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The Harveian Lectures
1902.

ALBAN DORAN

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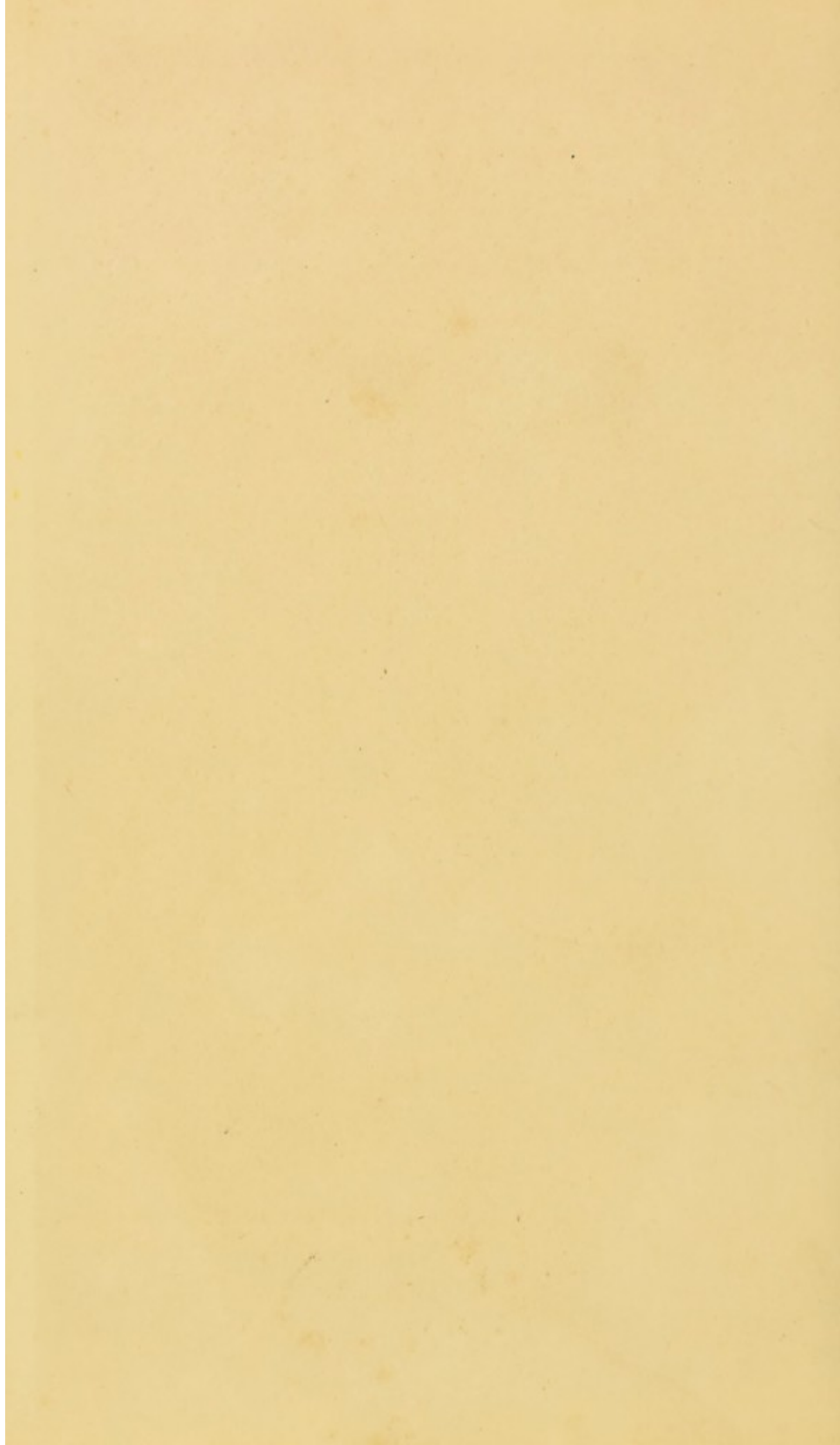
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THE HARVEIAN LECTURES



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The Harveian Lectures
ON
FIBROIDS OF THE UTERUS
AND ITS LIGAMENTS

CONSIDERED FROM A CLINICAL AND
SURGICAL STANDPOINT

*Delivered before the Harveian Society of London on
November 6th, 13th, and 20th, 1902*

BY
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The Garbeian Lectures

ON

FIBROIDS OF THE UTERUS AND ITS LIGAMENTS CONSIDERED FROM A CLINICAL AND SURGICAL STANDPOINT.

LECTURE I.

Delivered on Nov. 6th, 1902.

MR. PRESIDENT AND GENTLEMEN,—In calling upon me to deliver these lectures you have conferred upon me an honour which I deeply appreciate and for which I most sincerely thank you. I have chosen for their subject certain questions of clinical and surgical interest in relation to fibro-myoma of the uterus and its ligaments and my remarks will be mainly based on my own experience. The different subjects will, no doubt, appear to you rather disconnected, but you will not expect me to deliver a systematic course of lectures on a subject so well known as the pathology, diagnosis, and treatment of uterine fibroid disease.

On the pathology of fibroids I need not say much, as we all know that a tumour of this class is essentially a myoma and contains more or less white fibrous tissue. The surgical anatomy of fibroids of the uterus and its ligaments is a matter of more pressing interest. Demonstrations of the anatomy of the triangles of the neck and of the structures concerned in hernia are very familiar to us. We who have to diagnose and to treat abdominal and pelvic tumours and are sometimes called upon to remove fibroids ought to make clear the anatomy of the parts concerned both in their origin and their development. On that account I shall first direct your attention to the surgical anatomy of the broad ligament and to the seat of origin of fibroid tumours associated with it. Next I shall turn to my own experience as to the treatment of the ovaries when the uterus is removed for fibroid diseases and say some words on the question of removal of the ovaries as a remedy in cases of that disease—an operation which still has

distinguished advocates, as we learnt last summer at Manchester. Then I will say something on some more or less purely clinical subjects in association with fibroid disease—namely, family history, hæmorrhage, absorption (another matter that was talked about at Manchester), ascites, necrotic changes, “cup-and-bail” fibroids, disease of the appendages associated with fibroids, and, lastly, large vessels and the soufflé in fibroids. The concluding lecture will consist of my views and experience as to several surgical questions—namely, the management of capsules, adhesions in fibroid disease, post-operative ileus in hysterectomy, rupture of the abdominal wound, and cancer of the stump. I shall terminate with some observations on the danger of pushing impacted fibroids out of the pelvis. You can now see beforehand that I shall not dwell on many subjects pertaining to uterine myoma and its treatment. I shall omit all mention of those subjects, not only because I have not sufficient time to discuss them, but also because they have been so much talked about of late that some other matters, I mean those on which I intend to dwell, will probably interest you more or at the worst weary you less. For the most recent opinions about the more important subjects which I cannot discuss—namely, prognosis of fibroids, expectant treatment, and the merits of different operations—I refer you to the well-known writings of Dr. F. H. Champneys,¹ Dr. C. J. Cullingworth,² Dr. M. A. D. Scharlieb,³ and Mr. E. Stanmore Bishop,⁴ and to the recent discussion on total abdominal hysterectomy at the Manchester meeting of the British Medical Association.⁵

THE SURGICAL ANATOMY OF THE BROAD AND OVARIAN LIGAMENTS.

Since the establishment of pelvic and abdominal surgery a great deal has been written by Sir F. Treves, Mr. C. B. Lockwood, and others about the folds of the peritoneum. In dealing with fibroids, clinically or surgically, we have specially to consider one fold, the broad ligament, and certain other bands, also dignified by the name of ligament, in its vicinity. The more thoroughly we understand these folds and bands the better. The literature of the broad ligament is already very voluminous, but it has up to the present been mainly devoted to the question of burrowing

¹ An Address on Some Points in the Natural History of Uterine Fibroids, *THE LANCET*, Jan. 20th, 1900, p. 147.

² An Analysis of 100 Cases of Uterine Fibro-myoma, *Journal of Obstetrics and Gynæcology of the British Empire*, January, 1902, p. 3.

³ An Analysis of 100 Cases of Fibro-myoma Uteri, *ibid.*, October, 1902, p. 323.

⁴ Uterine Fibro-myomata: their Pathology, Diagnosis, and Treatment, 1901.

⁵ Herbert R. Spencer: Total Abdominal Hysterectomy (especially by Doyen's method) for Fibro-myoma Uteri, with Discussion, *Brit. Med. Jour.*, Oct. 11th, 1902, p. 1131.

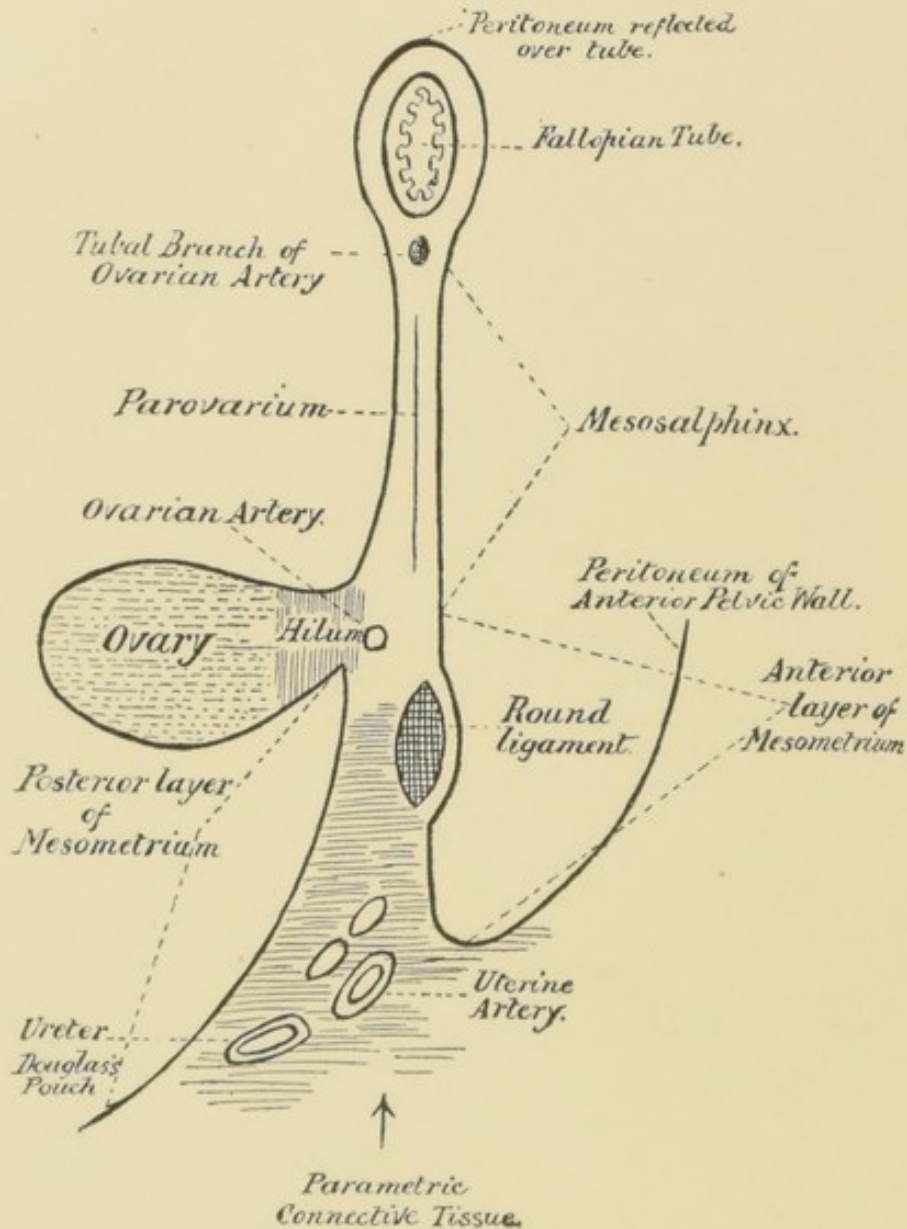
cysts and extra-uterine foetal sacs, with which we are not directly concerned.⁶ Still we make mistakes, or we may operate under conditions where diagnosis is uncertain, hence, whilst it is necessary for us to understand how fibroids may burrow into the folds of the broad ligament, it is also imperative for us to be aware what other kinds of tumour may be found insinuating themselves into these very same folds.

We all know how the peritoneum is reflected over the Fallopian tube. Meeting below it, the layers lie close together until they reach the level of the ovary. This reflexion is the upper portion of the broad ligament now universally known as the *mesosalpinx*. It contains the parovarium and an anastomosis of the uterine and ovarian arteries. Its connective tissue is scanty but loose, hence the Fallopian tube can be easily peeled off when its folds are opened up. The mesosalpinx is invaded by broad ligament cysts, by burrowing ovarian tumours, and also by many subserous fibroids of uterine origin that grow outwards. Last month when removing a large fibroid uterus I was puzzled by a swelling in the left mesosalpinx of the size of an almond. I had to open the posterior layer before I could apply a ligature to the broad ligament. Then I found a body like an extra-ovary, but Dr. C. H. J. Lockyer pronounced it to be a pedunculated subserous uterine fibroid. Sessile fibroids of broad ligament origin do not, as a rule, develop in the mesosalpinx but rather in the mesometrium, presently to be described. Hence the tube, mesosalpinx, and ovary often lie unaltered on the top of a big fibroid of the broad ligament—a most characteristic appearance and a useful guide to the operator. I can show you, however, a specimen of a minute pedunculated fibroid attached to the posterior layer of the mesosalpinx. This specimen, to which I shall again refer at greater length, implies, I believe, that even a sessile fibroid independent of the uterus may develop in the mesosalpinx.

Owing to the small amount of connective tissue which it contains the mesosalpinx is not so much involved in parametritis as is the lower part of the broad ligament and it bears manipulation and ligatures much better. It includes in its folds large lymphatic vessels which when obstructed, as frequently happens in cases of large uterine fibroids, appear as irregular yellow bullæ, sometimes concealing the Fallopian tube so as to confuse the relations of the tumour. A branch of the ovarian artery which anastomoses with the uterine runs in the mesosalpinx close under the inner half of the tube. When the ligature slips from the inner part of a pedicle after removal of an ovary it is this artery which bleeds and in enucleating a uterine fibroid which has opened

⁶ See Capsules, False and Real, in Ovariectomy, Brit. Med. Jour., vol. i., 1896, p. 960; and On the Management of True and False Capsules in Ovariectomy, Transactions of the Obstetrical Society of London, vol. xxxix., 1897, p. 265.

up the mesosalpinx the same vessel is cut or torn. It bleeds very sharply but is easily secured. In concluding these observations about the mesosalpinx I must add that the operator should remember that when the fibroid burrows in the mesosalpinx the tube will lie stretched in the tumour, as



Vertical section through the broad ligament showing relations of mesosalpinx and mesometrium, as distinguished by Waldeyer.

in the case of parovarian cyst, whilst when it opens up only the lower part of the broad ligament, now to be described, the mesosalpinx and tube will project from the upper surface of the tumour.

Posteriorly the ovary projects into the peritoneal cavity, anteriorly the round ligament, in its course from the uterus to the inguinal canal passes under the anterior layer of the broad ligament. Below the level of the ovary the broad ligament is best distinguished by the name *mesometrium* sanctioned by Waldeyer.⁷ The layers of the mesometrium as they descend part widely, the gap being filled by the parametrium, part of the pelvic connective tissue. The anterior layer soon turns sharply upwards over the corresponding side of the bladder and pelvic wall, to become the parietal peritoneum of the abdomen. Hence this fold forms the lateral continuation of the utero-vesical pouch. Its relation to the bladder is very important and is often greatly altered by fibroids which develop in the anterior part of the uterus and grow outwards. Broad ligament fibroids cause yet greater displacement of this fold. Hence in operating on such cases the surgeon must make sure where the fundus of the bladder lies. Even when the fold is normal the bladder may be found in abnormal relation to it. Tandler and Halban describe and figure a case where the bladder, otherwise normal, was invested by the layers of one broad ligament.⁸

When a fibroid of the broad ligament or uterus grows forwards and upwards, displacing this fold, it not only draws up the bladder on its anterior aspect but also insinuates itself between the abdominal parietes and the parietal peritoneum. The same happens when a pelvic cyst and when a tubo-ligamentary pregnancy advances anteriorly, constituting the "anterior ligamentary pregnancy" of Taylor.⁹ In all cases the tumour lies in front of the peritoneal cavity. The parietal peritoneum behind it protects it from infection from intestine.

I cannot understand why, in diagrams by Andersen and other anatomists of repute, drawings copied over and over again in text-books, the anterior layer of the broad ligament is represented as though it dipped down as low as the posterior. We all know that the posterior layer, which below the ovary forms part of the mesometrium, passes deeply downwards into the pelvic cavity to form the anterior part of Douglas's pouch.

Uterine and broad ligament fibroids sometimes grow backwards and upwards, displacing the posterior layer of the mesometrium. This complication, much more frequent than displacement of the anterior layer, brings the tumour into close relation with the ureter, vagina, and rectum, which may be adherent and therefore liable to damage at an operation. The neighbourhood of the rectum involves

⁷ Das Becken, 1898.

⁸ Topographie des weiblichen Ureters, Plates xxxi. and xxxii.

⁹ Extra-uterine Pregnancy: A Clinical and Operative Study, p. 77. Also called "sub-peritoneo-pelvic" or "sub-peritoneo-abdominal pregnancy." As the tumour lies away from intestine the chance of infection is slight.

risk of infection, not so great, however, in the case of a fibroid as when an ovarian cyst or a tubo-ligamentary pregnancy¹⁰ displaces the posterior layer of the mesometrium. The "posterior ligamentary pregnancy" of Taylor usually becomes septic. But though fibroids in the same position are seldom infected ligatures applied to the capsule after their enucleation are especially liable to infection. The mesometrium is the natural home, the seat of origin of most fibroids (fibro-myomata) of the broad ligament, which often do not open up the mesosalpinx even when they burrow extensively behind or in front of the peritoneum. Broad ligament cysts and ovarian tumours sometimes burrow in the mesometrium, after having already opened up the folds of the mesosalpinx; but I have noted instances where tumours of this class have, like a fibroid of the broad ligament, opened up the mesometrium alone, the tube and mesosalpinx lying free on the top of the tumour.¹¹ A fibroid of the body of the uterus or of the cervix not rarely opens up the mesometrium. Enucleation in these circumstances is specially difficult. The parametrium, so abundant in the mesometrium, is subject to parametritis, either as the familiar "pelvic cellulitis" of childbed or as the inflammatory affection which sometimes follows hysterectomy through bruising of the tissues or from the irritation of ligatures. The ureter and uterine vessels run in the lower part of the mesometrium. We know how the utero-sacral ligaments, which contain plain muscle fibres, form a kind of edge laterally to Douglas's pouch beneath them. They may cause the incarceration of a small ovarian tumour, a painful complication,¹² and I have found pedunculated fibroids springing from the back of the uterus similarly incarcerated, the uterus being drawn back. I fancy, therefore, that they sometimes account for the pain caused by small tumours which occupy Douglas's pouch. These ligaments may damage a backward-displaced uterus by gripping it, but the amount of harm thus done is questionable. A fibroid may develop in one of the utero-sacral ligaments.

I now desire to turn special attention to a structure the importance of which has been underrated, I mean the *ovarian ligament*. It is a fairly stout band of fibrous and plain muscular tissue which runs from the uterus to the ovary, causing a slight elevation of the posterior layer of the broad ligament. It is quite short, usually under an inch in length, but I have seen it nearly two inches long even when attached to a normal ovary. The surgeon, for obvious reasons, should remember that for practical—that is to say,

¹⁰ Taylor: loc. cit. This variety is the "posterior ligamentary" or "retro-peritoneal" pregnancy of that author.

¹¹ See Capsules, False and Real, in Ovariectomy, with notes of six cases, loc. cit., Fig. 3, No. 4.

¹² See Case 1 in my note on Ovarian Tumours simulating Inflamed Ovaries, Edinburgh Medical Journal, vol. iii., New Series, 1898, p. 450.

pedicle-making—purposes it is short. In cases of ovarian cyst, with which we are not directly concerned, it is elongated, but in fibroid disease of the uterus it usually remains short. Histologically, and therefore anatomically, it is part of the uterus; it is a fibro-muscular structure liable to become the seat of a fibroid, a true fibro-myoma. This specimen shows this form of tumour in a very early stage and more will be said presently about fibroma of this ligament. Such a growth is more than a pathological curiosity. I shall have to speak of large ovarian ligament tumours. But such morbid growths are rare. It is much more important for the surgeon to remember that a piece of detached ovarian tissue is occasionally to be detected in the ovarian ligament close to the uterus. Operators of repute, such as Dr. Murdoch Cameron and Mr. Furneaux Jordan, still advocate oöphorectomy for the cure of fibroids, but I will show on the other hand that it is hard to remove all ovarian tissue in that operation owing to the nature of the ovarian ligament.

