species and oestrous period of the animal from which the gland was derived, the methods of extraction and of exhibition, and the diseases for which the substances had been used were all of prime importance. Dr. J. C. Hirst had shown that the intravenous administration of corpus luteum in the pernicious vomiting of pregnancy was effective. The speaker had also found that the corpus luteum would inhibit ovulation, and indeed in continued dosage would produce extreme degeneration of the follicular apparatus. The evidence was not plentiful, but it was very probable that there was a direct relationship between ovarian function and the blood sugar level. The speaker was surprised that Miss Coward had found mouse and rat units identical in oestrin standardization, as this was contrary to the usual finding. Further, it was undoubted that the lutein cells arose from the theca interna in some animals, the membrana granulosa in others, and possibly from both in some others. It was, therefore, necessary to specify the species in any assertion as to the endocrine function of these cells.

Dr. DAVID CAMPBELL (Glasgow) raised the question whether the injection of ovarian extract into animals had any inhibiting effect on the activity of insulin. With Dr. Scott he was investigating this point, and up to that time their results were as follows: (1) Subcutaneous injection of oestrin or the lipo-soluble ovarian hormone and of watery extracts of the ovary had no effect on the blood sugar of a normal animal. (2) Subcutaneous injection of oestrin twenty-four hours before, and again simultaneously with, insulin injection had no inhibiting effect on the action of insulin when compared with control experiments. (3) Subcutaneous injection of watery extracts of ovary given at the same time as insulin had no inhibiting effect on the action of insulin when compared with control experiments. Dr. Dixon, however, in his experiments, had used the intravenous route, and had showed that the apparent effect on the pituitary gland was transitory, lasting only ten to twelve minutes. Dr. Campbell had tried to determine whether the intravenous injection of watery extracts would have any effect on the blood sugar of an animal in the state of insulin hypoglycaemia. These experiments had not progressed very far, but up to the present there was no evidence to suggest that it did inhibit insulin activity; occasionally the reverse effect had been observed. It might be that they had used extracts of ovaries taken at a time when there was no hormone present, and it was necessary to investigate this point further before they could say definitely that ovarian extracts had no inhibiting effect on insulin activity through the medium of the pituitary gland.

Professor C. W. GREENE (United States of America) called attention to work by Professor Edgar Allen of the University of Missouri, who was a pioneer in the discovery and scientific testing of oestrin. Professor Allen had recently been testing the reactions of ovariectomized monkeys. His publications on this new work had not yet crossed the Atlantic. Allen first established the sexual cycle of individual monkeys and then removed the ovaries. Follicular extracts were then given in repeated doses. The animals reacted with all the phenomena of the normal oestrus—reddening and swelling of the skin of the vulva, reddening of the ischia and adjacent skin, and growth of the mammary glands. The uterine-vaginal growth changes occurred as in the normal, and menstrual bleeding actually occurred in these test monkeys.

Dr. DIXON, in reply, briefly referred to the work of Dr. Addis, and laid stress on the fact that the action of pituitary extract was essentially to render the uterus super-sensitive to any form of stimulus. Dr. Addis and he were in entire agreement regarding facts, but Dr. Addis thought that the ovary acted directly; all previous investigators were agreed that it exerted no such action. In reply to Dr. Campbell, he referred to a paper written by Dr. Wadia and himself, and published in the *BRITISH MEDICAL JOURNAL*, showing that insulin also excited the pituitary gland to secrete as it did other endocrine glands. He referred

finally to the primary work of Allen and Doisy, and explained to Professor Greene that if the names of these two investigators had not been mentioned in the discussion, it was not that their pioneer efforts had not been appreciated, but rather because their conclusions were generally known and accepted.

THE CLINICAL FEATURES OF ECTOPIC PREGNANCY.*

BY

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THERE is an extensive and very complete literature on the subject of ectopic pregnancy, and I cannot hope to add anything new to what has already been written. In the early part of this year, however, I reviewed a hundred cases operated upon by myself, and it may be of interest to refer to some of the main clinical features in the light of the results obtained from an analysis of that series.

Pregnancy in one or other Fallopian tube is by far the most common variety, and as all my cases come under that heading I propose to leave out of account the other and rarer forms. I will also say very little about the pathological anatomy of ectopic pregnancy, except to mention the frequency of the various terminations found at the time of operation in my own cases.

Tubal abortion occurred in 52 per cent., tubal rupture in 37 per cent., and the tubes were unruptured and unaborting in 12 per cent. A tubal mole was present in nearly 80 per cent. of the cases.

