UNSUSPECTED TUBERCULOSIS OF THE ENDOMETRIUM.

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P R E F A C E.

The investigations on which this thesis is based were carried out in the Pathological Department, Wards and Out-Patient Department of the Royal Samaritan Hospital for Women, Glasgow. A paper entitled "Unsuspected Tuberculosis of the Endometrium" has been published in the Journal of Obstetrics and Gynaecology of the British Empire, 1943, L, 161, from the data recorded in this thesis.

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S E C T I O N 1.

INTRODUCTION.

A study of the literature on tuberculosis of the endometrium shows that 3 varieties of this condition exist. These varieties will now be discussed in turn.

(1) The first type is quite common and forms part of a widespread genital tuberculosis which chiefly affects other pelvic structures, particularly the Fallopian tubes. Numerous papers dealing with this variety have been published, and the condition has been widely recognised for many years.

The first recorded case of tuberculosis of the uterus was described by Morgagni (1744). In performing an autopsy on a girl aged 20 years, he found the uterus and both Fallopian tubes filled with caseous material. Other early writers on the subject were Blacke (1831), Boivin and Dugés (1834), Bristow (1854-55), Brouardel (1865), Coote (1850), Geil (1851), Hérard (1846), Hutchinson (1857), Kiwisch (1847), Louis (1843), Namias (1858), Namias and Christoforis (1858), von Paulsen (1853), Reynaud (1831), Senn (quoted by Blacke, 1831), Thiry (1852) and Tomlinson (1863). The cases described by these early writers were all of the first type, and most of the papers consist of

reports of a single case or a small group of cases. More extensive studies were carried out by Geil (1851) and Kiwisch (1847).

In more recent years many papers have been published dealing partly or wholly with Type I tuberculosis of the uterus. Among the most notable of these may be mentioned contributions by Amann (1902-1), Berkeley (1903), Daniel (1925-1), Daniel (1932), Gorovitz (1901-1), Gorovitz (1901-2), Greenberg (1924), Hegar (1886), Jameson (1935), Murphy (1903), Murphy (1904), Norris (1921) and Williams (1894). An extensive review of the literature is given by each of these authors. The most exhaustive bibliography is found in the recent monograph by Jameson (1935); unfortunately it contains numerous errors which greatly reduce its value.

(2) In the second type, which is rare, the tuberculous infection is very gross but is confined to the body of the uterus. In some of the cases in this group, the endometrium is replaced by a layer of tuberculous granulation tissue, and little trace of the original structure can be found on histological examination. In other instances the tuberculous process is hypertrophic and forms irregular masses which project into the uterine cavity. In this latter group the condition may be mistaken for a true neoplasm of the uterus.

The literature on this type of endometrial tuberculosis is scanty and consists principally of reports of single cases. The following authors have described such cases: Alessandri (1910-1), Babès (1926), Bland-Sutton (1905), Goerdeler (1913), Tessmer (1938), Wiley (1939). The hypertrophic variety is discussed in detail by Babès (1926), who has called it pseudo-neoplastic tuberculosis of the uterus.

(3) The third type of tuberculosis of the endometrium, which is generally thought to be even rarer than the second variety, is also limited to the uterine body. On microscopic examination the tuberculous lesions are isolated and infrequent, and the remainder of the endometrium appears to be normal. This third type forms the essential subject of the present study. This variety of endometrial tuberculosis has received little attention in the literature. Apart from a fairly detailed description of a series of 12 cases by Schockaert and Ferin (1939) of Louvain and reports of single cases by Tamis (1940), Tourneux (1921) and Williams (1923), this condition appears to be virtually unrecognised as a definite clinical entity.

A number of authors have described cases of tuberculosis limited to the body of the uterus, where the information given is not sufficient to identify the exact type of lesion. These writers and the number of cases they report are listed as follows:-

Berkeley (1903)	3 cases
von Braun-Fernwald (1906)	1 case
Bulman (1933)	1 case
Cornil (1889)	2 cases
Cullen (1895)	1 case
Daniel (1933)	2 cases
Deymel (1927)	1 case
Diethelm and Ramsey (1935)	1 case
Gerich (1925)	1 case
Goodall (1907)	2 cases
Lackner, Schiller and Tulsky (1940)	2 cases
Moura (1927)	1 case
Muret (1934)	14 cases
Rock (1940)	4 cases
Rock and Bartlett (1937)	7 cases
Schlimpert (1911)	11 cases
Schröder (1921)	3 cases
Siddall (1936)	1 case
Simmonds (1909)	9 cases
Simmonds (quoted by Bauereisen, 1920)	1 case
Simon (1920)	1 case
Walther (1897)	1 case
Wolf (quoted by Gerich, 1925) ...	3 cases

It should be noted here that uterine tuberculosis occurring as part of an acute generalised tuberculosis is outside the scope of the present investigation.

S E C T I O N II.

THE INCIDENCE OF TUBERCULOSIS OF THE ENDOMETRIUM.

The findings of the present investigation show that, contrary to the generally accepted view, the third type of tuberculosis of the endometrium is relatively common and that in these cases the principal complaint is usually one of sterility. These conclusions are arrived at as a result of an analysis which was made of the histological preparations of the Pathological Department of the Royal Samaritan Hospital for Women from 1st January, 1935, till 31st May, 1943.

During this period 6,902 curettings and 980 uterine specimens were examined histologically. In the curettings, tuberculosis of the endometrium was found in 91 specimens (1.3 per cent). In the uterine specimens, tuberculosis of the endometrium was found in 15 instances (1.5 per cent). Thus out of a total of 7,882 specimens in which the endometrium was examined histologically, tuberculosis was found in 106 (1.3 per cent). These 106 specimens were obtained from 79 cases.

Following the classification which has been described in the Introduction, the 79 cases of endometrial tuberculosis were found to be of the following types:-

Type I ..... 29 cases

Type II ..... 2 cases

Type III ..... 48 cases

This aspect will be discussed in detail in a later section.

Literature on the Incidence of Tuberculosis of the Uterus.

The incidence of tuberculosis of the uterus has been discussed in numerous papers, and very varying opinions have been expressed on this matter. In general, the early writers regarded the condition as an extreme rarity, but this was not invariably the case. The majority of the later workers, on the other hand, were of the opinion that uterine tuberculosis was more frequent than had previously been realised.

In the following papers the number of curettings showing tuberculosis on histological examination and the total number of curettings examined is given: Browne (1943) 16 in 1,515 (1 per cent), Dogra (1940) 10 in 1,052 (1 per cent), Martin (1902) 24 in 1,600 (1.5 per cent), Rock and Bartlett (1937) 8 in 457 (1.7 per cent; this material was obtained by endometrial biopsy from 329 patients). These figures are in fairly close agreement with the present

findings of 91 in 6,902 (1.3 per cent). On the other hand, Dominguez (1939) only found tuberculosis 5 times in 5,516 endometrial specimens examined histologically (0.1 per cent).

The findings discussed by Dominguez (1939) were obtained by analysis of histological material over a period of 10 years, and were quoted to show the low incidence of endometrial tuberculosis in Uruguay. While this may be the case, it is of interest to note that the figures quoted by Browne (1943) were from Ireland, those by Dogra (1940) from India, those by Martin (1902) from Germany and those by Rock and Bartlett (1937) from the United States of America. These very similar results show that the present figures for the incidence of endometrial tuberculosis are not due to any abnormal local incidence.

A number of other authors give the percentage of all cases of genital tuberculosis in which uterine involvement was found:

Bertolini (1921)	12.7 per cent
Bush (1933)	48 per cent
Caffier (1931)	50 to 70 per cent
Ciarlo (quoted by Daniel, 1932)	20 per cent
Daniel (1925-2)	10 per cent
Dickinson (1931)	40 per cent
Diethelm and Ramsey (1935)	3 per cent
Fehling (quoted by Neuwirth, 1923)	50 per cent
Goodall (1907)	12 per cent
Greenhill (1943)	70 per cent
Heynemann (1940)	50 per cent
Horizontow (1911)	47.8 per cent
King (1938)	50 per cent
Kroemer (1911)	25.1 per cent
Kroenig (quoted by Courriades and Jaulain, 1935)	12.7 per cent

Labhardt (1912)	10 per cent.
Lahmann and Schwartz (1940)	75 per cent.
McArdle (1896)	75 per cent.
Merletti (1901)	43.6 per cent.
Mosler (1883)	66 to 76 per cent.
Neu (1911)	14.6 per cent.
Norris (1928)	50 per cent.
Peterson (1922)	50 per cent.
Polano (1901)	50 per cent.
Puxeddu (1940)	56.5 per cent.
Ravid and Scharfman (1940)	40 per cent.
Schlimpertsur (quoted by Courriades and Jaulain, 1935)	34.5 per cent.
Schramm (1882)	20.6 per cent.
Smith (1928)	22 per cent.
Simmonds (1909)	76 per cent.
Spaeth (1885)	66 to 76 per cent.
Stevenson (1938)	75 per cent.

The most striking feature of the above list is the great variation in the individual figures quoted. The lowest figure given is 3 per cent (Diethelm and Ramsey, 1935) and the highest is 76 per cent (Simmonds, 1909). These great differences are difficult to explain, but it is probable that calculations based on small numbers of cases and varying diagnostic criteria are partly responsible. As far as can be judged, these authors refer almost entirely to the first type of uterine tuberculosis and possibly, in rare instances, to the second variety. There is nothing to suggest that the third type plays any part in these figures.

Many other authors have discussed the incidence of uterine tuberculosis without giving any figures. The following writers are of the opinion that uterine tuberculosis is an uncommon condition, the estimates of frequency

varying from "uncommon" to "extremely rare". Adenot (1902), Alessandri (1910-2), Alterthum (1898), Andral (quoted by Louis, 1843), Barozzi (1898), Bayle (quoted by Reynaud, 1831), Brissaud (1880), Carstens (1918), Coote (1850), Düntzen (quoted by Coote, 1850), Goodall (1943), Gough (1936), Hegar (1897), Hutchinson (1857), Illingworth and Dick (1941), Keen (1913), Kirkes (quoted by Coote, 1850), Kiwisch (1847), Louis (1843), Mayo (1905), Mazer and Israel (1941), Meckel (quoted by Coote, 1850), Osler (1935), Reinhart and Moore (1928-29), Reynaud (1831), Rokitansky (quoted by Coote, 1850), Schroeder (1887), Solomons and Pollock (1922-23), Teacher (1935), Tourneux (1921), Wiley (1939).