In July, 1901, I removed a large bleeding fibroid from a woman, aged 41 years. I sacrificed both ovaries as they were undergoing suspicious cystic degeneration. It happened, as is usually the case when an ovary is cystic, that the ovarian ligament was elongated; this was noted on both sides. Dr. Lockyer examined the uterus and its appendages after the operation and found a distinct piece of ovarian tissue or "accessory ovary" in one ovarian ligament, close to the uterus. The patient recovered and the period was completely suppressed, not without very troublesome flushings. Had the case come under my care 15 years earlier I should probably have removed the ovaries alone. Then the bleeding would almost certainly have continued as the "accessory ovary" would have lain in the pedicle. The occasional presence of ovarian tissue in the ovarian ligament and the natural shortness of that band need our serious consideration. For it is, as a rule, impossible to remove the normal ovary entire with intent to check hæmorrhage from a fibroid or to prevent its further growth. The ovarian ligament is often hard to reach and if cut short after ligature there would be great risk of slipping of the silk and fatal hæmorrhage, whilst if cut long some ovarian tissue will be left behind and the object of the operation will be frustrated. Whilst it is so difficult to remove all ovarian tissue with safety, and to leave the fibroid uterus behind, there is no difficulty in taking away the ovaries entire at a hysterectomy. They come away complete, attached to the uterus by the ovarian ligaments. It is the outer, not the inner, attachments of the ovaries that are divided in that case. The outer attachment of the ovary is the infundibulo-pelvic ligament, bearing the ovarian vessels, which does not contain detached portions of ovarian tissue and is readily divided at a point far external to the limits of the ovary. Hence, when an ovary seems diseased, there need be no hesitation in removing it with the fibroid uterus. Nor, on the other hand, is it difficult or dangerous

to leave an ovary when the uterus is removed. In that case the broad and ovarian ligaments are ligatured with the tube internal to the ovary and divided on the uterine side of the ligature which will hold well; the vessels on its distal side give no trouble after the big vascular uterus has been removed. Let it be noted how different is the case when the ovarian ligament is ligatured, the ovary cut away, whilst the fibroid uterus full of large vessels is left behind.

FIBROID OR FIBRO-MYOMA OF THE BROAD LIGAMENT.

Fibroid tumour of the broad ligament has been shown by recent experience to be anatomically and surgically, though not pathologically and clinically, a disease distinct from fibroid of the body and cervix of the uterus. When of large proportions the proof that the tumour was not originally uterine may be contested. It happens, however, that several small broad ligament fibroids have been detected at operation or after death lying far from the uterus and separated from that organ by a wide tract of the parametric connective tissue. Streeter¹³ removed a tumour of this kind weighing 10 ounces from the right broad ligament and I have recently reported a case¹⁴ where I took away a large multilocular cyst of the left ovary and then found beneath it a very heavy little tumour, smooth, oval, and two and a quarter pounds in weight. It was enucleated with the greatest ease from the parametrium and was perfectly distinct from the uterus; it was made up of plain muscle cells and white fibrous tissue. Vessels had to be secured in the parametrium, but no part of the uterus was wounded or ligatured and recovery was speedy.

These broad ligament fibroids are really retro-peritoneal. For clinical reasons I may note that Mr. Marmaduke Sheild has reported a case of retro-peritoneal *fibroid* which he admits may have been of uterine origin.¹⁵ It lay behind the mesentery, the position where large retro-peritoneal *lipomas* develop. Now it happens that Sir Frederick Treves describes how he removed a *lipoma* from the broad ligament where we usually find *fibroids* of the kind which we are now considering.¹⁶ These rare conditions must be borne in mind when we attempt to diagnose a doubtful abdominal swelling.

There remains one more subject of clinical and surgical importance in relation to fibroid of the broad ligament

¹³ American Journal of Obstetrics, vol. xxi., p. 211.

¹⁴ Fibroid of Broad Ligament associated with an Ovarian Cyst. Transactions of the Obstetrical Society of London, vol. xliii., p. 260. The specimen is in the Museum of the Royal College of Surgeons of England (Pathological Series, A.4590, A. a).

¹⁵ A Case of Large Solid Tumour removed with success from the Retro-Peritoneal Space, Transactions of the Royal Medical and Chirurgical Society, vol. lxxx., p. 205.

¹⁶ A Case of Lipoma of the Broad Ligament, Transactions of the Clinical Society of London, vol. xxvi., p. 101.

as a retro-peritoneal tumour. That class of morbid growth seems related to congenital displacement of the kidney. Retro-peritoneal lipoma, properly so-called excluding lipoma of the omentum and broad ligament, is very rare. Yet in one case which occurred in my own operative practice¹⁷ the right kidney lay on the brim of the pelvis, its vessels being apparently derived from the common iliac artery and vein. Thus displacement of the kidney was detected in one out of about 30 reported cases of the most typical form of retro-peritoneal tumour. Turning to fibroid of the broad ligament, a less typical form, but pathologically retro-peritoneal, let it be noted that out of 39 cases which I have tabulated and published¹⁸ in one there was a pelvic kidney. The surgeon may as well remember that a kidney may lie much lower down than he suspects, so that he must be cautious while enucleating a fibroid of the broad ligament.

The surgical anatomy of a broad ligament fibroid is of much more importance to us than its pathology. The tumour usually lies at first between the folds of the mesometrium. It is, as a rule, sessile, but it may be pedunculated. Whilst the mesometrium is always involved the mesosalpinx is seldom opened up, nor does this kind of tumour commonly originate between its folds which, unlike the mesometrium, include but little connective and muscular tissue. This specimen, to which I have already referred, shows that a broad ligament fibroid may be pedunculated and also that it may be connected with the mesosalpinx. Hence it is just possible that a sessile fibroid might originate in that part of the broad ligament. The specimen comes from the museum of the Royal College of Surgeons of England¹⁹ and is thus described: "A left broad ligament exhibiting a small pedunculated myoma, which is attached to the posterior surface of the mesosalpinx near the hilum of the ovary, *but unconnected with its ligament*. From a middle-aged woman who had several pedunculated fibro-myomata attached to the serous surface of the fundus uteri." It was found in the College stores. The fibroid is so small that its relations are evident—its pedicle has no connexion with the uterus, the ovary, or the ovarian ligament. The great majority of broad ligament fibroids, however, are sessile tumours developing in the mesometrium. The manner in which they open up that fold, push the intact mesosalpinx upwards, and come to lie in close relation with the bladder, ureters, and rectum has been already explained when I spoke of the surgical anatomy of the mesometrium which must be thoroughly understood

¹⁷ Retro-peritoneal Lipoma weighing 13 pounds 12 ounces, *Journal of Obstetrics and Gynæcology of the British Empire*, September, 1902, p. 244.

¹⁸ *Transactions of the Obstetrical Society of London*, vol. lxi., p. 188, Case 7.

¹⁹ Museum of the Royal College of Surgeons of England (*Pathological Series*, No. A. 4590).

by all who attempt operations on pelvic tumours. The perils of operative interference due to these relations are self-evident. The rectum or ureters may be strongly adherent to the tumour and in all cases the parametric tissue is bruised. This tissue does not always tolerate ligatures, which are liable to infection from the neighbouring bowel. The surgeon operating on a broad ligament fibroid must remember, on the other hand, that he has not to face other dangers inevitable when an equally large fibroid of the uterus itself is removed. In that case the cervix is often thick whilst the uterine cavity is dilated and lined with unhealthy endometrium. When the fibroid is confined to the broad ligament the uterus is usually small and flattened; it may be left behind as in the case where I removed a small tumour with an ovarian cyst, or if advisable it may be removed with little addition to the risk of the operation.

Such is the surgical anatomy of these tumours; but before speaking of treatment more must be said about the tumours themselves from a clinical standpoint. They are proportionately much more frequent in young women than is any form of fibroid of the uterus and cervix proper. According to my own tables 17.6 per cent. were observed in patients under 30 years of age. In one instance a fibroid of the broad ligament weighing over 18½ pounds was removed from a girl, aged 19 years; in another a tumour weighing 11 pounds was removed from a young woman, aged 22 years. In a case where I operated the tumour was first observed already large when the patient was 23 years of age and it grew to enormous proportions in five years. On the other hand, fibroid of the broad ligament may appear after the menopause and, just as very big tumours have been found in young subjects, so very small growths of this class have been discovered in old women either at an operation or after death from some other disease. They may certainly take on growth after the menopause. It is interesting to find that, as in this kind of tumour, true fibroma of the ovary is not rarely seen in girlhood and in age²⁰ as well as in the mature. This fact is of importance with respect to diagnosis.

We find anæmia not rarely in cases of fibroid of the broad ligament and it is of serious import otherwise than is the anæmic condition constant in bleeding uterine fibroids. The anæmia in broad ligament fibroid is secondary to bad health. The impaired health may be due to the bulk of the tumour or to pressure effects on the vessels, bowel, and ureters or to necrotic changes in the substance of the new growth which, just as when they occur in uterine fibroids, make the patient sickly. When menorrhagia is present in a case of broad ligament fibroid there is probably a fibroid or polypus in the uterus as well.

²⁰ I have removed a fibroma of the ovary (weight 4 pounds 11 ounces) from a girl, aged 20 years, and another weighing 3 pounds from a woman, aged 52 years.

The sessile fibroid of the broad ligament may attain a great size. As it is fixed it gives little trouble at first; it does not irritate the peritoneum by rolling about, nor does it worry the patient by setting up uterine hæmorrhage. Ascites is not a common complication. When it grows to its full proportions, however, it is apt to cause grave pressure effects, whilst its maintenance is a tax on the patient. Ureteral obstruction may prove fatal even in cases where the tumour has not risen above the pelvic brim and has been overlooked during the patient's life (Gouget). Emaciation and anasarca of the lower extremities are extremely common. The larger tumours of this class range from 10 to over 40 pounds in weight.

The diagnosis of a fibroid of the broad ligament is not always difficult. When the tumour is distinctly solid and sessile and the abdominal walls are thin the outline of the uterus on the anterior surface of the tumour can be defined or even seen. The uterus can sometimes be slid about laterally on the tumour. The cervix lies high, close under the pubes, and is not rarely inaccessible.

In most cases diagnosis is difficult as the outline of the uterus cannot always be made out and the sound cannot in every case be passed owing to the elevation of the cervix and its compression against the pubes. Indeed, it is not always easy to make out by dissection after the operation that the tumour has developed independently of the cervix. This section shows how doubtful the origin of the fibroid may be. I removed this tumour three years ago with satisfactory results. One half is in the museum of St. Bartholomew's Hospital, the other in the museum of Charing Cross Hospital. I think that the tumour might have arisen in the parametrium behind the cervix. The practical importance of this question is clear—a broad ligament fibroid may sometimes be enucleated and the uterus spared; in fibroid of the cervix this cannot be done. It is a serious thing to remove the uterus of a young woman. The diagnosis of a soft or cystic sessile broad ligament fibroid is difficult even when the uterus can be clearly defined; it then closely resembles certain sessile tumours of ovarian or parovarian origin. Pedunculated fibroids of the broad ligament are usually impossible to diagnose from subserous fibroids attached to a uterus otherwise but little enlarged, or from fibroma of the ovary.

The treatment of fibroid of the broad ligament should, I believe, be surgical in any case. A sessile tumour of this class is not likely to be harmless, after the fashion of many a fibroid uterus lying high above the pelvis and freely moveable. The dangers of operation steadily increase with the size of the tumour. The removal of a sessile broad ligament fibroid of any size demands careful enucleation. A small tumour of this class may be shelled out of the broad ligament, then, after the securing of all bleeding points and the uniting of the cut edges of the broad ligament by

suture, the abdominal wound can be closed. Thus the uterus is saved.

When the tumour is large enucleation is difficult. The necessary steps and precautions must be considered in detail. Not only must asepsis be assured, but measures must be taken to anticipate or to minimise shock and hæmorrhage. No attempt should be made to draw the lower part of the tumour out of the pelvis by a sharp tug or by firm traction—such a manœuvre may cause laceration of the capsule and some of its vessels and damage to adherent rectum, bladder, or ureter. The capsule must be divided first, but as the trunks of the ovarian and uterine vessels are very inaccessible, their preliminary ligature cannot always be effected. Therefore, the operator should never make a horizontal incision around the entire circumference of the tumour and then attempt rapid enucleation. Dangerous hæmorrhage would certainly ensue, however quickly and dexterously the enucleation be performed, even if the large vessels be caught on both sides, immediately after their division, by assistants. Each vessel on the surface of the capsule must be secured by ligatures at two points about three inches apart. These ligatures can be passed under the vessels by means of blunt pointed pedicle needles. Then the capsule should be divided horizontally between the ligatures for two or three inches. The threads are drawn tight by assistants as the vessel is being divided. When all the vessels on the surface of the capsule have been thus secured, the horizontal incisions can be joined so that the capsule is entirely divided. Then the lower part of the tumour can be enucleated. The operator should never trust to pressure forceps when dividing the vessels on the capsule. The enucleation demands all the well-known precautions required when a fibroid of the uterus proper is enucleated. Bladder, rectum, ureter, and other structures may be damaged by hurried, rough enucleation. As for the vessels running into the tumour the pressure forceps applied at two points is useful at this stage. The vessel is divided between each forceps. That instrument, unsafe when applied to vessels on the convex capsule before enucleation, is very convenient for securing vessels running across the space created by the separation of the tumour from its attachments to the capsule.

When the uterus is small and the tumour large it is advisable to amputate the body of the uterus above the cervix so as to take it away with the fibroid. The capsule may be closed as when the tumour is uterine. Sometimes drainage or gauze-packing is safer, especially as regards certain after-results of the operation. I intend to say more about the management of capsules in hysterectomy and allied operations.

Of cases in my own practice one of the biggest, though by no means the heaviest, was observed in a woman, aged 44 years, who had borne three children, the youngest being 14

years of age. She had suffered from swelling of the abdomen for over three years and it had recently increased in size. The period appeared every three weeks and of late had lasted for about a week, but the show of blood was trifling. Mr. T. A. Mulcahy of Portsmouth detected an elastic solid tumour which reached to the epigastrium and came down low in the pelvis. I found that the os was drawn up too high to be reached, whilst the outline of the body of the uterus could plainly be felt above the pubes, sliding on the tumour. The catheter showed that the bladder was drawn up to the right groin. I operated and managed to deliver the greater part of the tumour through a long abdominal wound. The vessels on the capsule, much enlarged, were tied in two places as described above. Then the capsule was divided horizontally and the fibroid enucleated, the uterus was removed, and the stump was treated intra-peritoneally. In this instance I was able to trim away much of the capsule; the edges of the remainder were sewn together. The tumour was a very bulky fibro-myoma weighing 9 pounds 13 ounces; it had opened up the mesometrium, whilst the mesosalpinx lay intact with the tube and ovary on the top of the growth. The patient recovered. In this case the capsule, though thick, was not tensely stretched, and so its vessels were easily secured though enormously dilated. One big vein from the pampiniform plexus ran free from the infundibulo-pelvic ligament to the top of the tumour, the tissue connecting it to the broad ligament having been absorbed. This condition is more common in the dilated vessels of adherent omentum. The capsule was easily pushed down so as to allow the bladder to fall to its normal level.

The largest fibroid which I have removed weighed 44½ pounds. It was in this instance that careful ligature of the vessels in the capsule, in the manner already described, proved so satisfactory. Scarcely a drop of blood was lost. The patient gained flesh markedly after the operation, which took place in the autumn of 1898. One case, in a woman, aged 40 years, ended fatally. The tumour was in part cystic and unfortunately had been tapped and drained three years before I operated. The cystic cavity discharged quantities of blood through the drainage-track and was very septic, and small intestine adhered firmly to the surface of the tumour. Pedunculated fibroids of the broad ligament are as a rule easily removed, but the pedicle may be thick and fleshy and great care is always needed to prevent hæmorrhage. Every bleeding point in the cut surface must be secured and the cut edges of the serous investment of the pedicle sewn over the raw surface. When very thin, transfixion and ligature, as in ovariectomy, may be sufficient.

In these lectures I have endeavoured to confine my remarks as much as possible to my own experience. In relation, however, to the question of pedunculated fibroids independent of the uterus, I must here relate the instructive

experience of Rosenstein,²¹ who removed a fibro-myoma of the right utero-sacral ligament. The patient was 46 years of age. The tumour was of "about the size of a man's head," tense, and freely moveable. It was diagnosed as a multilocular ovarian cyst. On one occasion, it is interesting to learn, the patient had a sharp attack of pain so that torsion of the pedicle was reasonably suspected. At the operation the tumour was found to be perfectly free from the uterus but continuous with the middle of the right utero-sacral ligament by a distinct pedicle as thick as a lead pencil. It had no connexion with the Fallopian tube, ovary, ovarian ligament, or infundibulo-pelvic ligament. There was no difficulty in securing and dividing the pedicle which did not bear any large vessels. No doubt other cases of fibroid of the utero-sacral ligament have been overlooked or rather mistaken for tumours of different origin.

In conclusion, I have said enough to explain that a sessile broad ligament fibroid is a formidable kind of growth to remove and that its extirpation demands many precautions. I have already tabulated a series of operations on large tumours of this class.²² It is fair to say that enormous fibroids of the uterus itself may be successfully extirpated. Thus in Dr. F. Cole Madden's case, recently reported,²³ the tumour weighed 53 pounds. The patient was an Egyptian girl, aged 18 years—very young to be subject to fibroid. The tumour originated in the anterior wall of the uterus which was at once lifted out of the abdomen when the incision was made sufficiently large. Such a manœuvre is impossible in the case of a broad ligament tumour. The patient was doing well according to the last report, six weeks after the operation.

FIBROID OF THE OVARIAN LIGAMENT.

I will now say a few words about an interesting type of tumour closely related to the common uterine fibroid, although surgically it is akin to a pedunculated ovarian growth. Many years ago I detected fibroid of the ovarian ligament in an incipient condition, thus proving its possibility.²⁴ Here is the specimen²⁵ and its relations are perfectly clear. Microscopically it was composed of well-formed plain muscular fibres mingled with white fibrous tissue. The tumour is plainly seen as a small spherical

²¹ Ein Fibromyom der Douglasfalte, *Monatsschrift für Geburtshilfe und Gynäkologie*, vol. xiv., 1901.

²² *Transactions of the Obstetrical Society of London*, vol. xli.

²³ Hysterectomy for a Soft Fibro-myoma weighing 53 pounds, *Brit. Med. Jour.*, vol. i., 1902, p. 70.

²⁴ Fibro-myoma of the Ovarian Ligament, *Transactions of the Pathological Society of London*, vol. xxxviii., 1887, p. 245. A microscopical drawing of the tumour will be found in the *Transactions of the Obstetrical Society of London*, vol. xxx., 1888, p. 413, Part I., Fig. 2.

²⁵ Museum of the Royal College of Surgeons of England (Pathological Series, No. 4644a).

body about half an inch in diameter lying in the substance of the ovarian ligament midway between its uterine and ovarian extremities.

Two years later I myself successfully operated on a tumour pathologically the same but over 16 pounds in weight.²⁶ Since then similar tumours have been removed by other operators. Quite recently Dr. Lockyer in examining two fibroid uteri which I had removed at the Samaritan Free Hospital for Women and Children found that in each there was a pedunculated fibroid of the ovarian ligament. One of these tumours I exhibit this evening. It is a firm, oval growth three inches in horizontal diameter, one and a half inches in vertical diameter, and two inches in antero-posterior measurement. The pedicle is very stout and about an inch in length. The base is attached to the uterine end of the ovarian ligament which appears to run from the pedicle to the ovary. Being pedunculated the tumour was very moveable and as it was also heavy the severe pelvic pain from which the patient suffered seems to be comprehensible. I noted similar pain in a case of myoma of the ovary and in another of fibroid of an undeveloped cornu; in all these cases a small heavy, very moveable tumour hung down in the pelvis. This tumour may be instructively compared with the minute specimen which I have already demonstrated. It is only through a minute sample like the latter that we can feel sure of the origin of a tumour as big as the former.

I am not surprised that when a careful observer like Dr. Lockyer studies fibroids he occasionally detects a growth of this kind connected with the ovarian ligament, for they are probably more frequent than is generally supposed. Still, as I have already observed, this other specimen²⁷ shows that a pedunculated fibroid may arise from the mesosalpinx quite independently of the ovarian ligament. The surgical importance of the distinction between a fibroid of the ovarian ligament and a pedunculated fibroid of the broad ligament is evident. When the tumour is of purely broad ligament origin the pedicle alone may be secured by ligature and divided and the tube and ovary saved. This conservative practice is not always safe when the fibroid springs from the ovarian ligament, though Doléris was able to save the adjacent appendages when removing an ovarian ligament fibroid. It is bad surgery to remove an ovary in the case of a girl or a young wife if the operator can save the organ without risk. Experience has shown that whilst a fibroid of the ovarian ligament manifestly demands removal its extirpation does not offer much difficulty to the surgeon. In my own case, notwithstanding its enormous bulk, the tumour was well pedunculated and I was able to secure its pedicle

²⁶ Fibroma of the Ovary and Ovarian Ligament, Transactions of the Obstetrical Society of London, vol. xxxviii., 1896, p. 184.

²⁷ Museum of the Royal College of Surgeons of England (Pathological Series, No. A4590).

with ease, leaving the uterus. I considered, on the other hand, that it was safer to remove the tube and ovary.

