of the tongue, and the detection of the exciting cause. The extraction of a rough tooth may cause the rapid healing of a very dangerous-looking ulcer. Never irritate such sores by rubbing them with caustics. This treatment only precipitates the danger of cancer. It is the worst thing you can do.

To complete this subject I will very briefly speak to you of two cases which came under my own personal observation within the last two years. One was that of the wife of a gamekeeper down in the country, quite a young woman, under thirty years of age, who had at the back of the tongue a sore which had been produced by constant friction of the tongue against a rotten, jagged, molar tooth. She showed the sore to a medical man in the neighbourhood, and he did what is, alas! a very common thing to do in such cases—the jagged tooth was left, and the sore rubbed with caustics. This went on for some six months or so, and in the meantime a rapidly growing cancer formed in

the site of the ulcer. I went to see this unhappy woman, and found the root of her tongue infiltrated with cancer. I could do nothing in the operative way, and she had to die a miserable death. Large doses of morphia were administered in order to render her unconscious to pain. This is only an example of many sad cases which occur as the result of an absolute want of knowledge in not extracting a rough tooth which rubs upon the tongue. As a contrast to this case, in Princess Ward about two months ago there was an old woman who came in with a hard, indurated mass at the side of the jaw and tongue which looked exactly like epithelioma. We noticed that she had a jagged tooth rubbing the parts, and we decided to extract this before doing an operation, which would have necessitated the removal of a portion of the jaw. The tooth was taken out, and within a month the whole ulcer had healed and the induration disappeared. The mass was inflammatory, not cancerous. Such a case shows strikingly the beneficent action which sometimes influences these ulcers by the extraction of an offending tooth. I trust you will for ever remember these cases, and never fall into the dangerous errors I have thus plainly indicated.

I am putting off the all-important subject of cancer to the last, and I will next shortly allude to some rare ulcerations of the tongue and its neighbourhood.

1. You know of the disease called pemphigus, where large blebs form over the body. You may get in this disease the same kind of action occurring in the mouth and under the tongue, and on the conjunctiva. The blebs under the tongue may be associated with painful ulcers. When the eruption on the body is large and associated with enormous crust formation and intractable ulceration, and the same action occurs on the tongue or in the air-passages, the prognosis is most serious.

2. In association with this subject, old feeble persons sometimes get very painful sloughing ulcers under the tongue. One cannot explain their occurrence, and they are most difficult to cure.

3. Next comes tuberculous ulcer of the tongue. I do not recollect having seen more than two or three instances of this malady. The ulcer is very characteristic in appearance, just like a tuberculous ulcer elsewhere, with a ragged margin and a yellow caseous discharge; such ulcers are generally found in people in the advanced stages of tuberculosis. You may find these ulcers in an emaciated patient, with cavities in the lungs, loss of voice, and, perhaps, tuberculous larynx.

I must take up your time for a brief space to discuss the hæmorrhagic ulcer of the tongue. This is an exceedingly rare disease, and a very fatal one. It receives little notice from authors. I myself have seen three instances, in each of which the disease ran a similar course. The ulcers occurred under the tongue, and spread slowly despite all remedies. Blood constantly oozed, notwithstanding the use of all sorts of astringents. The ulcer was covered with flabby granulations of a deep livid-blue colour, from which blood constantly flowed away. This disease is associated with some bad and acute form of sepsis. All these three patients died in the same way—they got hæmorrhagic eruptions all over the skin, with high fever, and died in a condition of acute sepsis. The integument became sallow and jaundiced, and post-mortem putrefaction set in with such rapidity that the whole body crackled with gas within a few hours of death. These cases are excessively rare, but you will remember in your future practice that if ever you get a patient with a hæmorrhagic ulcer on the tongue, and it begins to bleed, and the bleeding continues despite all remedies, the case is of the utmost gravity and danger. The sooner you have the best aid the patient can afford the better for all parties concerned.

The last case of this curious malady which has come under my notice was that of an apparently healthy man about forty-five years of age. He had the best aid London surgery could afford. Nothing checked the bleeding. The patient died in about a week with hæmorrhages all over the skin, and putrefaction was so extreme that within

a few hours the whole body was emphysematous. Was this due to the presence of the *Bacillus septicus?* A bacteriological examination was never made in this case, and the possibility of anthrax occurred to my mind afterwards.

I now pass on to the affections of the tongue which I have put in a special class by themselves, because they are perhaps the most important of all—namely, the cancerous ulcers of the tongue. One of the first things a patient thinks of when he or she gets an ulcer of the tongue is the possibility of cancer. A most dreadful thought! Frequently the patient will put off showing his tongue to a medical man as long as possible in fear of the verdict being confirmed. Now recollect this point about this serious disease. Cancer seldom engrafts itself on a healthy tongue. If there was no excessive smoking, no syphilis, no rough neglected teeth, no ill-fitting tooth-plates, probably there would be little cancer of the tongue. For these reasons, lingual epithelioma is far more common in men then women. Cancer of the tongue being produced by irritation, the exciting causes are principally as follows:—(1) Irritation of the tongue by smoking, especially hot clay pipes, which irritate and burn the organ. (2) Irritation of the tongue by neglected, ill-fitting tooth-plates, or jagged, carious teeth. (3) Irritation of the tongue produced by obstinate chronic syphilitic changes.

Cancer of the tongue is usually a disease of late life. There are exceptions to all rules. Sometimes cases will occur in quite young men of thirty to thirty-five years old. Instances have been seen in this hospital in men of under thirty, and the disease runs such a virulent course at that age that it is often not worth while interfering surgically.

Diagnosis of cancer of the tongue may be easy enough or may be exceedingly difficult. In a typical case the ulcer occurs generally towards the side of the tongue; the edges of the ulcer are hard, indurated, and "gristly," as can be well perceived by gently pressing the pulpy portion of the index finger upon them. The disease is associated

with severe shooting pains in the nerves which supply the tongue; reflex pains in the distribution of the fifth nerve, about the jaw, and in the auditory canal are common.

The tongue is prone early to become fixed in the floor of the mouth, the cancerous infiltration extending into the muscles. Next the glands under the jaw and in the neck are very early enlarged and infiltrated. The extreme hardness of the edges of the ulcer is very characteristic, and the base may be covered with granulations and slough.

There is another variety of epithelioma that I must draw your attention to, and it is of importance because of its greater amenity to treatment. I mean papillomatous or "warty" epithelioma of the tongue. This variety is well illustrated by the man in Fitzwilliam Ward, who had at the side of his tongue a heaped-up growth about as large as half a walnut. These cancers are similar to a papillomatous epithelioma that grows on a scar or an old burn on the leg. I have seen precisely similar growths on the glans penis. In the case of the tongue they are commonly engrafted on old, obstinate, syphilitic disease, the epithelium being thick, white, and fissured (leukoplakia). A large number of papillomatous epitheliomata of the tongue, when they are removed, never grow again. The prognosis is much more favourable in this form of the disease than in that other which is associated with rapid and deep infiltration of the organ and the infection of the glands down the neck.

I have spoken regarding the value of the microscopical test in cancer, and caution you not to rely upon the nature of the infiltration-cells as proof positive of that disease. I have also told you that the iodide of potash and mercury test should not be persisted in too long. You will find in practice that occasionally cases will arise, especially in syphilis of the tongue, where an ulcer forms, and where it is next to impossible to be sure whether it is a syphilitic ulcer or epithelioma occurring on a syphilitic basis. In old ulcers of this nature it is far better to remove the ulcer

before it becomes cancerous than afterwards. I cannot impress this clinical truth upon you with too great force. If you are called to a case of obstinate ulceration of the tongue with thickened epithelium, and it resists all remedies, advise that that portion of the tongue be removed before the too probable cancerous infiltration has occurred. It is only, of course, a few sensible patients who will submit to this. As a general rule the ulcer heals under remedies, but breaks down from time to time. At length cancer arises, and then it may be too late. It is an aphorism in surgery that if an irritating sore on the tongue cannot be got rid of by any other treatment, it is far better to remove this potential cancer before further and more serious mischief has occurred. So much, then, for the diagnosis of cancerous ulcerations of the tongue.

Now we will go on to say a few words about the treatment of these affections. First there are general rules regarding the treatment of all ulcerations of the tongue which must be very carefully observed. For want of observation of them I have known treatment repeatedly fail. Rule No. 1 is this:—Pay attention to the teeth. I have already spoken about the ill effect of jagged teeth, and how, when these teeth exist, their edges should be filed or they should be extracted. More than this, it is important that the teeth be daily cleansed with an aseptic mouth-wash. Rule No. 2:—All smoking must be absolutely prohibited. Time after time I have had cases of ulceration of the tongue brought to me by medical men who say, "I have tried this and that remedy, and somehow or other the thing always breaks out again." I say to the patient, "How many cigars do you smoke a day?" "Not many now; I used to smoke six or eight, but the doctor only allows me two at present." That is quite sufficient to arrest the healing of any ulcerated tongue. Not even a cigarette should be allowed. Rule No. 3:—There are certain articles of diet which must be carefully avoided in ulceration of the tongue—mustard, pepper, curry, spirits, especially mustard and pepper; but indeed, any article of

diet which irritates the tongue must be discontinued. Rule No. 4:—In cases where ulceration of the tongue is excessively painful, it is always my practice to give the patient a slate and make him write his wishes, and forbid him to talk in case he may rub the ulcer against his teeth and irritate the part.

How are you to treat syphilitic ulcerations of the tongue—which I have said are so common? The general rules for treating syphilitic ulcers are these:—The patient should be placed under the influence of iodide of potassium, and in gradually increasing doses. The prescriptions and "vehicles" are so numerous that I cannot attempt to describe them here. A mercurial application should be applied to the tongue. One of the best for common purposes is equal parts of the mercury and chalk powder with tragacanth, which is applied as a paste to the part and slowly swallowed off. Calomel fumigation to the affected part is also most useful. There is just one caution here. I do not think it is wise to apply mercurial fumigation if iodide of potassium be taken at the same time. Sometimes an iodide of mercury may form locally, which is rather an irritant.

Another excellent local application in these cases is the cyanide of mercury. Of course it is a very active poison, and is to be carefully used. My own method of applying it, is to make the lotion of ten grains to the ounce with glycerine and water. I apply it myself thoroughly with a brush to the affected parts of the tongue, making the patient keep it on as long as possible, and afterwards rinsing out the mouth with water. I have found in some cases of ulceration of the tongue that sometimes iodides fail to do good, and if so mercury often proves very beneficial, especially if the mercurial is applied by unction, or injected immediately into the muscles of the buttock, a course which I am very fond of adopting. These are only some of the various methods which you can employ in syphilitic ulcerations of the tongue. In cases where cracks and fissures occur with much local thickening of

epithelium, chromic acid or salicylic acid may be used. Chromic acid can be applied, in the proportion of 20 per cent., with a small mop or brush, and salicylic acid in the like proportion. These applications are painful, and must not be too often repeated. In cases where the ulcers are very tender or painful you may combine with any application to the tongue a certain proportion of cocaine, which is often beneficial, especially before the swallowing of food. Such, then, is the treatment that I advise you to adopt in cases of syphilitic ulceration of the tongue. The earlier in the course of the disease the tongue lesions occur, the greater the need of placing the patient on a mercurial course of a prolonged and careful nature.

Next I pass on to the treatment of so-called dyspeptic or aphthous ulceration of the tongue. These cases are often extremely difficult to treat. First, you should bear in mind the general rules already promulgated for treating an ulcer of the tongue. Next, you will find the greatest benefit accrue in these cases in opening the patient's bowels with mild mercurials, by giving the ordinary remedies for dyspepsia, more especially bismuth, and by sedative applications locally. Do not rub the ulcer with caustics. Weak solutions of cocaine may be applied to the mouth before food. Often these troublesome cases are most rapidly improved by attending to the general health. A change of air to the seaside or the country will often cause ulcers to heal which you have been vainly treating in London for many weeks. Chlorate of potash in full doses is also very useful. Finally, remember you must exclude syphilis very carefully before treating a case of ulcer of the tongue as merely "dyspeptic."