ETIOLOGY.

Most authorities agree that the chief predisposing cause of ectopic pregnancy is a preceding pelvic infection which so damages the Fallopian tubes as to obstruct or delay the passage of the fertilized ovum to the uterine cavity. The results of pelvic infection may be visible to the naked eye at the time of operation in the form of adhesions, especially about the non-gravid tube, and the frequency of this factor can therefore be determined with some accuracy. It has to be remembered, however, that gonococcal infection may be limited in its results to the tubal mucosa, and be incapable of demonstration except by careful histological examination.

In my own series old-standing adhesions about the non-gravid tube were observed in 50 per cent. of the cases, but as this leaves out of account those in which the gravid tube only was affected or the mucous membrane alone damaged, it will be realized that the percentage is probably much higher.

Gonorrhoea and puerperal septic infections are undoubtedly mainly responsible for the pelvic inflammatory lesions, but appendicitis and abdominal tuberculosis are also important. There were four patients who had had previous operations for appendicitis, and in the course of my own operations I found the appendix adherent in twelve cases, in ten of which it was found necessary to remove it. The appendix was not always examined, however, so the incidence of this source of infection is probably greater than I have indicated. In this connexion it is interesting to note that tubal pregnancy is somewhat more common on the right side—59 per cent. as against 41 per cent. in my own series.

Developmental abnormalities, such as tubal diverticula and distortion of the tubes by tumours, also play a part, though I think it must be a very subsidiary one. I found only one example of developmental abnormality, a double uterus, and the malformation was probably in no way responsible for the extrauterine pregnancy. Fibroid tumours were observed in two cases (about 2 per cent.), but in both instances the tumours were small and not situated near the uterine cornua.

There are certain other factors which have a bearing on

* A paper read in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Edinburgh, 1927.

the question of etiology. Age in itself is of little importance; the youngest patient was 21 years of age, the most elderly 43 years, and the majority were between the ages of 26 and 35 years. In 40 per cent. the condition occurred during the first five years of married life, and 35 per cent. during the second five years. In about 10 per cent. the patient had been married one year or less (the shortest period was seven weeks), and in every one of these the ectopic was the first pregnancy. Evidence of previous pelvic infection was present in only one case, so there must obviously be some other cause to seek in the case of recently married and apparently healthy young women who start their child-bearing career with an extrauterine pregnancy.

Nearly one-third of the cases had never had a previous uterine pregnancy; of these 2 were single, 8 had been married one year or less (shortest period seven weeks), 5 one to two years, 5 two to three years, 3 four to five years, and 9 more than five years (longest period ten years).

The proportion of uterine abortions to full term pregnancies was not abnormally large, but it was noticed that the last pregnancy terminated in abortion in 20 per cent. of the cases, and in 10 per cent. this abortion was the only previous pregnancy.

The interval between the last uterine pregnancy and the operation for ectopic gestation exceeded three years in 55 per cent. and five years in 31 per cent. of cases; this lends some support to the view frequently put forward that ectopic pregnancy commonly follows a period of sterility. The shortest interval in the series was seven months, but I know of one case operated upon by a colleague within four months of a full-term labour.

DIAGNOSIS.

The diagnosis of ectopic pregnancy is based upon a symptom-complex which includes one or more of the three cardinal symptoms—amenorrhoea, irregular uterine haemorrhage, and abdominal pain. Pain on defaecation is also important, but is not encountered with the same frequency.

John Morley has pointed out that shoulder-tip pain is not infrequently met with in the graver forms of tubal rupture where the peritoneal cavity is suddenly flooded with blood. In the general run of cases dealt with by the gynaecologist this symptom will not be met with very often, but in those very acute cases often diagnosed merely as acute abdomens and sent into a general hospital it will no doubt be found much more frequently.

Amenorrhoea I found present in 72 per cent. of my cases. I include, of course, those cases where the patient merely goes a few days or perhaps a week or two over her period and then commences with uterine haemorrhage. The latter constitute the vast majority in any series, as it is unusual to find a longer period of amenorrhoea than two months. Amongst my own cases there were only two in which the foetus was of more than two months' development.

Abdominal pain is practically always present, as I found it in 97 per cent. of cases. It varies in character and degree according to the lesion, but it is generally sufficiently prominent to indicate to the patient that something is wrong. The colicky pain associated with a pregnancy still in the tube or in process of abortion is almost invariably situated on the same site as the gestation, although I have seen the contrary stated. The acute lancinating pain met with in cases of diffuse intraperitoneal haemorrhage is definite, striking, and requires no further elaboration. There is also a more diffuse pain associated with gradual leakage of blood or repeated small haemorrhages into the abdomen and the formation of protective adhesions.