Myoma of the ovary is probably derived from the muscular elements in the ovarian ligament and hence is anatomically uterine. In a case where I operated it was clearly a process of the ligament which seemed to run in between it and a cystic growth which involved the whole of the ovary proper. Though small, this myoma was exceedingly heavy²⁸ and caused pelvic pain so that inflammatory disease rather than a new growth was suspected. This kind of tumour is exceedingly rare and has nothing to do with fibroma of the ovary. As in the case of fibroid of the ovarian ligament, removal of a myoma of the ovary is surgically an ovariectomy. As a rule it proves very easy, for there are seldom adhesions, and the tumour, probably owing to its seat of origin, never seems to burrow into the folds of the broad ligament.

In concluding these observations on tumours of the ovarian ligament I must repeat what I remarked when demonstrating the anatomy of that structure. These rare fibroid tumours are of considerable interest, but it is much more important for us to remember that a piece of detached ovarian tissue is occasionally detected in the ovarian ligament quite separate from the ovary and sometimes very near the uterus. I further dwelt on the importance of these pieces of ovarian tissue in respect to the surgery of the ovaries.

THE ROUND LIGAMENT AND FIBROIDS.

When the uterus is distorted by fibroids the round ligament on one or both sides may undergo great hypertrophy. This change I have observed even when it was but little stretched. As a rule, of course, the hypertrophy is associated with stretching. There is a familiar feature of surgical importance in respect to the hypertrophied round ligament. I refer to the great increase in size of its artery. On that account the ligament should be secured with its artery separately during hysterectomy. This practice is advisable whenever the uterine fibroid is large and vascular; even when the round ligament has escaped hypertrophy I have found the artery of that ligament very large in such circumstances. When the removal of the fibroid cannot be effected quickly without risk one precaution essential in such circumstances is the ligation of the enlarged round ligament and its artery in two places followed at once by division. I know it to be dangerous to trust the distal end to a clamp. Some surgeons object to tying the round ligament separately when it has not shared in the hypertrophy of the parts of the uterus adjacent to the fibroid. One ligation, to include the ovarian vessels

²⁸ Museum of the Royal College of Surgeons of England (Pathological Series, No. 4532 A a).

and the round ligament, may be sufficient in these circumstances when the broad ligament is also narrow and not involved in the growth. I cannot think, however, that the round ligament artery is safely secured in this manner; more than once I have seen it spout, after the division of the ligatured broad ligament, though the ovarian vessels did not bleed. In one case, after closing the flaps over the stump, I detected rather free bleeding from the artery of one round ligament which I at once secured.

The operator will always seek both round ligaments as landmarks when the precise seat of any pelvic tumour is uncertain. The round ligament is very useful when there is any doubt about a growth being tubal or uterine. As the text-books teach, it will spring from the outer side of a fibroid or hæmatometric tumour of a separate or ill-developed uterine cornu and will lie on the inner side of a tumour of the Fallopian tube or a tubal gestation sac. In the case of a tubal gestation sac the round ligament is always an excellent guide, whilst in oddly-shaped fibroids springing from the cornu the relation of the round ligament may be far from clear, as in one case in my own practice²⁹ to which I shall again refer in the course of my observations on necrotic fibroids. But in the majority of cases of fibroids in an undeveloped cornu the relation of the round ligament, usually much hypertrophied, is perfectly clear.

Fibroid tumours of the round ligament itself are of much interest, but differ greatly in clinical characters from similar growths in the broad and ovarian ligaments. The latter are closely allied to uterine fibroids, whilst tumours of the round ligament lie in very different anatomical relations, so that it is not necessary for me to dwell upon them.³⁰

FIBROID IN AN UNDEVELOPED CORNU AND CONDITIONS WHICH SIMULATE IT.

Malformations of the uterine cornua are of much importance owing to the difficulties which they throw in the way of diagnosis and to the grave effects of the atresia which often accompanies them. Hence the bibliography of the subject is very extensive. It begins with reliable records published before the nineteenth century and ends with valuable recent

²⁹ Lockyer and Doran: Sloughing Fibroid of the Left Uterine Cornu; Abnormal Relations, Transactions of the Obstetrical Society of London, vol. xliii., 1901, p. 272.

³⁰ For records of fibroids and other tumours of the round ligament consult Sänger: Archiv für Gynäkologie und Geburtshilfe, vol. xxi., p. 279; J. A. Amann: Zwei Fälle von Fibromyoma Ligamenti Rotundi, Monatsschrift für Geburtshilfe und Gynäkologie, vol. xiv., p. 6; Frigyesi: Fibrosarcoma Ligamenti Rotundi, Centralblatt für Gynäkologie, No. 31, 1902, p. 830; Lichtenstein and Herrmann: Zur Pathologie des runden Mutterbandes, Monatsschrift für Geburtshilfe und Gynäkologie, vol. xv., 1902, p. 414; Vassmer: Zur Pathologie des runden Mutterbandes und des Processus Vaginalis Peritonei, Archiv für Gynäkologie, vol. lxxvii., 1902.

work such as Josephson's³¹ scientific monograph. An undeveloped cornu seems predisposed to the development of a fibroid growth in its substance and the author just quoted discusses at length this remarkable association of pathology and teratology. In a short note on the Removal of a Fibroid from a Uterus Unicornis in a Parous Subject,³² published three years ago, I summed up most of the records of cases of this condition reported by contemporary authorities in this country.

Whenever we have to do with the abdomen and pelvis in a woman we must remember that deformities of the uterus are not exceedingly rare. When detected, we can never feel certain how far other parts of the genito-urinary tract may be normal or malformed. In the case of fibroid of an undeveloped cornu diagnosis may be easy, a thin band being detected on palpation between the uterus and the tumour, whilst the uterus, or rather half uterus, is small and strongly deflected to the side of the pelvis opposite to the new growth. In other cases, especially when the half uterus is well-developed through past pregnancies and lies centrally, diagnosis is often impossible. Again, a normal uterus has been suspected to be bicornute or to consist of one cornu and most of us have come across doubtful cases of this kind. Extreme lateral displacement of the body simulates uterus unicornis. The mistaking of a normal for a bicornute uterus is possible in certain conditions when the patient is pregnant. Paul Bar³³ observed a case where in early pregnancy there seemed to be a soft tumour containing the foetus and attached to a firm uterus; between the two there was a certain amount of mobility. Yet the pregnancy proved to be perfectly normal. I relate this condition because the hard part of the uterus may be taken for a fibroid complicating pregnancy; I once witnessed the opening of the abdomen by an able operator who practised midwifery. Cornual pregnancy with fibroid disease of the uterus was suspected. Yet the pregnancy was normal; the uterus was found to be less bilobed than it felt; it became quite regular when it emptied itself a few days later. Bar reminds us that in these cases the ovum has become attached to the uterine wall close to the orifice of one tubal canal so that the adjacent part of the uterus develops at first much more rapidly than the remainder. After the middle of pregnancy the rest of the uterus undergoes softening until the normal condition is attained. I am speaking, however, of fibroid in an undeveloped cornu rather than of cornual pregnancy; the above observations were simply made to warn us against diagnosing the coexistence of these two interesting conditions when it happens that neither is present. When, then, this

³¹ Ueber die Neoplasmen der missgebildeten Gebärmutter, Archiv für Gynäkologie, vol. lxiv.

³² Brit. Med. Jour., vol. i., 1899, p. 1389.

³³ Note sur la Greffe de l'Œuf dans une Corne Utérine, Bulletin de la Société Obstétrique de Paris, March, 1902, p. 168.

combination of two conditions, each frequently associated with malformed cornu, is suspected we must watch the pregnancy for a month or two. Still, diagnosis may be uncertain. I recently operated on a most puzzling case where there was a bilobed tumour. A foetus lay in the right lobe which reached to the hypochondrium, whilst there was a loud souffle over the left as well as over the right tumour. There was neither pain nor hæmorrhage and such is the rule in cornual as distinguished from tubal pregnancy. I operated and, as you see, the left tumour proved to be a very vascular fibroid springing by a broad base from the posterior aspect of the inferior segment of the uterus to the left. The left ovarian vessels were rotated forwards by the growth of the tumour and accounted for the souffle. The bilobed tumour before it was exposed simulated in some respects pregnancy coincident in a normal uterine cavity and in a closed cornu, in other respects pregnancy in a normal uterine cavity and fibroid tumour in a closed cornu. Pregnancy of tubal origin was improbable, though Taylor and others have reported cases without a history of pain. Without exploration diagnosis was impossible.

There is much of interest in considering fibroid disease of a badly developed cornu independent of pregnancy. I will put aside all cases of atresia where the fibroid becomes of secondary importance and only speak of cases where the opposite half of the uterus is normal. A small fibroid of this class lying loose in the pelvis may make itself known not so much by swelling and by the other conditions associated with a tumour as by pain and other symptoms indicating pelvic inflammation. In this respect it may resemble a small, heavy myoma of the ovary hanging down in Douglas's pouch. I happen to have had in my own operative practice a case of each of these forms of tumour where pain was the chief clinical symptom.³⁴

In my own case of fibroid in an undeveloped cornu the patient was 38 years old. She had been married for eight years and had been delivered five years before operation of a child who was then still living. The forceps was used and after recovery she complained of falling of the womb. Mr. W. C. Aylward of Tunbridge Wells relieved this symptom by the aid of pessaries and detected a small, painful swelling in the hypogastrium. The patient became pregnant again and aborted at the second month. Then followed much pelvic pain without fever or high pulse. Since the development of the painful swelling the period had been accompanied by sharp pain in the right iliac fossa and it recurred once after the miscarriage. The patient then came under my care. I found the uterus markedly anteverted; the cervix was small but well formed. The sound passed three and a quarter inches. A freely moveable, hard, oval mass occupied

³⁴ Ovarian Tumours simulating Inflamed Ovaries, including a Case of Ovarian Myoma, *Edinburgh Medical Journal*, vol. iii., New Series, p. 449. The reference to the case of fibroid of the cornu is given above.

the right fornix. It moved separately from the uterus. On making an exploratory incision I was rather surprised to find no evidence of pelvic inflammation beyond a small adhesion which held down the left ovary. The right appendages were not directly attached to the uterus but ran on to the outer surface of a firm tumour of the size of a hen's egg. This tumour was connected internally with the uterus by a broad band, free above and continuous below with the pelvic peritoneum. The cervix had no connexion with the tumour. From the outer border of the anterior aspect of the tumour arose a very broad ribbon-like structure which curved inwards and entered the inguinal canal. This structure was, of course, the round ligament. The uterine artery, remarkably large and tortuous, ran up from below into the outer side of the tumour. I performed a kind of enucleation by dividing the serous coat of the band after ligature of the right ovarian and uterine vessels; the tumour with the detached tube and ovary then came away. There was a broad raw surface left on the divided band; the peritoneum was carefully sewn over it. A year later the patient became pregnant and was delivered of a well-developed male child at term.

It is not clear why this little tumour caused pain, but as it was very heavy for its size it possibly set up the painful symptoms by dragging on surrounding structures. The remarkably thick round ligament has been noted in this anomaly before.³⁵ The great size of the right uterine artery which supplied this little tumour was remarkable; the left artery which supplied the normal cornu, already once the seat of pregnancy, was distinctly smaller. The right ovarian artery and veins were not dilated. These peculiarities about the blood-supply of a tumour or hæmatometra in an ill-developed cornu must be borne in mind by the operator. He must make sure of the position of the uterine and ovarian arteries before dividing the pedicle. Simple transfixion and ligature of the pedicle as in ovariectomy would be dangerous; the two arteries should be ligatured before division of the pedicle.

Lastly, I observed when speaking of the relations of the round ligament to a fibroid that in some cases of fibroid near the cornu those relations are not very clear.

OÖPHORECTOMY FOR FIBROIDS AND ITS TEACHINGS.

The removal of the ovaries for checking the hæmorrhage from a fibroid and reducing its growth was a very popular operation not many years ago but has recently fallen into disfavour. Mr. J. Furneaux Jordan,³⁶ however, still defends

³⁵ Josephson: loc. cit.; Falk: Zur Kasuistik von Geschwulstentwicklung und Doppelbildung der Gebärmutter, Centralblatt für Gynäkologie, 1898, p. 1418.

³⁶ The After-effects of Removal of the Appendages and Removal of the Uterus, British Gynæcological Journal, vol. xv., 1899, p. 369.

it, under certain limitations, and Professor Murdoch Cameron created some surprise at the Manchester meeting of the British Medical Association by openly advocating this operation. "A new era," said Professor Cameron,³⁷ "set in with the methods of Hegar and Tait, and notwithstanding current opinion against their methods, I desire emphatically to say that I have never met with a single bad symptom following the removal of the ovaries and tubes for fibroids when thought advisable, but, on the contrary, I have found it highly beneficial in all cases operated on, and the patients themselves testify to the blessing they have enjoyed through its means. This has also been the experience of others in Glasgow." It would be interesting to know how this distinguished authority manages to remove the ovaries thoroughly without leaving a trace of ovarian tissue and yet without risk of slipping of ligatures owing to the necessary shortness of a pedicle of the ovarian ligament cut completely internal to the ovary. I have taken some pains to demonstrate the anatomy of the ovarian ligament, and noted that, short as it is, it may contain ovarian tissue. As a rule, when oöphorectomy for fibroid was largely practised the pedicle was cut too long and a piece of the ovary was to be seen on the distal side of the ligature. The piece of ovarian tissue sometimes underwent atrophy, as in a case of my own which I recorded over eight years ago.³⁸ The patient was 41 years of age, and very anæmic from menorrhagia due to a fibroid in the anterior wall of the uterus. I reported that "owing to the shortness of the ovarian ligaments a minute portion of ovarian tissue was left on the distal side of the pedicle. I rather feared at the time that the object of the operation would be frustrated." Yet the menopause was established permanently, without any disagreeable symptoms. I had several other similar lucky experiences and the same is the case with other operators. Indeed, I am of opinion, on the ground of this experience, that cure was due in many such cases to some factor of which we are ignorant; the same may be said in explanation of Professor Cameron's brilliant results. A fibroid is capricious in its course and may cease to grow and to bleed spontaneously. I am speaking, be it understood, solely of cases said to be suitable for oöphorectomy, cases where the fibroid grows near the fundus, nourished by the ovarian artery. Yet I have had good results in several cases where even the cervix was involved, though with that condition failure is the rule. My good, or, rather, lucky, results can hardly have been due to the removal of the ovaries alone. Indeed, the majority of patients did well for a year or so, then the bleeding returned or the tumour continued to grow. In one case in my own

³⁷ The Past and Present Treatment of Fibroids, Brit. Med. Jour., Oct. 11th, 1902, p. 1153.

³⁸ An address on the Treatment of Bleeding and other Uterine Fibroids by Removal of the Appendages, Brit. Med. Jour., vol. i., 1894, p. 1233, Case 1.

practice³⁹ a strange result ensued: great and permanent reduction in the size of the tumour occurred, yet the suppression of the catamenia was but partial. The "show" was accompanied by all the disagreeable symptoms of the menopause, and last autumn (10 years after the operation) the patient, then 48 years of age, saw the period three or four times yearly and suffered from occasional flushings.

A return and advance both of the bleeding and of the growth of the tumour seem, however, to have been the rule when oöphorectomy for fibroid was popular. The reason seems to be evident: the ovarian tissue on the distal side of the pedicle resumed its functions, for a time in abeyance owing to the organisation of lymph thrown across the groove formed by the ligature, a condition well known in the pedicle after ovariectomy.⁴⁰ In performing a hysterectomy in a case where oöphorectomy had failed I detected a small, flat button of ovarian tissue lying on the stump of the tube against the cornu of the uterus. The operation itself was not without dangers—slipping of the ligature of the pedicle and thrombosis of a pelvic vessel or of one of the big veins of the lower extremity being not unknown. In anæmic cases the shock was often quite as great as after the removal of a big fibroid and I reported a fatal case in the address to which I recently referred. Again the ovaries may be so placed in relation to a big tumour as to render their removal impossible. The hæmorrhage in some instances proved to be due to a polypus high up in the distorted uterine cavity and thus easily overlooked.

Mr. Jordan believes that a hysterectomy always involves more shock and takes up more time than an oöphorectomy for fibroid disease.⁴¹ If so uncertain, however, for reasons which I have explained, hysterectomy must be a far better operation. Mr. Jordan's teaching may, I admit, be advantageously followed under exceptional conditions. Thus in 1897 I removed the ovaries of a woman, aged 44 years, who was under Dr. Travers Smith's treatment for hæmatemesis which had greatly reduced her health. There was a small bleeding fibroid and I found the appendages springing from the uterus well below the tumour which was in the fundus. Above all, the ovarian ligaments were long. I speedily removed the ovaries and the "show" at once began to abate, ceasing altogether seven months after the operation. The patient's strength steadily increased, but unfortunately three months after the artificial

³⁹ Loc. cit., Case 5 and Fig. 4.

⁴⁰ For the literature of the subject see "On Ligature of the Pedicle in Ovariectomy." Transactions of the Obstetrical Society of London, vol. xxxv., 1893.

⁴¹ "However skilfully and by whatever method a hysterectomy may be done and however favourable the conditions are it takes longer and inflicts more shock on the patient than removal of the appendages." Loc. cit.

menopause she died suddenly from perforation of the stomach. As far as the oöphorectomy is concerned this case was satisfactory, but a previous experience to which I have referred taught me that the operation may be followed by fatal shock without any clinical or post-mortem evidence of internal bleeding or sepsis.

LECTURE II.

Delivered on Nov. 13th, 1903.

THE TREATMENT OF THE OVARIES IN HYSTERECTOMY FOR FIBROID.

MR. PRESIDENT AND GENTLEMEN,—Mr. J. Bland-Sutton, fortified by Dr. G. Crewdson Thomas's valuable statistics,¹ maintains that when more or less of the ovaries is left the catamenia are not, as a rule, suppressed, whilst in cases when they stop the menopause symptoms are far less severe than when the ovaries are entirely extirpated. But certain authorities hold that other conditions are necessary, besides leaving ovarian tissue, to ward off a severe menopause, whilst there may be distinct evil effects due to leaving ovaries behind. On the strength of experience, on which I shall shortly dwell at some length, I maintain that this conservative operation entails benefits, but that those benefits have been over-estimated. There is no reliable homology between the removal of normal ovaries with a fibroid uterus and double ovariectomy for ovarian tumours. We know nothing about the influence which ovarian new growths may exert on the menstrual phenomena before they are removed. As a rule the period is quite unaffected in double cystic disease, whilst some malignant tumours are associated with amenorrhœa which sets in long before cachexia. I find that in a series of double dermoids in my own practice flushings, &c., were very rare, though the suppression of the period was rapid and complete after ovariectomy. Yet in my first case (1882) when the patient was 32 years of age, and where there could be no doubt about the complete extirpation of both tumours, there were troublesome flushings for nearly 10 years. No period occurred after the operation. Again, when enucleation is necessary, it is very possible that a piece of healthy ovarian tissue may be left in the ovarian ligament, as in a case of my own where the patient bore a child two years after a second ovariectomy.² Martin's tables of his double ovariectomies³ are instructive but of no value for our present purpose for reasons just suggested. He makes no note of

¹ The After-histories of 100 Cases of Supravaginal Hysterectomy for Fibroids, *THE LANCET*, Feb. 1st, 1902, p. 294.

² Pregnancy after Removal of both Ovaries for Cystic Tumour, *Transactions of the Obstetrical Society*, vol. xlv. (1902), p. 231.

³ *Die Krankheiten der Eierstöcke und Nebeneierstöcke*, 1899, p. 907.

severe menopause symptoms. I must remark, however, that he registers one case where cancer of the cervix occurred in a patient from whom he had removed two ovarian tumours of an innocent type. We may bear this in mind when considering cancer of the stump after hysterectomy.

If we cannot, in relation to our present purpose, dwell profitably on the effects of double ovariectomy for tumours on menstruation, still less need we pause to consider the results of oöphorectomy for inflammatory diseases of the appendages or for checking the growth of a fibroid. In hysterectomy for fibroid, as was explained in the first lecture, the extirpation of the ovaries is nearly always easy and thorough when so desired. After oöphorectomy for any purpose he is bold who can ever feel certain that no ovarian tissue has been left behind. So I will say no more concerning the loss of both ovaries save so far as it regards hysterectomy for fibroids. I shall have to make use of the term "cervical menstruation," by which a periodical flow of blood from the stump of the cervix after hysterectomy is understood. The term is clearly convenient, but the precise nature of cervical menstruation remains obscure. Bleeding from the stump of the cervix may be due in some cases to a polypus or to an interstitial fibroid in its walls, but then the flow is not necessarily periodical and regular and not associated with molimen; this was the case in one instance which I shall mention when speaking of bleeding in relation to diagnosis of uterine fibroids. It is certain that true cervical menstruation is not caused by overlooked polypi and interstitial growths.