As to the painful ulcerations of the tongue which occur in old people, they are very remarkable, and especially on account of their obstinacy to treatment. I do not understand their true pathology, and I know only two remedies which cure them, and those are quinine and opium. In the Medical Society's 'Transactions' you will find a case related by myself, which occurred in Charing Cross

Hospital, where an old man was practically dying with this form of ulcer of the tongue. Every other remedy had been tried without avail. The sores had even been cauterised with fuming nitric acid. Large doses of opium were given, and completely cured the disease. You begin in these cases with either solid opium or laudanum—twenty drops of laudanum three times a day, then add five drops each time after the first day until the pupils thoroughly contract under the opium. As the doses are increased you will find these painful ulcers of the mouth, which have resisted all other treatment, heal as if by magic. In pemphigus with lingual ulcerations you will sometimes find arsenic of great benefit. In one of these cases I have known quinine and opium of benefit.

With regard to tuberculous ulcer, that, of course, needs sedative treatment also. I have treated one such case by the curette and lactic acid, after cocanization, with marked benefit.

I have spoken of hæmorrhagic ulcers of the tongue, and noticed their extreme fatality. I think, if ever such a case were brought under my notice again, I should destroy the ulcer most thoroughly with the actual cautery at a black heat. I believe this treatment would give the patient the best chance of life. A bacteriological examination for anthrax should at once be instituted. These cases are so rare, and I know so little about them, that I can advise you only imperfectly. Among the local astringents are turpentine, adrenalin chloride, and "iron wool;" but all these may prove quite unavailing.

With regard to treatment of cancer of the tongue, we all know that the only remedy is to be found in surgery, and in early surgery. Here comes in the immense importance of the subject to any of you who enter general practice. When a patient in the early stage of carcinoma shows an ulcer or soreness of the tongue or floor of the mouth to the general practitioner, if the latter is a judicious man he will save a great calamity in the patient's family by at once seeking or adopting surgical measures.

If he is a foolish man he will say, "It is nothing," or will rub the sore with "lunar caustic." The patient will be allowed to go on smoking, and thus his destruction is ensured. The successful treatment of these cases depends on their early treatment, and the only treatment is by surgery.

It is often difficult in cases of cancer of the tongue to know whether they ought to be operated upon or not. The greatest differences of opinion exist on these matters. The extent of an operation for cancer of the tongue is often in proportion to the age and sanguine temperament of the operator. The contra-indications for operations, I will tell you briefly, are as follows:—If you get a case where the tongue cannot be protruded from the mouth, it is a bad case; the muscles and floor of the mouth are infiltrated, perhaps to the epiglottis. If the infiltration has extended so far back in the tongue that you cannot get your finger behind it on to soft and healthy tissue, it is a very bad case; it means that if you amputate the diseased part of the tongue you leave cancer elements behind which will soon reproduce the disease. If the disease has extensively invaded the glands of the neck so that you get infiltrated masses fixed to the jaw and pharynx, the outlook is very bad. If the disease is of the acute variety, with rapid ulceration and infiltration of the tissues of the mouth, especially towards the floor of the mouth, and if this condition occurs in a man under forty years of age, the patient will seldom live long, whatever you do by operation.

It comes to this, therefore,—the favourable cases of cancer of the tongue for operation are the hard papillomatous epitheliomata occurring on the side of the tongue, which are slow and chronic in formation where the organ is mobile and can be protruded from the mouth; and the older, the more withered, the more shrunken the patient, the more successful, probably, will be the result of the case.

Indeed, cancer of the tongue follows the rule of growth

of cancers all over the body. Cancers in old people are more chronic than in young, vigorous people. I have seldom seen much good result from treatment of cancer of the tongue in persons under forty years of age; it is generally a very virulent disease, and rapidly kills them.

Supposing you have to operate upon cancer of the tongue, recollect that the operation must be of a very free nature. One of the worst things you can do in such an operation is just to "snip out" a cancerous ulcer of the tongue. The affected part of the organ must be very freely removed. I advise you not to attempt such an operation unless you can command the services of a first-class anæsthetist who is well acquainted with the steps of the operation that you are going to do. I always operate upon these cases in the lateral position, the side of the affected part of the tongue being uppermost. All the blood runs into the dependent cheek, and thence to the floor, and there are no embarrassments to respiration, which so often occur when the patient is placed in other positions.

Another method of doing these operations, and a very good one, is by performing laryngotomy and stopping the upper part of the larynx with a soft sponge. The anæsthetic is given through the tube, and the latter is removed so soon as sensibility returns. In cases where the growth extends far back, and the posture of the patient is dorsal, I think highly of this method.

At the operation you cannot be too careful to securely ligature the main vessels as they are cut. Snip the muscular fibres very slowly, and seize the lingual artery where it is spurting and tie it on the face of the stump with fine, strong silk. I think this is better than tying the lingual artery in the neck. The best operators cannot always find the lingual artery in the neck, and so the patient may get bad hæmorrhage when the tongue is divided. Also vessels of considerable size sometimes enter the tongue from other arteries, so the old rule of tying vessels where they are cut is the best to adopt. I am aware that here I run counter

to the practice of many operators. After operation, of course you want to have the patient's mouth constantly washed out with some antiseptic lotion or spray; talking must be prohibited, and he must be fed carefully with a feeder. The one great danger in these cases is septic pneumonia, which is best avoided by cleansing the mouth.

I do not like the plan advocated in these cases of dissecting up flaps of mucous membrane and sewing them over the cut surface of the tongue. It is a method which certainly enables the tongue to heal far more quickly, but it is accompanied with the risk of leaving infected tissue behind.

With regard to removal of the tongue with such instruments as the *écraseur*, I have very little to say. The use of the *écraseur* is an especially risky proceeding, because it crushes the surface of the tongue, and I know from the experience of past days it by no means always certainly stops the hæmorrhage. I am never happy in leaving a tongue case, unless I have with my own hands tied the lingual with security on the face of the stump.

When glands are infected in the neck, the case is far more serious. If the mass is fixed, with extensive infiltration, and especially if suppuration is associated, little or no good will ensue from operating. In early gland contamination very free operating must be practised. Large triangular flaps, containing the skin fascia and platysma, must be turned down, and the triangles of the neck dissected free of glands and all surrounding tissues in conjunction with them. In late cases this is impossible, and though you may remove the glands apparently, you leave behind infected tissue, and return is certain. Operations for cancerous glands in the neck should be "secondary" to the tongue, and as a rule not done at the same time.

In cases where the tongue cannot be removed, you can do a great deal to comfort the patient by keeping the mouth aseptic with carbolised washes, painting the sloughing ulcer with carbolic acid, and applying the powder of orthoform with morphia.

Now as to the question of dividing the lingual nerve in cancer of the tongue. This is a most useful proceeding, and I have done it over and over again in severe cases of cancer of the tongue with the greatest benefit to the patients. In this operation the patient is anæsthetised, the sloughing part of the tongue is cleaned, and the incision is made below the last molar tooth of the lower jaw. With a small hook you then lift up the lingual nerve and cut a piece out of it. This will give great relief in the pain experienced, especially in the anterior surface and sides of the tongue.

Finally, in most cases you must have recourse to morphia. Morphia is a bad drug to commence. It undermines the moral power of the patient, and often seems worse than the disease. At the same time the avoidance of severe pain is one of the things one must aim at, and this can only be effected by large doses of morphia.

Those of you who have attended this lecture, before you leave this room, remember my parting word—do not neglect ulcers of the tongue in their early stages. If you have reason to believe that they will develop into cancer, then have them removed while there is yet time. Cancer in its early stages, especially in old people, and when engrafted upon syphilis, is a hopeful disease if only it is taken early and freely operated upon.

THE SIGNIFICANCE OF ACUTE SEPTIC PERITONITIS.

Acute peritonitis should now hardly be looked upon as a disease in itself. In the vast majority of cases it is the consequence of some formidable direct infection which has produced it. Excluding the causation of acute peritonitis by causes from without, the nature and existence of which are usually obvious and clear, we may clinically look upon the malady as due to a septic infection of the membrane from some cause within the abdomen. This cause we have, if possible, to discover, interpret, and promptly treat by surgical aid. Upon the correct appreciation of this principle may often hang a human life. Bullet wounds, stabs, or lacerations of the peritoneum by the claws or horns of animals are sufficiently obvious. It is well here to draw the attention of the practitioner to two especial localities where septic wounds of the peritoneum are peculiarly obscure and concealed from view. The one obscure situation is through the vagina or uterus; the other is by the rectum. By the former routes the unskilled efforts of the criminal abortionist may produce a septic and fatal peritonitis of a most mysterious type, readily misunderstood by the unwary. An instance is as follows:

Septic peritonitis from criminal abortion.—Many years ago, when house surgeon to the Cambridge Hospital, I saw the case of a young girl aged 18, who was suddenly smitten with acute peritonitis of a very severe type. In these days I feel sure that the case would have been attributed to perforation of the appendix. The symptoms were attributed to "cold checking menstruation." She

was treated by opium and leeches, as was the custom in those days. An abscess formed and "pointed" in the vagina, where it was opened. For weeks she was desperately ill, and seemed certain to die. She became alarmed and made a "confession." After a long and desperate illness she recovered with her life, but she was terribly damaged. The pelvic viscera were involved in a mass of adhesions, and both hips were flexed, contracted, and partly ankylosed. No one had the least suspicion of the true nature of her case until she made the "confession." As a result a man and a woman were arrested, and subsequently convicted and sentenced to a long term of penal servitude.

So, too, the well-directed efforts of the obstetrician may cause unintentional but fatal infection of the peritoneum. Thus operations upon the cervix uteri, or penetrations of the uterus by the "sound," or especially the curette, have, in the best hands, caused peritonitis. Such unfortunate cases are in the unpublished experience of most large hospitals, and may occur to anyone in gynæcological practice. If strict asepsis be practised, such lesions do not produce the fatal septic peritonitis which I have personally seen excited by the passage of the sound before the days of Listerism.

Peritonitis from the use of the uterine sound.—Early in the "eighties" I assisted in the treatment of a case of this nature. A young married lady received an obstetrical examination at the hands of one of the best known authorities of the day, and the sound was employed. On her way home in the train she was seized with agonising abdominal pain and collapse, and had to be brought back to London. She was obviously suffering from the worst form of acute septic peritonitis, from which she died. She was seen by most of the leading authorities, including Mr. Thornton, but the practice of opening the abdomen and cleansing it had not then prominently come into vogue. When acting as obstetrical assistant to my hospital about that period, I saw several cases of pelvic

cellulitis and suppuration undoubtedly caused by the use of the "sound." Seeing how readily breaches of surface are effected by such agents, we cannot be too cautious in their use, and the employment of the most strict asepsis.

Criminal wounds by the rectum are not unknown to the medical jurist. An enema syringe has caused a perforation of the gut, and so has a "lever" passed into the bowel with the intention of compressing the iliac vessels. In strictured or diseased conditions of the bowel a fatal septic peritonitis may be excited with terrible facility. I have known the mere passage of a finger through a strictured rectum cause a crack in the coats of the bowel, and the use of bougies in such cases is fraught with great danger. All forms of dilators of rectal constrictions are open to the same grave objections—namely, the ready laceration of a diseased bowel and fatal infection of the peritoneum. I commend these remarks to the careful consideration of all practitioners. Nothing is so serious and embarrassing as the production of acute septic peritonitis in a patient by such apparently harmless procedures. In the majority of cases where peritonitis is excited by wounds from without, the organisms will be streptococci or staphylococci, or both mixed. Such cases are exceptional in civil practice in this country, and one may pass through a long professional life without encountering them. It is far otherwise with peritonitis excited by infection from within. These anxious and responsible cases are in every one's experience, and form not a small proportion of the fatalities of human life.

In deference to various authors, I must allude to acute peritonitis from such attributed causes as "cold," rheumatism, pyæmia, erysipelas, or as a sequel to the specific fevers. During a hospital experience in abdominal cases of all sorts extending over twenty years I have never encountered one of these instances. And I believe, therefore, they are sufficiently rare to be dismissed from the notice of the practical surgeon or physician. In the acute peritonitis of pyæmia, for example, is there not some intra-

peritoneal lesion, thrombotic or actually pyogenic, whereby direct infection of the membrane is produced? Thus in one case of so-called pyæmic peritonitis an abscess of the liver had actually leaked into the peritoneal cavity; in another a suppurating gland was discovered on the brim of the pelvic cavity. In the so-called and very rare gonorrhœal peritonitis, there is in the male direct extension by the route of the inguinal canal and lymphatics, and in the female by way of the Fallopian tube.

