At 6.30 a.m. on May 13th, after a cup of tea, she had a severe attack of vomiting, and "then black, nasty-looking blood came, soaking the nightgown and sheet." She, however, got up later and washed them. Though feeling weak, she had no pain and the bleeding had stopped. On May 14th she went about "feeling weak and languid," but without pain or bleeding. In the evening she came to me as stated above.

From the history so far related no very clear guide as to the exact cause of her symptoms was evident. On examination her breasts showed no signs, and there was no apparent softening of the cervix with its old laceration, but there certainly was an enlarged tender right tube, without, however, any undue pulsation being noticeable. There was a little bleeding after the vaginal examination. Although signs and symptoms were not very positive, I concluded that this was probably a case of extrauterine pregnancy, and sent the patient home to bed, telling her she would require to be operated upon the next day, and that I would see her early in the morning, but to get her husband's consent in the meantime. It was fortunate that I did so, for serious internal bleeding, attended with severe attacks of pain, came on during the night, causing such collapse as to render the diagnosis unmistakable. Next morning she was lying curled up on her right side, complaining of much pain over the right iliac fossa, while there was peritoneal distension and a temperature of 101° F. Rapid examination revealed a tender mass round the right Fallopian tube. I gave her a small dose of morphine to quiet her restlessness and pain, and had her quickly removed to the private hospital, summoning two medical men to meet me there with a view to immediate operation.

Operation.

The patient was in a very low state, being absolutely bleached. On opening the abdomen, it was found to be full of blood, which passed out of the wound, and I removed clots in fistuls, having previously seized the right tube, which was surrounded by a large mass of clot. The tube itself was quite empty, having completely extruded its contents through the fimbriated end. It was quickly removed, the left tube and ovary freed from adhesions, and the abdomen rapidly sewn up, as the patient's condition was desperate.

After-History.

She was speedily got to bed, the foot of which was kept well elevated all night. By the morning she had rallied considerably. Her temperature before operation was 100.2°, and it reached that level on two successive evenings only, thereafter soon becoming normal. She had a remarkably easy and uneventful recovery, without vomiting or pain, and left the hospital in four weeks "feeling splendid," though still somewhat anæmic.

Bearing in mind that the patient was probably not more than a month pregnant (the dates of coitus being known) it is remarkable what an enormous quantity of blood was poured out from the open end of the affected tube, the width of which was no greater than that of an ordinary fountain pen. It was difficult to account for this till I thought of the explanation offered by Mr. Bland-Sutton:

It is important to remember that a gravid mole-containing tube will, after discharging the mole through its coelomic ostium, return to its normal size exactly like the uterus after labour. In regard to this, the student should remember that if any one unacquainted with the remarkable properties of unstriated muscle were shown a fetus at term in the amnion, and the uterus in which it developed an hour later, he would have his credulity sorely tried to be persuaded that the amnion and contents had been housed in the centre of the uterus. We make this observation because some thoughtful men, thoroughly familiar with the behaviour of the uterus, fail to comprehend that a similar state of things happens with the Fallopian tubes.

Recent opinions are somewhat at variance in regard to the periods at which tubal abortion is possible. According to Bland-Sutton, it can only occur during the first two months after fertilization; when the ostium is occluded (commonly by the sixth week, but it may be delayed to the eighth) the blood cannot escape without rupture of the sac, but Clarence Webster maintains that it may take place later if the fimbrial end be closed only with recently formed weak adhesions.

In 32 cases reported by Mackenrodt abortion occurred during the first month in 8 cases, during the second month in 19 cases, during the third month in 4 cases, and during the fourth month in 1 case. In 29 cases reported by Orthmann it occurred in the first month in 13 cases, the second month in 10 cases, the third month in 4 cases, and the fourth month in 2 cases. In most cases, according to Orthmann, the ovum is completely expelled. Here he again differs from Bland-Sutton, who states that incomplete tubal abortion is more common than the complete form.

Except to free the opposite Fallopian tube from adhe-

sions, I deliberately left it, in contradistinction to the practice of several surgeons in this city, who always remove both tubes when either is affected by tubal pregnancy. On this point I may fittingly quote the emphatic declaration of Bland-Sutton, who places the final words in italics, that "a series of investigations on an abundant supply of material, teaches us that a healthy Fallopian tube is more likely to become gravid than one which has been inflamed."

The possible causation of tubal pregnancy is always interesting. Bland-Sutton states that "concerning its cause or causes nothing is known," but Clarence Webster maintains that while "mechanic factors might be associated with ectopic pregnancy, there was no proof that they were the ultimate factors in its causation." He has "demonstrated the existence of the decidual reaction in the tubal mucosa in all cases of tubal pregnancy, and advanced the view that the fertilized ovum could develop only on tissue capable of undergoing a genetic reaction. Normally, in the human female, this reaction, occurring as the result of fertilization, takes place in the mucosa of the uterus. Its occasional occurrence in other portions derived from the Müllerian tract—that is, Fallopian tube—is to be regarded as a reversion in these tissues to an earlier mammalian type, either in structure or in reaction tendency."