There are four questions to be solved in respect to the treatment of the ovaries in hysterectomy for fibroid. We must firstly find out if the period always ceases after hysterectomy with removal of both ovaries; secondly, if their removal really involves very bad menopause symptoms; thirdly, if, when more or less be left of the ovaries, the period will continue regular; and lastly, if this preservation of the ovaries be wholly beneficial. In order to throw light on these four questions I have carefully scrutinised 44 cases in my own operative practice between March, 1897, and July, 1901, rejecting several more where the after-history is too short or otherwise unreliable. The cases may be grouped under three classes: Class I., both ovaries removed, includes 25 cases; Class II., one ovary or part of one ovary not removed, 17 cases; and Class III., neither ovary removed, two cases. As I have found that the worst features of fibroid prevail between 40 and 45 years of age I have operated most frequently on patients at about that age (24 out of the 44 cases), leaving 12 whom I may call "young" and eight "old." One case, 50 years old, is included as still menstruating, all older cases are rejected.

In considering the first question let us see if removal of both ovaries necessarily results either in immediate or at least in speedy and absolute suppression of the menstrual

function. In my 25 cases where both ovaries were entirely removed no show of blood, with more or less molimen, occurred after convalescence in any save in four distinct exceptions. In one of these it appeared once six months after operation, in one it reappeared and still occurred, though irregularly, 13 months after operation, in one it was maintained two years, and in the fourth for two years and seven months, though clearly beginning to cease. I have sketches of the parts removed in two of these cases and they show that the ovaries came away entire whilst the infundibulo-pelvic ligament was tied and divided well outside each ovary. I have already explained that it is almost as difficult not to take away the ovaries entire in a hysterectomy as it is hard to extirpate them entirely when the fibroid uterus is left behind. Thus suppression of the menses is not always immediate and absolute, for cervical menstruation, *whatever that may be*, continues in some cases. It always tends to cease, but it may do so, as will be presently shown, when one or even both ovaries are saved.

The second question is closely associated with the first. Does removal of both ovaries necessarily cause very bad menopause symptoms? In 21 cases, those where the menopause was complete after the removal of both ovaries, there were no symptoms whatever in seven, mild and infrequent flushings in seven, and severe symptoms in seven. In six of the last seven there were simply the usual subjective evidences of the change of life severe enough to give discomfort. The seventh developed symptoms of persecutory mania a few months after the operation; they soon subsided. Her relatives then informed me, for the first time, that she had already suffered from persecutory mania. In another case, of which I lost sight within four months after the operation, so that she is not included in the series, the patient, an eccentric single woman, aged 42 years, left home with her nurse after convalescence and has refused ever since to communicate with her relatives, but the operation was not followed by shock and there is no reason to believe that she became insane. I find that Dr. Crewdson Thomas registers two cases of mental symptoms, both in patients of unstable mind before the operation. But post-operative insanity is well known in general surgery. Most of us have seen the specimen in the Museum of the Royal College of Surgeons of England of two cysts removed from the breast of a woman, aged 51 years, with its history. "The patient became insane soon after the operation."⁴ Again, coincidence must be taken into account as well as other considerations in any example of insanity associated not only with operations but also with an operable disease where nothing has been done. I had two instructive cases in my wards at the Samaritan Hospital a few years ago.

⁴ Museum of the Royal College of Surgeons of England, Pathological Series, No. 4760.

One was a hysterectomy for fibroid where I used the serre-nœud. The patient was violently excited on the second and third days, but ultimately calmed down and got perfectly well. At the same time there was a middle-aged woman in another ward with an ovarian tumour, probably dermoid, and to all outward appearances a simple case. On the day before that which had been fixed for the ovariectomy this patient had a violent attack of acute mania. She was removed and died a few days later with no symptoms attributable to the tumour. Had I operated on the day before the attack and had the same fatal complication followed the ovariectomy I certainly should have charged the operation with causing the mania and I must have registered the case as a death *after*—always understood as *from*—ovariectomy.

The above cases show that we must be careful about throwing the blame on the operation and not too ready to attribute mental complications to the manner in which the ovaries are treated. I do not deny that removal of the fibroid uterus seems to have a specially bad influence on a patient liable to mental disease. I know of two cases of acute mania after hysterectomy with application of the serre-nœud: one was reported by Dr. Herbert Spencer at the Manchester meeting of the British Medical Association. I suppose that psychologists would include my own case just mentioned. The serre-nœud always gave great pain, a fact which should be taken into account.

We must now return to other points of interest in association with my 21 cases of hysterectomy where the menopause was complete after the removal of both ovaries. Marked *corpulence*, developing rapidly, was noted in two cases; in one the patient was 30 years of age and in the other 50 years of age, but still menstruating. Yet sudden accession of stoutness was also observed in a patient aged 40 years where one ovary was saved. In respect to *age*, Dr. Crewdson Thomas lays stress on youth in relation to the severity of the artificial menopause. According to his tables "the younger the patient who has her ovaries removed the more severe will be her artificial menopause." Out of my 25 cases where both ovaries were removed four were under 40 years of age and of these one had severe symptoms, two had mild, and one had no symptoms at all, but these numbers are too small to be trustworthy. Lastly, as in seven out of 25 cases of removal of the ovaries with the uterus, or 28 per cent., there were marked menopause symptoms I think that it is best to leave one or both ovaries if healthy, the more so as this conservative practice involves a far smaller wound on each side of the cervix. But at the same time my experience shows that retention of the ovaries is not a matter of supreme importance and I find, as will be shown, that it does not guarantee the patient against a severe menopause. Hence I never scruple to remove the ovaries when there is the least suspicion of ovarian tumour or when there is marked inflammatory disease of the appendages.

The third question is whether the period remains regular after hysterectomy when more or less is left of the ovaries.⁵ In two out of the 44 cases I removed neither ovary. One patient was 24 years of age; her period continued regular over two years after the operation. The other was 45 years of age; I removed a tumour over 12 pounds in weight. The period occurred three times after the operation and then ceased altogether. This may have been a natural menopause. In 17 of the 44 cases I left one ovary or in one case only a piece of one ovary. In only four did the period persist; strange to say, one of these patients is phthisical, yet she remains regular over two years after the operation. In four there was irregular "show," whilst in the remaining nine, or nearly 53 per cent. of the 17 cases, the period did not appear after operation, and in five out of these nine the menopause was distinctly severe. One of the five was 36 years old; all the others were between 40 and 45 years of age.

There is another factor, however, to be considered besides the preservation of the ovaries—that is, the preservation of a portion of the tissue of the uterus above the cervix as well. Abel and Zweifel⁶ declare that it must be saved, and, what is more, it is a bit of the uterine mucosa above the os internum that must be left, else a severe menopause will come on at least within three years. Dr. Crewdson Thomas kindly informs me that he "was unable to get any evidence to support this view." American authorities ignore Abel-Zweifel principles, for Kelly directs that the uterus be divided "in its cervical portion at a point just above the vaginal junction";⁷ and Noble⁸ considers that in Europe too much cervix is left. The results of panhysterectomy where no cervix is left have not been accurately recorded. My own experience, to a certain extent, supports the Abel-Zweifel theory. For in six of the cases where the period was completely suppressed though one ovary was not removed, I had cut the stump short entirely below the os internum. Persistence of the period was noted in three cases where one ovary was left and uterine tissue above the cervix was included in the flaps. But it also persisted in a fourth case where the stump was entirely cervical, whilst, on the other hand, it was suppressed entirely in three cases where the flaps included uterine tissue and at the same time one ovary was left behind. We must beware of making uterine flaps to accommodate ourselves to a theory which is not thoroughly

⁵ Howard Kelly (*Operative Gynecology*, vol. ii., p. 370) advises that both ovaries be left in a subject under 40 years of age, "although menstruation ceases." He finds that a severe menopause is thus avoided.

⁶ Referate über die Behandlung der Myome, *Centralblatt für Gynäkologie*, 1899, p. 616.

⁷ *Operative Gynecology*, vol. ii., p. 370. Let it be noted that Kelly finds that menstruation ceases though both ovaries be left (vide supra).

⁸ Personal Observations concerning the Present Status of Gynecology in Europe, *American Medicine*, Oct. 12th, 1901.

proved by experience, and which, if true, can only confer a benefit of not very high value. The practice is not without danger. Large fleshy flaps are liable to slough, especially when the patient is reduced by anæmia. I lost two cases in this manner, whilst in some included in this series I observed symptoms during convalescence which gave me anxiety and other operators have informed me that their experience is similar.

We have now to consider the fourth question: Is the practice of leaving the ovaries or sparing one ovary wholly beneficial? has it any disadvantages? and may it not be dangerous in certain circumstances? How far removal or saving of the ovaries influences the possibility of cancer developing in the stump we cannot say, but this matter will be considered presently. Cancer of the stump seems unknown in British practice. There can be no doubt, however, that the appendages when retained occasionally inflame. Both Fritsch and myself have observed perimetritis after hysterectomy. I suspect that this complication is usually due, not to inflammation of an ovary, but to an unhealthy tube. The tubal canal after ligature and division lies exposed at the point where the tube has been cut through. Not only immediate, but also distant, inflammation might follow. Dr. G. G. Bantock recently removed a pyosalpinx which had developed seven years after hysterectomy for fibroid. I always sacrifice appendages which seem unhealthy in order to avoid these undesirable after-results, and I will indicate the precautions necessary in dealing with diseased tubes at a hysterectomy.

The most serious objection to leaving the ovaries is the possibility of their becoming the seat of tumour. I will presently speak of Littauer's case of blood cysts in an ovary removed about nine months after panhysterectomy. It is not clear that the tumour in this case was a true new growth; it was small and seemed to be made up of dropsical follicles full of blood and perhaps it would have atrophied if left alone. But Dr. Bantock removed in July, 1895, the uterus of a woman, aged 46 years, for cystic degeneration of the cervix, operating through the vagina. Both ovaries appeared to be perfectly healthy. Six years later the same operator removed from the patient an ovarian tumour weighing five and three-quarter pounds; it had strong pelvic adhesions. Thus we must remember that ovaries left behind may become subject to tumour. That this is not in itself sufficient reason for removing them with the uterus, I admit, for experience has shown that the development of an ovarian tumour after hysterectomy is very rare. In some cases where they have been detected after that operation they might have existed already and been overlooked by the surgeon. The specimen which I exhibit shows that a small cystic tumour of the ovary might be overlooked by a too speedy operator. In this instance a fibroid blocked the pelvis. I tied off the broad ligaments close to the uterine cornua and pushed them down

at the beginning of the operation. The only portion of this ovary which was in sight seemed healthy. At the end of the operation I carefully inspected the relations of the stump and then I detected this ovary converted, as you see, into a cyst of some size concealed behind a coil of adherent intestine. It is easy to understand how a small tumour of this kind might be overlooked, especially in a case where the operator thinks it advisable to close the abdomen speedily. The answer to the fourth question is that leaving the ovaries may entail danger, but experience shows that the risk is not great.

In respect to the effect of removing or leaving the ovaries the question of previous hæmorrhage ought to be taken into account. With our present knowledge, however, I cannot see how we can draw any correct conclusions. Some women tolerate very little hæmorrhage, others seem almost the better for free bleeding going on for years. The cause of the menorrhagia is certainly not identical in all cases. Sudden cessation of the free bleeding of necessity occurs directly after hysterectomy, then there may or may not be some constitutional disturbance, but whether that disturbance be chiefly due to the sudden cessation of hæmorrhage or to the treatment of the ovaries we cannot determine with precision. As far as I can make out the patients reduced by long and severe hæmorrhages suffer nothing at all by their cessation whether the ovaries be left or removed. Dr. Crewdson Thomas, I find, does not tabulate "hæmorrhage" in his series. I fear that this dissertation on the ovaries has been very tedious. I have earnestly endeavoured to get at the truth and therefore I did not set to work at these researches with intent to prove that it is best to remove the ovaries, or that it is best to leave them, or that it matters little how we treat them. My results seem somewhat indefinite, but the indefinite may be the truth especially where there are so many complex factors to be taken into consideration.

FAMILY HISTORY OF FIBROIDS.

According to my own experience a family history of fibroids is more interesting than important. I find, like others, that a strong history is to be detected on inquiry in some families. In one remarkable instance the mother underwent hysterectomy for fibroid, while three daughters are subject to fibroid disease, in two it has remained stationary for several years, while in the third the tumour suddenly increased and I recently removed it. The mother's sister died from uterine cancer and so did a fourth daughter, whilst there remains a fifth from whom a fibroid polypus was removed; there is at present a small growth in the cervix. This solitary family history is of no value for general considerations about the relations of fibroid to carcinoma. I must note one family history which I mentioned in opening

the discussion on the Natural History of Fibroids at the Ipswich meeting of the British Medical Association in 1900. There were three sisters, all single, and all between the ages of 30 and 40 years. In all, the fibroid was interstitial or partly subserous and there was but moderate menorrhagia. In two the tumour suddenly increased in size and I operated, with good results. In the third the tumour was the largest of the three six years ago; it remained stationary for four years and recently seems to have grown smaller and harder. Hence family history is not a sound guide to prognosis and treatment.

BLEEDING IN RELATION TO DIAGNOSIS OF UTERINE FIBROIDS.

Clinical experience has taught and proved that menorrhagia and intermenstrual hæmorrhage associated with a uterine tumour are strong evidence, should there be good reason to exclude cancer, that the new growth is a fibroid. A fibroid wholly subperitoneal does not cause hæmorrhage, whilst in the submucous variety bleeding is rarely if ever absent, and a little polypus is, as a rule, a source of relatively free hæmorrhage. The presence of a polypus or of submucous growths often accounts for menorrhagia when a large subserous fibroid is present. For evident reasons it is easy to overlook a polypus in many cases of uterine fibroid. In the days when ovaries were freely removed with a view to check the growth and bleeding of fibroids an overlooked polypus sometimes maintained hæmorrhage. The same after-history was not rare when the *serre-nœud* was applied in hysterectomy, for the cervix could not then be thoroughly explored, as is the case when the body is amputated by newer methods. In 1892 I had under my care a woman, aged 47 years, suffering from a cystic uterine fibroid of large dimensions.⁹ I noted before operation "small pedunculated polypus of cervix" I removed the tumour with tubes and ovaries entire and applied the *serre-nœud* to the cervix without troubling about the polypus. For more than a year after the operation there was occasional discharge of blood from the *os externum*. Before the operation there had been no menstruation for six months.

In association with polypus the diagnosis of another tumour may be obscured. A polypus may be overlooked in a case of ovarian tumour closely connected with the uterus; then its bleeding may induce us to mistake the ovarian tumour for a cystic or solid fibroid of the uterus. On the other hand, a uterine polypus does not always cause bleeding.

One case in my experience where bleeding obscured

⁹ Large Cystic Myoma of Uterus, with Notes on Cystic Fibroids, Transactions of the Royal Medical and Chirurgical Society, vol. lxxvi., 1893, p. 325 (After-history, p. 332).

diagnosis had a very instructive history. In the autumn of 1886 a woman, aged 39 years, was referred to me by Sir Spencer Wells. She had noticed for eight years a tumour which had increased in size very slowly. We were of opinion that it might be an ovarian growth, but that if uterine removal would be more dangerous than leaving it alone. The period was moderate. In September, 1886, I cautiously explored the tumour through a short incision. It had a dull-red capsule and, as far as could be made out by digital exploration, was absolutely incorporated with the uterus. In those days hysterectomy for large burrowing fibroids was attended with high mortality and we had in our minds Keith's observations about his first hysterectomy where a cystic fibroid was taken for an ovarian cyst.¹⁰ I thought it best not to attempt the removal of the tumour. I kept the patient under close observation for many years as I was not quite certain about my own diagnosis. The girth of the abdomen increased until 1890 and then slowly decreased till the menopause in 1900. Dr. C. H. J. Lockyer, who saw her in the out-patient department of the Samaritan Hospital, noted that the menopause was preceded by severe hæmorrhage which lasted for six months. Then the tumour began to increase rapidly in size, so in November, 1901, I operated once more. The tumour was a burrowing multilocular cyst of the left ovary so closely associated with the back of the uterus that I removed that organ as well, leaving the right ovary. Strange to say, though I did so and though the menopause had been passed the patient had fresh menopause symptoms after convalescence. Dr. Lockyer carefully examined the parts removed and he found in the uterus a small polypus. This growth was in all probability the cause of the hæmorrhage; there had been no menorrhagia previously to the menopause though the tumour had existed for years, but the bleeding naturally suggested that the earlier diagnosis of uterine fibroid was correct.

Quite recently I removed a large ovarian cyst from a woman, aged 66 years; she had suffered from hæmorrhages suggesting cancer, but a polypus was detected and removed. Diagnosis was easy in this case but would have been otherwise had the cyst burrowed and come into very close connexion with the uterus. After all, we are all aware that a polypus causes bleeding and therefore, if overlooked when associated with a tumour which does not set up menorrhagia, no wonder we are puzzled. Dilatation of the cervix of a fibroid uterus in order to search for polypi is a dangerous procedure. But it must be remembered, I repeat, that a polypus sometimes does not cause bleeding.

I operated last year on a single woman, aged 46 years, who was suffering from a rapidly growing fibroid. The period was regular and always moderate and there was

¹⁰ Contributions to the Surgical Treatment of Tumours of the Abdomen, Part I., p. 25 (Oliver and Boyd, 1885).

never any intermenstrual hæmorrhage. The tumour was a spherical myoma in the anterior wall of the uterus, undergoing mucoid degeneration. Dr. Lockyer, in examining the parts removed, found a pedunculated polypus one inch long in the uterine cavity, attached near the fundus. There was also a submucous polypus bigger than a pea. In short, there ought to have been hæmorrhage¹¹ if the fibroid had known how to conform to the most elementary text-book.

I have already referred to a case where a polypus in the stump of the cervix caused hæmorrhage. In a case reported by Doléris¹² the menorrhagia for which the fibroid had been removed only increased, until a year later when he operated once more and dissected a small interstitial fibroid out of the substance of the stump; the bleeding then ceased. We all know what a bleeding fibroid is and we are all acquainted with fibroids that never bleed. I need not dwell on them as I have determined to limit my remarks to exceptional conditions in relation to hæmorrhage or its absence as a symptom.

ASCITES AND UTERINE FIBROID.

For some reason by no means evident ascites is rarely found in association with any form of uterine fibroid. In Keith's case¹³ the complication developed after a fall, when the tumour was struck against a low railing. Butler-Smythe's patient was knocked down by a cart and much bruised on the abdomen, thighs, legs, and arms.¹⁴ Symptoms of peritonitis followed; 18 pints of ascitic fluid were withdrawn three months after the accident. After four more tappings the fibroid was successfully removed. The tumour consisted of two subserous growths and there were numerous omental and intestinal adhesions. Thus in both these cases the free fluid collected in the abdomen as the result of an injury to a patient suffering from fibroid and not as a direct result of the tumour. Blows on the abdomen injuring a fibroid may set up other kinds of local mischief. An elderly patient of mine subject to this kind of tumour fell down a flight of stone steps and struck her abdomen. A soft mass developed in the interior part of the tumour with symptoms of peritonitis. An ugly swelling formed, the skin was glossy and injected, and I feared sarcomatous degeneration. I incised the swelling, which proved to be a suppurating hæmatoma,

¹¹ The endometrium was smooth, pale, and healthy. Perhaps that condition partly accounted for the absence of hæmorrhage.

¹² Fibrome du Moignon après une Hystérectomie Abdominale Sub-totale, *Annales de Gynécologie et d'Obstétrique*, vol. lvii. (1902), p. 154.

¹³ Contributions to the Surgical Treatment of Tumours of the Abdomen, part I., case 40, p. 96. The patient was tapped 44 times, a total of about 250 gallons being removed. The case was remarkable for many reasons and deserves study.

¹⁴ Notes on a Case of Profuse Hydroperitoneum complicating Uterine Fibroids, *Brit. Med. Jour.*, vol. ii., 1900, p. 1772.

and much clot, followed by pus, came away. The swelling vanished; the tumour was small and gave no trouble.

I removed a fibroid uterus a year or two ago in a case where ascites was marked. In this instance there were about eight pints of free fluid in the abdomen, yet no history of any kind of injury. The tumour was a bulky, œdematous fibroid which had grown rapidly within six months of the operation and weighed 4 pounds 6 ounces. The omentum adhered strongly and its vessels were much dilated, whilst there was old-standing disease of the appendages. Recovery was rapid. There was no reason to suppose that the mere presence of the fibroid caused ascites in this case. Nor was it set up as the result of injury, but there was pelvic serous inflammation which extended higher. The ascites and the marked œdema of the tumour were probably two results of some common cause not easy to explain. There was inflammation of the appendages, a condition which does not tend to cause serous effusion. The relation of pelvic inflammation to fibroid tumours is another question which will presently be considered.