Far otherwise is it with acute peritonitis due to intra-abdominal conditions. To say that the cause is always septic is not far from the truth. Peritonitis excited by non-septic exciting causes is protective merely. Thus extravasations of blood become surrounded by plastic lymph, decolourised, and subsequently absorbed. The surgeon relies upon this process to embed his silk ligatures in plastic exudation, and for the same reason he employs the gauze tamponade.

I have examined cases where iodoform gauze and sponges have been left in the abdominal cavity by the inadvertence of operators, and these formidable extraneous substances were surrounded by masses of partly organised tissue.

It is also right to say that the violence and danger of the peritoneal imflammation will be in direct proportion to the septicity of the exciting agent, and probably also to its amount. No complaint, for instance, is more terrible and rapid than the peritonitis which follows the rupture of an appendical abscess into the general abdominal cavity; whereas the peritonitis excited by a small leak in the walls of the stomach is often limited, and, indeed, may result in a localised abscess, and be recovered from, without the prompt surgical measures so essential in the former condition. Thus the *severity of the initial symptoms* may often with justice be looked upon as a most important diagnostic point in estimating *the gravity and extent* of the perforating lesion and the peritonitis likely to ensue.

Healthy secretions, as bile, urine, or gastric juice, would in theory produce a plastic, non-suppurative peritonitis. In practice this is seldom or never the case. The diseased conditions which lead to the extravasations furnish a plentiful supply of septic organisms mixed with the secretions. In "squeezes" or crushes of the belly, where viscera are injured without external wound, the coats of the intestine, if not actually ruptured, are often bruised or deprived of their blood-supply from injury to the mesentery. Such conditions afford means by which bacteria can penetrate the walls of the intestinal tube, leading to rapid decomposition of fluid collections in the immediate vicinity. Acute peritonitis coming on after a blow on the belly is a symptom which usually justly leads to the belief that some internal viscus has been injured. As the organisms which produce peritonitis from without are frequently streptococci or staphylococci, so the organism which inflames the peritoneum from within is principally the well-known *Bacillus coli*. At the same time other organisms are found, and the bacterial examination of the products of a septic peritonitis is usually highly complex. The question of the amount of dosage is of great importance in connection with the history of the *Bacillus coli*. The symptoms are proportional to the quantity of the septic agent introduced.

The protective action of peritonitis must be clearly recognised, and the plastic exudations which surround extravasated blood, gastric contents, and pus are familiar to pathologists, and are essential aids to the surgeon. The presence of protective adhesions in peritonitis was recognised by the older authors, and especially by Watson.[1] The encysting action of plastic exudations is, of necessity, limited and localised, and thus the phenomenon of a distinct lump or mass within the abdominal cavity in cases of peritonitis is, generally speaking, a hopeful sign as regards the saving of life, since it signifies that the inflammation, however dangerous, tends to be limited in

[1] 'Principles and Practice of Physic,' vol. ii, p. 378.

extent, and may be dealt with on the principles of an abscess. This will be again alluded to in speaking of appendical abscess.

The vast majority of cases of acute septic peritonitis originate in infection from the alimentary canal. In practice the thoughts of the surgeon should at once turn to the appendix as the cause of the evil. *In children and young adults a sudden acute and dangerous peritonitis is far more likely to be due to perforation of the appendix than anything else.* Were this dictum more widely known and appreciated many lives would be saved which are now lost.

Next in frequency come the perforations of the stomach and duodenum. These dangerous lesions form a significant proportion of causes of acute peritonitis in adult life. In women are superadded lesions and diseases which occur about the pelvic generative organs. Thus the rupture of an ovarian abscess or suppurating cyst, the sudden extension of infection from a suppurating tube, are familiar examples of causes of peritonitis of pelvic origin, often difficult and dubious enough in actual practice to diagnose and verify. A large number of cases must also be mentioned which are more exceptional, and which may never be met with in practice. The perforation of typhoid fever forms a class in itself. Suppurations and perforations of the gall-bladder, the rupture of hydatid cysts, the extravasation of hepatic, spinal, or glandular abscesses into the abdominal cavity, are all exceptional causes of peritonitis which I have met with in practice in the last twenty years.

I have also encountered several cases of acute peritonitis in connection with cancer of the large intestine, the colon, or upper part of the rectum, sudden leakage of virulently septic material producing a violent septic peritonitis, the nature of which was only clear after exploration by operation. It is very noteworthy that in these cases the existence of previous cancerous disease of the bowel was quite unsuspected, the patients having merely suffered

from vague disturbances of the digestive tract. This is a good example of such an illness:

A case of sudden perforation of a cancerous colon, with acute septic peritonitis as a consequence; symptoms of intestinal obstruction.—A stout man aged 64 was admitted at midnight into St. George's Hospital on October 19th, 1900. His belly was distended, tympanitic, and tender. His pulse 124, "small and hard." The temperature was 100°. The tongue was foul, and the patient had been vomiting for three days, at intervals. Absolute constipation existed. The face was pinched and anxious, and the patient evidently desperately ill. There was nothing to be felt on rectal examination; extreme tenderness was elicited. He had had large doses of powerful purgatives. The diagnosis of chronic intestinal obstruction was made. The patient being carefully anæsthetised with A.C.E. mixture, the left iliac incision was made, and a cancerous growth of the sigmoid was at once found. The belly was full of thin, stinking pus, the intestines red, injected, covered with flakes of lymph. The cause of this was not far to seek. A ragged perforation existed in the cancerous mass, and feculent material could be seen issuing therefrom. The diseased bowel was drawn out of the wound and attached, and the peritoneum cleansed; but, as might be expected in so desperate a case, the patient soon succumbed. It is very significant that the only premonitory symptoms in this case were vague abdominal pains and a tendency to constipation, for which purgative drugs had been employed. The abdominal pain came on suddenly when the man was driving his van four days previously.

This case is only one of several I have seen, and sufficiently demonstrates that cancer of the large intestine may exist unsuspected, and sudden perforation and septic peritonitis may occur from it, the cases being difficult and misleading in a high degree. In other such cases a gaseous or fæcal abscess may form and "point," or be opened through the abdominal wall. Here the protective

inflammation of the peritoneum is sufficient to encapsule the pus.

Acute peritonitis from perforation of the intestine by foreign bodies belongs to the "unusual" and "curious" category. Such offending materials as pins and pieces of bone more often cause localised abscesses than general acute peritonitis. Cases are, however, on record where jugglers and mountebanks have paid with their lives for their temerity in swallowing knives, nails, pieces of glass, and the like; and a similar fate has befallen lunatics, who may swallow dangerous substances. A mysterious peritonitis in an inhabitant of an asylum may be explained in this way. Such cases are not likely to come under the notice of the practitioner, and I only allude to them for the purpose of completeness. My notes only contain two instances of peritonitis of this class. The one was due to perforation of the appendix by a pin; the other was caused by a portion of jagged bone which worked its way through the descending colon. In both of these cases the peritonitis was localised. The use of the X rays may be of great value in mysterious localised peritonitis in a person of unsound mind, and the employment of this aid to diagnosis should never be neglected.

A proper knowledge and appreciation of the initial symptoms of perforative peritonitis is so important to the practitioner that attention cannot be too forcibly directed to a matter fraught with such momentous issues. The peritoneum and intestines being widely concerned in the distribution of the sympathetic nervous system, any sudden injury is associated with two phenomena of grave import; the one is pain, the other shock and collapse. The immediate condition of a patient suffering from a large perforation of the stomach, for instance, differs little from a man or woman who has been shot in the belly by a revolver. The face is ghastly white and anxious, sweat bedews the forehead, the extremities are cold, and the pulse can hardly be felt at the wrist. I have known instances of patients dying in this condition from perfora-

tion of the stomach, and such cases may not survive for the symptoms of subsequent peritonitis to show themselves. The severity of the pain is equally marked in bad perforative lesions. Thus it is described as "cutting," "stabbing," burning,—indeed, so severe as to be compared to imaginary agonies, which the patient has never actually experienced. The sufferer is "doubled up," and may cry out, groan, or shriek. *Such significant and terrible pain is peculiarly often experienced in the umbilical region in cases of sudden rupture or perforation of a diseased appendix.* And here we may formulate an obvious, if often neglected rule, that such symptoms as these indicate a formidable injury to the peritoneum, which is not likely to be recovered from without prompt surgical aid.

The situation of the pain is only a rough guide to the situation of the lesion. Often, when an abscess or a viscus perforates, the septic fluid is ejected against the peritoneum or into one of its numerous pouches, at some little distance from the actual seat of mischief. The pain and tenderness will be worst at the situation where the inflammation begins to originate.

Then there are the errors which patients frequently make in cases of "referred" nerve pains, originating in areas from whence the mind has little experience of real sensations. Thus in acute appendicitis the pain is often referred to the umbilical region, and in perforations of the duodenum the pains may be referred to the "pit of the stomach," the umbilical region, or even to the left hypochondrium. There is a case of an elderly man recently operated upon for acute abdominal symptoms; his pain was referred to the region of the spleen, but the actual lesion was a perforation of small size near the pyloric end of the stomach. Following upon the initial symptoms rapidly supervene others of vital importance, due to inflammation of the peritoneum and rapid absorption into the circulation of the deadly toxins produced by organisms in the great serous sac.

Local tenderness to pressure with the hand is universal,

and this is associated with sudden rigidity of the abdominal walls over the damaged area. Both these signs are invaluable, as assisting the anxious practitioner in distinguishing between perforation and the "colicky" pains attending upon the ingestion of unsuitable or irritant food. The pulse now assumes the well-known quick and hard, or "thready" character, so often found in inflammations of serous membranes associated with extreme sympathetic nerve distribution. Rapid distension of the belly ensues, with absence of respiratory movements. And now, as the inflammatory process has spread to the walls of the intestine, the gut becomes red, covered with lymph, and distended with gas. This is marked clinically by inability to pass flatus *per anum*, by hiccough and belching of wind, and subsequently by vomiting of bilious material.

Vomiting is frequently an exceedingly early and important sign in perforative peritonitis. In sudden perforations of the appendix it may come on almost immediately, and in perforating gastric ulcer the symptom may be so prominent as to lead to the erroneous diagnosis of irritant poisoning. The symptom is, however, a variable one in the early history of the affections we are considering. In the later stages, however, definite intestinal obstruction is present, or perhaps a better expression would be definite paralysis of the intestinal walls with inability to expel the contents of the intestines.

This great clinical fact needs accurate appreciation. The wrong diagnosis of acute intestinal obstruction from "a band" or internal hernia is too readily made in these cases, and the early treatment of perforative lesions by lethal doses of purgative drugs is due to a confusion in the mind of the practitioner as to whether the symptoms are not due to some accidental obstruction. *A clear knowledge that peritonitis causes obstruction may save this disastrous practice.* Nothing is worse in a case of perforated appendix or a duodenal ulcer than a full dose of calomel or a measure of castor oil. Yet how frequently do we see this fatal error committed, and the chances of the patient made

infinitely worse! Peristalsis excited when there is a hole in the bowel merely leads to the ejection of fæcal material, and aggravates the dreadful evils already present.

The later stages of perforative peritonitis are well known. They are those of advanced septic intoxication and rapid collapse of the vital powers. The pinched face and deep hollows under the eyes; the tumid belly, too often marked by inefficient leech-bites and discoloured by "turpentine stupes;" the pulse weak and thready, hardly to be counted at the wrist; the cold fingers and toes,—all form a picture formerly very familiar, and even now too often seen in private practice! Death is imminent, and the chances of averting it by operation are slender indeed. The mind of the patient may be absolutely clear, and often immediately before death there is a curious cessation of pain, which makes the already moribund patient declare himself suddenly much better. I have more than once known the medical attendant to share in this erroneous opinion, and to give a favourable prognosis to the delighted relatives, which was rudely dispelled by the death of the patient only a few hours after!