Irregular uterine haemorrhage was found in 82 per cent.; the blood was almost invariably moderate in amount and dark in colour, with an appearance which has been likened to prune juice or black-currant jam. Very occasionally the blood was brighter in colour and more profuse, and in these I think that the uterine decidua was actually in process of separation.

The old explanation that the uterine haemorrhage is the result of decidual separation and expulsion is obviously

not complete, since it is well known that it may persist after the decidua has been completely expelled, and even after the uterine cavity has been curetted. On the other hand, the haemorrhage ceases almost immediately when the gravid tube has been removed, the only exceptions being those cases where the decidua is incompletely separated and is still in the uterus at the time of operation. Sampson believes that the haemorrhage is due to subinvolution, the process of involution being delayed by an incomplete termination of the tubal pregnancy. In other words, some of the chorionic villi are still alive in the tube, and are able to exert their stimulus upon the uterus.

The importance of the three main symptoms depends upon their presence in combination and not individually, and an examination of the histories of my own cases shows to what extent they can be depended upon in this respect. Amenorrhoea, uterine haemorrhage, and abdominal pain were present in 64 per cent. Bleeding and abdominal pain occurred in 24 per cent. Amenorrhoea and abdominal pain were found in 4 per cent., amenorrhoea and bleeding in 3 per cent., and abdominal pain only in 3 per cent. From these figures it would appear that all three cardinal symptoms may be expected in six out of every ten cases, and when characteristically present a correct diagnosis of ectopic pregnancy should be made without difficulty. The order of their occurrence was usually found to be amenorrhoea, abdominal pain, and then uterine haemorrhage.

The complete clinical picture varies according to the lesion present, and it is convenient to divide the cases into the following three groups or clinical types.

1. Cases in which the ovum remains in the tube and there has been little or no haemorrhage into the abdomen. There were 14 of my cases in this group, or 13 per cent.

2. Cases in which rupture or abortion has occurred with diffuse intraperitoneal haemorrhage—29 cases, or 27.6 per cent.

3. Cases in which rupture or abortion has taken place with gradual or repeated haemorrhage into the abdomen—62 cases, or 60 per cent.

In Group 1 are included those cases in which the pregnancy is intact, and also those in which a blood mole has formed. In the latter a definite group of symptoms and physical signs can usually be obtained, but in the former it is doubtful if a definite diagnosis will be possible.

The patient complains of colicky pain in one or other iliac fossa, and frequently of irregular uterine haemorrhage, dark in colour and moderate in amount. The bleeding can in no sense be described as a flooding. She will generally have gone a week or so over her period, and other signs and symptoms suggestive of early pregnancy may be present. She is not acutely ill, but may look quite definitely out of sorts.

Abdominal examination will yield little information, except perhaps some tenderness on pressure over one iliac fossa. On vaginal examination the uterus may feel somewhat enlarged, and it will usually be possible to make out through one or other lateral fornix a tender elastic sausage-shaped swelling. In many cases, however, the physical signs will be inconclusive, and in these the advisability of careful examination under anaesthesia should be seriously considered.

In the differential diagnosis, appendicitis, threatened uterine abortion, inflammatory tubal swellings, and small ovarian or broad ligament cysts, possibly associated with a uterine pregnancy, will present the greatest difficulties.

When the gestation is in the right tube the condition is apt to be mistaken for appendicitis, the patient being sent into the surgical wards of a general hospital. Appendicitis, however, presents a very definite symptom sequence—namely, pain, usually epigastric or umbilical, nausea or vomiting, local iliac tenderness, fever, and leucocytosis—and this will not be observed in cases of ectopic gestation. Nor will there be found in appendicitis a combination of any symptoms or signs suggesting a pelvic origin—for example, amenorrhoea, uterine haemorrhage, and tender extrauterine swelling.

Threatened uterine abortion should present little difficulty. There will be definite enlargement of the uterus, with, perhaps, some dilatation of the cervix; pain, if present, will be in the back or hypogastrium; the bleeding will be more profuse, bright in colour, and possibly associated with the passage of some clots; and there will be no extrauterine swellings to be palpated.