The following writers, on the other hand, consider that tuberculosis of the uterus is relatively common, or is more frequent than is generally supposed. The estimates of frequency vary from "not very rare" to "much more frequent than is usually supposed": Amann (1902), Courriades and Jaulain (1935), Gorovitz (1901-1), Heinrich (1932), Heynemann (1933), Hüssy and Vetter (1926), Jameson (1935), Jeanneney (1928), Jensen and McDonald (1941), Jones (1886), Jouin (1889), Kelly and Noble (1907), Lucy (1907), Moulonguet (1933-1), Norris (1921), Schockaert and Ferin (1939), Stacey (1936), Stillman (1914), Turner (1899-2), Vineberg (1903), Williams (1894).

From the foregoing review of the literature on

the incidence of tuberculosis of the uterus, it will be seen that considerable confusion exists on this question. Although most of the recent writers on the subject regard this condition as being relatively common, it is of interest to note that several of the most recent authors quoted still regard it as a rarity.

S E C T I O N III.

PRESENT SERIES.

Out of the gross total of 79 patients with all types of tuberculosis of the endometrium, 29 are excluded from further consideration in this study as they are of Type I, i.e. they showed evidence, clinical or pathological, of involvement of other pelvic organs in the tuberculous process. The remaining 50 patients form the essential subject of the present investigation. Two of them (cases 19 and 43) show the second type of endometrial tuberculosis; the aspects in which these cases differ from the others will be discussed in the appropriate sections. The other 48 cases are of the third type, with scanty miliary tubercles in otherwise normal endometrium. Details of the individual cases are given in the Appendix.

The only comparable series which could be found in the literature was the report of 12 cases of tuberculosis apparently confined to the endometrium which was recently published by Schockaert and Ferin (1939). The total number of specimens in which these cases were found is not stated.

Diagnosis.

In all cases in the present series there was

nothing to suggest before operation that uterine tuberculosis was present. In every case diagnosis was made by histological examination of the endometrium, supplemented in many instances by bacteriological investigations.

The difficulty of diagnosis of uterine tuberculosis on clinical grounds alone has been stressed by a number of writers, some of whom state that symptoms may be completely absent: Barozzi (1898), Courriades and Jaulain (1935), Cullen (1895), Daniel (1925-1), Deelman (1933), Delore and Chalier (1920), Diethelm and Ramsey (1935), Gerich (1925), Goodall (1907), Gorovitz (1901-2), Gupta (1928), Hüssy and Vetter (1926), Jameson (1935), Kelly (1906), Keogh (1898), Lackner, Schiller and Tulsky (1940), Lapeyre and Guibert (1936), Lenormant (1909), Muret (1933), Muret (1934), von Paulsen (1853), Teacher (1935), Thomson (1913), Vineberg (1903), Vogt (1928), Walther (1897), Weiss (1917). Every case in the series described by Schockaert and Ferin (1939) was undiagnosed before operation.

S E C T I O N IV.

CLINICAL ASPECTS OF PRESENT SERIES.

The present series can be divided into two main groups. The larger group consists of 32 patients in whom the principal and frequently the only complaint was sterility. One of the patients with advanced uterine tuberculosis is in this group (case 19). In the smaller group of 18 cases the principal complaint in 13 instances was profuse and usually irregular menstruation. The main complaint in the remaining patients was irregular menstruation (1 case), vaginal discharge (2 cases) and a feeling of "something coming down" (2 cases; one of these was the second patient with advanced uterine tuberculosis - case 43).

Separate analysis of these groups did not reveal any significant difference apart from age distribution; it is thus desirable to consider them together throughout this study. In the series of cases reported by Schockaert and Ferin (1939), the primary complaint in 8 instances was sterility and in the remaining 4 was profuse and sometimes irregular menstruation.

Pelvic Aspects.

Menstrual history. One of the patients with gross tuberculosis

of the uterus had primary amenorrhoea (case 19). In a second case the menopause occurred prematurely (case 48). Thirteen other patients had profuse and usually irregular uterine bleeding. The menstrual cycle in the remaining 35 patients showed no abnormality or only minor deviations from normal.

When the patient with primary amenorrhoea is excluded, the time of onset of puberty in the other 49 cases was within normal limits in almost every instance and only slightly delayed in the remainder. The average age at puberty was 14 years, the earliest being 11 years and the latest 18. Four patients had passed the menopause. The age at the menopause was normal in 3 instances, 47 years (case 8), 50 years (case 12) and 49 years (case 43). In the fourth patient the menopause occurred prematurely at 27 years (case 48).

Of the 35 patients in whom the menstrual cycle showed no gross deviation from normal, 17 had dysmenorrhoea, 8 had profuse menstruation, 7 had irregular menstruation, 4 had scanty menstrual periods and 2 had frequent menstruation. Four of the 12 cases reported by Schockaert and Ferin (1939) complained of uterine bleeding, 2 had scanty menstrual periods and one had dysmenorrhoea.

Previous pregnancies. Forty-eight of the 50 patients were married. The average number of years married was 9, the

shortest period being one year and the longest 47 years. Only 9 of the 50 patients had had any previous pregnancy. One patient gave a history of a miscarriage only. The remaining 8 patients had had an average of 4 children, the maximum number being 9 and the minimum one. Three of these patients had also had a miscarriage.

This high incidence of sterility in endometrial tuberculosis is striking. It is not possible to give the exact number of sterility patients from which these cases are derived. Sharman (1942) found tuberculosis of the endometrium in 20 cases out of a total of 390 patients complaining of sterility, in whom the endometrium was examined histologically (5.1 per cent). Nineteen of these cases are included in the present series; the remaining patient was excluded because slight tubal thickening was found on clinical examination.

Very few comparable figures were discovered in the literature. Schockaert and Ferin (1939) found 7 per cent tuberculosis of the endometrium in 71 sterility cases, Steinsick (1922) 7.2 per cent tuberculosis of the endometrium in 212 sterility cases and Willbrand (1930) 4.4 per cent tuberculosis of the endometrium in 271 patients complaining of sterility. These figures are in reasonable agreement with the present findings.

The importance of endometrial tubercle as a

causal factor in sterility has been stressed by a number of writers: Bulman (1933), Courriades and Jaulain (1935), Daniel (1925-1), Eden and Lockyer (1935), Halban and Seitz (1926), Höppner (1931), Hüssy and Vetter (1926), Kraul (1939), Mayer (1929), Muret (1933), Muret (1934), Rock and Bartlett (1937), Tamis (1940), Vogt (1928), Williams (1894), Williams (1933).

On the other hand, Jameson (1935), is of the opinion that sterility as a symptom of uterine tuberculosis has been overemphasized. In his cases of uterine tuberculosis (mostly examples of gross genital tubercle) parous patients outnumbered nulliparous patients by 2 to 1. The higher incidence of uterine tuberculosis in parous patients has also been stressed by Murphy (1904) and by Greenberg (1924). In the series of 200 cases of tuberculous salpingitis reported by Greenberg (1924), 58.6 per cent of parous women compared with 39.6 per cent of nulliparous women had uterine tuberculosis. When these findings are compared with the present series, it is seen that while gross genital tuberculosis may show a higher percentage of uterine involvement in parous than in nulliparous patients, tuberculosis apparently confined to the body of the uterus is much commoner in patients who have not been pregnant.

It is fairly easy to understand why this high incidence of endometrial tuberculosis in cases of sterility has not been more generally recognised.

(a) Routine histological examination of the endometrium in sterility patients was frequently omitted in the past. In recent years this has been carried out with greater frequency in order to obtain evidence of ovulation. In several of the sterility cases in the present series, curettage was not performed when the patient was in hospital, or the endometrium was not examined histologically at that time. In these cases the diagnosis of tuberculosis of the endometrium was subsequently made following endometrial biopsy at the Out-patient Department. The object of performing endometrial biopsy in these cases was to establish the presence or absence of ovulation. Had this not been carried out, the tuberculous condition of the endometrium would not have been discovered.

(b) The lesions of this third type of endometrial tuberculosis are easily overlooked as they are small and, in most instances, scanty. With increasing experience one's visual acuity for the lesions becomes correspondingly increased, but as will be shown later, they are found in many cases only after diligent search.

(c) Even when the lesions are seen, their tuberculous nature may not be obvious to the observer with an inadequate background of general pathology.

(d) It is possible that the increasing incidence of tuberculosis in general may also apply to tuberculosis

of the endometrium.

Other symptoms. The following additional symptoms were present:-

Vaginal discharge	24 cases
Increased frequency of micturition	11 cases
Dyspareunia	8 cases
Lower abdominal pain unconnected with menstruation	6 cases
Stress incontinence of urine	4 cases
A feeling of "something coming down".	2 cases
Abdominal swelling	1 case

Pelvic examination. The following lesions were found on pelvic examination:-

Mobile retroflexion of uterus	9 times
Erosion of cervix	7 times
Slight cystic enlargement of one ovary	6 times
Slight enlargement of uterus	5 times
Torn perineum	5 times
Prolapse of vaginal walls	4 times
Uterine fibroids	Twice
Complete prolapse of uterus	Once
Ectropion of cervix	Once
Carcinoma of cervix	Once
Urethral caruncle	Once

These conditions were found in 25 of the 50 cases in the series; in the remaining 25 patients no pelvic abnormality of any kind was discovered. From a study of the above list it is apparent that these lesions are sufficient to explain many of the symptoms of which the various patients complained. The association of tuberculosis of the endometrium with uterine fibroids and with carcinoma of the cervix is discussed in detail in a later section.