The time in hours or days that a case of perforative peritonitis may take to run its fatal course is very variable, and varies according to the septicity of the exciting agent and the resisting powers of the individual against the poison. The peritoneum is an enormous absorbent sac, and when distended with virulent stinking pus the quantity of toxins absorbed will soon destroy life. A strong boy of sixteen, for instance, will struggle for days against a septic process, which would destroy an adult with naturally weak cardiac action in twenty-four hours. This consideration is a very vital one for treatment, and a surgeon may take operative measures in a young and strong individual, which would be perfectly hopeless in a less vigorous subject. Anyone who has had much experience of these cases can recall the instances of boys whose abdominal cavities were full of pus, whose intestines were red and distended, and yet who have recovered under cleansing the cavity and full

doses of saline purgatives. Such happy results are too exceptional ; still they occur, and youth is a most important factor in the consideration of possible recovery. The temperature in acute peritonitis is a very variable, and too often deceptive, factor in the diagnosis. In young and plethoric individuals fever may be marked, especially at the onset of the attack. With absorption of septic products and toxæmia the temperature may fall rather than rise, and the absence of fever may really be explained by a serious diminution of the vitality and resistent forces of the individual. Again, it is a most instructive and important fact that localised abscesses, especially in the right iliac fossa, may exist with but little concomitant fever. *The absence of a febrile temperature is no proof that an abscess in this situation does not exist.* I am able to affirm this positively from abundant personal observation, and it is a clinical consideration too little appreciated. The medical attendant relying upon his thermometer can hardly credit that four or five ounces of stinking pus may be present in the iliac fossa. Indeed, an incision is often needful both to convince the practitioner and to evacuate the pus.

No account of the phenomena of acute peritonitis would be complete without a reference to the remarkable power of morphia over the symptoms. The agonising pain is at once lulled, and the pathological road to certain death may be completely smoothed by the deceptive sedative influence of this drug. It is indeed difficult to believe that the grateful and drowsy patient who now declares his relief and improvement, is the same man who was "doubled up" in abdominal agony a few hours before. The local tenderness even is less, and the one symptom which may make it clear to the cautious and observant practitioner that the true source of evil remains unrelieved, is the terribly rapid and hard pulse.

In private practice, when the early agony of perforative peritonitis is very great, the attendant is almost driven by the importunities of the patient and his friends to do "something." Let him remember to administer the

smallest possible dose of morphia. I have never seen necessity for more than a sixth of a grain hypodermically in these distressing circumstances. Even this quantity masks serious symptoms, and is very apt to render the need for prompt surgery less urgent in the eyes of all concerned.

The treatment of acute peritonitis by what are termed medical measures is open to the great objection that the medical attendant must feel uncertain as to whether or not a hopeless lesion remains undetected, which must render his best efforts nugatory. The decision has to be made promptly, for nothing is more distressing and useless than to invoke the aid of surgery to a distended moribund patient, who, to obtain any chance of life, should have been operated upon days before. If medical measures have failed in these cases, surgery indeed has a poor chance. Accordingly I feel sure that few indeed of the forthcoming generation of medical men will have the hardihood to treat by medical measures a violent peritonitis coming on suddenly, with the pain and sickness and other symptoms of grave import I have attempted to depict.

In those instances when patients or relatives refuse operative treatment, what is to be done? Such experiences are not uncommon among the votaries of homœopathy or Christian Science, and also among the ignorant in rural districts. Now the experience of anyone who has been long in practice teaches that acute septic peritonitis may in exceptional instances be recovered from without surgical aid. In such cases the patients are usually young and vigorous, and the initial infection slight. I have on several occasions known severe peritonitis having its origin in the neighbourhood of the pylorus get spontaneously well. In such cases I have always thought that some small lesion of the duodenum was present, but of course one could not be sure. Again, it is difficult if not impossible for a medical man single-handed, living perhaps miles from aid or from the assistance of a competent

anæsthetist, to undertake an exploration, let us say, for a supposed duodenal ulcer. This aspect of the question has been much ignored by writers, who appear to little know or appreciate the difficulties which beset the path of the practitioner dwelling in remote districts.

Small doses of morphia mixed with atropine, the emptying of the large intestine by enemata, and the support of the strength by rectal alimentation, are the main factors upon which the practitioner must rely. Leeches and turpentine applied to the abdominal wall are only of slight benefit, and doses of calomel by the mouth are only permissible in those cases when no perforation of the intestine occurs. In this haphazard mode of treatment the practitioner must, to speak plainly, rely largely on luck. If the lesion and source of infection be slight, and the patient young and vigorous, the powers of nature may be sufficient for recovery. If the infection be severe, and the patient obese or feeble, death will ensue despite all the resources of the pharmacopœia. It is in cases treated after this fashion that the aid of surgery is invoked too late, and operations fall into discredit.

There are few regions in Great Britain where a patient if poor cannot be at once transferred to the nearest hospital, or if well-to-do cannot command the services of a competent operator. The telegraph and express trains cut away the ground from under the feet of those who hesitate to obtain skilled aid.

We are now in a position to formulate a rule of practice, which can, indeed, be open to but few exceptions. It is as follows :—Whenever a patient is smitten with the group of symptoms which I have described, abdominal exploration by a skilled operator gives the best chance for life, to repair the lesion, to cleanse the peritoneum, and stay the progress of the fatal septic inflammation. That all lives will be saved by these means is, of course, saying too much. Desperate conditions will be sometimes found beyond the hope of human aid to repair. Often, however, it is the cry of "too late!" The intricate pouches and

folds of peritoneum are polluted beyond hope of cleansing. Any period of delay beyond six hours in perforative septic peritonitis means the possible destruction of the patient. Heavy indeed is the responsibility of the practitioner in these cases, and fortunate is he who, in his hospital career, has well studied and appreciated them.

The question may well be asked,—are there any preliminary symptoms by which we may be guided to the cause, in any given case of acute perforative peritonitis? Pathological examination affords us a useful answer to this important query. I have already stated my belief that if a boy or girl under the age of twenty is suddenly smitten with severe abdominal symptoms running on to rapid peritoneal inflammation, the cause is practically always in the appendix, which is commonly enough gangrenous or perforated. In a young girl the sudden rotation of a small ovarian cyst may produce symptoms very like those of perforative peritonitis.

Close investigation may show that the patient has had previous attacks of pain and tenderness about the right iliac region, with "colic" and digestive disturbances. Such a previous history makes the mind incline very strongly to the appendix as the origin of the trouble. *The majority of cases of acute, dangerous appendicitis have had these premonitory symptoms.* This clinical fact is of the utmost importance, and cannot be too strongly insisted upon.

Perforating gastric ulcer is common in anæmic young women who have long suffered from chronic dyspepsia and have swallowed much physic for its relief. A history of this nature will much help us. Yet this lesion may be absolutely sudden, and I have known it occur in women apparently previously in the best of health. In ulcer of the duodenum the patient is usually an adult male. A previous history of pain and indigestion is common, but by no means universal. The lesion is usually sudden, and if mysterious acute abdominal symptoms, terminating in peritonitis, originate in the upper zone of the abdominal cavity in an adult male, a duodenal ulcer is the likely cause.

Peritonitis excited by suppuration around or perforation of the gall-bladder is comparatively rare. The patient will be an adult, frequently obese, with a history of a lethargic life, and perhaps previous attacks of biliary colic or transient jaundice. I have never known a case of suppuration and perforation of the gall-bladder to occur in which there have not been such premonitory signs of trouble.

In these cases the portal vein or its tributaries is frequently infected, and high fever with severe rigors is common, leading to the wrong supposition of malarial fever.

Peritonitis of pelvic origin occurring in a young married woman is very suggestive of infection from the neighbourhood of the Fallopian tube. Such cases are generally gonorrhœal in origin, and a purulent vaginal discharge may also be detected. Acute peritonitis from criminal operations upon the uterus is for obvious reasons usually devoid of history, or the patient may actually mislead the medical attendant. The practitioner must remember that such a case may be brought before his notice in the most unsuspected quarters, and in the highest walks of what is termed "fashionable society."

It may be supposed that acute peritonitis would offer symptoms so prominent as not often to be mistaken.

In very obese subjects, the layer of fat renders the phenomenon of local tenderness on pressure hard to be elicited. Rectal and vaginal examination may elicit extreme typical tenderness, and if fluid exudation has taken place it may thus be detected. Rectal examination should never be forgotten under such circumstances. In feeble and elderly persons the acute signs of peritonitis are rapidly masked by symptoms of general poisoning of the individual; and abdominal distension, with a quick "running" pulse, may be the only signs of the serious condition present. Finally it may be recollected that in exceptional cases tuberculous disease of the peritoneum may run a very rapid course, and may even be difficult to distinguish from an appendical infection.

The following rules of practice may be formulated from the previous remarks:

Acute peritonitis is the result of infection, and the lesion which produces it usually needs surgical treatment.

The spreading of peritonitis over a larger and larger area, no limiting mass of inflammatory nature being detected, is a serious symptom, and calls for operation.

The treatment of acute peritonitis without operation is generally of the "haphazard" type. Recovery may take place if the infection be slight. Many lives are lost through this practice.

For purposes of a practical diagnosis the abdomen may be divided into two zones—an upper and a lower.

In the upper zone the cause of the acute peritonitis may be in the stomach, duodenum, or gall-bladder; in the lower zone the appendix, or the pelvic generative organs in women.

Anomalous and rare causes of peritonitis, as the rupture of a spinal abscess, or a hydatid cyst, will seldom be correctly diagnosed without exploratory operation.

APPENDICITIS.[1]

To-day I want to say a few words to you on a subject of really surpassing importance in practice, and it is this fact which, more than any other, led to my choosing it for our consideration. Several cases have lately been under my care in this hospital. Many of you have doubtless seen them. I refer to affections of the vermiform appendix, which were at one time, and that comparatively recently, generally known under the term perityphlitis, *i. e.* inflammations about the cæcum. And with respect to this I may first remark that although inflammations about the cæcum occur from other causes, at the same time the common and great reason of perityphlitis is some mischief connected with the vermiform appendix. You may, for instance, meet with inflammations and suppurations about the cæcum from perforation of its walls by a tuberculous ulcer. Some of you may remember that I operated upon such a case quite recently. Epithelioma is an important, though rare, cause of ulceration and perityphlitic abscess. Again, caries of the ileum may produce an abscess which may even burst into the cæcal cavity. In women an abscess may form in the neighbourhood of the cæcum in connection with suppurations in the broad ligament. I have twice seen abscess in connection with gall-stones track down and point in the right iliac fossa. You will clearly remember, however, that all such causes of pericæcal abscess and inflammations as these are comparatively rare. The vermiform appendix is the

[1] A clinical lecture delivered at St. George's Hospital, December 8th, 1896.

principal and common source of mischief. This little tube, in addition to certain accidents, which from its length and shape it is apt to exemplify, is also liable to all the diseases which affect the intestine generally. You may thus get tubercular disease of the appendix, or malignant ulcerations of it, or there may even be in and about it that rare affection actinomycosis. If the appendix is such a long, worm-like body as illustrated by the specimen on the table fresh from the post-mortem room, you can readily understand how it may become twisted and curled upon its own axis. If the torsion is very acute the whole appendix may slough off, and in such cases when you come to open an abscess in this locality you find the appendix as a sloughing, necrotic mass free in the general cavity of the abscess. If the torsion is not so great you may find, where the surfaces are brought into contact by the twist, a number of ulcers; and strictures may form, which may be either single or multiple. When stricture occurs the part beyond the constriction may form into a kind of cyst, which is liable to be filled with sero-pus, and this may burst into the general peritoneal cavity with very great ease and the most terrible results.