Inflammatory tubal swellings, when mistaken for ectopic pregnancies belonging to this group, will generally be of the subacute or chronic variety, and will often be bilateral. There will usually be a longer history, vaginal discharge will have been complained of, amenorrhoea will be absent, and menstruation, if affected at all, will usually be too frequent and the loss excessive.

Where a small ovarian or broad ligament cyst is associated with an early pregnancy the diagnosis is apt to be more difficult, but here again the character of the haemorrhage, if present, will afford a clue. If no haemorrhage be present the uterus will be found definitely enlarged and soft, and the extrauterine swelling not usually tender. The swelling will also have thinner walls, and feel more cystic than a gravid tube, points easily made out and of great value in clearing up the diagnosis.

In Group 2 there are also two varieties. In one the haemorrhage is sufficient to prostrate the patient, who either dies or is operated upon immediately. In the other she reacts, and if not operated upon during the acute attack manages to weather the storm, and when dealt with surgically at a later period will present the characteristics of a case belonging to Group 3. To these Schumann has applied the terms *asthenic* and *sthenic* respectively.

In the *asthenic* variety the patient is suddenly seized with an agonizing and lancinating pain in the lower abdomen, accompanied by extreme nausea and vomiting; syncope, collapse, and shock rapidly follow. The pulse becomes thin and rapid, the temperature is subnormal, the features are pallid, the skin is cold, clammy, and blanched, the respirations become shallow and rapid with frequent sighing, the pupils are contracted, and the expression is anxious. There is intense restlessness and thirst. On examination the abdomen is found somewhat distended and resistant to pressure, and it may be possible to demonstrate the presence of free fluid. Tenderness and rigidity will be noted in some cases, but not in all, depending, no doubt, on the time which has elapsed since the actual rupture or abortion took place. On vaginal examination it will usually be possible to detect a fullness in the posterior fornix, or even a doughy feeling if clots be present. The affected tube may or may not be palpated. The sudden onset of symptoms and the general appearance of the patient will frequently be the chief points on which a diagnosis is made, but they are sufficiently characteristic to warrant this in nearly every case.

In the *sthenic* type the onset is very much the same, but the patient rallies in a short time and the pain becomes less acute. The temperature rises to 101° or higher, and the pulse remains full and strong and is not unduly rapid. The expression is anxious, the skin is not usually pallid, and the mucous membranes are not blanched. The abdomen is distended, and extremely tender to pressure. Rectus rigidity is the rule, and is usually more intense on the affected side. Shoulder-tip pain may sometimes be elicited. There is tenderness on vaginal examination and a sensation of fullness or a doughy feeling through the posterior fornix as before.

The descriptions I have given of the two types of cases are taken largely from Schumann's excellent monograph on extrauterine pregnancy, and agree with my own observations in cases belonging to this group. In the differential diagnosis various acute abdominal catastrophes, such as perforation of the stomach, gall bladder, or appendix, have to be excluded, but the history of the case, the sudden onset, and the persistence of extreme pallor and subnormal temperature without rigidity of the abdominal wall, in a patient previously well except for some menstrual irregularity, seldom or never leave room for doubt. (Zachary Cope.)

The *sthenic* type of case may be mistaken for an acute salpingitis and treated expectantly for a time. Amenorrhoea followed by bleeding is occasionally found in these

cases, so a correct diagnosis will have to be based on the short and characteristic ectopic history and the presence or otherwise of a purulent vaginal discharge or other symptoms pointing to a recent pelvic infection.

Group 3 will always comprise the majority of cases in any series, and the clinical picture will vary from that of an acute and dangerous illness to what may fairly be described as a chronic disability. The most serious cases will include those from Group 2 already referred to, and also a certain number (ten in my series) in which the amount of encysted blood is sufficiently large to form a definite tumour capable of displacing neighbouring structures and possibly reaching above the pelvic brim.

The patient complains of abdominal pain of moderate severity and usually situated in one or other iliac fossa, though later it may be diffused over the lower abdomen. There will nearly always be irregular uterine haemorrhage of the characteristic ectopic type. Careful investigation of the history will usually discover a short period of amenorrhoea followed by uterine bleeding of varying duration. A severe attack of pain followed by collapse may have occurred, or there may have been several less severe attacks accompanied by momentary faintness.