The following abnormalities were found on pelvic

examination in the series of 12 cases of endometrial tuberculosis described by Schockaert and Ferin (1939):-

Cervicitis	4 times
Enlarged uterus	Twice
Uterine fibroids	Twice
Cervical stenosis	Once
Uterine hypoplasia	Once
Enlarged and tender adnexa	Once
Parametritis	Once
Fixed retroversion	Once
Perimetrial adhesions fixing uterus.	Once
Bilateral hydrosalpinx	Once

The above lesions were found in 11 of the 12 cases in Schockaert and Ferin's series; the remaining patient showed no pelvic abnormality. Although the writers say that they have excluded all cases in which the clinical examination suggested probable genital tuberculosis, in 5 of their cases there is at least a suspicion that the tuberculous process was not confined to the endometrium. The lesions in these cases are the last 5 on the list. In the present study all patients with any lesions of these types were excluded.

Surgical Investigation and Treatment.

Dilatation of the cervix and curettage of the uterus were performed in 38 cases and in 6 of these the operation was repeated at a later date. In many of these patients endometrial biopsy was performed on one or more occasions at the Out-patient Department after dismissal.

In 9 other instances full curettage was not carried out and the diagnosis of tuberculosis of the endometrium was made from material removed by endometrial biopsy at the Out-patient Department. In the remaining 3 patients the uterus was removed. In 2 of these cases uterine fibroids were present and abdominal hysterectomy was performed for this condition; in each instance the Fallopian tubes and ovaries appeared to be healthy at operation and were conserved (cases 13 and 50). In the last case, Stage I carcinoma of the cervix was present and vaginal hysterectomy was performed for this disease; no adnexal lesion could be felt and the Fallopian tubes and ovaries were not removed (case 38).

The following additional operative procedures were also carried out:-

Tubal insufflation	30 cases
Cauterisation of cervical erosion ...	7 cases
Colpo-perineorrhaphy	3 cases
Perineoplasty	2 cases
Biopsy of cervix	2 cases
Anterior colporrhaphy	1 case
Cauterisation of urethral caruncle ..	1 case
Insertion of radium	1 case
Donald-Fothergill operation	1 case

Tubal patency. Tubal insufflation was carried out in 28 of the 32 sterility patients and in 2 of the patients with a primary complaint of uterine haemorrhage who also complained of sterility (cases 30 and 37). In many cases the insufflation was repeated on one or more occasions in the course of the follow-up. The Fallopian tubes were

found to be patent in 6 cases and blocked in the remaining 24; failure of gas to pass at 200 mm. mercury was taken as evidence of tubal occlusion in each instance. No palpable thickening of the Fallopian tubes was present in any case. In the cases in which the tubes were patent, the pressure at which gas passed was as follows:-

Case 11	108 to 110 mm. mercury
Case 18	140 mm. mercury
Case 20	190 mm. mercury
Case 21	60 to 80 mm. mercury
Case 32	80 to 120 mm. mercury
Case 41	60 to 80 mm. mercury

It will be seen from the above figures that in certain of the cases in which tubal patency was demonstrated by tubal insufflation, there was some evidence to suggest partial obstruction or stenosis of the Fallopian tubes. In 2 of the patients in whom the Fallopian tubes were patent (cases 11 and 18), the insufflation was repeated after 17 and 16 months respectively and the Fallopian tubes were then found to be blocked. In 4 of the cases in which tubal insufflation had demonstrated tubal blockage, injection of Lipiodol was employed (cases 10, 14, 15 and 18). In each instance the blockage was confirmed by X-ray examination. It is of interest to note that no calcified abdominal glands were seen in any of these films.

Several authors have discussed the question of tubal patency in cases of tuberculosis of the endometrium.

Bulman (1933), Höppner (1931) and Tamis (1940) each report a case of apparently uncomplicated endometrial tuberculosis in which tubal insufflation showed the Fallopian tubes to be patent. In the case reported by Bulman (1933) the patency of both tubes was later confirmed by injection of Lipiodol. Tamis (1940) carried out Lipiodol injection in his case 3 years after insufflation had demonstrated tubal patency and both Fallopian tubes were then seen to be blocked at the fimbriated ends. Schockaert and Ferin (1939) found tubal patency in 5 of their 8 sterility patients with endometrial tuberculosis in whom tubal insufflation was carried out. In one of their cases with blocked Fallopian tubes, hystero-salpingography showed bilateral hydrosalpinx to be present. Willbrand (1930) performed tubal insufflation in 12 cases of tuberculosis of the endometrium and found that tubal patency was present in 9; one of the patients with patent Fallopian tubes later became pregnant and was delivered of a full-time child.

The percentage of cases in the present series with blocked Fallopian tubes (80 per cent) is much higher than that found in general sterility cases. Since Rubin (1920) first described the tubal insufflator, a great deal has been written about the clinical investigation of tubal patency. In Table I the number of cases of sterility in which tubal insufflation was carried out and the percentage of these cases with patent Fallopian tubes are shown:-

TABLE I.

Percentage of tubal patency in general sterility cases.

Author.	Cases of sterility with tubal insuff-lation.	Percentage with blocked tubes.
Budimlić (1936)	320	24.7
Feiner (1942)	541	35.5
Forsdike (1928)	100	31
Graff (quoted by Haselhorst (1936)	376	56
Hamilton (1941)	275	39.6
King (1936)	272	49.3
Kotz and Parker (1939)	150	49.3
Mayer (1929)	406	16
Meaker (1930)	50	20
Meaker (1931)	25	20
Meaker (1934)	100	16
Pribram (1927)	45	33.3
Rongy (1926)	400	35.5
Rubin (1930)	650	28.5
Rubin (1932)	2,192	26.1
Sharman (1942)	480	38
Tschertok (1927)	112	47.3
White (1940)	48	23

From a study of the figures in the above table it is seen that although there is considerable individual variation in the results obtained, the percentage of tubal occlusion is invariably below the present figure of 80 per cent, and is usually less than half that figure. It is possible that the higher incidence of tubal blockage in the patients with tuberculosis of the endometrium may be due to a sub-clinical tuberculosis of the Fallopian tubes, but this

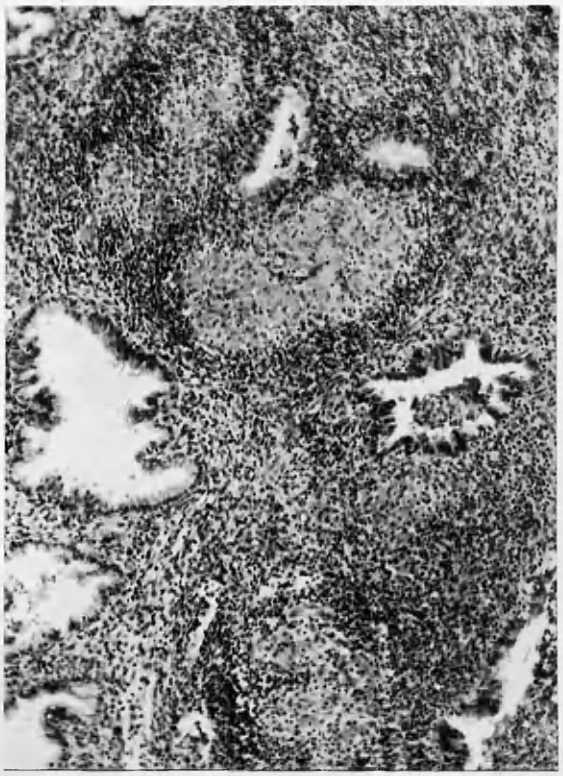
hypothesis has not been tested by pathological examination of the Fallopian tubes in any of the present cases.

Ahlfelder (1902) describes a case of co-existing carcinoma of the cervix and tuberculosis of the uterine body; total hysterectomy and bilateral salpingo-oöphorectomy were performed and although chronic salpingo-oöphoritis was found to be present, the tuberculous process appeared to be limited to the body of the uterus. Siddall (1936) reports a case of tuberculosis of the endometrium accidentally discovered by curettage; when hysterectomy and bilateral salpingectomy were performed, the tuberculous lesion was found to be limited to the endometrium. Tourneux (1921) reports a similar case in which diagnostic curettage for menopausal bleeding revealed an unsuspected tuberculosis of the endometrium; total hysterectomy and bilateral salpingo-oöphorectomy were performed, and the tubes and ovaries were found to be normal on histological examination.

Novak (1940) is of the opinion, however, that when curettage reveals tuberculous endometritis, one is justified in assuming that tuberculous disease of the Fallopian tubes is also present, even though clinical evidence of the latter cannot be found. In all his cases of this type in which laparotomy was later performed, unquestionable evidence of tubal tuberculosis was discovered. Wiley (1939) describes a case of tuberculosis of the endometrium in which the uterus, tubes and ovaries were removed. The

FIGURE 1.

Tuberculous lesions in a late secretory endometrium.



Case 37.

Low power view.

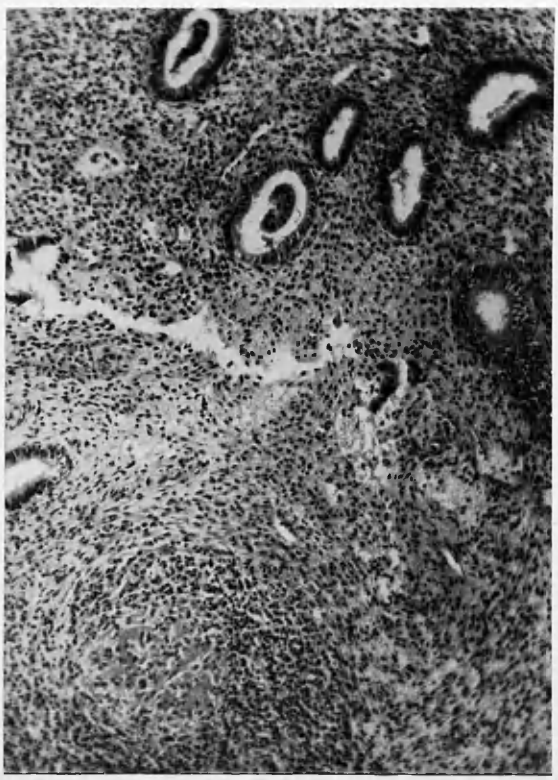
uterine lesion was very gross. The Fallopian tubes and ovaries were normal on inspection; on histological examination both ovaries and the right Fallopian tube showed no abnormality, but early tuberculosis of the left Fallopian tube was discovered. Zweifel (1892) states that in cases of uterine tuberculosis it is impossible to tell clinically whether the tubes and ovaries are involved or not.