The most important of all causes of mischief about the vermiform appendix is the formation in the little tube of intestinal concretions. As usual, we have in our museum specimens illustrating all conditions of this affection, and you will see on the table a most beautiful specimen of a concretion in a dilated and swollen appendix. These concretions are usually supposed—by students—to be foreign bodies. If you ask a student what is the ordinary concretion of the vermiform appendix he is almost certain to answer that it is a cherry-stone or a fish-bone! I do not say that such foreign substances never gain access to the tube of the vermiform, but they are quite exceptional. The concretion is practically always composed of hardened fæcal matter and masses of bacteria, and it generally has for its nucleus some calcareous material which has been formed by the deposition of salts from the mucus. This body, thus

formed, may vary extremely in size, shape, and hardness, but it soon frets and ulcerates the mucous membrane, leading to the terrible phenomena of perforation and its results. You should also remember that the appendix, like other mucous channels, is liable to recurrent attacks of inflammation, the condition being known as "catarrhal appendicitis." In many of those cases, no doubt, there is really a small concretion which is responsible for these periodical inflammatory visitations. Repeated attacks may also arise from torsions and twistings, and in very exceptional instances the vermiform appendix may be bound down, or even strangulated in an external hernia. Such strangulation may be either internal or external. If external, it is usually in the femoral region; I have seen at least three cases where the strangulated appendix was found in a femoral hernia. The specimen I now show you will illustrate what strange places the vermiform appendix will stray to. This specimen looks like an ordinary garden worm, but closer inspection shows it to be an appendix nearly four inches in length, and it was found in the sac of a congenital hydrocele on the right side. How it got there I do not know, but I mention the matter to make you prepared for finding elongated appendices in very queer places. The various relations of the vermiform appendix to the cæcum is a matter of very great interest, but time does not permit for me to enter into this subject now. A very long appendix may also get into the pelvis, and in several cases of very bad perityphlitic abscess I have operated upon, pus has been found right down behind the bladder, the appendix being tied down in this situation by adhesions. In the same way the abscess may burrow up behind the ascending colon even as high as the liver or diaphragm, the appendix lying behind the gut, and perforating in this direction.

Let us next consider, with all brevity, the pathology of the various complications which occur from lesions of this little death-trap which we all carry about in our bodies. The intestine contains an abundance of organisms, espe-

cially the well-known *Bacillus coli*. This organism will infect the peritoneum if there be any lesion through the intestine, and will even infect the peritoneum though there may not be an actual perforation. The more complete the perforation the more extreme the infection of the peritoneum or neighbouring parts. As soon as ulceration or other morbid process is established in the vermiform appendix, a certain amount of peritonitis is excited outside, and the abundant plastic lymph glues the appendix to various parts—to the coils of intestine, the mesentery especially, or to the parts behind the colon. The abundant adhesions and thickenings of plastic lymph are nature's barrier for preventing the spread of the septic inflammation into the interior of the peritoneal cavity. Very fortunately these adhesions are often sufficient to prevent any further progress of the mischief, and the patient may for the time get well. He may thus get attack after attack, even up to the number of a dozen or twenty, each one leading to perhaps a little more thickening about the walls of the appendix or the parts around, than the last, so that ultimately the vermiform becomes almost indistinguishable from the masses of adhesions which surround it. In these cases a hard and painful lump, the size of a walnut, can generally be felt on deep pressure somewhere in the cæcal region. Under a higher degree of infection an abscess may arise. The *Bacillus coli*, associated with other microbes, extensively infects the cellular tissue around the appendix, producing an abscess, of varying size, filled with peculiarly fœtid pus and gas, which is situate in the right iliac fossa, and usually slowly and painfully works its way towards the skin. It may burst just above Poupart's ligament, or into the intestine, bladder, or rectum ; and in females it has been known to point and burst into the vagina. In other cases the abscess, which may be very small in size, transgresses its feeble barriers, and the pus extravasates into the peritoneal cavity. So that there are two classes of affections of the appendix—that in which the part gets thickened and glued

down; and secondly, that in which an abscess forms and bursts, or is opened by the surgeon.

I can only briefly mention the catarrhal variety, which is characterised by slight recurrent attacks, with thickening of the walls, possibly without any extra-appendical inflammations that may be felt or appreciated.

Next I wish to allude to a variety of appendicitis upon which I cannot lay too much stress. You may read your text-books, and they will tell you that perforations of the appendix straight into the peritoneal cavity are rare affections. I will not say whether I think the text-books are right or wrong. All I can say is that I believe in these cases the experiences of surgeons differ very widely. You may get fifty mild cases, and your next ten may be terribly severe. I happen to have come across recently a considerable number of cases of perforative peritonitis of a very dangerous nature, where the ulceration about a concretion has gone straight through into the peritoneal cavity; and I cannot help thinking, therefore, that possibly the frequency of this class is underrated. Perforative peritonitis of this kind is so dangerous, and, I regret to say, so little understood, that I cannot call your attention too earnestly to the subject.

From what we have said we may, for clinical purposes, divide the cases into four varieties:

1. Recurrent appendicitis, characterised by thickening and adhesions, and exudations of plastic lymph.

2. The variety where an abscess forms, which may burst externally, or into the peritoneal cavity, or into the other channels I have told you of.

3. The catarrhal form, where the appendix itself is merely thickened or enlarged.

4. The serious form of perforative appendicitis which invades the general peritoneal cavity.

Chronic appendicitis with ulceration and deeply encysted abscess is sometimes complicated by pyæmic abscess of the liver. The radicles of the portal vein take their origin in great numbers from this part of the alimentary tract, and

go right into the liver substance. I have seen several cases of multiple abscess in the liver from this cause, with hepatic enlargement, deep jaundice, rises of temperature, rigors, and heats, closely simulating ague and very puzzling to the medical attendants in the case. These cases are called portal pyæmia, and you will find in your practice hereafter two great causes of this affection—namely, ulcerations about the vermiform appendix, and ulcerations about the gall-bladder due to calculi. I mention these "medical facts" because, doubtless, if the infective focus in such fatal cases could be early removed, life might be saved. Portal pyæmia is, however, rare, and I will not dwell upon it further.

My next duty is to lay before you the symptoms of this most important affection; I say important because none of you will be in practice very long before you encounter such cases. They may be very slight in character, or they may be very severe and dangerous. Upon your prompt recognition and treatment life or death will certainly hang. Therefore the subject is one you cannot study too carefully. And I would first say this about the management of cases of appendicitis: I do not believe any fixed rule can be laid down for the treatment, either in dietary or remedies, because cases differ very much, no two being exactly similar. Each must be judged on its merits, and the common-sense treatment of each carried out,—and this is, indeed, true of many maladies besides appendicitis. Now as to the symptoms you may expect. The ordinary class of phenomena in recurring appendicitis, where the infective trouble does not implicate the peritoneal cavity, is much as follows:—The patient will be usually a young adult, and more likely a male than a female; yet appendicitis may be found at the extremes of life—I myself have operated on boys of seven and on a very old man,—but such cases are exceptional; ordinarily the patient is under thirty, generally between sixteen and twenty years of age. He will generally be the subject of indigestion; his bowels will be constipated, and he will often have bad teeth,

which lead him to bolt his food before properly masticating it. The main symptoms are probably known to you, but do not think that a recapitulation of these is superfluous. The attacks usually come on suddenly, and are often attributed by the patient to "indigestion," "biliousness," "wind," or what not. The patient has sudden griping pains in his abdomen—almost enough to double him up,—referred to the right iliac fossa or to the neighbourhood of the umbilicus; he may retch and be a little sick, that which is vomited being almost always the contents of the upper small intestine, green in colour—in fact, it is bile. This symptom leads patients, and, alas! some doctors, to put such cases down too commonly as "biliousness," a term which I should like to see purged from the medical vocabulary. Nobody knows exactly what it means, and, like the cloak of charity, it is employed to cover a multitude of sins. The patient looks collapsed or ill, and almost always has tenderness, most developed near the right iliac fossa. He lies in bed with the right leg slightly drawn up to relax the fascia. Moreover the pain radiates down to the end of the penis, to the perineum, and to the testicle. The pain in the penis is peculiar, and is referred to the course of the pudic nerve. I have observed it in such a number of cases of appendicitis that I am coming to look upon it as an important symptom. The temperature and pulse are usually raised, but great variability is here observed, and much depends upon the acuteness of the attack. Now as a general rule, if such a case is treated judiciously the inflammation subsides, and the attack passes off in a time which varies according to the manner of onset and the severity of the case. But even if it passes away, if you make firm pressure about two inches above the anterior superior spine of the ilium you will come to a spot at which there is a certain amount of uneasiness, and probably pain, and be able to appreciate some thickening or an actual "lump." The patient may now go on well for a few months or so, and then will get another attack, perhaps quite slight, perhaps as severe as

before, and so will go on having attack after attack, suffering much misery and some danger. In one of these attacks the barrier formed by nature may give way, and the case may resolve itself into one of perforation, or an abscess may readily form. Such is a rough sketch of many of the cases that are met with in practice. They are of all degrees of severity, confining the patient to bed for weeks, or only for a few days.

The next class, the "catarrhal," are marked by just the same symptoms, but they are far slighter in degree. The patient has nothing like such severe pain; he does not vomit so much in his attacks, and he may have such slight visitations as to be laid up for only two or three days. Then he will think no more of it; will go about his work, or play his football as usual. These cases are usually associated with mere thickening of the appendix, and are too often diagnosed and treated as "indigestion."

Cases associated with abscess have, again, in their early stages much the same symptoms as I mentioned in regard to the recurrent variety. There are sudden acute pains, vomiting, and extreme local tenderness, but a hard lump forms, and the tenderness increases. If long neglected a red blush of the skin with some œdema is seen, and the peculiar phenomenon of crackling may be observed from escape of gas. The pain is very severe; there is fever, and vomiting is often persistent. The larger and more evident the inflammatory formation to palpation, the more likely is pus to be present. I have repeatedly known matter to form with no very evident temperature signs.

The abscess in these cases is often exceedingly deep, and may track up behind the ascending colon as high as the diaphragm or kidney. When such cases are treated on the "expectant" plan the pus may burst into the colon. Motions of indescribable fœtor pass *per anum*, and recovery may ensue if the unfortunate patient has any vitality left. Remember, too, that the constitutional signs of abscess and the severity of the local symptoms will be in direct

proportion to the amount and virulence of the infection. Thus they may be exceedingly slight, the pus forming quietly and insidiously.

Now a word about the true perforative cases—those very terrible ones I have mentioned, where infection directly invades the peritoneal cavity. These maladies are amongst the most awful with which you will have to deal in practice; awful, because you can hardly appreciate that a healthy young man may in four or five days, or possibly within forty-eight hours, be a corpse before you unless the resources of surgery are promptly brought to bear.

In these cases the foul-smelling pus, mixed with a host of organisms, will escape in a jet into the general peritoneal cavity. The symptoms are now of a very typical nature. The patient is smitten with fearful pain, with urgent green vomiting, and with marked collapse. The tenderness is marked, the belly is rigid, and soon becomes somewhat distended. The patient lies in bed with his knees drawn up, and especially remark that as the peritoneum becomes irregularly inflamed, the tenderness in the right iliac fossa may not be a marked symptom. At first the face will be flushed and covered with sweat, but soon the well-known "facies abdominalis" is observed, and the vomit may become fæcal. The pulse now becomes quick and running, the extremities cold and dusky, and so death rapidly and often unexpectedly ensues. The symptoms, indeed, are strikingly like those of acute intestinal obstruction, from which they cannot always be distinguished.

In many of them the pulse and temperature are most deceptive, and the vomiting, and abdominal tenderness and distension, are the sole symptoms of the dreadful mischief going on within. I want to especially remark also that the condition of the bowel varies; sometimes there is a violent expulsion of the contents of the large intestine, sometimes constipation,—there is nothing you can depend upon. Oddly enough, the history too is very deceptive, for many of these cases take place during violent

exertion, which doubtless ruptures some feeble adhesions and allows the infective matter to escape. In my own notes I find a kick from a boy at school, an injury in wrestling, a blow on the belly in a street fight, positively given by the relatives as a cause of the illness. I have known inquests demanded and held in two of these cases. So, again, if opium is given you will relieve nearly all the symptoms. The patient will express himself "in heaven," and he will seem so much better that your resolution to operate may readily break down. You will be rewarded by finding that the abdominal distension does not yield; there is still rigidity and tenderness, and the patient will persistently vomit all he takes by the mouth. The great, the urgent question in all such cases as these—remember, you will have one day to answer it for yourselves—is the matter of operation. Now I will venture to give you this rule, that whenever the symptoms of appendicitis set in with suddenness and savage intensity, delay not an hour in seeking consultation as to what you are to do. If, as may happen, skilled aid is not near you, I can tell you this: I have never yet seen a bad "appendix case" operated on too soon. Alas! I have seen many operated upon too late.