Howard Kelly goes so far as to state that ascites is a complication by no means rare in fibroid disease, if we take into consideration lesser as well as larger quantities of fluid.¹⁵ He relates a case where he found nearly 12 pints in the abdomen; no history of any injury is given. Kelly states that "the cervix was jammed down on the pelvic floor by hard uterine tumours filling the pelvis." Perhaps œdema played a share in causing ascites. The cause of ascites, says Kelly, is not known and I think that we must agree with him. There was evidence of lymphatic obstruction in my own case, but this in itself can hardly cause ascites. In fibroid disease where free fluid is conspicuous for its rarity, marked obstruction of the lymphatics of the broad ligament is perhaps plainer to the eye than in the case of any other tumour, whilst in ovarian growths free from œdema and from dilatation of lymphatics in the adjoining broad ligament, ascites is not rare. Mechanical irritation cannot explain the rarity of the complication in question. Cannon-ball-like ovarian tumours (the exogenous cysts of pathologists) are often associated with ascites, but cannon-ball uterine fibroids (groups of subserous myomata) are often found in a perfectly dry peritoneal cavity. Let us remember that ovarian dermoids, which certainly cause mechanical and yet worse forms of irritation, are rarely complicated by ascites, whilst free fluid is proportionately common in true fibroma of the ovaries even where its surface is smooth.¹⁶ Free papilloma is always associated with ascites.¹⁷

¹⁵ Operative Gynæcology, vol. ii., p. 901.

¹⁶ See cases of Fibroma of the Ovary and Ovarian Ligament removed by Operation, Transactions of the Obstetrical Society of London, 1895, vol. xxxviii., p. 187.

¹⁷ Even if not malignant, as in a case when the patient was alive and quite free from recurrence several years after I removed two

Infection cannot explain the rarity of ascites in fibroids, for septic changes in these tumours are not unknown, yet it is not recorded that they are complicated by ascites, whilst there was no evidence of infection of the tumour in any of the cases of ascites which I have just related. Septic changes are frequent in ovarian dermoids, yet, as in these uterine growths, it is rare to find them associated with dropsy. In short, the rarity of ascites in fibroid disease of the uterus remains unexplained and its cause in exceptional cases is obscure. I admit that true ascites and pure passive hydroperitoneum have not been carefully distinguished in clinical records, though ascites as a symptom in visceral disease was manifestly absent in the cases which I have brought forward. The subject deserves more attention from general pathologists and physicians.

ABSORPTION OF FIBROIDS.

In 1893 when preparing a monograph on this subject¹⁸ I was able to discover about 50 relatively recent reports of which under 40 were worth consideration. Since that date we have heard little about "absorption" of fibroids until last summer when Professor Murdoch Cameron once more turned our attention to this subject.¹⁹ "I can remember," said he, "quite a number of cases which were sent to me as fibroid tumours of the uterus, but which with rest and potassium iodide eventually disappeared. *These cases very closely resembled fibroid growths.*" This observation was the starting point of correspondence between Professor Cameron and myself.²⁰ He replied to my inquiries about the clinical symptoms of these cases, saying that "on examination an extensive hard swelling was found in each case behind the uterus and extending backwards to the sacrum. Its outline could not be defined." Professor Cameron suspects them to be inflammatory or traumatic in origin,²¹ but adds that as there was no operation he could not give their pathological characters. He felt sure that they were not cases of impacted fibroid growths of the uterus and so he treated them with drugs and rest. The hard masses slowly disappeared. Though sure that the swellings were not "impacted" fibroids, Professor Cameron implies by the use of that

enormous masses of papilloma springing from the broad ligaments. Pleural as well as peritoneal effusion occurred in the case of papilloma of the tube reported in Allbutt and Playfair's *System of Gynæcology*, p. 806; the patient was well 16 years after the operation.

¹⁸ On the Absorption of Fibroid Tumours of the Uterus with a Report of a Suspected Case, *Transactions of the Obstetrical Society of London*, vol. xxxv. (1893), p. 250.

¹⁹ The Past and Present Treatment of Uterine Fibroids, *Brit. Med. Jour.*, Oct. 11th, 1902, p. 1153.

²⁰ *Ibid.*, Oct. 18th (p. 1281) and 25th (p. 1372), 1902.

²¹ Dr. J. A. Shaw Mackenzie suggests that the tumours might have been inflammatory in Lancereaux and Legrain's cases, *ibid.*, Nov. 8th, p. 1564.

term that they were fixed. No doubt some of the alleged cases of absorption of fibroids were really instances of disappearance of parametric exudation fixing the uterus; still, in others the uterus was reported as moveable. For my own part, I was never a great believer in reported cases of rapid "absorption" of fibroids. Putting aside shrinkage after necrosis, there seems to be no such thing as a "quiet" and molecular disintegration of a fibroid, the molecules being carried away by the blood-vessels and lymphatics and not discharged into the vagina.

Kleinwächter, Kidd, and John Phillips each report a case of disappearance of a fibroid after delivery. I collected these three cases and reported them in my monograph. Professor Cameron believes that it is the capsule, or rather the surrounding normal uterine tissue, that undergoes involution during the puerperium. He further declared that he "has never observed the absorption of the original growth which simply returned to about its original size." Many of us will agree with Professor Cameron who at least indicates a source of fallacy. Yet the three observers just mentioned are men of authority.

There remains another source of fallacy in respect to the absorption of fibroids after delivery. Might not the fibroid have been expelled in some instances during parturition and have been overlooked? Boissard²² recently reported a case where the placenta came away spontaneously after a normal labour. It was preserved and examined by a midwives' class as a matter of routine. A fibroid polypus as big as a hen's egg was discovered about three inches from the edge, with its fundus firmly adherent to the chorion and its pedicle torn through. Thus a tumour as big as a hen's egg may be delivered unobserved with the placenta. Let us remember that a submucous fibroid might be discharged in that manner, mistaken for part of the after-birth by a careless nurse, and then thrown away. A gynæcologist might have detected the tumour during or before the pregnancy. Supposing that he did not attend the labour yet had the opportunity of examining the patient after convalescence he would be liable to come to a false conclusion about the vanished fibroid. The disappearance of a correctly diagnosed fibroid may be the result of necrotic changes and in association with that complication I shall presently refer to a case related recently by Stouffs of Brussels where a necrotic fibroid was removed three months after delivery. Lastly, I believe, as I did in 1893, that destructive inflammatory processes account for the disappearance of fibroids in most cases where there was no pregnancy, and that this was clearly the explanation in my own case.²³ Mr. Skene Keith and

²² Délivrance et Fibrome, *Bulletins de la Société d'Obstétrique de Paris*. March 20th, 1902, p. 169.

²³ *Loc. cit.* The patient had a fall and the abdomen was struck over the tumour. See also Schmauch's case of spontaneous morcellement (Mortifikation und Spontan-elimination eines grossen Myoms), *Centralblatt für Gynäkologie*, No. 45, 1902, p. 1217.

Dr. Gerald Garry²⁴ are active supporters of electricity in the treatment of fibroids. Mr. Keith declares that he has seen more than 20 fibroids disappear after Apostoli's treatment. But Dr. Garry admits that out of 70 cases of uterine fibroids under his treatment he can report "but two in which the shrinkage almost amounted to disappearance." In one of the two the disappearance followed "a violent inflammation which lasted over three weeks," not due, according to Dr. Garry, to the treatment but to gross carelessness on the part of the patient.

Whilst rapid absorption is so doubtful there can be no doubt that many fibroids gradually vanish. The process which brings about this result is probably necrosis, or more strictly speaking, the aseptic necrobiosis not rare in fibroid tumours. The source of nutrition fails and the tumour softens and becomes infiltrated with fluid which disintegrates its fibres.²⁵ When extreme shrinking results the condition may be taken for absorption. The same change no doubt causes the disappearance of fibroids at the menopause, as is usual though not constant. Professor Cameron sees no reason why fibroids should not by some at present unknown means be made to disappear. Perhaps in some of the cases cured by drugs the tumour was really a fibro-myoma and necrosis was induced by the action of the drug. The same may be said of treatment by electricity. It is now advisable for us to consider this question of necrosis independent of diminution of the fibroid.

NECROTIC FIBROIDS.

Necrosis of a uterine fibroid is a change of great clinical interest. It is usually accompanied by distinct impairment of health, whilst the advent of anæmia in a case where menorrhagia is absent is, I find, very characteristic. Dull pain is felt in the pelvic region and the tumour is often tender to the touch. The temperature is usually, but not always, above normal and the pulse is quick and weak. On examination the tumour is found enlarged and softer than before the symptoms just described set in. Obscure fluctuation is often to be detected, no sloughing structure presents at the os externum, and the fornices are free. There is tenderness in the pelvic and hypogastric regions. Pathologically this change consists in a quiet death of the tissues without the agency of germs; infiltration of red fluid full of septic organisms sometimes observed is no doubt secondary. The tumour becomes infiltrated with fluid which softens and even breaks down its fibres; this infiltration is sometimes erroneously named "œdema"; it is ultimately followed by shrinkage of the mass. Thus, as I have remarked, many cases of rapid "absorption" were instances of shrinking

²⁴ Brit. Med. Jour., Nov. 8th, pp. 1564, 1565.

²⁵ Schmauch, loc. cit.

necrotic tumours. The dead fibroid remains in its place; at least, for our present purpose I may be allowed to insist on that clinical limitation. For sloughing and expulsion into the vagina are not quite what we understand by necrosis. The same may be said of discharge of the growth through the abdominal walls after the development of abscess, as described by Olshausen, but I suspect that in some such cases there is first an injury,²⁶ then a suppurating hæmatoma develops, as in a case of my own, to which I referred when speaking of ascites after injury to a fibroid. An adjacent fibroid growth might easily loosen until it lay in the abscess. Olshausen considers that it is the capsule, not the tumour, that sloughs in such cases. In necrosis of a fibroid as a rule the capsule remains healthy, but the tumour sometimes discharges its substance into the vagina, as in Schmauch's case.²⁷ Perhaps it is advisable for us to find out what kills fibroids. Abuse of ergot has been given as a cause, and I think on reasonable grounds in some cases. In more than one instance under my observation electricity had been tried for the cure of the tumour, but I admit that it is difficult to determine cause and effect. Necrosis, it would appear, usually occurs when the patient's general health is impaired or when the tumour is badly placed for nutrition. General ill-health may unfavourably influence a fibroid hitherto innocuous, whilst a bleeding tumour, by impairing the general health, may insure its own destruction. Pregnancy without doubt may cause necrosis of a fibroid. Stouffs of Brussels²⁸ has recently reported a case where a subserous myoma was found to be necrotic when removed three months after delivery.²⁹ The patient complained that the tumour was tender, as was also observed in at least two instances of necrotic fibroid in my own practice, which I shall presently relate. This tenderness is of importance; it is remarkable how rare it is to find a uterus tender to touch, so unlike the appendages which bear handling badly even when only a little inflamed. Adhesions of intestine, rare in fibroid disease, could not very well cause necrosis, but in one case under my observation they were beginning to set up true septic changes in a fibroid already necrotic.

I have operated on several cases of necrotic fibroids, some of which deserve consideration. In two general malnutrition seemed to be the direct cause of the complication.

²⁶ Die Abdominalen Myom-Operationen. Veit, Handbuch de Gynäkologie, vol. ii., p. 748.

²⁷ Loc. cit. Note that in Schmauch's case there was anæmia without hæmorrhage and that the fragments of the necrotic fibroid were not septic; they recalled the aseptic intra-uterine maceration of a retained foetus.

²⁸ Fibrome Utérin en voie de dégénérescence nécrobiotique post partum, Bulletin de la Société Belge de Gynécologie et d'Obstétrique, vol. xiii., 1902-03, p. 71.

²⁹ Some cases of alleged "absorption" of a fibroid after delivery may be explained this way. The necrotic tumour becomes softer and ceases to enlarge.

The first patient was a sickly neurotic single woman, aged 45 years. When 19 years of age she suffered severe shock in a railway accident and was laid up for 20 years. She never regained perfect power over the bladder. For two years the patient had menstruated freely, clots and membranes had been expelled about eight times during that space of time, but there were no exhausting hæmorrhages. The uterus rose to a few inches above the pubes and came down into the pelvis; it was tender to touch, especially below. The temperature was about 99° F. at night. I operated in November, 1901, sparing both ovaries. The tumour was a necrotic submucous fibroid in the posterior wall of the uterus; it weighed only 14 ounces but was very bulky. A year after the operation the patient was in good health; the period was represented by a little dark "show" every fortnight.

The second patient was a neurotic spinster, aged 29 years, subject to phthisis which had abated under suitable treatment a year previously when a fibroid was diagnosed. The tumour rose to about four inches above the pelvis. It became tender with rise of temperature. Then attacks of retention of urine set it. The period grew a little more copious than before for a reason detected after the operation. I operated in February, 1899, sparing the left ovary. The uterus contained a characteristic fibroid as big as a coconut, yet weighing only one pound one ounce; it was very soft and contained much semi-fluid yellowish material. A hard fibroid as big as a cob-nut projected under the mucous membrane immediately above the os internum and was doubtless the cause of the menorrhagia. The patient's general health was greatly improved a year later.

General malnutrition seemed to account for the necrosis of the tumour in these cases. The cause may in other instances be local, the tumour being placed so as to interfere with its own nutrition. I will relate a case of the kind when I come to speak of the "cup-and-ball" fibroid which fits closely into the pelvic cavity. The commonest cause of necrosis seems to be a combination and reaction of general and local influences—above all, hæmorrhage with its consequence, anæmia.

In 1897 I operated on a woman, aged 42 years, who had suffered for two years from severe menorrhagia and intermenstrual hæmorrhages and was extremely anæmic. There was rise of temperature at night, which may mean clot retained in the uterine cavities, inflammation of the appendages, or, as in this case, necrosis. Both ovaries were removed as they showed signs of cystic degeneration. There was a big necrotic fibroid in the posterior wall of the uterus. The patient rapidly regained her health.

In several cases of multiple fibroids which I have removed where the patient was much reduced by menorrhagia some of the growths were necrotic.

Adhesion of intestine could not very well cause necrosis

but might set up septic changes in a fibroid already necrotic. This was the case in a remarkable instance which I spoke about in association with the relations of the round ligament to fibroids. The growth in this case was so placed that its vascular supply was inadequate for its support and thus necrosis occurred. Adhesion of intestine caused more prejudicial changes. In no case could I trace necrosis of the fibroid to inflammatory disease of the ovaries and tubes. That complication did not exist in any of the cases above mentioned, whilst in none of the instances of inflammatory disease of the appendages presently to be related was there any necrosis of the fibroid. As long as the necrotic fibroid is removed so that the knife passes below it and none of its substance touches the peritoneum there is no special danger in operating upon it, nor are its semi-fluid contents always septic, so that if spilt during removal bad results do not always follow. But sometimes it is otherwise, and in the days when I used the serre-nœud I lost a case where some turbid fluid escaped into the peritoneal cavity during hysterectomy. Necrosis seemed due to general ill health in this instance. The fluid was certainly septic. In any case where general infection of the uterus is evident (as in removal of a fibroid uterus in the puerperium) panhysterectomy is indicated. In conclusion, it is clear that small necrotic fibroids cause more constitutional disturbance than a trifling amount of menorrhagia can account for. Such cases often justify hysterectomy when the fibroid is small, as it is a source of general ill health. The surgeon, however, must not urge the removal of a small fibroid on the plea that it may become necrotic.

CUP-AND-BALL FIBROID.

The term "cup-and-ball myoma" has been applied by Howard Kelly³⁰ to a globular fibroid tumour which fits more or less firmly into the pelvis. It is mainly of interest on account of the difficulty experienced by the operator in drawing it up, whilst the securing of the broad ligaments and uterine arteries is never easy when the fibroid is spherical and developed chiefly in the lower part of the uterus. The necessary manœuvring cannot be satisfactorily described in a lecture nor can it be performed by any fixed rule, as Kelly implies. The most accessible broad ligament must be tied and divided, then by traction towards the opposite side aided by more or less rotation the uterine artery is reached and ligatured at this stage; in many cases the tumour is free enough to be drawn up, so that the opposite broad ligament and after it the corresponding uterine artery may be secured, the cervix being divided last. Sometimes a corkscrew must be used to draw up the tumour. In most

³⁰ Loc. cit., vol. ii., p. 389.

cases, however, Kelly's method of cutting through the cervix after the first uterine artery has been ligatured and divided, securing the other uterine artery, dividing it and ending this stage of the operation by tying and cutting through the remaining broad ligament, is easier than the more usual plan of working through both broad ligaments to the cervix. The latter is the better plan where there is a bulky vascular tumour in the fundus with a narrow cervix and wide broad ligaments easily reached below the morbid growth.

The cup-and-ball fibroid is, as the above remarks show, chiefly known for the difficulties which it offers to its removal. The most important question, as it directly concerns the patient's interest, is, Why should it be removed at all? The truth is that many fibroids of the body of the uterus pass through this cup-and-ball stage before they are detected by the patient or by the medical attendant. If the tumour be light and if it does not invade and therefore shorten the broad ligaments so as to impair its own mobility it will cause no inconvenience. Ultimately, when the patient is lying on one side or stooping, it will roll upwards above the pelvic brim and settle for good in the abdominal cavity. These cases are often seen in out-patient departments and in private; they largely make up the series of fibroids which can be pushed up with a clinical history of subsequent comfort or which can be kept up more or less by a pessary. Whether they grow larger after their ascension or give trouble through menorrhagia is not to the point. Not rarely, on the other hand, does the cup-and-ball fibroid give rise to special troubles in its vicinity, and it is one of the forms of uterine myoma that tends to arrest its own development by changes prejudicial to the patient's general health. A good example of necrotic changes in a cup-and-ball fibroid occurred this year in my own practice.

The patient was a single woman, 41 years of age. She was thin and anæmic, but hardly through loss of blood, as, though the "show" at period had increased during the past six months, it was not more profuse than is often seen in association with perfect health, and no bleeding ever occurred between the periods. Dr. F. J. McCann detected a tumour when she consulted him for fever and mucous vomiting which had continued for three weeks; there was also sharp pain in the hypogastrium and left iliac fossa sometimes set up by micturition. The upper part of the mass lay half-way between the pubes and the umbilicus. The cervix lay completely to the left of the lower part of the tumour which seemed to occupy the right fornix. I operated on March 13th. There were no adhesions and no evidence of inflammation external to the tumour, which was quite spherical. Its lower hemisphere fitted firmly into the pelvic cavity, whence it was extracted with difficulty. I succeeded in reaching the broad ligaments and saved the ovaries; the right was plump and bore a large corpus luteum, the left was flattened out by pressure and atrophied. After turn-

ing down an anterior peritoneal flap I managed to ligature the uterine vessels which lay in an awkward position between the prominent under surface of the tumour and the short cervix. The rest of the operation was easy. The tumour which I now exhibit (weight two pounds, two ounces) consists of the greater part of the body of the uterus with a spherical necrotic fibroid in its posterior wall. The degeneration was probably due to the position of the tumour, which prejudiced its nutrition, its lower part pressing against the broad ligament; the squeezing of the left ovary against the pelvic brim in part accounted for the pain, whilst the necrotic changes impaired the patient's health. She declared that she had felt very ill for some months before the tumour was removed, whilst seven months after the operation her general health was excellent. The majority of cases of small spherical fibroids lying in the pelvis neither get impacted nor necrotic, therefore the subject need not further detain us.

FIBROID UTERUS AND DISEASE OF APPENDAGES.

Oöphoritis, salpingitis, hydrosalpinx, pyosalpinx, as well as simple perimetric adhesions, may exist in association with uterine fibro-myoma. Inflammation of the tubes and ovaries cannot cause a fibroid to develop or if it can be shown to do so in some cases it is no essential cause. We often see appendages, perfectly healthy and innocent of any "pinx" or "itis," associated with every type of fibroid. On the other hand, inflammation of the appendages, puerperal, gonorrhœal, &c., may occur in a patient subject to this common form of uterine disease. Dr. C. J. Cullingworth³¹ believes that the complication is always a coincidence. In 100 cases in his own practice salpingitis was not once met with, an experience which seems exceptional. He fails to see how a fibroid, except in the comparatively rare instance of its having become septic, can be directly responsible for a condition like salpingitis, which so far as we know at present is always the result of infection. We must all of us agree with the latter part of Dr. Cullingworth's argument—the statement that salpingitis is due to infection. Necrotic fibroids are often not septic, but on the other hand they not rarely contain germs. Still, in none of the cases of necrotic fibroids of which I have been speaking was there salpingitis, whilst in none of the cases of salpingitis (of which more will be said presently) was there necrosis of the fibroids.

Necrotic fibroids, then, as we learn from experience, do not necessarily infect appendages, whether they themselves

³¹ An Analysis of 100 Cases of Uterine Fibro-Myoma, *Journal of Obstetrics and Gynæcology of the British Empire*, vol. i., p. 26, last paragraph.

be originally septic or free from germs. But Dr. Cullingworth implies that only a septic uterus can infect the tubes and ovaries previously healthy. I think that in some cases where there is disease of the appendages they have been infected, not by a septic uterus, but by septic germs pent up in the uterus. We often find in the uterine cavity an accumulation of sanious fluid and broken-down endometrium which cannot freely escape owing to obstruction near the os internum, but though these products of disease cannot get out germs may get in, perhaps introduced by the sound, as in a large class of cases which Matthews Duncan grouped under the common heading "chronic gynæcology." It is easy to understand how the tube might thus become infected by the contents of the uterine cavity. This probably occurred in a case of bilateral pyosalpinx which will presently be described. In some cases of pyosalpinx (which is often a primary disease as far as the tube is concerned) it is possible that a hydrosalpinx first developed and that its contents afterwards became purulent owing to infection from adherent intestine. This cannot always be the explanation—as, for instance, in three cases in my own operative practice where there was pyosalpinx without any adhesions. These cases and others induce me to believe that infection is often derived from the contents of the uterine cavity. I repeat that the tubes and ovaries remain quite healthy in a majority of cases, and so far my experience is more like that of Dr. Cullingworth than that of Twambly (Boston) and Lawson Tait who imply that this complication exists in 50 per cent. of all cases of fibroid.³²

I need not dwell on numerous cases in my own experience where the ovaries were imbedded in soft perimetric adhesions and the tubes congested, if not inflamed. This condition does not demand their sacrifice. In six cases of uterine fibroid I encountered disease of the appendages sufficiently severe to increase appreciably the difficulties and dangers of an operation. Fortunately, no ill results followed in any case. In one the inflammatory disease was bilateral and severe, the fibroid was small, so that the appendages were removed and the uterus was left behind. In five hysterectomy was performed, and it is important to note that in three out of the five the inflammatory disease was unilateral and I was able to save one ovary.