Pain on defaecation is commonly met with, and sometimes dyspareunia. If the amount of blood in the pelvis be large there may be constipation amounting to obstruction, or painful or frequent micturition, or even retention of urine. The patient looks ill, though usually not acutely so, and there is generally some degree of anaemia. The temperature is slightly higher than normal, and may occasionally be over 100° . The abdomen is tender on pressure, especially over the affected side, but there is no rigidity. There may be a sensation of resistance over the pelvic brim or a definite tumour may be palpated. In the latter case the percussion note is partly dull and partly tympanitic, as the mass consists of both blood clot and adherent intestine.

Vaginal examination will reveal a tender mass in one or other lateral fornix, and if the blood in the pouch of Douglas be clotted a tumour will be felt through the posterior fornix also. When a large haematocoele is present the uterus will usually be displaced forwards and upwards, but if there has been bleeding into the broad ligament with the formation of a haematoma, the uterus will be pushed over to the opposite side.

Cases belonging to this group have to be distinguished from pelvic appendicitis, pyosalpinx, and retroversion of the gravid uterus. Pelvic appendicitis is particularly difficult to exclude, as it may give rise to nearly all the signs and symptoms of a small pelvic haematocoele. Hypogastric pain, vomiting, local tenderness, slight fever, and tenderness on rectal and vaginal examination are frequently present in both conditions, and in neither case will one expect abdominal wall rigidity. (Zachary Cope.)

In ectopic pregnancy, however, there is nearly always some amenorrhoea or menstrual irregularity, characteristic uterine haemorrhage, the appearance of anaemia, and the initial attack of pain and faintness suggestive of intra-peritoneal haemorrhage. In pyosalpinx the characteristic ectopic history will be absent, there will be a longer history of ill health, and some evidence of previous pelvic inflammation. There may be some menstrual irregularity, but rarely amenorrhoea. On vaginal examination the doughy mass in the posterior fornix will be absent.

A retroverted gravid uterus should present no difficulty in diagnosis unless the tubal pregnancy has gone on to the third or fourth month. There will be a history of three or four months' amenorrhoea, with the characteristic appearance of bladder symptoms during the fourth month, and the other signs and symptoms of uterine pregnancy will be well marked. If a catheter be passed and the bladder emptied, the absence of the uterine fundus from its proper position will be noted.

TREATMENT.

The treatment of ectopic pregnancy is surgical, and in my opinion the sooner operation is performed the better for the patient. Expectant treatment is dangerous, as it is impossible to foretell when another and possibly fatal haemorrhage may occur. In a few of the very severe cases where shock is profound and the patient practically

pulseless it may be advisable to improve the general condition before submitting her to the additional strain of a laparotomy, but if this line of treatment is to be followed the patient must be in a hospital or nursing home, and under constant observation, as she may have to be taken to the operating theatre immediately should there be any indication of further haemorrhage.

The particular operation performed will depend on the type of case and the condition of the patient. In serious cases nothing more should be done than is actually required to save the patient's life, and this generally means excision of the affected tube with or without the corresponding ovary. No time need be lost in attempting to clear the peritoneal cavity of all blood clot. When the case is sub-acute, and the pelvic organs are disorganized or the seat of an old infective lesion, it is quite justifiable to remove both appendages or even the uterus.

Some advocates of conservative surgery have urged that the gravid tube should be saved whenever possible, but this view has not received general support. The danger of another pregnancy occurring in the same tube is probably not a remote one, so most operators prefer to err on the safe side and remove it. A second ectopic gestation not uncommonly occurs in the remaining tube, and there are those who would guard against this accident by always removing both tubes when operating for tubal pregnancy. This is going too far in the other direction, since many of the patients have normal pregnancies subsequently if the non-gravid tube be left intact.

The operations are carried out abdominally, the only exceptions being those rare cases in which a pelvic haematocoele has become infected. In such an event the correct line of treatment is to open the posterior fornix and evacuate the infected clot. One of my own patients in whom this operation was performed subsequently became pregnant and was delivered of a healthy child.

The operations performed in my series of cases were as follows:

Unilateral salpingectomy	10 cases.
Unilateral salpingo-oophorectomy	55 "
Double salpingo-oophorectomy	8 "
Subtotal hysterectomy with removal of both appendages	30 "
Posterior colpotomy (for infected haematocoele)	2 "

RESULTS.

The prognosis in cases submitted to operation is good, and the earlier operation is performed the better the results. I know of no disease of parallel severity where the response to prompt surgical treatment is so rapid or so satisfactory. There are, no doubt, many patients who die before surgical treatment is available, but the number of these cases will become smaller as the symptoms and signs antecedent to rupture become more generally recognized. There were no deaths in my series, and this I must attribute to good fortune, though it bears out what I have said about the remarkable powers of recovery which these patients display after operation.