The argument that a certain number of these cases are "brought through" by leeches and opium has no force to my mind. This is a haphazard treatment. You do not know how far the infection has spread, you cannot tell how large is the perforation, you can never be sure of conditions hidden from your eyes by the skin and abdominal walls, and therefore you can hardly plan safe treatment.

The only cases of appendicitis I have ever lost have been those where general perforative peritonitis has been allowed to remain unchecked. I would therefore speak very decisively on this point; bad symptoms about the appendix need immediate surgical exploration. Hospital patients have far the best chance of recovery in these dangers. Private patients in good circumstances demand this or that consultant. One advises opium, another

purgatives, a third that distant relatives should be telegraphed for. Too often when the cardiac powers begin to fail, surgery is summoned, and the dictum "too late" is plainly written upon the face of the dying patient. I would commend these remarks to the notice of those who think hospital patients are operated upon needlessly.

Now we must say a few words about the general management of appendicitis. Where the patient is not very ill, and the inflammatory symptoms are localised, and especially where he has had several attacks before, you may cautiously temporise. Put on six or eight leeches over the region of the appendix; you cannot do better than this. The abstraction of blood gives great comfort and acts like magic. I think, considering how little you can know of the actual conditions present, it is safe practice rather to empty the large intestine by enemata than by purgatives. Restrict the patient's diet, giving meat extracts and clear soups, which form little fæcal material. Strict rest must of course be enjoined. If you carry out such practice in mild cases of appendicitis, you will find that in nine cases out of ten the attack will subside. It is from such cases that the opinion has been formulated that appendicitis can be "cured" without operation. But mark this: the patient is probably sent away as well; in a few months, suddenly, without any warning, he may get another of these attacks, and they may come on so persistently that his life is a misery. The focus of disease may be felt in the intervals the size of a hazel-nut, painful on pressure about two inches above and internal to the anterior superior spine.[1] The patient flinches when this spot is pressed upon. It is generally acknowledged that under such circumstances the right thing is to remove the appendix by operation, and the time to remove it is in the intervals between the acute attacks. The operation itself may be very easy or very difficult. If there have been

[1] The fact that attacks have occurred is the main argument for operation. Serious disease may be present in a deeply seated appendix, which cannot be felt by the surgeon, and may not be painful to the patient.

many attacks the appendix may be so bound down by adhesions that it cannot be found, or is only enucleated after much patience in operating. Still the operation ought to be attempted, and in the vast majority of cases the diseased organ is found and removed easily enough. The mortality from these operations of removal of a diseased vermiform appendix for recurrent attacks is very low, and many experienced surgeons who have been operating for years have never lost a case. I do not know how many such operations I have performed, but I have brief notes of a considerable number. None of them caused me anxiety. This is very different from the state of affairs when perforation into the peritoneal cavity has taken place.

I need hardly in these days dwell upon the aseptic precautions needful in all such operations as these. In the intervals between slight attacks of appendicitis much care should be taken with the dietary, the state of the teeth, and the digestive functions generally. Mild occasional aperients are very useful, but I repeat that during any attacks of the disease I adhere to the safe rule of emptying the lower bowel by enemata, and not giving purgatives by the mouth.

Where you have reason to strongly suspect the occurrence of abscess, you should open it by incision at once, without delay. Remember once more, that the main sign of abscess is an increasing tender "lump" in the iliac fossa, with (generally) fever, intense pain, and all the signs of poisonous septic absorption—as a dry tongue, delirium, and failure of the vital powers.

A curved incision is made over the cæcum through the parietes, and you break into the swelling with your finger. Horribly fœtid pus will escape. It will cause you to start back from the patient, and the odour will pollute your hands for days. Imagine, then, what a source of sepsis this must be when "pent up" within the body of a patient!

It is always a moot point whether you should remove

the gangrenous or perforated appendix in cases of abscess. Most authorities advise that you should be content in these cases to merely open the abscess and thoroughly wash it out and drain it. In some, if the stump of the appendix is not found and ligatured, a troublesome fæcal fistula may result. When searching with your finger for the appendix you must be very careful not to roughly break down any adhesions, and thus contaminate the general peritoneal cavity with foul pus. Personally, I always make a prolonged search for the appendix, and if possible I get it away and then tie the "stump" close to the cæcum. If there seems to be great difficulty in the matter, you must drain the abscess and leave the appendix to take care of itself. If you think that in your manipulations you have broken down the walls of the abscess—which you can generally appreciate by coils of intestine showing or rolling against your fingers,—it is always good and safe practice to "tamponade" with a long strip of iodoform gauze, by which means in forty-eight hours the intestines will be shut off from the abscess cavity by plastic lymph. The flushing out of the abscess cavity must not be half done. In a private house a bath-can of warm water makes an excellent flusher, and you must wash and re-wash until you have mechanically dislodged and washed away the septic pus and sloughs. The more the peritoneal cavity is infected, the more free should be your ablutions.

Now a few words about the performance of the operation. Experience alone will teach you all the methods employed in operating in this region; but I have a preparation upon the table which well illustrates a point which is very useful, and which will be a sure guide in many cases of difficulty. You see in this cæcum the appendix is quite out of sight, being tucked behind the ascending colon. Now note that the band of longitudinal muscle-fibres is easily to be seen on the cæcum, and if you trace this band down it leads on to the root of the appendix. When in complicated cases you are in doubt,

remember this guide, and by feeling about with your finger at its termination you will appreciate the swollen appendix and be able to enucleate it with ease; indeed, personally I employ feeling far more than sight in all these cases. All kinds of methods are employed for closing the wound. I have no reason to depart from the usual mode adopted in abdominal sutures. I think it very important only just to include the peritoneum in the deep stitches, so that none is interposed between the muscles. The after-treatment I adopt is rectal alimentation for two days, and the least sign of distension of the belly is met by saline purgatives, with enemata of rue or turpentine.

As regards the mode of removing the appendix itself, the method I myself adopt is to make a circular incision and turn back a cuff of the peritoneum; I then cut through the tube inside the cuff, tie the inside, and turn the two peritoneal flaps over, invaginating them with fine silk sutures. But in cases where the appendix is at all sloughy or damaged I have seen equally good results obtained by simply tying the diseased tube with silk, cutting it away, and disinfecting the parts with carbolic acid. In all cases the little artery of the appendix must be secured. The cases where the general peritoneal cavity is implicated are only favourable if you get them early. It used to be a saying that if four hours elapse before operation in perforative peritonitis the case is lost. This is altered now. For instance, last year I attended in this hospital a young man with general septic perforative peritonitis of four days' standing. He was smitten on board a steamer, and did not get to London until the fourth day. His belly was full of putrid pus, but his life was saved. We tied the sloughy appendix, and practically washed over the whole of his intestines and flushed out the abdominal cavity with jug after jug of hot water. He made a complete recovery, and this largely due to the repeated and careful washings. But do not for a moment think these neglected cases generally completely recover, for if you do you will put off

operation on them. The rarity of recovery in these cases is enough to explain their frequent publication.

Again, last August a girl aged 16 was brought here hurriedly, because, very much to the credit of the doctor who attended her, the gravity of her case was fully realised. As soon as her medical attendant found her with severe sudden abdominal pains, green vomit, and great tenderness in the right iliac fossa, he sent her here at once. She was taken straight from the admission room to the operating theatre. An operation was performed within an hour of her admission, and the perforated appendix was found lying free in the peritoneal cavity, surrounded by foul pus. The intestines were red and inflamed over an area the size of a cheese-plate. In this case, again, we used free and prolonged hot water flushing, and recovery was rapid and complete.

Before we part, let me tell you that though you may read in your text-books all of what I have told you, and much more, you will not learn there what I hope I have impressed upon you to-day, your serious responsibility in these cases. The most important thing you have to decide is whether you will have to operate at once or not. I have told you here that the severity of the symptoms with their persistence will usually put you right. In the next place, do not put a light face on these cases; if you mistake one of them, and say it is a "bilious attack," "colic," or something of that sort, and the patient gets worse, and dies on the third or fourth day, you will feel very uncomfortable, and your reputation may seriously suffer. As a student I was taught to treat these cases invariably with opium and leeches, and only to open when abscess was very evident. Of course, a good many cases of the catarrhal and adhesive varieties got temporarily well. Those in which the peritoneal cavity was infected went "the other way," and furnished, no doubt, some of the specimens which are here for our instruction to-day.

As a final warning do not fall into the opposite error of not operating for appendicitis unless it is really necessary.

Unfortunately it has now become, in some countries, a fashionable disease, so that people think they ought to suffer from appendicitis, or have their appendix removed. I hope none of you will ever be influenced by such foolish or wicked reasons as a desire to operate, or to obtain fees dishonestly, to pander to the fancies and follies of patients, and perform such operations without the gravest consideration.

In conclusion I must ask you to supplement this too brief sketch of a most important subject by observation and reading. Especially pay attention to such subjects as renal calculus, ovarian inflammation, typhoid fever, or lead colic, all of which conditions may closely simulate mischief about the vermiform appendix.

ON TWO CASES OF APPENDICITIS.[1]

This afternoon I am going to call your attention to two cases of appendicitis which have recently been in the hospital. They present some remarkable features, principally for the reason that they were operated upon very soon after admission, far more early and quickly than perhaps is usually the case. I will commence by briefly giving you an outline of the particulars of them.

The first of the patients was a schoolgirl, aged 16, who had been in good health until January 29th, when in the middle of the day she was suddenly seized with very acute pain referred to the "pit of the stomach." I wish to call your special attention to this; the pain was referred by the patient to the middle of the stomach. This is common in appendicitis, and often leads to errors in diagnosis. At the same time she was twice very sick. Later on the patient describes the pain as "settling down on the right side." She was very sick again, and could not keep anything down. As usual, a dose of castor oil was administered by a nurse, but it was fortunately vomited. The bowels had acted once. Menstruation was present, and naturally enough the nurse supposed that this had to do with the symptoms present. She was brought to the hospital on the following day—that is to say, January 30th,—and was at once operated upon for these reasons:—Her pulse was exceedingly quick—nearly 120 per minute; there was a good deal of rigidity, resistance, and tenderness in the right iliac fossa, but no "lump" indicating a barrier of plastic lymph could be

[1] A clinical lecture delivered at St. George's Hospital, March 6th, 1900.

felt. The abdomen on that side was swollen, and meteorism was evidently coming on. The temperature was only 100°. A very important condition of things was discovered on making a small incision into the abdomen, one and a half to two inches in length. An inflamed swollen appendix was at once found, lying free among the intestines on the inner side of the cæcum. It was the size of one's finger, club-shaped, intensely red, and covered with yellow sticky lymph. On lifting the appendix out and attempting to ligature in the usual way it burst, and there issued forth several drachms of virulent yellow pus, which we caught hastily on a sponge. The appendix was, indeed, only just removed in time. If a few more hours had passed we can hardly doubt but that the abscess would have given way into the general abdominal cavity, and that most fatal condition known as septic or perforative peritonitis would have ensued, and would have hurried her to destruction. The intestines were sponged and cleaned, and the treatment afterwards was the usual one,—that is to say, the bowels were opened by a saline purge, turpentine enemata were given *per rectum*, and as soon as flatus passed freely we began to give some fluid food. For the first twenty-four hours nothing but tepid water was given by the mouth, and nutrient enemata every three hours by the rectum. She made an easy recovery.

The second case was that of a man aged 27. He gave this history:—A month before admission he had what he called an attack of colic; I wish you to particularly notice this. Attacks of what is termed colic are often enough really unrecognised appendicitis of a slight nature. The patient on this occasion felt rather uneasy, was given some opium pills, and got better. He remembers, however, the important fact that the pain was in the right iliac region. The day before he was admitted into this hospital he had a second attack of pain and tenderness, referred markedly to the right iliac region. Swelling and resistance on pressure was noted in the right iliac fossa.