The first patient was 47 years of age, subject for several years to menorrhagia and some hypogastric pain. There was a history of perimetritis after delivery when the patient was 22 years of age; since then she had never been pregnant and suffered from no pelvic symptoms. Dr. W. B. Addison of Thornton Heath detected fibroid enlargement of the uterus. I discovered a tender, tense, irregular mass behind an enlarged uterus and operated in November, 1897. I found

³² See Stanmore Bishop, "Uterine Fibro-myomata," p. 49. Twambly was speaking specially of interstitial fibroids.

bilateral hydrosalpinx with ovaries the seat of old inflammation. There were multiple adhesions of omentum to the bladder, uterus, and appendages. The fibroid growth was distinct but hardly rose above the pelvic brim. I removed the diseased tubes and ovaries without any trouble. In May, 1902, four and half years after the operation, Dr. Addison informed me that the patient was in perfect health and had never menstruated since her recovery. The fibroid seems to have remained stationary.

In one patient where I removed a bleeding fibroid over four pounds in weight there was a large pyosalpinx on the right side. I ligatured the right ovarian vessels and took away the dilated tube unemptied and attached with the ovary to the uterus. This is the right manœuvre whenever practicable. The left appendages, perfectly healthy, were saved. There was no feverish reaction during convalescence and the patient was quite well two years later.

In a second case I also discovered a pyosalpinx on one side (the left) and saved the opposite appendages, but owing to the shape of the uterine tumour I saw that it would be safer to take away the pyosalpinx separately, which I did without spilling any pus. Two years later the patient was in very good health.

The third case where I saved the appendages on one side was curious ; the patient was a very anæmic woman, aged 41 years. She was delivered of her only child 24 years before the operation ; necrosis of the tarsal bones of the right foot occurred during the puerperium and the foot was amputated. For six years she had been troubled with severe hæmorrhages and occasional attacks of pain and tenderness. When I examined her there were much pain and all the symptoms of pelvic peritonitis. There was pyosalpinx on the left side. I found that it was safer and easier to remove the diseased tube and ovary first and then the uterus was amputated, the right appendages being saved. Three years later the patient was in good health.

In the three cases just related there was pyosalpinx but there were no adhesions. The source of infection could hardly have been on the peritoneal side, as when an adherent hydrosalpinx suppurates. I suspect that in the third the infection might have arisen from decomposing material in the uterine cavity.

In two cases the disease was bilateral and both appendages had to be removed with the fibroid uterus.

The first patient was 38 years of age ; she aborted about the fourth month four years before operation. For five months she had been laid up with severe abdominal pains when I operated and removed a bulky fibroid 4 pounds 12 ounces in weight. The tubes were diseased and the right ovary showed signs of early cystic degeneration. The cause of the inflammatory disease of the appendages was not clear. There were no adhesions, as in the three previous cases. Infection might well have arisen from the uterine cavity.

The second case has already been noted when I spoke of ascites associated with fibroid. The patient was 43 years of age and single, and I could not find out any cause for the chronic diseases of the appendages which, on the other hand, may have played a share in producing the ascites. In this case there were free omental adhesions to the right appendages and to the tumour. The patient remains in good health nearly two years after the operation.

The operator should never leave a suspicious tube behind; its cut surface is a source of germs and favours adhesions. The aspirator is advisable to empty an adherent pyosalpinx which cannot be detached and drawn up without fear of rupture. But when the dilated tube is free it is best to wrap it in sterilised gauze after separating it from the ligatured ovarian vessels and either to take it away unopened with the uterus or else to tie it in two places close to the uterine cornu and to cut between the ligatures and remove it separately with the ovary. Forceps should not be used for this purpose, as they will be contaminated by the pus, whilst as both uterus and tube have to come away the ligatures will do no harm. I think that I have said enough to show that inflammatory disease of the appendages is of sufficient frequency in cases of uterine fibroid to be taken into account both as regards the medical and surgical treatment of that complaint.

Having spoken of inflammatory disease of the ovaries a word or two on tumours in relation to uterine fibroids will not be out of place. A considerable number of cases of ovarian cyst coexistent with fibro-myoma of the uterus have been recorded.³³ But in the great majority of cases each of those forms of tumour exists by itself and it would be frivolous, in the face of clinical and pathological evidence, to attempt to make out that uterine fibroids are caused by ovarian cysts or that the cysts are the cause of the fibroids. Fibroma of the ovary is not a very rare disease and is independent of uterine fibroid; it is significant that in the few recorded cases of pure myoma of the ovary, including one where I was the operator and where the ovary was cystic, there was no new growth in the uterus, contrary to what might be expected. Malignant ovarian tumours also have no associations, save coincidence, with uterine fibroids. Lastly, no uniform change has been discovered in ovaries associated with uterine fibroids which could imply that it played any part in causing the development of the fibro-myoma. Several foreign

³³ Mrs. Scharlieb (An Analysis of 100 Cases of Fibro-myomata Uteri, *Journal of Obstetrics and Gynecology of the British Empire*, October, 1902, p. 330) detected cysts of one or both ovaries in 23 per cent. of these cases. The cysts must, however, have been in most of these cases dropsical follicles, or, as the authoress herself states, "changes due to interference with the pelvic circulation and with the nutrition of the ovaries by the fibroids." Experience shows that out of all cases of fibroid far less than a quarter have coincident cystic tumour properly so called.

authorities as well as Mr. A. Corrie Keep and myself have examined numerous ovaries associated with uterine fibroids. We have all come to the conclusion that any marked change seemed to be due to the pressure of the uterine tumour which may reduce the ovary to a flat ribbon, or to obstruction to the circulation in the ovary, which sometimes causes blood cysts to develop. I have found hæmatoliths³⁴ in ovaries associated with uterine fibroids and fibroid disease of the uterus existed in the case recorded by Hector Mackenzie,³⁵ the discoverer of ovarian hæmatoliths. Blood cysts, it may here be observed, have been detected by Olshausen and Littauer³⁶ in ovaries left behind after removal of the uterus; they seem to be a result of disturbance of circulation due to tying the uterine branch of the ovarian artery close to the cornu. They concern not the pathogenesis of fibroids but rather the treatment of the ovaries in hysterectomy which we have already considered. The changes seen in the ovaries in some instances may play a part in aggravating hæmorrhage or otherwise, but this question remains obscure.

LARGE VESSELS IN FIBROIDS: THE SOUFFLE.

The vessels in a large fibroid of old standing are often extremely dilated. Therefore a souffle may be heard on auscultation, which, of course, must not be confounded with the pulsations of the abdominal aorta audible through any solid tumour. In two quite recent cases the souffle was loud, transmitting in one a thrill to the palm of the hand placed on the surface of the tumour. In the other the sound as heard through the stethoscope simulated the souffle of pregnancy perfectly. The patient was a married woman, aged 30 years, but she had not been pregnant for ten years. She was extremely anæmic and much reduced in health from profuse floodings. The cervix was small and firm and for other reasons pregnancy was improbable, but I could well understand when I auscultated this case how in slightly different circumstances pregnancy might reasonably have been diagnosed. Thus the cervix might have been soft and a spherical outgrowth in the lower part of the tumour might have simulated a foetal head. The tumour weighed over four pounds and the veins were enormous. One ovary was left, but the case is too recent for drawing any conclusions about the effects of the preservation of

³⁴ Blood Concretions in the Ovary, Transactions of the Obstetrical Society, vol. xl., 1898, p. 214. The specimen is in the Museum of the Royal College of Surgeons of England, Pathological Series, 4482, C.

³⁵ Blood Concretions in the Ovaries, Transactions of the Pathological Society of London, vol. xl., 1889, p. 215.

³⁶ Note on a Specimen of an Ovarian Growth removed after Vaginal Panhysterectomy, Centralblatt für Gynäkologie, No. 39, 1902, p. 1025.

ovarian tissue. There have been no troublesome after-effects up to the present.

I have dwelt on the souffle, but not solely as a curiosity. It means that there are big vessels and their existence implies increased risk of the hysterectomy. A big vein should be carefully tied on its proximal side. Clamping, invaluable as a temporary resource in the course of the operation, inflicts much damage on the tissues immediately surrounding the vein. Hence it is better to avoid clamping a big engorged vein on its proximal side, or if that be actually necessary the vein should be ligatured below the clamp and the tissue bruised by the instrument carefully trimmed away. The ligature should never be stout. No. 2 silk will answer well for a vein. Careless clamping, needless handling of structures on the proximal side of the line of incision, and stout ligatures not only increase the chance of inflammatory exudation, parametric abscess, and intestinal adhesion, but when vessels are large these practices naturally promote thrombosis and embolism.

LECTURE III.

Delivered on Nov. 20th, 1902.

THE MANAGEMENT OF CAPSULES.

MR. PRESIDENT AND GENTLEMEN,—When a burrowing fibroid is shelled out of its capsule of broad ligament the tissues usually shrink so that little or no trimming is needed. Vessels have always to be secured on the inner or parametric surface of the capsule. Some operators allow the capsule to remain open and to drop down into Douglas's pouch after ligation of its vessels, the oozing being absorbed by the peritoneum. Mr. Knowsley Thornton¹ observes: "I have never been able to understand the great trouble taken by most abdominal surgeons to shut off stumps and raw surfaces from the peritoneum. All experience shows that if the operation be aseptic effusions of blood are much more rapidly and harmlessly absorbed by the peritoneum than by torn and cut cellular tissue and experience likewise teaches that adhesions to any raw surface left free on the peritoneum are very rare. Damaged surfaces, on which peritoneum remains, much more frequently adhere. If asepticity be not quite assured, it is easy to drain with a glass tube. In my opinion, it is infinitely more dangerous to shut up cut and torn tissues."

Thus spoke a surgeon of high authority on abdominal surgery, a witness of the good as well as of the evil in methods of operating and treatment now considered effete. A younger British operator teaches opposite principles and practice. Dr. William Duncan² wrote two years ago: "In the cases in which the tumour grows between the layers of the broad ligament, after it has been shelled out a raw cavity is left. This cavity is best treated by whipping the walls securely together from below upwards (after hæmorrhage has been stopped) by means of a continuous silk suture, and thus the necessity for drainage by a tube or by iodoform gauze is obviated." Dr. Howard Kelly³ differs a little from Dr. Duncan. He directs that the peritoneal flaps should be sewn together over the stump after the turning in of the pedicles of the ovarian vessels, but adds that "if

¹ Allbutt and Playfair's System of Gynæcology, article "Hysterectomy," p. 627.

² The Modern Treatment of Uterine Fibroids, &c., THE LANCET, April 21st, 1900, p. 1109.

³ Operative Gynæcology, vol. ii., p. 373.

there is a large space left in the cellular tissue it will be best to unite the peritoneum with interrupted or mattress sutures, so that any blood which escapes from capillaries will run into the peritoneum and be absorbed instead of forming a hæmatocele."

I am not surprised to find that three operators of experience differ in their management of capsules, and I believe that the last word has not been said on the matter, or rather I do not see that any rule can apply to every case. When there is not likely to be any effusion, as in cases where the enucleation is not extensive and the capsule, consisting of little more than the two flaps of the opened-up broad ligament, shrinks to very small proportions, the turning in of everything that can be pushed under the flaps is in the highest degree advisable. Whenever I have adopted the practice, under the conditions just stated be it understood, I have noted that all went well, pulse, temperature, excretion of urine, passage of flatus, and general condition included. But this neat and surgical tucking-in practice is unsuited to cases where the capsule is deep, forming a big cavity below the two flaps of peritoneum. We know from experience that it is not very difficult to avoid mischief on the peritoneal side of the flaps whilst it is not easy to insure the patient against complications caused by prejudicial changes in the parametrium under the flaps, complications specially probable when the enucleation has been extensive. The principles of the three writers already quoted are less at variance than they appear to be at first sight. Mr. Thornton is right in teaching that the peritoneum is a better absorber of blood than the parametrium. It follows that Dr. Howard Kelly is also right in applying sutures to the flap in such a manner that the oozing blood may run out of the parametrium into the peritoneal cavity. As the surgeon in the process of enucleation makes a parametric cavity, an unnatural space, Dr. Duncan is right in his principles of closing it. His precise line of practice may, on the other hand, lead to complications.

Let us deliberately consider this question of the flaps. We may put aside all thoughts about the stump of the cervix and assume that it has been either cut away or else so treated as to secure it from hæmorrhage without risk of sloughing from unskilful application of ligatures. We have to consider at present the treatment of a big cavity left in the parametrium after enucleation. The peritoneum tolerates a great deal of handling and ligatures, though when it is damaged beyond its powers of endurance the patient is placed in great and immediate peril. The parametrium is less tolerant. It is inevitably bruised during an enucleation, and it does not bear bruising well. It tolerates foreign bodies very badly; now after hysterectomy it often has to hold clot, which is pathologically a foreign body, and it must of necessity contain ligatures which more literally come under that denomination. Hence certain complications are apt to

follow hysterectomy and panhysterectomy where there has been extensive enucleation, complications seldom deadly like septic peritonitis, but often chronic and intractable, tormenting to the patient, and discreditable to the surgeon and to the operation itself. These late complications do not always appear in statistical tables. Owing to the reparative powers of the serous membrane the peritoneal flaps seldom fail to unite. Their edges begin to adhere in a few hours like the margins of the serous layer of an abdominal wound. The dangers of septic infection of the peritoneum are soon averted, usually never to return as far as the capsule is concerned; sloughing of the stump may cause it, but that complication is not under consideration. Later trouble arises from the extra-peritoneal or subperitoneal relations of the capsule. The patient often does well for a week, a month, or longer after the healing of the peritoneal wound. Then comes trouble which is usually manifested not so much by local pain as by rise of temperature. The pulse, though quick, is usually not weak and the constitutional symptoms are not so marked as the condition of the pelvic organs found on examination might lead an inexperienced observer to expect. In short, all the familiar symptoms of parametritis or pelvic cellulitis are present. The cause of the parametritis is suppuration of a hæmatocele or a phlegmon developed around an infected ligature. I have said nothing about the early bursting of a hæmatocele into the peritoneum, as that accident is rare and comes surgically under the same category as slipping of a ligature. The hæmatocele formed by the pent-up blood oozing into the parametrium tends to undergo the usual pathological changes even when big enough to rise above the pelvic brim. Soft at first, it becomes hard. Then it may be, and generally is, absorbed. Unfortunately infection is always possible during this retrogressive change; then comes fresh softening, that is to say, abscess heralded by the earlier signs of parametritis. Suppuration is also the result of infection of a ligature. This accident leads at once to parametric deposit. Hard at first, it becomes soft, but the softening sets in much earlier than in a mild case of parametritis after labour so that fluctuation can soon be detected.

Thus suppuration occurs from two causes, themselves the effect of infection. The germ must in many cases come from the intestine. When a large tumour is enucleated from the posterior layer of the mesometrium its base is often in close contact with the rectum, as I explained when I demonstrated the surgical anatomy of the broad ligament. Thus after enucleation and closure of the flaps clot and ligatures lie in damaged parametric tissue close to the bowel, perhaps on it. The abscess will burst. We know the directions in which a parametric abscess may travel before it points. As a rule it bursts into the vagina, not rarely it opens into the rectum. Rupture above the groin, common in puerperal parametritis, is unusual in these cases. Fortunately the bladder is not

often involved in abscess. We know that ligatures, ugly things to get into any part of the urinary canal, seem specially prone to make their way into the vesical cavity. From what I have observed, however, this objectionable complication is usually, when it follows hysterectomy, the result of inclusion of a piece of the bladder itself in the sutures passed through the anterior flap. Hence it is, as a rule, associated with simple cases where there is no enucleation and the flaps are cut thin and too short. When extensive enucleation is necessary the flaps are big and the bladder is not likely to be transfixated by the suture needle. It is ligature silk deep down, far from the bladder and near intestine, that sets up abscess, and it is often discharged with the pus when the abscess bursts into the rectum or vagina. These suppurative changes may develop long after an uninterrupted recovery and then prove very distressing, especially if the patient be upon her travels or away from those who know the nature of the case.

I have dwelt designedly on these complications, for I cannot see how the most careful closing of a big gap in the parametrium can guarantee the patient against distant infection. Ligatures occasionally set up trouble after the simplest hysterectomy or after an uncomplicated pan-hysterectomy for fibroid, as in a case done abroad which I examined a few years ago. After extensive enucleation such an accident is far more probable. A continuous silk suture applied to the flaps in a simple case may work its way into the vagina; we cannot, therefore, always trust a similar suture fixing together the opposed inner or parametric surfaces of a deep capsule. Besides, in these cases, numerous ligatures have to be applied to the mouths of blood-vessels.

Of suppuration and discharging ligatures I have seen many cases which have naturally been registered as "recoveries." In one of my own patients I enucleated and closed a large capsule after carefully securing a number of vessels with No. 1 silk. I checked oozing as much as possible by keeping several sponges pressed down in the capsule whilst other parts of the field of operation were being attended to. The pelvic connective tissue was opened up posteriorly as far as the rectum. Parametritis set in early during the third week and an abscess burst into the vagina discharging a ligature and a small piece of sloughing tissue. In a second case I had to enucleate a fibroid outgrowth from the vesico-uterine connective tissue. Two years later two pieces of ligature which I had applied to vessels in the interior of the capsule came away—through bursting of a small abscess into the vagina. I know of similar results in the experience of others and I may here repeat that the complication may be met with after panhysterectomy when there has been free enucleation just as it is seen after supracervical hysterectomy. I am therefore inclined to think that in cases where the capsule is deep, extending far below the flaps of broad

ligament, it may be better surgery to drain it than to close up the flaps. In two recent cases I thought it best to revert to this old practice, excellent when not abused. The results were satisfactory, there was no trace of parametric exudation, and the patient enjoyed perfect comfort after convalescence. There are objections to drainage, no doubt, but the practice is as under-rated at the present time as it was once, within our own memory and experience, over-rated and abused. I am not speaking of peritoneal drainage. Olshausen⁴ is not far wrong when he asserts that the routine drainage of Douglas's pouch through the abdominal wound is a "fond delusion." Dr. Howard Kelly in his "Operative Gynæcology" records experiments which show at least that while the tube may possibly help germs out it certainly lets them in. With a deep capsule it is otherwise. Its edge can easily be sutured to the lower end of the abdominal wound, so that its cavity is cut off from that of the peritoneum. Then it can be drained so as to be relieved of effusions which it is ill adapted to absorb, whilst there is no danger of infection of the peritoneum. I believe that drainage is beneficial in some cases of deeply burrowing broad ligament and ovarian cysts. A bad case of fæcal fistula came under my care a few years since; it followed about two years after an enucleation by a skilful operator, whilst in a similar case in my own practice where the burrowing cyst had suppurated a sinus developed nearly a year after the operation and gave some trouble.⁵ Neither case had been drained. If for any reason drainage of the capsule through the abdominal wound should appear inadvisable, a tube might be passed into the cavity through an incision made from the vagina or gauze introduced the same way. But abdominal and vaginal drainage differ surgically and therapeutically in many respects; I cannot here discuss their relative merits.

In conclusion, I beg to remind you that I am no enthusiast about drainage, having seen too much of the results of its abuse. Nor is the drainage of a capacious capsule a practice which can afford the operator much satisfaction. The tissues of the capsule often come away in sloughy fragments, and the lower end of the wound is liable to become the seat of hernia. But I know from experience that these evils which (except hernia) mostly appear whilst the patient is still under the operator's care are far less than those which not rarely make themselves manifest many months later in an undrained case, when the operation has been registered as

⁴ Die Drainage in der Bauchchirurgie eine arge Täuschung ist, Veit's Handbuch der Gynäkologie, vol. ii., p. 710.

⁵ Mr. Harrison Cripps agrees that such capsules may be drained, but he objects to fixing them to the abdominal wound. See Abdominal Section for Ovariectomy, St. Bartholomew's Hospital Reports, vol. xxix., p. 13. My comments on this practice will be found in a communication on the Management of True and False Capsules in Ovariectomy, Transactions of the Obstetrical Society, vol. xxxix., 1897, p. 265. Suppuration around a ligature has been known to follow the practice of letting the ovarian capsule drop.

a success and the patient has very likely passed under the care of another medical attendant. Only last June a surgeon practising in New Zealand told me that he attended in January, 1902, a patient who suffered from a sinus in the abdominal walls whence he extracted a loop of stout silk which had been applied over ten years before in the course of an abdominal operation performed by a distinguished operator now deceased. I admit that the material of the ligature ought to be considered, but time forbids me to discuss the trustworthiness of sterilised catgut and other substances.