Presence of ovulation. Endometrium was removed in the premenstrual phase of the menstrual cycle in 26 cases in the present series. The endometrium had the normal appearances of the secretory phase of the menstrual cycle in 18 of these cases. Figure 1 shows tuberculous lesions in a late secretory endometrium; the last menstrual period commenced 30 days previously (case 37). In the other 8 cases evidence of secretory activity was absent in one or more specimens. In 4 of these 8 cases the date of the subsequent menstrual period could not be ascertained, so no deductions were made regarding the presence or absence of ovulation in these patients (cases 3, 32, 35 and 46). Lane-Roberts et al. (1939) stress the importance of disregarding absence of secretory activity in premenstrual endometrial biopsy specimens, unless the date of the next menstrual period is known; the date of the preceding menstruation must never be taken as the sole guide.

In the remaining 4 patients (cases

FIGURE 2.

Tuberculous lesion in endometrium from anovulatory cycle.



Case 31.

Low power view.

10, 14, 27 and 31) in whom no evidence of secretory activity was found in the premenstrual biopsy specimens, the subsequent menstrual period followed within a day or two of the biopsy in each instance. The findings in these cases are shown in Table II. Figure 2 shows a tuberculous lesion in endometrium taken during an anovulatory cycle; the next menstrual period commenced 2 days after the biopsy had been performed (case 31).

TABLE II.

Cases in present series showing absence of ovulation.

Case.	Number of premenstrual biopsy specimens removed.	Number of specimens showing absence of ovulation.
10	1	1
14	3	1
27	3	1
31	1	1

The absence of any sign of secretory activity in an endometrial biopsy specimen removed from a patient in whom menstruation subsequently occurs within a day or two can be taken as presumptive evidence of absence of ovulation in that particular menstrual cycle only. The fact that in 2 of the 4

present cases in which this was found, an anovulatory cycle only occurred once out of 3 cycles studied shows that the information gained from a single premenstrual biopsy is limited. Lane-Roberts et al. (1939) state that in any normal woman a given cycle may be anovulatory, and that even a sequence of anovulatory cycles does not justify the diagnosis of permanent sterility.

Excluding the 4 cases in which the date of the subsequent menstrual period was not known, the presence of ovulation was investigated in 20 sterility patients, one patient complaining principally of profuse menstruation (case 37) and one patient complaining of "something coming down" (case 44). In the last 2 cases evidence of ovulation was present. The occurrence of anovulatory menstruation was thus found in 4 out of 20 sterility patients in the present series (20 per cent).

The estimates of the frequency of anovular menstruation in general sterility cases show considerable variation. Lane-Roberts et al. (1939) state that the frequency of anovulatory cycles in general is still doubtful and that it is still a matter of individual experience and opinion whether the anovulatory cycle is regarded as associated frequently or infrequently with sterility. Shaw (1934) is of the opinion that anovulatory menstruation is an exceptional occurrence. He examined

30 endometria removed between the fourteenth and twenty-eighth days of the menstrual cycle and all showed secretory changes; none of these patients complained of sterility. He is very critical of earlier American publications on anovulatory menstruation, but in the light of more recent work on this subject his views appear to be incorrect.

A number of writers have investigated the incidence of anovulatory menstruation in general sterility cases and the results obtained are shown in Table III.

TABLE III.

Incidence of anovulatory menstruation in general sterility cases.

Author.	General sterility cases investigated.	Percentage with anovulatory cycle
Anspach and Hoffman (1934)	42	21.4
Bland, First and Goldstein - (1935)	50	54.0
Griffith and McBride (1942)	42	38.1
Jeffcoate (1935)	21	47.6
Mazer and Israel (1938)	109	33.0
Mazer, Israel and Kacher (1937)	65	29.2
Mazer and Ziserman (1932)	41	58.5
Novak (1939)	142	13.4
Rock, Bartlett and Matson (1939)	392	9.2
Sharman (1942)	355	6.5

In addition to the figures quoted in Table III, Jeffcoate (1935) examined 63 uteri removed at operation between the twenty-first and twenty-eighth days of the cycle; the patients from whom these specimens were obtained were infertile and had a regular menstrual cycle. In the total of 63 specimens he found 16 showing no evidence of secretory activity (25.4 per cent); he admits, however, that the absence of information about the subsequent menstrual periods reduces the value of these findings. Although the figure cited by Novak (1939) of 13.4 per cent anovulatory menstruation is much lower than most of the others in Table III, he considers this figure high and explains the unusual incidence by the fact that many of these patients had previously been studied elsewhere and the more obvious factors such as male sterility and tubal non-patency had been eliminated.

The most striking feature of the figures quoted in Table III is their great variability. It is worthy of note that the 3 lowest percentages of anovulatory cycles were found in the 3 largest series of cases. This suggests that in some of the other papers the figures are too small to be significant. The figure obtained in the present series (20 per cent) is also based on a very small number of cases, but there is nothing to suggest that there is an abnormally high incidence of anovulatory menstruation in sterility patients with Type III tuberculosis of the

endometrium.

General Clinical Aspects.

Age incidence. The age of the patients complaining of sterility ranged from 21 to 39 years (average 27 years). The age of the remaining patients ranged from 18 to 66 years (average 39 years). The age incidence of the cases reported by Schockaert and Ferin (1939) was in reasonable agreement with the present series. There is general agreement in the literature on the question of the age incidence of tuberculosis of the uterus. Most writers regard this condition as essentially a disease of reproductive life, and the great majority of the cases published fall into this age period; 46 of the present cases are in this group. Mayo (1905 and 1918), on the other hand, is of the opinion that tuberculosis of the endometrium is rarely found in a menstruating uterus and that this condition usually occurs in children before puberty or in women after the menopause. If tuberculosis affects the endometrium during normal menstrual life, menstruation will cease, although in its place there may be a blood-stained discharge. No figures are given to support these unorthodox statements. Stolper (quoted by Murphy, 1904), also says that tuberculosis of the uterine body is much more frequent before puberty and after the menopause than during menstrual life.

Tuberculosis of the uterus in children is

usually found as part of an acute generalised tuberculosis, or in gross tuberculous infection of the pelvic organs as in adults. The subject is discussed by Brüning (1902), Graefe (1915), Hirsch-Hoffman (1933), Maas (1896) and Wollstein (1900), all of whom describe cases of this condition. The following writers have also published cases of uterine tuberculosis in childhood: Askanasy (quoted by Daniel, 1925-1), Audion (1898), Biggs (1901), Blacke (1831), Camelot (1901), Hérard (1846), Morton (1892-93), Schmitz (quoted by Daniel, 1925-1), Silcock (1884-85), Talamon (1878).

The occurrence of uterine tuberculosis in women after the menopause is generally thought to be uncommon. This matter is discussed by Deymel (1927), Greenberg (1924), Jameson (1935), Norris (1921) and Schockaert and Ferin (1939). Cases of post-menopausal tuberculosis of the uterus are described by the following writers, several of whom draw attention to the rarity of this condition: Bertolini (1921), Buscarlet (1891), Carnot (quoted by Daniel, 1925-1), Coote (1850), Daniel (1925-1), Deymel (1927), Goerdeler (1913), Hofbauer (1898), Hueter (1906), Jameson (1935), Kiwisch (1847), Krzywicki (1888), Pinsan (1929), Rabère and Mandillon (1931), Reeb (1925), Tomlinson (1863), Vassmer (1898). Four patients in the present series had passed the menopause (cases 8, 12, 43 and 48).

Previous health. Investigation of the previous health of the patients in the present series revealed conditions indicating or suggesting previous tuberculous infection in 14 cases (28 per cent). These conditions are shown in Table IV.

TABLE IV.

Cases in present series with a history of possible or definite tuberculosis.

Case number.	Age.	Previous illness.
8	49	Pleurisy at 46 years.
9	24	Tuberculosis of abdominal glands at 12 years.
17	26	Intestinal tuberculosis at 3 years
26	28	Pleurisy at 17 years.
28	28	Pneumonia with pleural effusion at 23 years.
30	19	Tuberculosis of abdominal glands 4 months ago.
31	29	Operation for tuberculosis of neck glands at 24 years.
36	48	Pleurisy at 42 years.
39	31	Abdominal tuberculosis at 19 years.
42	26	Pleurisy at 13 years.
45	38	Pulmonary tuberculosis at 20 years, 30 years and 37 years.
46	23	Abdominal tuberculosis at 17 years.
47	31	Pleurisy at 18 and 22 years.
49	23	Tuberculous peritonitis at 15 years.

It will be seen from a study of Table IV that careful investigation of the patients' previous health in cases of Type III tuberculosis of the endometrium reveals a surprisingly large number with a history of definite or possible tuberculosis. The 2 cases with Type II tuberculosis of the endometrium did not give any history of such conditions. Four of the 12 patients with tuberculosis of the endometrium reported by Schockaert and Ferin (1939) had had previous illnesses which might have been tuberculous in nature. Three patients had had pleurisy in adolescence and one had had caries of the bones of the right foot in childhood. The question of the gynaecological sequelae of abdominal tuberculosis in childhood is discussed by Phillips (1922). He is of the opinion that in such cases sterility, with or without dyspareunia, may be the chief complaint. In all his cases, however, there was evidence of tubal involvement.

General examination. On general examination of the patients in the present series the following conditions were found:-

Case 3. Active pulmonary tuberculosis, confirmed by X-ray examination. Moderate anaemia with haemic cardiac murmur at apex and foot of sternum.

Case 10. Systolic murmur at cardiac apex, probably functional in type.

Case 12. Soft cardiac sounds.

Case 14. Evidence of subsiding bronchitis.

Case 16. Slight anaemia.

Case 35. Systolic murmur at cardiac apex, probably functional in type.

Case 38. Frequent extra-systoles at all cardiac areas. Heart sounds pure.

Case 43. Blood-pressure 170/80.

Case 45. Evidence of old pleurisy.

Case 50. Slight anaemia.