In conclusion, I will add a few words about the question of subsequent pregnancies.

Excluding those operated upon less than six months before the date of my investigation, there were 53 cases where subsequent pregnancy was possible; 14 could not be traced, which reduces the number to 39. Of these 46 per cent. had a subsequent uterine pregnancy, and 13 per cent. a second ectopic pregnancy. In 41 per cent. there was no further pregnancy.

The figures show that the prognosis as regards subsequent uterine pregnancies is fairly good, but that there is a very definite risk of the patient getting a second ectopic pregnancy. As a matter of fact 7 of the 100 patients in my series had two ectopic gestations, and in 5 of them I performed both operations myself. In these 5 cases the non-gravid tube was apparently healthy at the time of the first operation.

DISCUSSION.

Miss MABEL L. RAMSAY (Plymouth) related her experience of a case of undoubted ectopic pregnancy for which no operation was performed. At the necropsy, fifteen years later, there was no sign of pelvic disease.

Dr. LEITH MURRAY (Liverpool) questioned the high incidence of tubal rupture in Dr. Dougal's series. In his own series of 110 cases he had only found 7 cases of undoubted pathological rupture of the tube. He agreed that the great majority of cases were associated with pelvic disease in one form or another, but in quite a number of cases trouble could be traced to the appendix; hence on every occasion when operating for this condition he removed the appendix when reasonably accessible.

Dr. BETHEL SOLOMONS (Dublin) referred to the biochemical tests which had been introduced to aid in the differential diagnosis. Cases of ectopic pregnancy had very frequently to be judged by their general appearance only. In undoubted cases of tubal rupture he was strongly against moving the patient, preferring to operate, if need be, on a cottage table.

Dr. FARQUHAR MURRAY (Newcastle) said that in many cases all the signs were referred to the upper abdomen, so that a diagnosis of ruptured ulcer or biliary trouble might be made. In the early acute stages no blood could be detected in Douglas's pouch by vaginal examination alone, but only by combined rectal and vaginal examination. He thought that many patients were operated upon too hastily; a wonderful improvement often resulted if a short period was given to allow recovery from the shock of being moved.

Mr. FORDYCE (Edinburgh) said that there was one type of case which was apt to be overlooked—namely, rupture into the broad ligament. He had seen this several times, and it was frequently mistaken for the retroflexed gravid uterus, since the symptoms might be the same. He emphasized the need for the very greatest care in examining a case of suspected ectopic pregnancy; rough handling might produce disastrous consequences.

Professor R. J. JOHNSTONE (Belfast) laid stress on the extreme tenderness felt on examination in the posterior fornix, and regarded this as a valuable aid in diagnosis.

Dr. HAIG FERGUSON (Edinburgh) commented on the importance of obtaining an early diagnosis. In his experience the mistake was not infrequently made of diagnosing these cases as ordinary abortions.

Dr. DOUGAL, in reply, said that he might have over-estimated the number of tubal ruptures, but he did not think he had. He had had no experience with biochemical tests in distinguishing these cases from those of pelvic infection. He had seen a number of cases where pain had been referred to the upper abdomen. He agreed as to the dangers of rough examination.

COMPOUND COMMINUTED FRACTURE OF TIBIA AND FIBULA INVOLVING THE ANKLE-JOINT TREATED BY THE "BIPP METHOD."

A CASE REPORTED BY MONICA BELL, M.B., B.S.DURH., HUMSHAUGH-ON-TYNE,

With Remarks by

RUTHERFORD MORISON, F.R.C.S.,

EMERITUS PROFESSOR OF SURGERY, DURHAM UNIVERSITY SCHOOL OF MEDICINE, NEWCASTLE-ON-TYNE.

A GROOM, aged 30, was admitted to Hexham War Memorial Hospital on June 24th, 1927. Three hours before, while cycling on the road, he was crushed against a wall by a motor car, and the rear wheel of the car went over his right leg. He could see that his right foot was turned completely round, and that the bones of the leg were sticking out through his torn clothing, and that there was a large wound. He took hold of his foot by the heel and toes and replaced the bones as well as he could.

CLINICAL NOTE BY DR. MONICA BELL.

Condition on Admission.

He was a thin, fragile-looking man, and was suffering from severe shock. After x-ray examination he was taken to the operating theatre, anaesthetized with open ether by Dr. Hurley, and operated upon by Dr. Fairclough.