HYSTERECTOMY AND APPENDICECTOMY PERFORMED ON A PATIENT AGED 74: RECOVERY.

By JOHN D. MALCOLM, F.R.C.S. EDIN.,
SURGEON TO THE SAMARITAN FREE HOSPITAL.

THE following case exhibits several points of interest, the most remarkable being the soft vascular condition of a fibromyoma of the uterus more than twenty years after the menopause.

History.

The patient was a healthy-looking, well-nourished woman, aged 74, who had complained of indigestion for five or six years and for twelve months had suffered from increasing abdominal distension and constipation. Examination revealed a well-marked flatulent enlargement of the abdomen and a tumour continuous with the uterus and apparently within the right broad ligament. It was rounded in shape, not tender, large enough nearly to fill the pelvis, and firmly fixed, but I thought that the fixity was in part due to its size and position. It seemed to be a soft solid or a thick-walled cystic growth. There was no history of any serious illness and the other organs were healthy, with the exception that there was a trace of albumen in the urine, the specific gravity of which was 1014 to 1016 and its quantity was normal. Menstruation was regular and free, but not excessive at any time, and its cessation, at the age of 53, was not accompanied by noticeable symptoms.

In a younger woman a fibromyoma uteri, firmly held down by the broad ligament, would have been recognized without hesitation, and the continuation of the periods until the age of 53 years was in favour of the view that a fibroid tumour existed at that time. But it was difficult to understand how a tumour of this nature could give rise to trouble which did not become urgent until the patient's age was 74, unless it was undergoing a malignant or degenerative change. Without some such alteration of structure an enlargement of a fibromyoma long after the change of life is, I believe, unknown, and yet the symptoms seemed to be due to increasing pressure on the bowel. For these reasons I thought that the mass was probably a semi-solid ovarian cystoma or possibly a uterine tumour, the nature of which was obscure. It followed that an attempt should be made to remove it, and my chief doubt was as to whether its excision was possible.

Operation.

An exploratory operation was advised, and I opened the abdomen in the Samaritan Free Hospital on January 25th, 1907. The tumour appeared to be a fibromyoma within the broad ligament, but it was quite as soft and full of blood as such a growth usually is in a woman 30 years younger than this patient. Considering the symptoms of increasing mischief, the vascularity of the growth, and the apparent ease of the operation, I decided to perform a total hysterectomy. The tumour, which was closely attached to the right side of the uterus, was enucleated through an incision along the top of the broad ligament, and when the gap thus made was being closed, after the uterus and tumour were removed, it was seen that the small intestine was adherent to a portion of

the peritoneum which had covered the tumour. It was obvious that the new disposition of the parts would cause a dangerous traction on the adherent coils of gut, and that a gradual shrinking of the growth must have had the same effect. I therefore separated the adherent coils, and found that the vermiform appendix was completely hidden by them. There was no sign of a recent inflammation, but there was a round black concretion, measuring about $\frac{3}{8}$ in. in diameter, within the appendix, close to its junction with the caecum, and the adhesions were evidently due to an old appendicitis. All the small intestine was released, and the appendix, which had received much of its blood supply through the severed adhesions, was removed.

After-History.

After the operation the patient gave no real occasion for anxiety during the first week of convalescence, although the bowels caused some discomfort and there was still a trace of albumen in the urine. On the eighth day the patient was so well and the wound appeared so firmly healed that, contrary to my usual practice, I removed all the sutures. During the following night part of the incision gave way, and when the patient was being put under an anaesthetic with a view to inserting fresh sutures the whole wound broke down. The exposed coils of intestine showed no sign of inflammation or tendency to form adhesions, and the wound, after being resutured, healed throughout without suppuration, all the sutures being left in position fourteen days and some sixteen days.

Except for a slight bronchitis and a painless swelling of one leg of about three days' duration, there was little further trouble, and the patient recovered her strength in a very satisfactory way. It was noted, however, that as she moved about and took nourishment more freely the amount of albumen in the urine increased, but not to any great extent.

The patient left the hospital five weeks after the first operation, and some months later Dr. James Hitchcock informed me that she was to all appearances well and exceedingly pleased with the improvement in the bowel condition, in the general health, and in the power of getting about; but there was an increase of the albumen in the urine, which has continued, and there are now also numerous hyaline casts. The quantity of urine is good, and the patient is at present visiting friends in the country.

Description of Tumour.

The tumour was very soft, almost round, and measured about 5 in. in its greatest diameter. Mr. Darwall Smith has kindly examined a section of it, and he reports that the structure is that of a fibromyoma, which shows very little sign of degeneration. Here and there a few cells have become indefinite in outline, but otherwise the appearances are typical. There is no indication of a sarcomatous change.

The evidence seems to justify the conclusion that in this case the tumour had begun to diminish in size before it was first discovered, and therefore the symptoms could not be due to pressure from its enlargement. The shrinking of a large fibromyoma uteri is often associated with discomfort and even with much pain, as it becomes hard and impinges on the pelvic brim, and also when it becomes small enough to fall into the pelvis and press upon the sacral plexus, upon an ovary, or upon an inflamed Fallopian tube. But a tumour within the broad ligament, and which, as in the case under consideration, had probably always been within the pelvis, could hardly cause increasing pressure as its size diminished—at least, so long as it remained soft.