The remaining 40 patients were healthy in appearance and without any abnormality on systemic examination. Ten of the 12 patients described by Schockaert and Ferin (1939) appeared to be in excellent health; of the remaining 2, one had exophthalmic goitre, the other had lost a great deal of weight. Clinical examination of their patients did not show any evidence of active pulmonary disease; two had X-ray examination of the chest, the only abnormality found being evidence of old pleurisy in one instance.

Temperature and pulse-rates. An analysis was made of the temperature and pulse charts in the 41 cases in the present series in which such records were available. These charts were only the ordinary morning and evening hospital records and the observations had not been made with any unusual precautions. A study of the charts did not show any evidence of an active tuberculous lesion. One patient (case 1) had intermittent elevation of pulse-rate and temperature during a period of several weeks; she was found

to have a severe coliform infection of the urinary tract. Other 2 patients had slight, intermittent post-operative elevation of pulse and temperature over a period of 10 days (cases 38 and 50). Four further patients had a slight post-operative rise of pulse-rate or temperature for a day or two. In the remaining 34 patients the temperature and pulse-rate remained normal throughout.

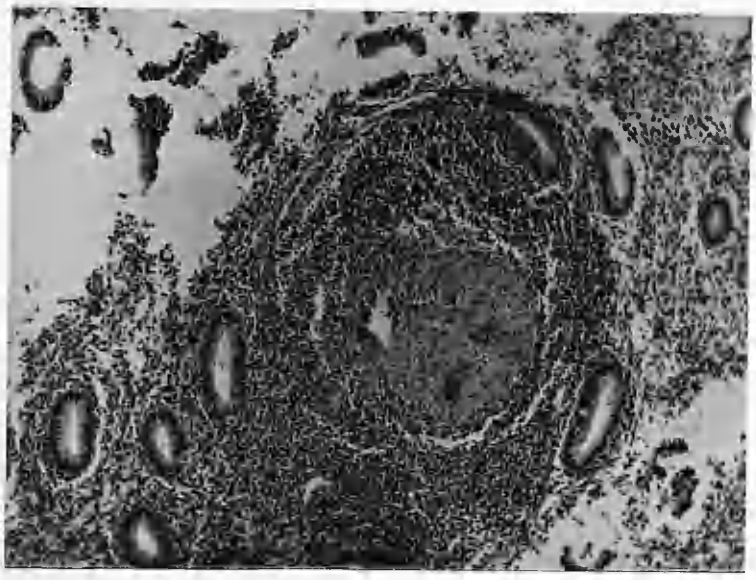


FIGURE 3.

Single tubercle in endometrium.

Case 4.

Low power view.

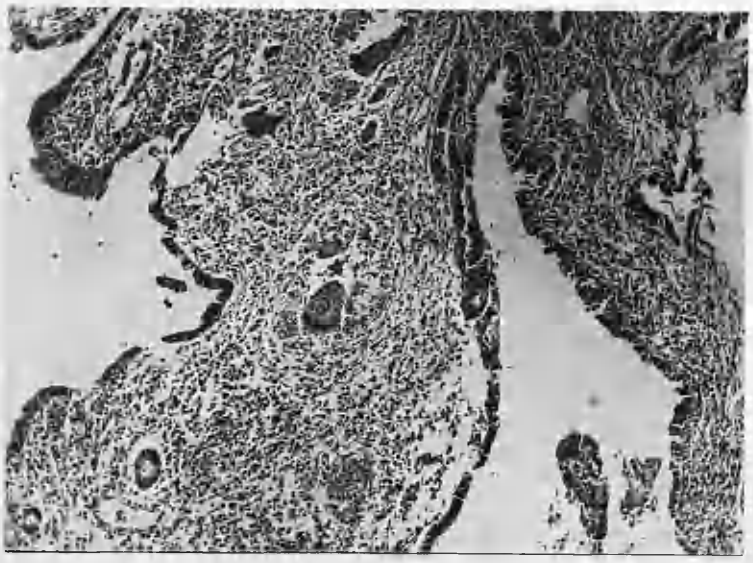


FIGURE 4.

Scattered tubercles in endometrium.

Case 3.

Low power view.

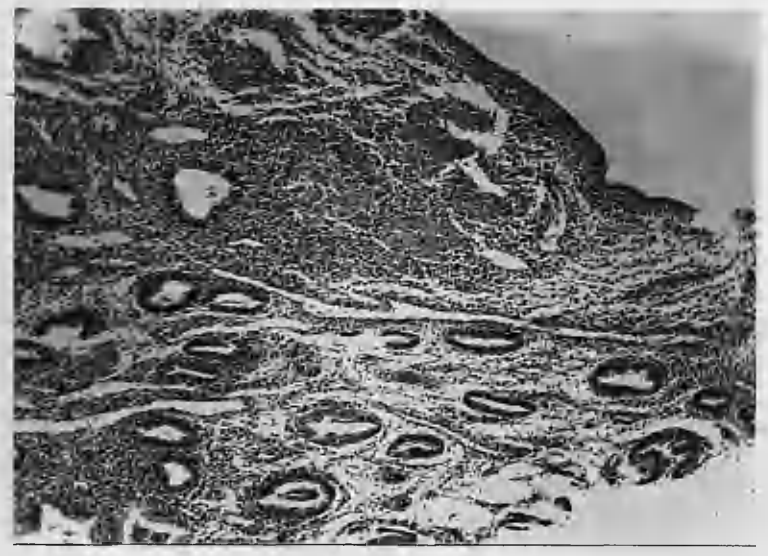


FIGURE 5.

Scattered tubercles in endometrium.

Case 5.

Low power view.

S E C T I O N V.

PATHOLOGY.

Naked Eye Examination.

Naked eye examination of the curettings obtained did not show any abnormality. The more gross forms of endometrial tuberculosis with caseation and extensive ulceration were not seen in any specimen. In the 3 uterine specimens the endometrium appeared to be normal on inspection.

Histological Examination.

In every case except the two with Type II lesions the histological appearances were similar. In the great majority of cases the picture was one of infrequent and usually isolated small tubercles scattered irregularly through the endometrium. Figure 3 shows an isolated tubercle in the endometrium (case 4). Scattered tuberculous foci in the endometrium are seen in Figure 4 (case 3) and Figure 5 (case 5). In a few instances the tuberculous lesions were more numerous and occasionally a cluster of tubercles could be seen in a single microscopic field. In the great majority of cases, however, the lesions were extremely scanty and careful search through

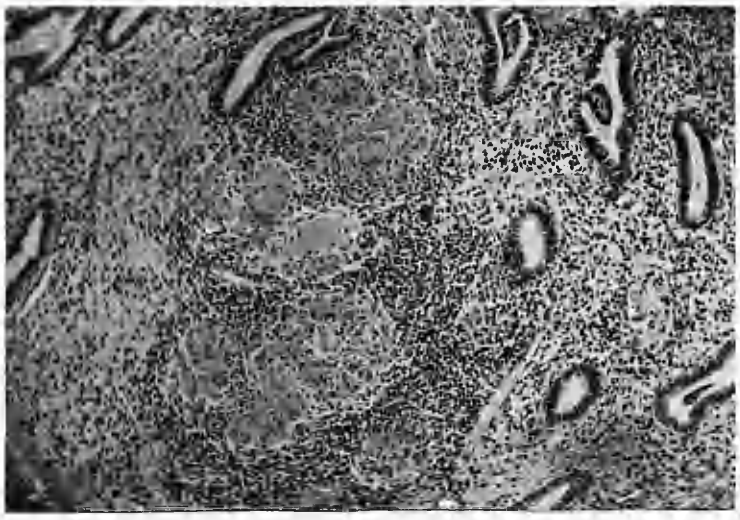


FIGURE 6.

Group of tubercles in endometrium.

Case 22.

Low power view.

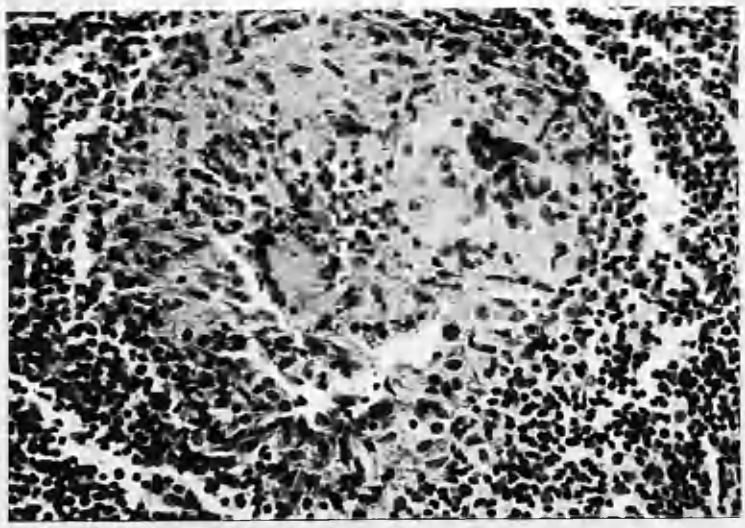


FIGURE 7.

Single tubercle.

Case 4.

High power view.

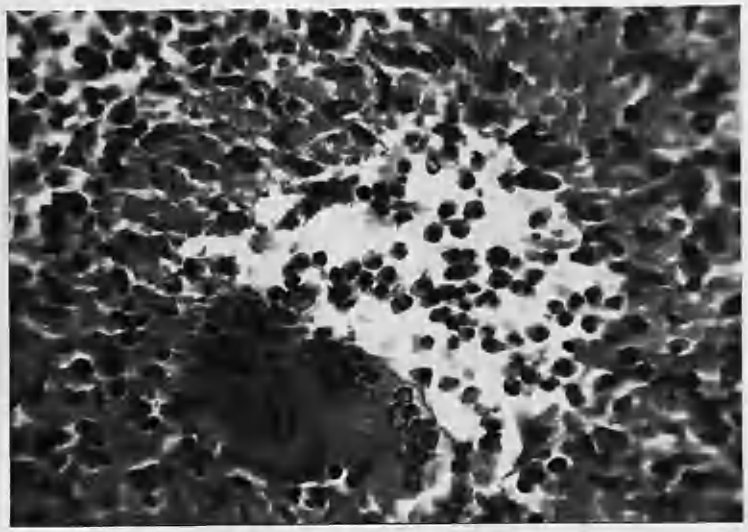


FIGURE 8.