He had been sick once and felt very nauseated. The doctor who saw him very wisely indeed advised surgical consultation, but the patient being a dispenser, and having, as he believed, a considerable knowledge of medicine, had taken opium freely. Now here follows a consequence I wish you most carefully to note. This man when he was seen by us looked comfortable, and said he felt very much better, "much better than on the day before." His tongue was foul and furred, his temperature over 100°, and there was marked tenderness on right iliac pressure. No "lump" was to be felt with certainty, but he had also the same important symptom which we noticed in the last case—a quick pulse. In the morning, carefully counted by the house surgeon, Mr. Pettinger, it was 80 to the minute, and in the afternoon 120, so that it increased very rapidly and progressively. On this ground mainly—the rapid increase of pulse-rate—I thought it better to explore the appendix. As usual with a patient enjoying the fallacious ease given by opium, some objections were offered, but overcome by strongly expressed opinions on the perils attending delay. On making the usual small incision I found a very disastrous condition of affairs. The appendix was gangrenous and sloughy; pus was escaping through a hole in it. Round the sloughing appendix the peritoneum was intensely red and inflamed. Some soft flimsy adhesions had already formed, and it seemed as though a large abscess would probably have ensued, if not general peritonitis. All this mischief, you will recollect, occurred in about twenty-four hours, and it was on the occasion of that "second attack," which those who promulgate "rules" in the treatment of a malady having such protean characters as appendicitis tell us we should wait for before operating! The appendix was removed, the parts sponged, and this patient also was given calomel, salines, and turpentine enemata to get the bowels to act rapidly. On the third day he had some fluid diet by the mouth, and, as usual in cases treated by these measures, got quite well.

These two cases, operated upon on the second day of the attack, form a useful illustration of the very important subject of acute appendicitis, of which you know a large number of cases are operated upon in this hospital, and which will constantly come before you in your future practice.

Three varieties of appendicitis often clinically recognised are (1) so-called simple or catarrhal appendicitis, (2) the ulcerative variety of appendicitis, and (3) that variety where the appendix is gangrenous and ulcerated and a diffuse suppurative septic peritonitis occurs. This latter variety is well termed "fulminating," and is one of the most perilous affections human beings are subject to. The so-called simple appendicitis, as recently shown by Mr. Lockwood in his paper before the Medical Society, is almost invariably due to the invasion of the lymphatics of the appendix with bacteria. And the concretions found in diseased appendices are largely composed of fæcal matter and organisms. Why the organisms pass through the mucosa is not quite clear; but when this happens an attack of inflammation takes place, which passes off, perhaps to be repeated by another one. This view of the pathology seems far more rational than to call these cases "gouty" or "rheumatic"! Recollect, then, that in the simplest case of so-called appendicitis there are all the potential factors present for a very serious disaster, if the inflammatory process should spread or be severe. You can never tell what the next attack will bring forth, and this is one of the dangers attending the practice of sending such cases to drink medicinal waters at a "Continental Spa"!

Now I will try to sketch out the usual history of a simple case of appendicitis. Of course the onset is sudden; the patient gets a certain amount of pain, which is often enough referred to the pit of the stomach, and is called an attack of colic. He feels sick and disinclined for food, and perhaps may actually vomit. The temperature rises to 100° or 101°; in a child it may be higher. The pulse is

increased in frequency, and the quicker the pulse and the more its rate is increased the more reason there is for anxiety. On examining the abdomen you find some marked tenderness on pressure in the right iliac fossa, and an obscure swelling may also be detected, owing to the quantity of plastic lymph which is thrown out round the inflamed appendix. The presence of a swelling indicates that some sort of barrier is being formed to general peritonitis, and is not a sign of evil omen. The bowels are almost always constipated, and the patient remains in this condition for a variable time, from twenty-four hours to two or three days. The temperature then falls, the rapidity of the pulse also lessens, and the patient almost invariably gets well. This is a summary of the sort of case which it is estimated forms 60 to 70 per cent. of the whole. The vast majority of such illnesses, if treated in the way I shall relate to you, get temporarily well. Now when you meet with a case where the symptoms are comparatively mild, how are you to manage it? The common plan adopted and advised by many physicians is to give these patients opium. My own idea is that there is no medicine that will benefit these cases in any real remediable way, and I think that far and away the wisest thing is to leave the patient alone and watch the case. If opium be given at all, a suppository of one sixth of a grain of morphia can be administered, but this is only to relieve discomfort, nothing else; and I would even avoid this if I could. It is also good practice to empty the lower bowel by enemata, and thus allow some flatus to pass. Give small quantities of cold fluid diet and watch the temperature, and especially the pulse-rate, with the most zealous care. If the case is going to turn out badly, there will be none of the fallacious improvements of opium to complicate your judgment. Locally, leeches and the ice-bag each have their votaries. I remember the late Dr. Hare used especially to dwell upon the efficacy of free leeching. Both these remedies may relieve pain, and I have a high opinion of the value of leeches. But as a general rule, if you leave these cases alone and let

them rest in bed, the attack spontaneously subsides. Perhaps the patient may go on without a second attack for many years; or he may have another quite soon, in a few weeks, and this may be a very serious one. One of the difficulties of the minor cases of appendicitis is the question of possibility of recurrence. All is uncertainty. You do not know when or whether the patient will have a return of his troubles, or whether, indeed, the next attack may not be fatal. So as long as the patient has a diseased appendix inside him, which gives rise to recurrent attacks, he is in a dangerous state. You may well compare such cases clinically to instances of neglected perforated otorrhœa. At any time, often most unexpectedly, a fatal blaze of inflammation may arise, and the disaster is often the more distressing because it is so unexpected.

Seldom will private patients allow operation in mild attacks of recurrent appendicitis. An attack severe enough to cause pain or alarm to the patient and his friends is often needed to convince them of the potential source of evil which is present.

Operation in recurrent appendicitis is usually done as a matter of choice, not at the time of the attack, but between the seizures. I think that all people who appreciate modern surgery will advise a patient who has such attacks, especially if he has had more than two, to have his appendix removed. The risk of removing an appendix properly through a small incision is practically *nil*. I have done a considerable number of these cases, and never have a moment's anxiety about them, and I do not see why any case should go wrong with ordinary care. Where many attacks have existed the extent and nature of the adhesions may severely tax the skill of the most experienced operator. I ask you to remember this, and never undertake one of these cases with the idea it is going to be easy or simple. The second class of case, where you get ulceration of the appendix with perforation and abscess, is in its symptoms much more severe than the last. The onset of the attack is more alarming, and so is the pain. Very severe

pain is commonly associated with a correspondingly severe lesion internally. This is, I think, as true as inferential observation can be, and is of *much clinical importance*. The patient may cry out, and commonly lies in bed with his leg drawn up so as to relax the fascia and peritoneum over the inflamed appendix. Vomiting is more urgent, the temperature higher, and the pulse is apt to be more rapid and to progress more quickly than in the last variety. So you see these two classes of case only differ in degree, and every gradation may be noted between them. You find a large, exquisitely tender mass in the iliac fossa, which rapidly forms, and which you can readily feel, and the difficulty which arises is to know when or whether pus has formed. Now the signs of the formation of pus in these cases are generally as follows:—The swelling, instead of getting smaller and retrogressing towards the third day, persists or gets larger. The mere persistence of one of these swellings beyond the third day of an attack generally means the formation of pus. Pus may be detected in these cases by rectal examinations. You should always examine *per rectum*, and by this means you will sometimes feel a sensation of elasticity or actual fluctuation. The pulse-rate—and this is an especially important matter—progressively increases. The patient often sweats profusely. If you have a mass in the right iliac fossa persisting over the third day, and the pulse mounts up to 105, 110, 120, in such cases I always advise operation. I simply tell you to-day what I would do personally, because there are great differences of opinion regarding the treatment of these cases, and we shall hardly ever be quite agreed about them.

A word *à propos* of the temperature in appendix abscess. It is very extraordinary what peculiarities of temperature one gets in abscess associated with disease of the appendix. Temperature may be normal, or may be even subnormal in acute attacks. I have known large abscesses filling up the iliac fossa associated with a nearly normal temperature. For this reason the temperature is not so good a guide in these cases as the pulse; but sometimes these patients have

a succession of rigors and sweats, and then one begins to suspect, with good reason, that there is infection of the portal vein, and that the patient has got, in fact, portal pyæmia with abscesses in the liver. This is one of the worst complications of appendix abscess that can happen. *So although absence of high fever does not exclude abscess, the presence of it is an additional evidence of the existence of pus.*

I may add here that pus in the appendix may be the cause of unexplained sepsis, with daily rigors and sweats. It is a region of the body to be carefully examined in doubtful cases of pyæmia. As a rule, a case that sets in with very severe symptoms—bad pain, vomiting, and so on—will generally terminate in abscess or peritonitis. My own practice in these cases, I may say at once, is to operate very early. If I am called to a case of appendicitis, and the symptoms come on with marked and alarming severity, I always explore the appendix. The only mistake I could make is to forestall an abscess or general peritonitis, which I have not the least objection in doing. I may say at once that even the most severe cases *may* be brought to a successful issue by giving opium and leaving them alone. An abscess may burst into the bowel and the patient recover. This treatment I would never sanction, and the responsibility must rest with the doctor or relatives who insist upon it.

The third class of case is that known as gangrenous appendicitis with ulceration, or fulminating appendicitis. I think this disease furnishes some of the most deceptive and tragic cases which you will hereafter meet with, and I therefore wish to speak very anxiously about it. First of all, these cases are unfortunately almost invariably mistaken for acute intestinal obstruction, which, indeed, they very closely resemble. In several instances I have known the onset to occur during severe exercise—as football,—or to be attributed to a blow. A patient is smitten with sudden acute abdominal pain referred to the pit of the stomach. He vomits most urgently. The first vomit is green fluid, and it will go on to become brownish and foul.

The belly rapidly swells, with rigidity and tenderness, and the bowels are absolutely constipated. The pulse at once becomes remarkably rapid. The temperature may rise at first, but it soon falls as the strength of the patient ebbs. The purgatives, which are unfortunately too often given in these cases, are providentially vomited. Within twenty-four or thirty-six hours symptoms appear which may first show the unwary what he has to deal with. The extremities become cold, the face dusky and pinched and anxious, with deep hollows under the eyes. The pulse, which at first is very rapid and hard, becomes in twenty-four hours to two days so fast and feeble that you can hardly count it at the wrist. The belly is greatly distended and very tender, and all food is vomited. The mind of the already moribund man is clear and collected. He often cannot realise he is severely ill, and if he has been given opium he "gives the lie to death" by declaring himself better. In these most dreadful cases speedy operation is the only hope for life, and the prognosis is in direct proportion to the time that has been lost and extent of the septic peritoneal infection. When the "collapse" symptoms have set in with a weak and quickening pulse, recovery is hardly to be hoped for. These cases are peculiarly dangerous and deceptive in early life. I have seen several instances in young children, and I cannot help believing that they are commonly overlooked. The child has agonising abdominal pain, vomits, and its belly begins mysteriously to swell, with a rapid pulse and some fever. I may remark that an additional diagnostic point about these acute cases is that you may sometimes detect fluid in the cavity of Douglas's pouch. This is not invariably the case, for the intestines may be glued together by yellow, sticky lymph. In other instances the belly is full of thin, evil-smelling pus, which may be detected by rectal examination.

The diagnosis of these cases from acute intestinal obstruction, often difficult, is made in the following way:— Vermicular movements of the intestines, marked in acute

intestinal obstruction, are absent in acute perforative peritonitis. In acute intestinal obstruction there is not necessarily fever, nor intense pain and tenderness on pressure over the right iliac region, nor an extremely rapid pulse. If the latter symptoms are present you can be pretty sure that the case you have to deal with is one of acute fulminating appendicitis. In cases of doubt, remember that an inch and a half incision in the right iliac region will at once clear up the matter. The appearance of healthy intestine negatives perforative appendicitis. If these cases are treated, as they often are, by opium and "expectancy," the patient will slip through your fingers and *pass quietly into the realms of hopelessness almost before you realise what has happened.* These cases, especially occurring in young people, and possibly in the only child of an important family, are apt to become terrible disasters both to the patients and to your own reputation. If you carry out the rule which I told you of just now, and remember to operate at once if the symptoms are very severe, or if you do not operate yourself, call somebody in to see the case with you who can operate, you will escape these dangers and share a very weighty responsibility with others. Another common error is to treat the acute peritonitis and to ignore its cause. Acute peritonitis is due in nine cases out of ten to perforations of some hollow viscus, or the bursting of an abscess. Thus perforations of the appendix, stomach, duodenum, or abscess of the Fallopian tube take a leading part in its production. Such lesions can only be dealt with surgically, and can only be dealt with successfully before the patient is poisoned by the septic products of his own peritoneum.