There is, however, another way in which the shrinking of a uterine tumour may cause trouble—namely, by dragging on parts which have become adherent to it. As I interpret the phenomena above recorded, the symptoms were due to a traction on the adherent intestines induced by the gradual diminution in size of the new growth—an explanation which could not possibly have been given before the operation. The absence of a history of appendicitis may have been due to forgetfulness, but extensive inflammatory mischief may arise from this cause without attracting much attention. It was really fortunate for the patient that an exact diagnosis was impossible, for I doubt if I would have recommended opening the abdomen for the relief of adhesions in a patient so old, and without the operation her discomfort must have increased.

The patient's age is interesting. I think she is the oldest upon whom a hysterectomy for fibromyoma has been performed and recorded. Otherwise the age is not remarkable. I have long been impressed by the great success which attends even very severe operations in healthy old people if asepsis is attained.

The condition of the urine is very important. A slight degree of albuminuria should not be considered to contraindicate an operation which seems otherwise advisable.

When the albuminuria depends on the condition of the kidneys it undoubtedly adds to the danger, and an aggravation of the renal mischief may follow the operation; but, as a rule, immediately serious consequences only follow if septicaemia develops. Apart from septic mischief, even extensively damaged kidneys have a reserve of excreting power equal to very great emergencies.

The most unusual pathological condition in this case was the state of the tumour, which was quite unique in my experience in a patient so old. As a rule, a fibromyoma shrinks soon after the periods cease, and its remains often undergo a calcareous change.

For example, on June 8th, 1903, I removed a uterus containing a tumour the size of a large orange which caused pressure symptoms in a patient aged 54, whose periods had ceased three years earlier. The tumour was so hard that it was difficult to cut it with a knife. The patient recovered. In another case I was informed that a fibroid uterine tumour developed until the patient's abdomen was as large as that of a full-time pregnant woman. When her age was 48 she was exceedingly ill from profuse haemorrhages and symptoms of blood poisoning, so that for four months her life was despaired of. She very slowly recovered, and her size diminished until the tumour did not show externally. When the patient's age was 60 years, the abdomen again enlarged, and I was asked to see her. On June 13th, 1903, I successfully removed two dermoid ovarian tumours, and the uterus with a fibroid which measured 5 in. in diameter. The outer part of the latter was so calcareous that, when it was incised, the knife broke through the tissues with a crackling noise rather than cut them.

Again, on November 16th of last year, I successfully removed an ovarian tumour deeply imbedded in the broad ligament of a patient aged 72. In front of the uterus there was a kidney-shaped tumour, about 4 in. in length, lying loosely in adhesions. It was evidently an old fibromyoma, and it was so hard that I had considerable difficulty in breaking it with a hammer. The hard part was all near the surface, the central portion being tough and leathery in consistence.

Small atrophied fibroids lying, like this one, harmlessly near the uterus, are not very uncommon in old women. In fact these cases show the conditions to be expected as patients advance in years, and the only explanation I can suggest of the softness and vascularity of the tumour found in the first case above recorded is that the growth was so near to the cervix and to the uterine vessels, and so completely outside the muscular tissue of the uterus that its nourishment was reduced less than usual by the changes associated with the cessation of menstruation, whilst the fact that the growth was completely within the broad ligament would also facilitate its nourishment and thus delay the normal degenerative changes. The explanation is probably in part also to be found in the unusual youthfulness and vitality of the patient.

THE CORRELATION OF THE OVARIAN AND UTERINE FUNCTIONS.*

BY

E. S. CARMICHAEL, and F. H. A. MARSHALL,

M.B., F.R.C.S.E.,
ASSISTANT SURGEON, ROYAL HOSPITAL FOR SICK CHILDREN;
SURGEON (DISEASES OF WOMEN), ROYAL PUBLIC DISPENSARY, EDINBURGH.

M.A., D.Sc.,
LECTURER ON THE PHYSIOLOGY OF REPRODUCTION, EDINBURGH UNIVERSITY.

(From the Physiological Laboratory, University of Edinburgh.)

A CONSIDERABLE body of evidence has been adduced in support of the hypothesis that the uterus is dependent upon ovarian influence for the maintenance of its structure and the discharge of its functions, and that the removal of this influence at any time during reproductive life causes the uterus to atrophy, besides producing a profound effect upon the entire metabolism of the organism. Some writers, on the other hand (for example, Blair Bell), contend that it is the uterus which is of prime importance, and observations have recently been cited pointing to the conclusion that this organ exercises a control over the growth and activity of the ovaries. Others, again (for example, Bond), adopt the view that the ovaries and uterus are to a very large extent interdependent upon each other.

The clinical evidence brought forward by surgeons after removal of the uterus and ovaries in the human subject

* Read before the Royal Society, London, May 30th, 1907.