Tubercle with central caseation.

Case 14.

High power view.

a slide of all the endometrium removed in a thorough curettage sometimes revealed only a single tuberculous focus, most of the fragments appearing absolutely normal. In most cases the tuberculous lesions occurred mainly towards the surface of the endometrium, but in a few instances, particularly when they were fairly frequent, they were seen at all levels. Figure 6 shows a group of tubercles in the endometrium (case 22).

The individual tuberculous lesions are quite characteristic. A central zone of epithelioid cells is always present and usually, though not invariably, one or more giant cells can be seen. In Figure 7 a high power view of a single tubercle is shown; this is the same tubercle as that seen in figure 3 (case 4). A small central area of caseation is sometimes present. Figure 8 shows a high power view of a single tubercle with central caseation (case 14). The focus is usually surrounded by a zone of lymphocytic infiltration. The glandular structure in the endometrium does not show any abnormality, apart from the glands in the immediate vicinity of the tuberculous foci.

In many cases the stroma is infiltrated throughout with lymphocytes and plasma cells in moderate numbers and in an occasional specimen this chronic inflammatory reaction is very marked. In infrequent cases

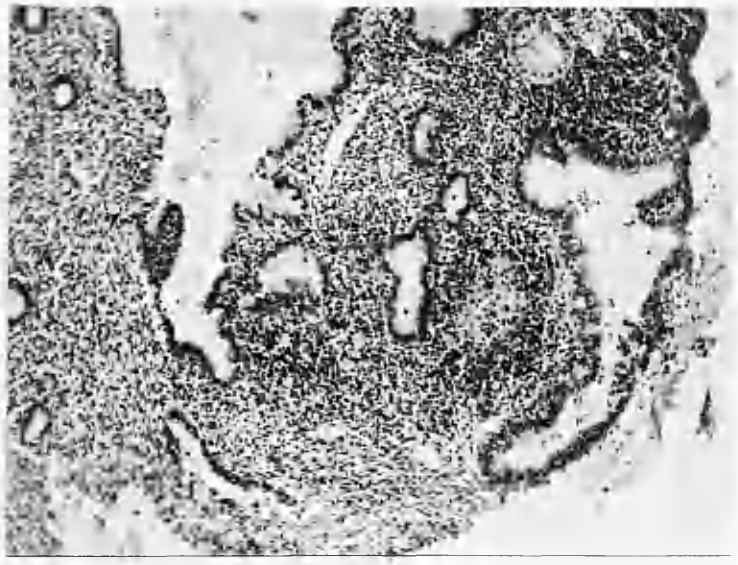


FIGURE 9.

Chronic endometritis with focus suggesting tuberculosis.

Case 47.

Low power view.

FIGURE 10.

Multiple tubercles shown up by cutting extra sections.

Case 47.

Low power view.

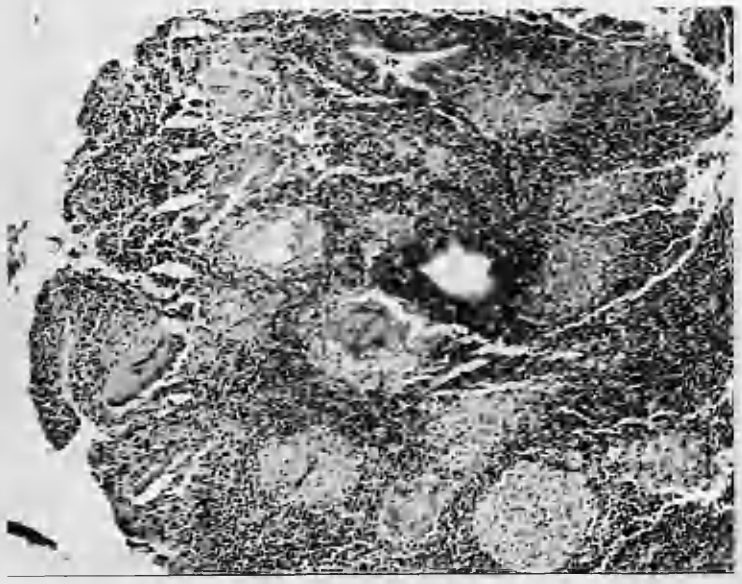


FIGURE 11.

Numerous tubercles in single portion of endometrium.

Case 33.

Low power view.

the tuberculous nature of the endometrial condition may be masked by extensive chronic inflammatory changes; in such specimens the cutting of additional sections will usually reveal typical tuberculous foci. In 2 cases in the present series chronic endometritis was seen in the initial specimens and definite tuberculous lesions were only found in further sections (cases 30 and 47). Figure 9 shows a portion of endometrium with marked chronic inflammatory changes in the stroma and one small focus which might be tuberculous in nature. The remainder of the endometrium showed no evidence of tuberculosis (case 47). In Figure 10 the result of cutting extra sections in the same specimen is shown; several definite tuberculous foci are present (case 47). Indeed, in any endometrial specimen from a nulliparous woman in which chronic endometritis is seen, careful search should always be made for tuberculous foci.

The histological picture is that usually described as miliary tuberculosis of the endometrium, though in most of the specimens in the present series the individual lesions were much less frequent than in the majority of the cases reported in the literature. Figure 11 shows a portion of endometrium in which many tuberculous foci are seen (case 33). It should be emphasized here that miliary tuberculosis of the endometrium is frequently found in Type I tuberculosis of the endometrium and that differentiation

between Types I and III is made essentially on the presence or absence of clinical involvement of other pelvic structures in the tuberculous process and not on the histological appearances.

On measurement the average size of the tubercles was found to be 0.21 mm. This figure was obtained by measuring 150 individual lesions, one or more being included from every specimen in which such localised lesions were found. The smallest tubercle measured 0.09 mm. and the largest 0.34 mm. The true average size of the tuberculous foci is probably much larger than 0.21 mm. as serial sections were not obtained and it is almost certain that in many instances the section did not pass through the centre of the tubercle. Even in a single piece of endometrium the size of the tubercles was found to vary considerably; it is not possible to say whether this variation was due to a true difference in size or merely to the cutting of the lesions at different levels.

In only 2 cases were the histological appearances different from those just described. These were the patients with Type II tuberculosis of the uterus (cases 19 and 43). In the first of these cases 3 examinations of endometrium were made and in the second case the endometrium was examined once. In all 4 specimens the curettings were composed entirely of tuberculous granulation tissue, no

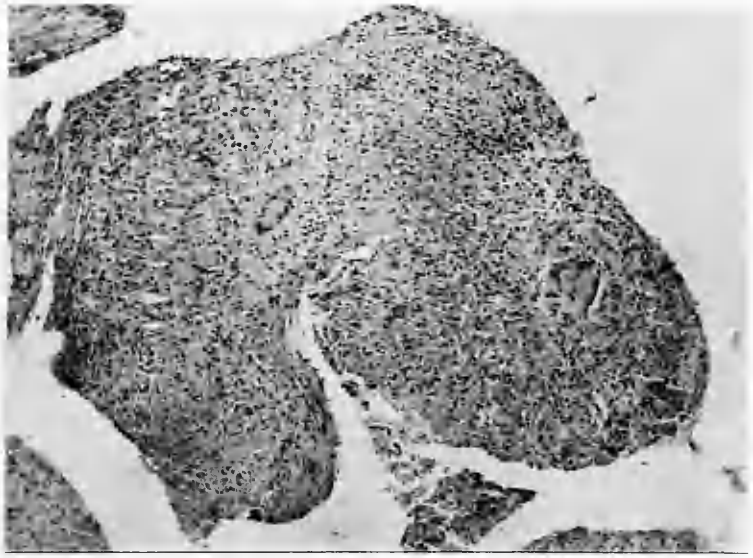


FIGURE 12.

Type II tuberculosis of the endometrium.

Case 19.

Low power view.

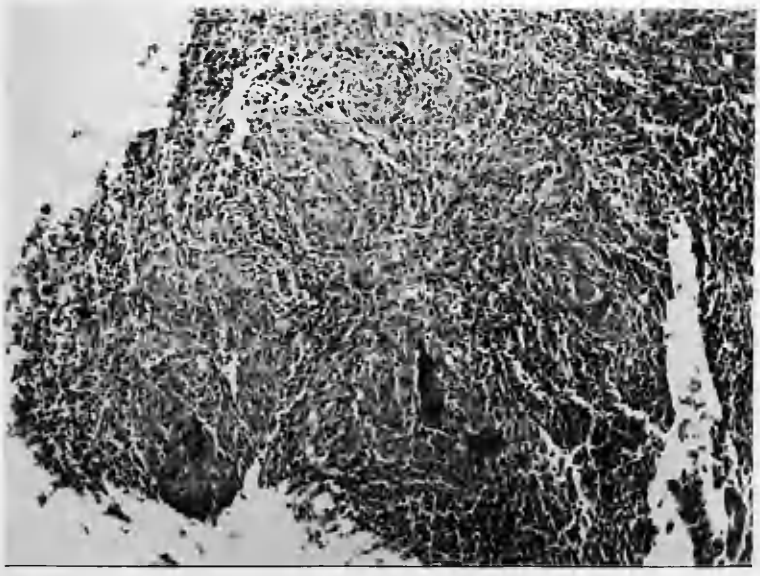


FIGURE 13.

Type II tuberculosis of the endometrium.

Case 43.

Low power view.

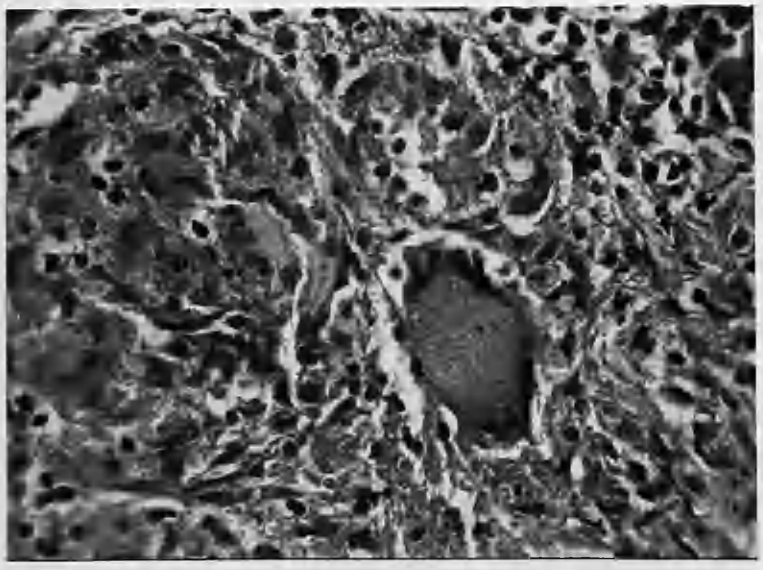


FIGURE 14.