Next I think I may say a few words as a general summary of my views regarding the giving of opium in these cases. It is all very well for us in hospital circles to preach against its use. I think you will find when you get into practice that you will be driven, against your will, to give opium in bad cases of appendicitis. The pain is so great, and the patient's distress and misery so marked,

that you must do something to relieve him. If driven to administer the drug, give a small dose of opium—that is to say, a quarter to half a grain—by the mouth, or, what is better, one sixth to one eighth grain of a suppository of morphia by the rectum. You will find that even such small doses will give very marked relief to the symptoms; but note the condition of the appendix is in no way altered, and because the patient feels and says he is better, do not be deceived as to the necessity for operation. If the pain again increases, and the patient craves for more opium, it is an additional proof for the necessity of operation. In these cases it is no exaggeration to say opium may completely relieve the patient and abolish all fear on the part of the doctor if given in large and continuous doses. The patient remains perfectly quiet, his countenance becomes more tranquil, he says he feels relieved, and he knows he is going to get better. An experienced surgeon feels the pulse, but to his dismay can hardly count it at the wrist. He finds the abdomen swollen and tympanitic, and he knows that fatal mischief has progressed unchecked, and that the signs of it have been absolutely concealed by the opium which has been administered. On the third or fourth day of such an illness the patient's friends will send round and say that a "sudden change" has taken place in the patient, and would the doctor come round to see him? And now alarm for the first time is created. The patient is dying, though he does not know it. But there is a marked alteration in his face; the eyes are sunken, the extremities are cold, the pulse can no longer be felt at the wrist, and in a couple of hours the patient is dead. Having seen several of these distressing cases, you will realise how strongly I feel that the giving of opium in appendicitis should be limited to a small dose at the outset of an acute attack in order merely to give the patient relief from his pain. Symptoms severe enough to call for more opium should be regarded as usually indications for operation.

Next let us devote a few words to the treatment of the

so-called mild cases of appendicitis, which I spoke of at first. I told you that the best plan in such cases at first was practically to do nothing but leave them alone, except for the emptying of the rectum by enemata, and giving some small quantity of fluid nourishment by the mouth. The next point concerns the treatment of these cases between the attacks. A large number of patients who have recurrent appendicitis of a mild type suffer from digestive disturbance, and particularly chronic constipation. A large proportion of these cases of appendicitis are found in constipated individuals. Therefore you have to carefully diet them for constipation, and a course of mercurial purgation in small doses is often beneficial. Massage of the abdomen must, of course, be negatived. It may do much harm.[1] Having got the intestinal canal to act regularly, occasional small doses of salol should be given for several weeks. If the patient has bad teeth, and cannot masticate his food, send him to the dentist to see that the teeth are put in good order. It often happens in cases of recurrent appendicitis that by regulating the bowels and diet no further attacks take place. If they do occur it is far wiser to have the appendix removed. Another point often needs consideration. If the patient is going to live abroad, or in an out-of-the-way part of the country away from skilled aid, he would be well advised to have his appendix removed at once if it is unsound. I have already pointed out to you the extreme uncertainty of these cases, and how impossible it is to judge whether the very next attack may not be of a most dangerous nature. Here it would be well if I were to say a few words as to how you ought to operate upon an abscess in connection with the appendix, because it is an operation which you are sure to have to do, and it is not one of great difficulty. Make a curved incision close above Poupart's ligament, and carry it through the muscles one by one, and then you come down upon the thickened adherent transversalis fascia and peritoneum, through which you pass your finger into the

[1] I wish to strongly emphasise this point.

abscess, and out will come stinking, offensive pus. You may wash the abscess cavity out with hot sterilised water, or wipe it with pledgets of gauze. I prefer the latter method. The question then will arise, are you to remove the appendix or not? There are great differences of opinion with regard to this. My own rule is to always remove the appendix if I can at all readily get at it. I sweep my finger round the cavity, and if I feel the appendix, and can shell it out, I remove it. I am sure in the majority of cases of abscess the appendix ought to be taken out at the time of opening. Some of these patients, however, are too ill to bear prolonged manipulations, and there is a risk of breaking down the cavity and infecting the general peritoneum.

Very frequently the abscess spontaneously cures the appendicitis by the appendix sloughing off into the abscess cavity, and coming away in the discharge. But this is by no means universal. I operated the other day upon a gentleman who about three years ago I treated for appendicular abscess. He had then an enormous abscess burrowing nearly to his diaphragm above, and below as far as the pelvis, and a large amount of offensive pus came away. He was so desperately ill that one could not think of removing his appendix. Tubes were put in, and the abscess flushed out, and he was carefully nursed, and although extremely weak he made a good recovery. A sinus remained for a long time, but that ultimately closed, and he was congratulated on his recovery, and I informed him, as one naturally does inform such persons, that he would probably get no further trouble, as the appendix was destroyed by suppuration and sloughing. He went on for all this time without a symptom. He played golf, and led an active life. But about a month ago he got another attack of very acute inflammation, and the question was whether he should be operated upon. He had a tender mass in the right iliac fossa, which was carefully watched. The pulse did not mount to any serious extent, the temperature on the third day subsided, and the swelling gradu-

ally disappeared. After this I urged the removal of the appendix, which I felt sure was there still, and ultimately the operation was done. The appendix was found matted in a lot of adhesions behind the cæcum, thickened, inflamed, and puckered from various perforations. He will now remain quite well. This case illustrates what I am continually harping on, that you do not know what is going on in tissues and organs; you cannot see and inspect, and if an appendix is once diseased there is no safety or peace for the individual until he is able to see it in a bottle.

Probably medical men will never quite agree on any routine treatment of appendicitis, because what one may consider a severe case another may consider mild, and *vice versâ*. But I am as confident as I can be that the safe plan in the treatment of this most protean malady is to explore the appendix in cases which are ushered in and accompanied by symptoms of any degree of severity. You never can tell whether an abscess is going to form, or whether there is going to be fulminating peritonitis, or what is going to happen. Operation in such cases prevents the formation of an abscess or peritonitis, which no one can object to!

In conclusion I want to say a few words about the operation for removal of the appendix. The proceeding for removal of the appendix is, as a rule, a very simple one. On the other hand, it may be very difficult, or indeed impossible. Provided the patient has not had many attacks—that is to say, if you remove it after the first or second inflammation,—it generally comes out with remarkable ease. The appendix should be removed through an incision of not more than one and a half to two inches in length. In such cases it is well to split the muscles in directions parallel to their fibres; I believe this lessens the tendency to hernia. The finger passed down into the abdomen will often at once come upon the enlarged appendix, which can be readily brought out. If you have no inflammatory lump to guide you, and you cannot feel the appendix, you should put your finger in and pull out a coil

of large intestine, which is recognised by the longitudinal bands in the surface. You follow these down over the cæcum, and the appendix is then generally found. A common place for the organ is behind the cæcum tucked up and pointing towards the kidney. But it may be located anywhere about the cæcum. It may be outside it, behind it, or pointing towards the umbilicus, or even hanging down in the pelvis. Sometimes it is of extraordinary length, as you see in this specimen. In a case like this the appendix may come down into Douglas's pouch or enter a hernia. I have known a concretion and abscess in the appendix to be felt through the vagina and be mistaken for a suppurating ovary. I may say that when difficulty occurs from numbers of dense adhesions, it is wiser to make a large incision at once, so that you can readily manipulate and expose the cæcum and surrounding parts. Much of the delay witnessed in these cases is due to the surgeon trying to remove through a little opening an appendix concealed and matted down by dense adhesions.

The actual amputation of an appendix should be done in the following way:—If it is exceedingly sloughy and bad, as is often the case, you tie it and cut it off, using for the ligature soft silk of moderate thickness carefully boiled. Here there is one point to which I must call your attention closely, because disasters have occurred from neglect of a very simple precaution. The appendix has a mesentery, and in this, close to the appendix, lies a little vessel. It is a terminal twig of the ileo-colic artery, which runs along the root of this mesentery and branches out over the appendix. If you merely tie the appendix and snip the mesentery across you may leave the artery bleeding into the peritoneal cavity. You hardly notice it at the time, and yet the patient may subsequently have serious intraperitoneal hæmorrhage. Employ the transfixion method of ligature, or use the "Staffordshire knot," so that slipping is out of the question.

Supposing that the condition of the appendix is not so

bad, that it is not inflamed, and not ulcerative or gangrenous, the usual way of dividing it, and perhaps the best, is as follows:—First tie the mesentery and its artery with a separate piece of silk thread; secondly, remove the appendix by making a circular incision round it, and turn down a "cuff" of peritoneum. Cut off the appendix and ligature it with a fine piece of soft silk, then turn your "cuff" of peritoneum up, and sew it together over the stump, in much the same way as you amputate an arm, supposing the bone to represent the lumen of the appendix, and the soft parts the peritoneum. I disinfect the stump in all cases with pure carbolic acid. If the appendix has sloughed away from the cæcum, the opening into the cut should be touched with carbolic acid, inverted, and united with a Lembert suture. Regarding the after-treatment of these cases, recollect that the more severe the case—the more peritonitis—the more reason there is for getting the bowels to act. If you get an early action of the bowels and passage of flatus in a bad case of appendicitis operation, the patient will almost invariably get well. The purgative I usually give is two or three grains of calomel, followed by sulphate of magnesia and syrup of figs, combined with a carminative, such as ginger and peppermint water. After two or three hours, a turpentine enema of the pharmacopœial strength is administered. I have even gone on giving compound jalap powder rather than let the patient die with distended bowels full of pernicious material. It is surprising how many of these patients can be brought round by purgation. Some of them die simply because the surgeon has not courage to get the bowels to act. In most cases, however, calomel and salines will do all that is needful. I avoid morphia after operation if possible.

As regards dietetic treatment, these patients after operation are thirsty. I see no objection to let them sip small quantities of tepid water. Nourishment during the first twenty-four hours should be in the form of rectal enemata, which may consist of beef-tea and small quantities of

brandy, with eggs beaten up with them. The more fluid the enema, and the less solids it contains, the better.

In operations for recurrent appendicitis, where the condition of the patient is generally good, the usual treatment is to get the bowels open on the third day, and a simple aperient with an enema generally suffices.

These are some of the points, but only some, regarding a most intricate subject, the treatment of appendicitis. It is very difficult to know exactly how to deal with these cases, and when you get into practice you will find your difficulty enormously enhanced. I can only say that a patient who is brought into a London hospital has a far better chance of escaping with his life than the millionaire who dwells in a palatial mansion in Belgravia. You will find that the higher the social status of the patient the less chance he generally has. Morphia holds its benign sway. Early operation is scouted or refused by the relatives or medical men. Even the resources of homœopathy are invoked in deference to the wishes of some important member of the family. When the surgeon is at last allowed to operate the case is well-nigh hopeless, and his operation is blamed for the death, which is really due to culpable delay. I take up a strong line in these circumstances, and advise operation if the symptoms are severe. If the relations do not agree to this, I tell them that I am perfectly willing for anyone to take charge of the case who will take the responsibility of "haphazard" treatment. The case may recover without operation, but the risks run are very serious. I trust that in your future practice, when, as assuredly will happen, these anxious cases come before you, you will remember my words. The necessity for operation is in proportion to the severity of the initial symptoms, and especially their progression from bad to worse. Acute peritonitis is practically always due to an infective focus, which needs early surgical treatment. The concealment of acute abdominal symptoms by morphia is a plan of practice fraught with risk.

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