ADHESIONS.

Fortunately for the patient and the operator adhesions are remarkably rare in uterine fibroid disease. I know no explanation of the fact. The smoothness of the surface of the myoma is not necessarily the reason. Smooth it generally is and adhesions are usually absent, but a simple ovarian cyst is smooth, yet adhesions often develop within a few months quite independently of complications such as torsion of the pedicle or peritonitis. Relative mobility has no evident share in causing adhesions, for women often go about for years with freely moveable fibroids, heavy or light, bulky or small, yet when an operation is undertaken not a trace of adhesion may be found. Out of all the series of 44 cases in my after histories already discussed, adhesions were only met with in six, but in one of these, which I will relate, the adhesion, very serious in nature, was due to an exploratory incision and in one the fibroid outgrowth was necrotic and anomalous in form. In two fatal cases I encountered very dense adhesions, but in one oöphorectomy had been performed and one had undergone an exploratory operation. Out of the six successful cases, the fibroid was pedunculated and freely moveable in one only; in that instance there was ascites as well, a complication not observed in any of the other five, or, indeed, in any other case in my series of hysterectomies. Relative fixity has no distinct relation to adhesions. In none of the above cases was there impaction in the pelvis and in several cases where that complication existed, old or recent, I found no trace of adhesions. In one of the six the tumour was practically fixed owing to partial opening up of the broad ligaments. But in no other uterine fibroid fixed by broad pelvic connexions did I encounter adhesions, nor did I find any in the cases of fibroid of the broad ligament independent of the uterus where I operated. Let me note here that in one of the cases of this form of fibroid the tumour was of enormous size, whilst in another it was a small heavy mass like a cricket-ball lying in the left mesometrium under a large multilocular ovarian cyst.

The word "cyst" turns our attention to cystic uterine fibroids. As ovarian cysts are often complicated by

adhesions, we might expect, going by logic instead of by observation, that adhesions are frequent in cystic uterine fibroids, but this is contrary to my experience. A fibroid, by the way, is not truly cystic unless it includes a big cavity containing at least half a pint of fluid. The pathological dilatations of lymphatics which resemble cysts on section are not true cysts and if two or three pints of serum drain away from such a tumour after removal and section the growth is in no sense cystic, but œdematous if not necrotic. I may add here that œdema in itself is no promoter of adhesions. Of my own cases of true cystic myoma one held 25 pints of serum and weighed 10 pounds 6 ounces;⁶ there was no evidence of sepsis but the patient was overworked and emaciated and had recently suffered from severe abdominal pains. Had the tumour been ovarian adhesions would almost certainly have existed. In another case the contents of the cyst were two pints of turbid red septic fluid and the patient had been laid up for two months with severe abdominal pains. Yet I did not find one single adhesion. The serre-nœud was used in both these cases.

The fact that intestinal adhesions are relatively rare is most important for us to remember and most fortunate for the patient who undergoes operation. Small intestine adhesions in a case of a large ovarian cyst are a distinct source of danger. A dense adhesion of the ileum is so serious a matter that it is often best to resect the adherent piece of gut. Intestinal adhesions to malignant ovarian tumours are specially perilous. But ovariectomy is imperative in a case of ovarian tumour. Experience shows, on the other hand, that this dangerous complication, intestinal adhesion, is rare in uterine fibroid disease, a much less certainly fatal malady than ovarian tumour, a fact to be considered in the estimation of the risks of hysterectomy for fibroids. Most assuredly a very strong factor in the good results of that operation is the rarity of this dangerous form of adhesion. Operators who report their cases should distinguish between true adhesions of the peritoneal surfaces of the intestine and tumour and the adhesion of an extra-peritoneal part of the large intestine to the surface of part of a tumour which burrows under and behind the pelvic peritoneum. The rectum is sometimes united to the tumour in this way; then it is not always easy to recognise and its longitudinal bands simulate the ureter or may be taken for strands of fibrous tissue belonging to the tumour. Great care is necessary in enucleating the base of a fibroid which burrows deeply. After dividing the pelvic peritoneum too rapid or rough use of the sponge or the finger may result in damage to the rectum, whilst that

⁶ Large Cystic Myoma of the Uterus of over Twelve Years' Duration removed by Enucleation; Recovery; with notes on Cystic Fibroids. Transactions of the Royal Medical and Chirurgical Society, vol. lxxvi., 1894.

portion of intestine may be badly torn if the base of the tumour be too smartly pulled up out of the pelvis. This accident is not unknown.

Parietal adhesions, the most frequent in ovarian cystic disease, are relatively very rare in cases of uterine fibroid. So much is this the fact that when the operator finds a connexion between the parietes and the tumour he must be very careful and should extend the incision higher till he finds that he can explore the upper limits of the tumour from the peritoneal cavity. For what he thinks is a dense parietal peritoneal adhesion is more likely a direct connexion between the abdominal parietes and the tumour, which lies in front of the parietal peritoneum. In this case the fibroid has burrowed under the anterior layer of the mesometrium, as I explained in my first lecture. The bladder lies drawn up on the front of the fibroid. The consequence of mistaking such a condition for an adhesion to parietal peritoneum is tearing of the bladder, an accident once pretty frequent. Fortunately, the use of the *serre-nœud*, otherwise objectionable, had at least one advantage, it taught us to look out for the bladder. In so doing we discovered and took into account these displacements of the parietal peritoneum. The omentum is the structure most usually adherent. When it has long been attached to the fibroid its vessels become enormously enlarged. At the same time its connective tissue often atrophies, so that two or three dilated veins and arteries run almost bare from the non-adherent upper part of the omentum on to the surface of the fibroid. I have seen a pulsating vessel one-eighth of an inch broad running for quite three inches in this manner; it formed a big loop between two points where it adhered to the surface of the tumour. These bare vessels, after all, are mainly curiosities as regards the disappearance of the connective tissue around them. The fact of their dilatation is a more serious matter. The omentum should be tied some distance above the adhesion and divided with great care. The mouths of the divided vessels should be carefully ligatured with No. 1 silk. Thrombosis of omental veins is not unknown, especially when the omentum is fat and thick ligatures are used. In one case of ovariectomy where the veins of adherent fat omentum were dilated I suspect this complication occurred; there were severe pain and rise of temperature about the second week and a tender, hard, moveable mass could be felt in the position of the omentum. All the objective and subjective symptoms subsided and the patient recovered.

Adhesions of fat omentum associated with a big omental epiplocele are very dangerous. The surgeon has to perform radical cure of hernia, formidable in the circumstances, as well as the hysterectomy. In a stout woman, aged 49 years, I had great trouble in separating the omentum from the sac and from the fundus of the fibroid as well; the vessels were very big. The tumour weighed 15 pounds 3

ounces ; it was removed after application of the serre-nœud. The more modern operation would have been better but the patient did well and is now alive, seven years after the operation.

The worst case of adhesion which I ever encountered was in a case where an exploratory incision had been made just four years before I operated. From what I could make out removal of the ovaries was intended but was found impracticable. The flooding continued and the tumour at last grew very rapidly. Mr. W. H. Chamberlain of Northampton sent the patient on to me. I found that the cicatrix adhered very firmly to the fibroid. Much omentum had first to be separated ; it had become firmly incorporated with the parietes, the wall of the uterus, and the cicatricial tissue between them. Unfortunately, two coils of ileum were involved in the cicatrix. I took every precaution, but both coils were unavoidably torn through all their coats. The rent was longitudinal and about an inch long in both coils. I succeeded in closing the lacerations, using a continuous No. 1 silk for the muscular coat and interrupted Lembert sutures of the same material for the peritoneum. Then I removed the tumour and observed before closing the abdominal wound that air passed freely along the repaired coils. The operation was rather severe, as after the repair of the gut I was obliged to enucleate a big subserous fibroid from the anterior part of the cervix before I could remove the main tumour. As there was a considerable amount of shock I ordered a quarter of a grain of sparteine to be administered in a beef-tea enema every three hours. There was but little sickness and flatus began to pass naturally 30 hours after the operation. Urine was secreted freely and in 48 hours the sparteine was discontinued, as the pulse became distinctly intermittent, and strychnine and digitalis were given instead. There was no trouble with the bowels and when I last heard from the patient, 15 months after the hysterectomy, she was free from any signs of intestinal obstruction. The troublesome complication and the consequent prolonging of the operation caused me all the more anxiety as the patient had a weak circulation and was subject to attacks of fainting during the period, even before much blood had been expelled. The sparteine seemed to act well, but I watched its action, as I know from experience that it is apt after a time to cause intermittence of the pulse.

In conclusion, it is certain that adhesions are rare in fibroid disease, that when they occur they are not specially associated with any particular variety of that form of tumour or with any other complication to which it is subject, that, on the other hand, they are sometimes a manifest result of previous incomplete or exploratory operations, and that they more often involve the omentum or intestines than the parietal peritoneum.

POST-OPERATIVE ILEUS.

Most writers experienced in hysterectomy record instances of this fatal complication and one has occurred in my own practice. Sometimes it is simple in character. A band of lymph connects the intestine to the stump of the uterus, the stump being in a normal condition so far as healing is concerned, then obstruction occurs, purely mechanical. Still, though Olshausen reports two such cases in his own practice,⁷ I suspect that, as a rule, obstruction is more often connected with septic changes. I will not dwell on the "raw surface" question. The dangers of a raw surface on a thick ovarian pedicle have been exaggerated. The practice of sewing the edges of the pedicle over the surface with continuous or interrupted sutures is in itself not without danger. The foreign bodies used as sutures may be sources of sepsis or other evils and the distal part of the stump may slough after this process of suturing. Nor, when it does occur, is obstruction necessarily due to adhesion to the raw surface. Dangerous adhesions may be contracted by the thinnest ovarian pedicle with a very narrow raw surface, and in cases of adhesion the intestine has been found fixed to the side of the pedicle and not to its raw extremity, as in Spencer Wells's classical example.⁸

In retro-peritoneal hysterectomy there is no transfixion and therefore no distal part of the stump as in the ovarian pedicle. I must note in drawing this distinction that some operators, such as Penrose and Howard Kelly,⁹ treat the ovarian pedicle without transfixion; they tie the ovarian and uterine vessels separately, leaving the membranous interval free. I believe that this practice is in many cases excellent, but it is not quite safe when the pedicle is large. In retro-peritoneal hysterectomy, I repeat, there is no distal end and in panhysterectomy there is no stump at all, but ligatures are applied to the peritoneum and to the upper part of the vagina. Obstruction is rare after both these operations for removal of the uterus. Under unfavourable conditions, however, inflammatory changes may render adhesion of intestine very possible. The uterine stump must be handled as little as possible and ligatured as little as possible, whilst the serous coat must be lightly sutured over the muscular tissue. This practice is correct for a uterine stump which cannot shrink so rapidly as an ovarian pedicle and is not transfixed by a ligature. Distal ends do not bear foreign bodies, but as I have just observed there is no distal side of a uterine stump. As to other considerations about the

⁷ Die Abdominalen Myoma-Operationen. Veit: Handbuch der Gynäkologie, vol. ii., p. 759. Olshausen adds two interesting cases of ileus after ovariectomy (pp. 760, 761).

⁸ Ovarian and Uterine Tumours, 1882, pp. 426, 427. The coil of intestine almost surrounded the sides of the pedicle.

⁹ Gynecological Surgery, vol. ii., pp. 24, 25.

suture of the peritoneal layer of the flaps, I have referred to them in speaking of the management of capsules.

At all events, to return to our subject, experience shows that the ligatured and sutured hysterectomy stump fares well as a rule if the sutures and ligatures be carefully and gently applied. But Zweifel warns us that clumsy ligaturing and rough handling of the stump greatly increase the risks of exudation and consequent intestinal adhesion.¹⁰ Unfortunately, certain stumps cannot bear the most gentle handling, whilst the patient's reparative powers are often at a low ebb owing to anæmia from hæmorrhage or visceral complications. Hence a certain amount of parametritis is observed in many cases after the removal of a big bleeding fibroid from a sickly woman and exudation, not easy to define by clinical research, probably occurs in such cases along the line of peritoneal suture. Such changes favour adhesions.

I will now record the only instance in my own experience of ileus after hysterectomy and the observations which I have just made will serve to explain how it developed.

The patient was a single woman, aged 36 years, subject to great pain in the left iliac fossa for over a year. There had been no hæmorrhages but her health was very feeble. The pain was caused by the presence of a large fibroid which filled the left side of the pelvis, extending a little above the brim. The growth sprang from the cervix, pushing up the uterus; the sigmoid flexure ran on its surface. There were other fibroid outgrowths, including one in the ovarian ligament, described elsewhere. Enucleation proved difficult as the cervical growth was bilobed and one lobe lay deep down in the parametrium. The capsule, made up of the left broad ligament, required many ligatures as did the thick uterine stump. The right appendages were left behind. This operation was performed on Dec. 10th, 1901. Evidence of sepsis, of uncertain origin, set in within a few days and obstruction came on gradually. The point of importance and interest in the after-history of this case was the difficulty of diagnosis of pseudo-ileus from true intestinal obstruction. The pulse grew very rapid and weak, and yet flatus passed freely. I feared, however, bacillus coli infection where flatus often passes even when the patient is moribund.¹¹ On the ninth day a great quantity of liquid fæces was brought away by the aid of turpentine enemata and the distension subsided. Within 24 hours, however, vomiting set in and I found that it was distinctly fæcal. Without delay I performed an abdominal section on Dec. 19th. Notwithstanding the septic symptoms and the feebleness of the patient the abdominal wound was

¹⁰ Referate über die Behandlung der Myome, Centralblatt für Gynäkologie, 1899, p. 613.

¹¹ See Vautrin's valuable article on Colibacillary Infection after Hysterectomy, *Revue de Gynécologie et de Chirurgie Abdominale*, November-December, 1901.

firmly united. The obstruction was far above the sigmoid flexure ; it consisted of a volvulus of the small intestine and immediately below it a knuckle of ileum adhered to the right side of the stump of the uterus. The small intestine was deeply congested, its coils adhered, and there was turbid red serum in the peritoneal cavity. I flushed out the peritoneal cavity with saline solution after setting free the adherent ileum. Unfortunately, the patient never rallied from the shock of the operation and died two hours after being returned to bed. There was a sloughy appearance about the stump of the cervix at the point of adhesion. This accounted for certain unfavourable symptoms seen during the first week—bad pulse, high temperature, and an unfavourable aspect. Pseudo-ileus is a common complication of septicæmia and so I was deceived by the manifest septic symptoms. The vomiting, fæcal from the first, came on late. I operated immediately after detecting it, but the patient was by that time in a very unfavourable condition.

In uncomplicated acute mechanical obstruction, as in Olshausen's cases, the symptoms are as a rule quite clear. The more or less acute pain and the characteristic vomiting, accompanied by quick pulse but no elevation of temperature, are very different from the combination of symptoms characteristic of the pseudo-ileus of septicæmia and septic peritonitis. The surgeon is not likely to delay opening the abdomen in an acute case. On the other hand, the more I see of complicated cases the less sure do I feel about pseudo-ileus and about the prophylaxis of intestinal obstruction in general. Secondary operations for obstruction where there is fever and where passive distension has been distinct before vomiting sets in are highly unsuccessful. Treatment by turpentine enemata, nutrient enemata, the wearing of the rectal tube for about 20 minutes before each enema, and judicious stimulation have saved numerous cases of passive distension with irregular vomiting and fever. When, as in my case, this condition masks distinct mechanical obstruction it is often very hard for the surgeon to decide what to do. Promptness in operating is the essential in acute obstruction. Deliberation and certain therapeutic appliances are the essentials in pseudo-ileus. But we may be much embarrassed by a mixed case. Lastly, there is no absolute prophylaxis against mechanical obstruction. The ovarian stump, the uterine stump, and the ligatured ridge of peritoneum left in the floor of the pelvis after panhysterectomy may all be the seat of adhesion. Even when unnatural prominences may be reduced by surgical ingenuity to a minimum, which we have certainly not yet attained, still the danger of acute obstruction will not even then be passed. Irritated serous surfaces and above all omentum always tend to adhere to what is next to them, and occasionally they fix themselves in such a way as to insure trouble with adjacent intestine. In one case of fatal obstruction after removal of inflamed appendages I found a coil of ileum twisted tightly around a tense

cord of omentum which adhered to the fundus of the uterus. The appendages had been removed a week previously. In opening the abdomen in cases where others have already operated I have repeatedly found omentum adherent in all directions and not rarely full of holes, and I have come across small intestine hanging from the parietes, sometimes with a little diverticulum due to dragging on the adhesion. Yet in these cases there was no history of obstruction. What I have seen, others I find have observed also, and when we say that obstruction is remarkable it is really its rarity that is the feature most worthy of remark. After hysterectomy obstruction seems relatively rarer than after ovariectomy, but statistics are not quite clear as to this point. Oöphorectomy for inflammatory disease is more liable to be followed by this complication owing, I suspect, to the unhealthiness of the stump, it being never free from inflammatory elements. Removal of normal ovaries for checking the growth or bleeding of fibroids is said to be often followed by obstruction, as the stump of the pedicle projects from the surface of a firm fibroid tumour usually more or less fixed and thus may lie in contact with the same coil of intestine for days. This theoretical explanation is plausible, yet though we very often performed this operation at the Samaritan Hospital ten years ago, and not always with perfect success as to its aim, I cannot trace one case where obstruction occurred. I know of one instance of acute obstruction following several months after retro-peritoneal hysterectomy and it was successfully relieved by the original operator. But it seems certain that this grave complication is rare after hysterectomy. The stump sinks down into the pelvis and undergoes atrophy. After an ovariectomy the uterus drags on the stump of the pedicle which stands up in the middle of the pelvis in a position more favourable for contracting adhesions.

RUPTURE AND HERNIA OF THE ABDOMINAL WOUND.

One of the disadvantages of extra-peritoneal hysterectomy with the application of the *serre-nœud* was the frequency of infection of the abdominal wound. The process of cicatrization was thereby much impeded and yielding of the wound followed by prolapse of coils of intestine was not rare. This complication is even more dangerous than it is inconvenient in such circumstances. When sepsis has played no share in the accident it is otherwise, for when a weak but uninfected wound yields intestine may come out and even lie in folds of dirty underlinen for hours before reduction without fatal results.¹² In the retro-peritoneal operation

¹² Cestan: *Quatre cas d'Eviscération Post-opératoire Spontanée*, Toulouse Médical, Nov. 1st, 1900, p. 249. A case where prolapse of a foot of small intestine through a gauze drainage-track occurred on the ninth day with no evil results is recorded in my article on

and in panhysterectomy rupture of the wound from septic influences is almost unknown. So many of us perform hysterectomies and are obliged to make long incisions, often in subjects weakened by anæmia, that we must think about the strength of the cicatrix and the risks of the development of hernia. Experience shows that the cicatrix is usually strong enough not to yield and to allow the bowels to prolapse, provided that the sutures, if meant to be removed, are not taken away too early, or if left are strong enough to hold the structures around the wound firmly till the cicatricial tissue is enough organised to do so. The constitution and the habits of the patient are two ever uncertain factors. I cannot dwell on the relative merits of a single row of interrupted sutures including all layers of parietes, and of sunken sutures absorbable or unabsorbable, continuous or interrupted, uniting the layers separately. Different surgeons of like authority and experience are by no means agreed about this question. In some cases I find that very bad hernial protrusions follow the older and simpler method, but as I pointed out many years ago the complication is often the result of taking up too much of the peritoneum so that two opposed layers of serous membrane project forwards between the more superficial structures, effectually preventing their union. A hernial pouch is easily developed in this manner.

On the other hand, hernia of the cicatrix is by no means unknown after suture of the parietes in layers. More than one operator of experience has found out that truth. Septic changes may occur around a sunken unabsorbable ligature, the patient feels a little pain some time after the operation, and an abscess forms, leaving a weak spot. I have observed this complication twice in cases where I had been the operator and another instance is recorded where a patient was admitted into hospital for a stitch abscess a year after ovariectomy by a distinguished authority.¹³ There is, on the other hand, evidence that catgut is too soon absorbed to allow of firm union, excepting some samples of chromicised gut which are very slowly absorbed and thus have the disadvantages of wire and silkworm-gut. My suspicions are confirmed by three cases recently reported by M. Recours of Bordeaux in an instructive thesis based on 62 cases of rupture of the wound and prolapse of intestine.¹⁴ Three cases are included where rupture occurred in the practice of one surgeon and they are worth considering for a minute or two, since where three wounds yield during convalescence and allow intestine to prolapse, many more sutured in the same manner must be so weak as to become inevitably the seat of rupture. In all three cases catgut was applied

Chronic Serous Perimetritis simulating Cyst of the Ovary, &c., *Journal of Obstetrics and Gynæcology of the British Empire*, vol. i., p. 265.