Type II tuberculosis of the endometrium.

Case 43.

High power view.

glands being present. The histological appearances of the endometrium in cases of this type are shown in Figure 12 (case 19), Figure 13 (case 43) and Figure 14 (case 43).

Relation of Tuberculous Lesions to Stage of Menstrual Cycle.

The size of the tubercles appeared to be approximately the same at all stages of the menstrual cycle; in almost every specimen taken during the first half of the cycle one or more lesions near the maximum diameter of 0.34 mm. were seen. Central caseation in the lesions was more frequently seen towards the end of the cycle. Jameson (1935) states that in most cases in which a diagnosis of tuberculosis of the endometrium was made by histological examination of curettings, the endometrium was in the premenstrual phase of the cycle. He is of the opinion that examination at this stage gives the best chance of success.

In the present series of 50 patients the endometrium was examined histologically 109 times; in 84 of these specimens the time in the menstrual cycle at which the tissue was removed was noted, and the results are analysed in Table V. The remaining 25 specimens were obtained from patients in whom a regular menstrual cycle was not present. It will be seen from the table that in cases of proved Type III tuberculosis of the endometrium

the chances of finding tuberculous lesions on histological examination are not significantly different at any stage of the menstrual cycle. The specimens from the Type II cases are excluded from consideration in the present connection as both patients in this group had amenorrhoea.

TABLE V.

Time of removal of endometrium in relation to finding of tuberculous lesions in known cases of tuberculosis of the endometrium.

Time in menstrual cycle at which endometrium was removed.	Total number of specimens examined.	Number of specimens showing tuberculous lesions.	Number of specimens showing no evidence of tuberculosis.
1st to 7th days	3	1	2
8th to 14th days	17	12	5
15th to 21st days	15	10	5
22nd day and over	49	30	19

Additional examinations of endometrium.

Additional examinations of endometrium were made on from one to four occasions in 32 of the patients in the present series. In the great majority of cases the additional specimens were obtained by endometrial biopsy,

but in a few instances full curettage was performed. The curette used in all the endometrial biopsies in the present series was of the type designed by Sharman and Sheehan (1937). It is of interest to note that the cervix appeared healthy on every occasion on which endometrial biopsy was carried out. In only 12 of the 32 patients in this group were tuberculous lesions found in every specimen examined. One of the patients with Type II tuberculosis of the endometrium is in this category; the endometrium was examined on 3 occasions and in each specimen gross tuberculous infection was present. The results of histological examination of the endometrium in the present series are shown in Table VI.

TABLE VI.

Results of histological examination in present series.

Number of occasions on which endometrium was examined.				
1	2	3	4	5
+ (18)	+ + (7)	+ + + (3)	+ + + + (2)	+ - - - - (1)
	+ - (8)	+ + - (1)	- + + - (1)	+ - - - + (1)
	- + (1)	+ - + (1)	- - + - (2)	+ - + - - (1)
		+ - - (3)		

\+ = tuberculous lesions present.

\- = no evidence of tuberculosis seen.

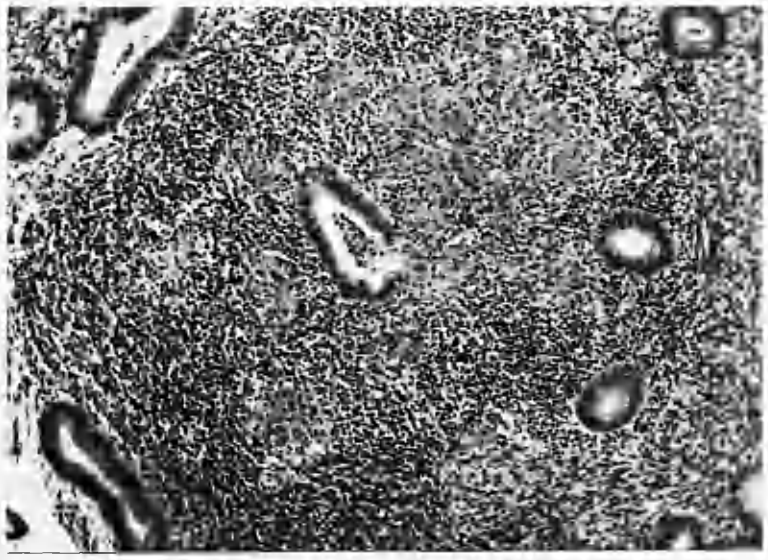


FIGURE 15.

Tubercles in endometrium from patient with menopausal uterine haemorrhage.

Case 34.

Low power view.

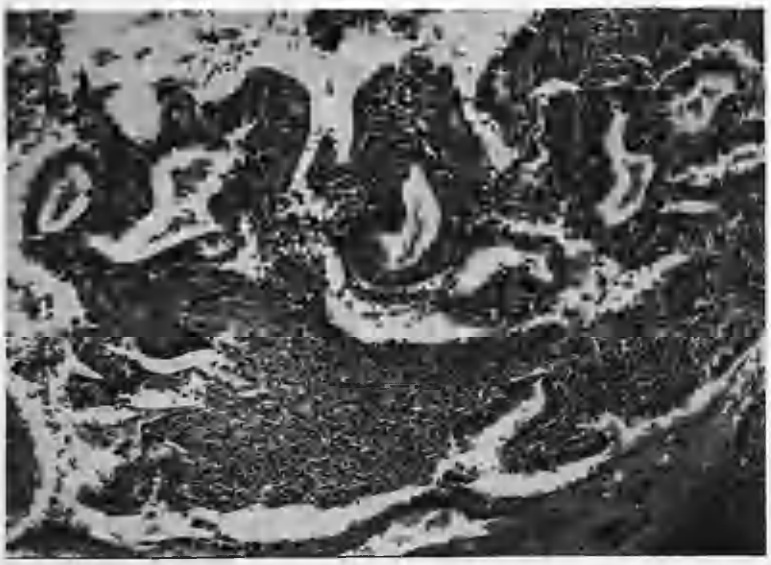


FIGURE 16.

Tubercles in endometrium from patient with postmenopausal uterine haemorrhage.

Case 12.

Low power view.

FIGURE 17.

Tubercle in endometrium discovered after re-embedding tissue.

Case 32.

Low power view.

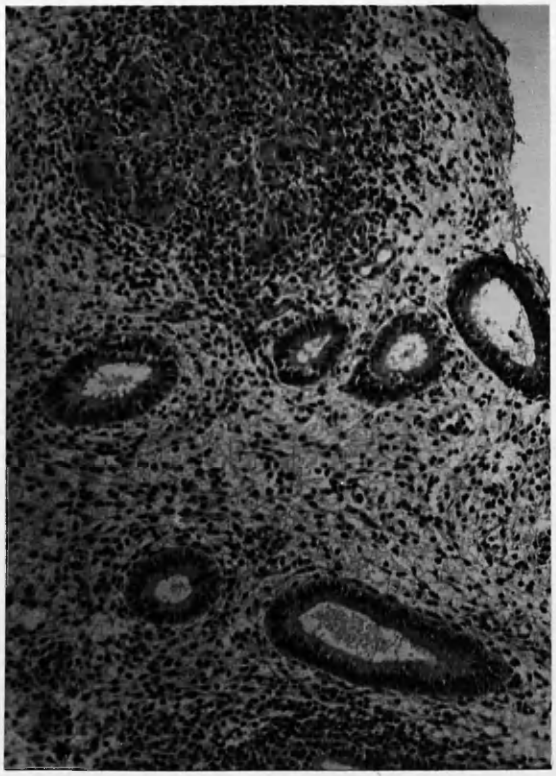
An analysis of Table VI shows that the tuberculous lesions of the endometrium in the present series of cases are often very scanty. A single negative biopsy in cases of sterility or functional uterine haemorrhage does not eliminate the possibility of tuberculosis of the endometrium. Figure 15 shows tuberculous lesions in endometrium from a patient with uterine haemorrhage at the menopause (case 34). Figure 16 shows tuberculous lesions in endometrium from a patient with post-menopausal uterine bleeding (case 12). A thorough curettage with histological study of all the endometrium removed should be carried out in all such cases. The advisability of examining several sections of endometrium before excluding tuberculosis has been stressed by Dogra (1940), Höhne (quoted by Gerich, 1925) and Jameson (1935).

In view of the foregoing results, an attempt was made to find evidence of tuberculosis in the specimens in which histological examination was negative. In all the specimens in this category in which any endometrium was left in the blocks, the tissues were reorientated and reembedded and fresh sections were then cut. In only one instance was histological evidence of tuberculosis found in the specimens so treated; this was the second biopsy specimen from case 32. Figure 17 shows a single tubercle from this specimen (case 32).

In 4 of the cases in which inoculation of a

FIGURE 18.

Tuberculous focus discovered in serial sections.



Case 16.

Low power view.

guinea-pig with tissue removed by endometrial biopsy gave a positive result, histological examination of endometrium removed simultaneously did not show any evidence of tuberculosis (cases 15, 16, 17 and 42). Serial sections were then made of all the tissue remaining in the 4 blocks and in 3 instances (cases 15, 16 and 42) tuberculous foci were found in this detailed search. Figure 18 shows a tuberculous focus demonstrated by this method (case 16). This emphasizes the fact that reliance must not be placed on a single section in eliminating tuberculosis of the endometrium.