¹³ *Transactions of the Obstetrical Society*, vol. xlv., 1902, p. 183.

¹⁴ *De l'Éviscération Post-opératoire Spontanée*, Thèse de Bordeaux, 1901. See cases 55, 56, and 57, p. 68.

to the muscular layer and horsehair to the integuments. The first patient was a man, aged 58 years; he underwent pyloro-gastrectomy for cancer. The wound yielded on the ninth day, but healed after it was sutured again, as happened in the two other cases. The second patient was a man, aged 50 years, with chronic catarrh; the wound gave way on the twelfth day after gastrostomy. The third case directly concerns us. The patient was a woman, aged 50 years, subject to uterine fibroid. She was cachectic, presumably from anæmia. Panhysterectomy was performed; the wound gave way, apparently without any violent effort, on the tenth day. Thus Recours rightly concludes that catgut, which is absorbed, or at least becomes practically useless within a week, will not allow time when the patient is feeble for the development of cicatricial tissue strong enough to bear by itself abdominal pressure increased by coughing or voluntary muscular efforts.

Into the statistics of hernia of the abdominal wound after hysterectomy I do not propose to enter, as I know not of any on which we may rely. In the operative results of one surgeon the latest cases fare nearly always the best, as he was most experienced when he performed his later operations and a life saved is a clear success directly after fair and evident convalescence. But it is otherwise when the strength of the cicatrix has alone to be taken into account. In 100 successful abdominal sections performed within 12 months there may be no case of hernia of the cicatrix, or rather no case where that complication has become advanced enough to be detected by the patient. But three years later there will assuredly be more than one hernia in the series.

CANCER OF THE STUMP OF THE CERVIX; THE ALLEGED MALIGNANT FIBROID.

Most of the subjects discussed in this lecture are illustrated by cases in my own experience. I am glad to say that I have never observed cancerous degeneration of the stump after retro-peritoneal hysterectomy in my own practice. Thus I am compelled to depart from the rule which I have endeavoured to maintain in respect to other matters of interest pertaining to uterine fibroids and their treatment. On the other hand, whilst I have refrained from speaking of subjects which happen never to have come under my personal observation, I feel bound to make an exception in regard to malignant changes in the cervix. Whilst I advocate a certain operation I am not justified in turning my back on the fact that others have shown that it is sometimes followed by evil results. Therefore, in respect to cancer of the cervix I feel bound to review the experience of others. In the first case we must make sure of the nature of these degenerations of the cervix. Is the "cancerous" stump always carcinomatous? On look-

ing into the literature of the subject I find that sarcoma of the stump has been mixed up with carcinoma. This is a grave error. In speaking about fibroids, as I have already endeavoured to explain, pathology need not trouble us much, as we take it for granted that the tumour is a fibro-myoma. When there is a question of malignancy the case is completely altered. Sarcoma of the cervix is a very rare disease, so is sarcoma of the uterus, but it is not always easy to recognise sarcomatous degeneration of the uterus, so that sarcoma of the stump after hysterectomy may imply that there were sarcomatous elements in the entire uterus when it was amputated. Cancer of the cervix is very common and if it develops after hysterectomy can we be always certain that the germs of the disease were not present before the operation? Can we be certain that the operation caused the cancerous degeneration? Lastly, may not any method of operating which insures as much as possible the maintenance of the nutrition of the stump favour, on that very account, the development of cancer? Or does the truth lie in the opposite direction—that is to say, may not a method which insures ultimate atrophy of the stump favour malignant degeneration?

I will first dispose of the cases of sarcoma of the stump which have been mixed up with the carcinomas. I have found three distinct cases, but in the first let it be remembered that the uterus was removed by the old extra-peritoneal operation. It is recorded by Wehmer.¹⁵ The tumour was a fibro-myoma weighing 16 pounds and the patient was 44 years of age. Now let us mark that sarcoma developed a few months later in the *scar* and rapidly diffused itself over the peritoneum. It is not clear how far the cervix was involved and the malignant disease might well have originated in the parietes adjacent to the stump. The second case is reported by Menge.¹⁶ Sarcoma developed in the stump after removal of a cystic fibro-myoma of the uterus 11 pounds in weight. But he admits that the uterine tumour was registered as an "innocent" fibroid on the strength of its naked-eye appearances ("*grossanatomisches Aussehen*"). Hence Menge had his doubts. The third case of sarcoma of the stump was related by Dr. Stone of Washington in a discussion to which I shall presently refer. The sarcoma was discovered in time before the patient left hospital; this fact is sufficient to show that the uterine tumour was in all probability sarcomatous. The cervix was subsequently removed with success.

Thus there are three fairly reliable cases of "cancer" of the stump which were really sarcomata. We cannot feel sure that others described as "cancer" were not also sarcomata. In one of the three cases actually recognised as

¹⁵ Beitrag zur Myomotomie und Castration bei Fibromen, Zeitschrift für Geburtshilfe und Gynäkologie, vol. xiv., p. 106, Case 17.

¹⁶ Ueber zwei Fälle von Myosarcoma Uteri Lymphangiecticum, Centralblatt für Gynäkologie, 1895, p. 453.

sarcoma the modern retro-peritoneal operation was not performed and the sarcoma may have originated in the parietes; in the second there was no microscopic examination of the uterus when it was removed; whilst in the third the probability that the uterus itself was sarcomatous is extremely strong. We cannot dismiss these cases of sarcoma without dwelling a little on malignant degeneration of fibroids, though a full discussion of that grave subject would here be quite out of place. Continental authorities claim to have discovered that sarcomatous change in a fibroid is not rare, but they rely much more on microscopical appearances than on clinical histories. Thus as long ago as in 1888 Martin detected four cases in a series of 205 operations for the removal of fibroids of the body of the uterus.¹⁷ As recently as last March Ulesko-Stroganowa declared that she found that ten out of 100 cases of fibroid examined by her were malignant, a proportion utterly at variance with clinical experience.¹⁸ She makes out that this "malignant" fibroid is a true leiomyoma, like any other fibroid, the muscle cells altering their form until they become polymorphic, yet in all cases the polymorphic cells can be traced back to plain muscle. The tumour which I described in 1889 was probably of this class.¹⁹ Never since that date have I come across a true malignant fibroid and I regret to say that I was unable to trace the patient in that solitary case after her convalescence. I cannot find many records of malignant fibroid in the United Kingdom, though the attention of the medical world has been so much turned towards uterine tumours of late years. Nor do the foreign observers furnish us with after histories of their cases. It seems clear that in most instances the tumours of the kind described by Ulesko-Stroganowa are clinically innocent and that the changes in the muscle cells, formidable in appearance, are not malignant after all. Many of her colleagues were of that opinion when she discussed her researches before a society.²⁰ Dr. Lockyer, to whom I am indebted for his careful examination and preparation of many of the specimens which illustrate these

¹⁷ Centralblatt für Gynäkologie, 1888, p. 389.

¹⁸ Ueber bösartiges Myom der Gebärmutter, in report of a meeting of the Russian Obstetrical and Gynaecological Society, Monatschrift für Geburtshilfe und Gynäkologie, September, 1902, p. 427, and October, p. 826.

¹⁹ Myoma of the Uterus becoming Sarcomatous, Transactions of the Pathological Society, vol. xli., 1890, p. 206. My conclusions (ibid., p. 212) practically signify that the tumour in question was a malignant myoma developed from the elements of plain muscle cells which had never advanced beyond their embryonic stage.

²⁰ Loc. cit., October, p. 826. Fenomenoff considered her percentage of malignant cases too high. Levinovitch remarked that young plain muscle cell was hard to distinguish from connective tissue new growth. Redlich was of a similar opinion. Ratschinsky remarked that in one case reported by Ulesko-Stroganowa as malignant there was no evidence of malignancy outside microscopical appearances. See also discussion in the Transactions of the Obstetrical Society of London, vol. xli., 1899, p. 369.

lectures, has recently turned my attention to an example of "malignant fibroid" which he intends to report in full. Most unfortunately the patient died after the operation, which was performed by an experienced surgeon. Two points of interest must be noted in respect to this case. Firstly, the tumour consists of large well-circumscribed growths, purely sarcomatous in the midst of a pure myoma, so that it is not certain that it corresponds with Ulesko-Stroganowa's cases. Secondly, what is yet more important for our purpose, I cannot see how the operator could have taken the fibroid for a malignant growth. Had the patient lived of course malignancy would soon have been manifest in the remains of the cervix. But then the case would have been an argument, I admit, in favour of panhysterectomy, but not an example of malignant disease developing in a stump of which the tissues were healthy at the date of the hysterectomy. I turned attention to this source of fallacy in relating Menge and Stone's case. The same must be said of Dr. Herbert Spencer's cases read at the Manchester meeting of the British Medical Association last August.²¹ In two cases of retro-peritoneal hysterectomy the tumours were indistinguishable from fibroids and were not known to be sarcomata until some months after removal; the patients ultimately died with secondary masses in the pelvis. This experience is no doubt a plea in favour of panhysterectomy, but there was no sarcomatous degeneration of the stump of a previously healthy cervix. It is remarkable that one operator should have had two cases of so rare a disease as sarcoma of the uterus with full clinical proof of malignancy within a very few years.

Thus there is such a thing as malignant fibroid and it must be taken into account in association with degeneration of the stump. We must further grant that a malignant fibroid is a sarcoma. Cancer of the fibroid uterus means carcinoma of the uterus coincident with a myoma, a grave complication to be duly borne in mind in association with the carcinoma of the stump which we must now consider, but a "cancerous fibroid" is not clinically any more than pathologically the same thing as a true sarcoma of the uterus developed from muscle cells or their elements.

Having duly weighed all these considerations about sarcoma, we are at length free to discuss cancer of the stump of the cervix, true carcinoma, which has undoubtedly been observed after retro-peritoneal hysterectomy. The most interesting summaries of clinical evidence which have recently appeared are to be found in Thumim's monograph on the operative surgery of the gravid uterus²² and in a discussion held this year at the annual meeting of the American Gynæcological

²¹ Total Abdominal Hysterectomy (especially by Doyen's Method) for Fibro-Myoma Uteri, *Brit. Med. Jour.*, Oct. 11th, 1902, p. 1131.

²² Chirurgische Eingriffe bei Myomen der Gebärmutter und Schwangerschaft und Geburt, *Archiv für Gynäkologie*, vol. lxiv., p. 457.

Society on the Relative Advantages of Complete and Partial Hysterectomy.²³ Thumim considers that the 15 reported cases of malignant degeneration of the stump are arguments against retro-peritoneal hysterectomy and favour pan-hysterectomy. But he includes the two sarcomas (Wehmer and Menge) which we have put aside and candidly admits that in two of the cases of carcinoma malignant degeneration of the cervix possibly existed when the uterus was removed. One of the doubtful cases was in Freund's practice, the second was reported by von Erlach in a discussion on Savor's case, to which I shall presently refer. Von Erlach, like Menge in his report on the sarcoma, was not sure that there was not cancer at the time of the hysterectomy; the uterine tumour was necrotic and was not carefully examined. I think that another case, included in Thumim's series of 15, is more than doubtful in the same respect. Schenk²⁴ is the reporter. The patient, I find on referring to the original report, was 57 years of age, and the uterus, as big as a fist through the growth of a tumour, was removed on account of bleeding for two months, with pain and emaciation. The operation was performed in December, 1897; sanious discharge was soon observed and in April, 1898, the stump of the cervix was found to be cancerous. The patient died four months later. Comment would be superfluous on such a case. Savor's case²⁵ is nearly as suspicious. The patient was 48 years of age when the uterus was amputated and the cancerous stump was taken away when she was 52 years old. The germs of cancer very probably existed at the time when this elderly patient underwent the operation. Thumim quite justly turns his reader's attention to a case where Landau removed a fibroid uterus by panhysterectomy from a woman, aged 44 years. When the uterus was examined after the operation cancer of the cervix was detected, a complication which had not been previously recognised. Had the cervix been left blame would have been attached to the "incomplete operation." All these cases show that statistics are misleading and when the disease develops in the cervix after the operation there is no clear evidence that the operation was the cause of the cancer. I speak elsewhere of a case in Martin's statistics where cancer of the cervix developed after double ovariectomy for tumours of an innocent type. Nobody would consider that the ovariectomy caused the cancer of the cervix.

The discussion in America to which I referred is worth attention. Noble, Cushing, and Janvrin considered that malignant degeneration was very rare. Cushing distinctly stated that the cervix has a certain physiological function of its own that is of value and on that account it should not

²³ American Journal of Obstetrics, August, 1902, p. 265.

²⁴ Ueber Dauererfolge nach Myomotomie, Archiv für Gynäkologie, vol. lxi., p. 460 (Case 18).

²⁵ Carcinoma cervicis nach Laparo-myomektomie, Centralblatt für Gynäkologie, 1898, p. 1367.

be removed when hysterectomy is performed on a young woman. This consideration is much more important, in Cushing's opinion, than the ultimate chance of cancer developing in the stump. His theory appears related to Abel-Zweifel's which I took into consideration when speaking of the treatment of the ovaries in hysterectomy, but the German authorities insist on a retention of a piece of the uterine mucosa above the level of the os internum. Cushing is silent about this qualification and, as I have already stated, American operators amputate the cervix below the os. Noble of Philadelphia has observed cancer of the cervix in only one out of 300 hysterectomies in his own practice and in that case it was present before the operation. The case of sarcoma of the cervix recorded by Dr. Stone of Washington has been already mentioned. It is clear that when part of the cervix is left that part may become cancerous, but this complication is rare and there is no evidence that the operation causes it. So far the advocates of panhysterectomy may make use of the complication in question, but there are other considerations which favour the supra-cervical operation. On these, however, it is not to the point for me to dwell.

The last consideration relative to malignant changes in the stump is of considerable interest. Such changes, it is evident, occur occasionally. May not any method of operating devised to maintain the nutrition of the stump favour on that very account the development of cancer? I refer, of course, to the preservation of the ovaries in hysterectomy, a subject which I have already discussed at considerable length. Or does the truth lie in the opposite direction? That is to say, does an atrophic stump of the cervix tend to become carcinomatous, just as cancer usually develops in the cervix when the uterus is becoming sexually aged? The truth remains unknown. The maintenance or the limitation of the nutrition of the stump must play a part in the development of cancer, but as to which condition favours, and which tends to avert, malignant changes we know nothing. We saw that there is great uncertainty as to the effect of removing or leaving the ovaries in any one case of hysterectomy. We also saw that observers do not agree as to the effect of leaving or removing part of the uterine body as well as the cervix. In short, we are far too ignorant about essential points to be able to solve this question. There must be a solution, but at present we lack even bare clinical evidence. We know that the preservation of the ovaries in hysterectomy, as a rule at least, favours the continuation of a modified menstruation and as a rule softens the artificial menopause. Unfortunately I find that in the records of carcinoma of the stump the treatment of the ovaries is seldom if ever noted. None of the authors lay any stress on the matter. I have only succeeded in obtaining evidence about the ovaries in two cases, both recorded this year by M. R.

Condamin of Lyons.²⁶ That writer, like his predecessors, makes no mention of the ovaries, but he kindly took the trouble to reply to a letter which I wrote to him asking for the necessary information. He stated that at the time when he operated on the two patients he always left at least one ovary. The evidence of two cases, however, is insufficient, especially in one instance, for the first patient was 58 years old and malignant disease appeared as a bleeding fungous mass in the stump a year after the hysterectomy. It might well have existed at the time of the operation. The second patient was 40 years of age and the malignant changes in the stump were detected by accident four years after the hysterectomy during an operation for hernia of the abdominal cicatrix. Pain, hæmorrhages, and fatal cachexia quickly followed. Thus it is clear that we want more light thrown on this question. Let all operators faithfully record the treatment of the ovaries and the nature of the uterine flaps in every case of hysterectomy for fibroid disease. If there be clearly any distinct advantage in one line of treatment—I mean clear evidence of relative immunity from malignant changes—let us adopt that treatment, for there is great weight in Cushing's argument in favour of retaining the stump of the cervix; but if no method of treatment secures the cervix from degeneration, and if better evidence than is at present at our disposal can establish a causal relation of the preservation of the cervix to its malignant degeneration, then we may seriously think about adopting panhysterectomy to the exclusion of the less complete operation.

DANGER OF PUSHING A FIBROID OUT OF THE PELVIS.

Pushing up an impacted fibroid is never a thoroughly safe proceeding. It is specially dangerous during pregnancy, and we must remember that that condition may be overlooked in a young woman where metrorrhagia is present and simulates menstruation. The impacted fibroid is usually firmer than the gravid part of the uterus and not rarely very much harder; the danger of pushing a hard against a soft mass is evident. I exhibit a very instructive preparation; it was a fibroid uterus which I removed during pregnancy. Some of you have seen it before; the full history is published in *THE LANCET*²⁷ and there is a fine engraving of it in the forty-third volume of the Transactions of the Obstetrical Society (p. 178). I watched the development of the pregnancy for over six weeks. The lower mass became fixed in the pelvis. Reduction would have been very dangerous.

²⁶ De la Transformation Néoplasique du Moignon Utérin après l'Hystérectomie Subtotale; *Lyon Médical*, vol. xxviii., p. 561 (April, 1902).

²⁷ A Case of Hysterectomy for Fibroid in the Fifth Month of Pregnancy, *THE LANCET*, March 2nd, 1901, p. 621.

Observe the soft uterus, once containing a fair amount of liquor amnii. The mass beneath it is extremely hard, the growth above it is at least much harder than its own tissue. It lies like an orange between two stones. As the impacted mass caused pressure symptoms, so that it was inadvisable to wait till term and do a Cæsarean section, I removed the uterus.

I know that a hard mass in the pelvis associated with a pregnant uterus is naturally supposed to be a fibroid and when impaction is threatened many practitioners try to push the mass out of the pelvis. Experience, however, teaches us that a small tense ovarian cyst pressed down into the pelvis may feel very hard when the hand contrasts it with the soft pregnant uterus. This fact must be remembered, as rupture of an ovarian cyst in pregnancy is serio s. I exhibit a cyst from a case in point which I recorded in full²⁸ last spring. Before the pregnancy the patient had noticed no symptoms of any tumour, attacks of severe pain set in during the fourth month, and on examination a mass was found occupying Douglas's pouch and the left fornix. It seemed absolutely fixed and was very firm; but owing to its position under and behind the pregnant uterus satisfactory bimanual palpation was not practicable, even under an anæsthetic. Gentle attempts to push it up were made under chloroform. Several of my colleagues at the Samaritan Hospital examined the patient with me on that occasion and we all agreed that the firm tumour was probably ovarian, yet possibly might be a fibroid, as in the other case. We were certainly prudent in avoiding firm or continuous pressure. I made an exploratory incision and found on raising the uterus out of the abdominal wound that the tumour was a small pyriform cyst of the right ovary displaced backwards and entirely to the left. It was jammed in the pelvis behind the uterus. Its pedicle, twisted two turns, was stretched tightly across the back of the uterus. The left ovary lay both above its fellow and above the pelvic brim. The cyst was removed with the greatest ease; I operated in the fifth month and the pregnancy went on to term. I think that these two specimens are a good object lesson, teaching us the perils of trying to push a firm tumour out of the pelvis during pregnancy. I was careful about handling the pelvic swellings and so the patients were preserved as well as the specimens.

In concluding these remarks about pushing up pelvic tumours during pregnancy I must once more insist on the difficulty of diagnosis in these cases where the tumour can seldom be explored bimanually. A swelling resembling a cystic fibroid might prove to be a hydatid cyst. Franta, who has written a valuable monograph on hydatid cysts

²⁸ Ovarian Tumours and Ovariectomy during and after Pregnancy, THE LANCET, Feb. 8th, 1902, p. 356.

in pregnancy, labour, and the puerperium,²⁹ notes that only in one recorded case could the cyst be successfully pushed up above the pelvis during labour. I doubt if anybody would care to push up a hydatid cyst, if he had diagnosed it, in any circumstances. Great care must also be taken when attempts are made to push up a fibroid even when the uterus is evidently not gravid. The fact of impaction is only certain when the operator knows on very reliable evidence that the mass fixed in the pelvis was recently free and moveable. Pushing a broad ligament fibroid might entail serious consequences.

In conclusion, Mr. President and Gentlemen, I must heartily thank you for the patience with which you have listened to me. I have endeavoured to turn attention to several unsolved factors relating to fibroid disease and have dwelt on two themes which many of us believed to be defunct until it was shown last summer that they were only in a state of suspended animation. You will now understand why I have avoided disquisitions on the innocence of fibroids, the necessity for surgical interference, and the best kind of operation. These matters have been freely discussed of late by able advocates and opponents, so freely that I understand that the profession is getting tired of discussions which are not likely to lead to any solution. I must specially thank my friend and colleague, Dr. Cuthbert Lockyer, for the pains which he has taken to prepare a number of specimens which I have used during these lectures for purposes of demonstration.

²⁹ The complete essay, "Kystes Hydatiques pendant la Grossesse, l'Accouchement, et les Suites de Couches," is published in the Bohemian language (Prague, 1901) with a summary in French. The clinical reports were published in the *Annales de Gynécologie et d'Obstétrique*, March, 1902.