In the present series of 50 cases, 109 specimens of endometrium were examined histologically. Evidence of tuberculous infection was found in 74 of these; the specimens in which tuberculous foci were discovered after reembedding the tissues or after cutting serial sections are not included in this total. In the remaining 35 specimens no tuberculous lesions were seen in the initial preparations. It is thus seen that in known cases of tuberculous endometritis, examination of single slides gives negative findings in approximately a third of the cases.

In the present investigation the incidence of tuberculosis of the endometrium is recorded as 1.3 per cent of all curettings examined, but these examinations were nearly always made on single sections. If serial sections of all curettings had been studied it may reasonably be

considered that an appreciably higher incidence than 1.3 per cent would have been found. It is very possible that if routine guinea-pig inoculations had been made from every curetting, a higher percentage still would have been discovered. The same considerations apply to the incidence of tuberculous endometritis in patients complaining of sterility; the figures of 5 to 7 per cent quoted previously are presumably an underestimate of the true incidence.

Discussion on Pathological Findings in Type III Tuberculosis of the Endometrium.

The above findings show that it is quite easy to miss tubercles in the endometrium unless plenty of tissue is examined and serial sections are studied. Nevertheless there seems to be some difficulty in recognising tubercles in the early part of the menstrual cycle; only one case was identified as tuberculous endometritis among the numerous patients curetted during the first week of the menstrual cycle in the period of over 8 years from which the present series is taken.

This raises the very interesting question of whether the tubercles grow as a fresh crop in each cycle of the endometrium and are shed at menstruation, or whether they remain continuously in the endometrium. The former view is in accordance with most of the findings:-

FIGURE 19.

Tubercle with central caseation.

Case 14.

Low power view.

(a) The tubercles are chiefly situated in the superficial layer of the endometrium and those in this situation must inevitably be shed during the menstrual flow.

(b) The tuberculous foci are always miliary in type and have histological appearances suggesting an age of a few weeks at most.

(c) Central caseation in the tubercles is most marked towards the end of the menstrual cycle. Figure 19 shows central caseation in a tuberculous focus. This specimen was removed by endometrial biopsy on the twenty-fifth day of a 28 day cycle. The lesion is the same as that shown in Figure 8 (case 14).

(d) Even if the tuberculous foci are present in the first week of the cycle as histologically recognisable entities, they must usually be very small and widely separated, so that, in fact, they could only be identified in one case in the present study, even though nearly all the patients at this stage were fully curetted.

Although the chances of finding tuberculous lesions on histological examination are not significantly different at any stage in the menstrual cycle in cases of proved endometrial tuberculosis, the tubercles appear to be more numerous and more easily recognised in the last week

or two of the cycle. The proportion of positive specimens in Table V is high in the last week of the cycle despite the fact that 39 of the 49 examinations at this stage were made on only a small biopsy fragment of endometrium. On the other hand, the tubercles in the first half of the cycle are of approximately the same average size as the tubercles in the second half of the cycle; it is difficult to bring this into agreement with the view that all the tubercles are shed at menstruation.

Assuming that there is a shedding of the tubercles at menstruation, the further question arises of how the continuous reinfection of the endometrium occurs. Jameson (1935) suggests that reinfection of the endometrium in cases of tuberculous endometritis may be from diseased Fallopian tubes. Although no palpable tubal lesion was found in any of the present cases, the abnormally high incidence of tubal occlusion in the sterility patients may possibly be an indication of subclinical tubal tuberculosis. Other possible methods of reinfection of the endometrium are that tubercles may remain in the basal layer and spread to the developing endometrium, or that reinfection occurs from infected menstrual blood. Information on this matter could be obtained from two sources:-

(a) Thorough curettage or hysterectomy in the first 2 or 3 days after menstruation, with detailed histological

study of all the endometrium.

(b) Bilateral salpingectomy followed by frequent biopsy and inoculation of the endometrium into guinea-pigs for several months afterwards to see if a cure was obtained.

It has, unfortunately, not been possible to carry out either of these procedures in the present study.

With regard to the question of the time taken for reinfection of the endometrium to develop, an analysis was made of the cases in the present series in which endometrial biopsy was performed within 3 months of thorough curettage. The results are shown in Table VII.

TABLE VII.

Cases in present series where endometrial biopsy was performed within 3 months of thorough curettage.

Case.	Type of lesion.	Time after curettage at which endometrial biopsy was performed.	Result.
19	II	8 days	Positive
34	III	44 days	Negative
40	III	34 days	Positive
41	III	20 days	Positive
42	III	27 days	Positive
47	III	69 days	Negative
48	III	38 days	Positive

It will be seen from Table VII that reinfection of the endometrium may develop in a very short time after thorough curettage. Tubal insufflation was performed in 6 of the above 7 patients; the tubes were patent in one instance (case 41) and blocked in the remaining 5. The case with tubal patency shows that if reinfection does develop from diseased Fallopian tubes, then such an occurrence is compatible with normal tubal patency as well as with entire absence of any palpable tubal abnormality.

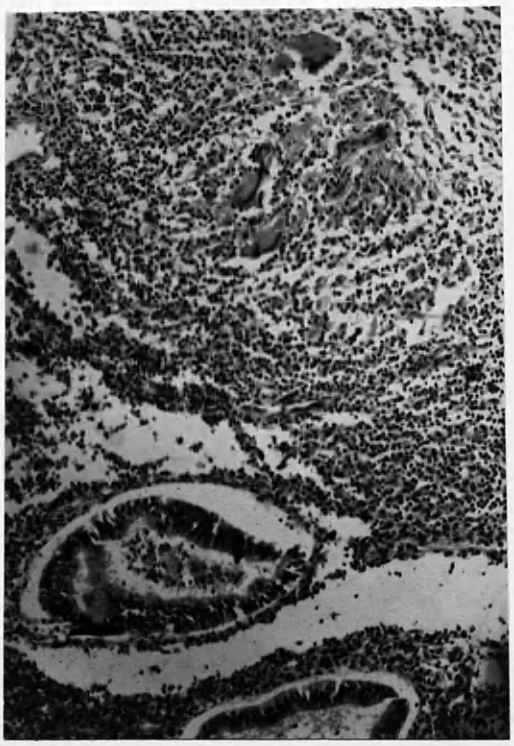
Uterine Tumours associated with Tuberculosis of the Uterus.

In 3 of the 50 cases in the present series uterine tumours were found to be associated with the endometrial tuberculosis. In 2 instances the associated neoplasm was a fibromyoma (cases 13 and 50) and in the third patient a squamous cell carcinoma of the cervix was present (case 38). The association of uterine tumours and uterine tuberculosis has been discussed by Scott (1921-22), who regards this combination of pathological conditions as an extreme rarity. He could only find 7 such cases in the literature and added an eighth case of his own; in all 8 cases the neoplasm was benign. He makes no mention of the co-existence of malignant disease and tuberculosis in the uterus.

Fibromyomata of the uterus associated with uterine tuberculosis.

FIGURE 20.

Tuberculosis of endometrium from uterus containing fibroids.



Case 13.

Low power view.

In the 2 cases in the present series in which fibromyomata and tuberculosis were found to co-exist in the uterus, the uterus had been removed because of the presence of the fibroids. The additional diagnosis of tuberculosis of the endometrium was only made at a later date by routine histological examination of the specimens. It is probable that many cases of this type are unrecognised, because histological examination of the uterine wall in such cases is frequently omitted. Figure 20 shows tuberculous lesions in the endometrium from a uterus removed because of the presence of fibroids (case 13).

The association of fibromyomata and tuberculosis of the uterus has not received much attention in the literature, but the subject has been discussed by several authors. Special stress has been laid upon this association by Berent (quoted by Daniel, 1925-1), Cetroni (1930), Heinrich (1908), and Lorrain and Blot (1921). Heinrich (1903) reports a case of miliary tuberculosis of the endometrium in a uterus containing multiple fibromyomata. Kelly (1906) is of the opinion that this combination of lesions is exceedingly rare and states that he has only met with one example. Kelly and Cullen (1909), in their monograph on myomata of the uterus, state that the co-existence of fibromyomata and tuberculosis of the uterus can be regarded as mere coincidence. They found uterine tuberculosis 7 times in 1,674 uteri removed because of the

presence of fibromyomata; the tubes were also tuberculous in 6 of the 7 specimens. Uterine fibroids were present in 2 of the 12 cases of endometrial tuberculosis reported by Schockaert and Ferin (1939).

Carcinoma of the uterus associated with uterine tuberculosis.

Rokitansky (1855) was the first to state that carcinoma and tuberculosis rarely occur together in the same organ or even in the same individual. Similar views have since been expressed by many other writers. The subject is discussed in detail by McCaskey (1902) who is of the opinion that a mutual antagonism exists between the two diseases. White (1925) on the other hand, considers that this combination of pathological conditions in the same patient is quite common. He found this association in 12 per cent of 180 autopsies, including tuberculosis only if recent and active.

The simultaneous occurrence of carcinoma and tuberculosis in the uterus is generally thought to be very rare. Imamura (1938) found uterine tuberculosis 8 times in 3,103 patients with carcinoma of the uterus (0.25 per cent). Lubarsch (1888), on the other hand, found uterine tuberculosis 29 times in 129 uterine cancers (22.5 per cent). No details of these cases are given by either of these writers. The aetiology of co-existent carcinoma and tuberculosis of the uterus is discussed in detail by Gais

(1926) and Lubarsch (1888).

Apart from the cases quoted by Imamura (1938) and Lubarsch (1888), about which no details are available, many writers have reported examples of the association of carcinoma and tuberculosis in the uterus. In the following list these authors and the number of cases reported by each are shown:-

Ahlfelder (1902)	1 case
Bass (1899)	1 case
Eisenstein (1908)	1 case
Essig (1911)	1 case
von Franqué (1894)	1 case
von Franqué (1903)	1 case
von Franqué (1911)	1 case
Gais (1926)	1 case
Grünstein (1932)	1 case
d'Halluin and Delval (1910)	1 case
Heinsius (1902)	1 case
de Jong (1905)	1 case
Kriss (1933)	1 case
Matzdorff (1927)	1 case
Menniti (1933)	2 cases
Mönckeberg (quoted by Ravid and Scharfman, 1940)	1 case
Nassauer (1894)	1 case
Novak and Windholz (1931)	1 case
Petridis (1931)	1 case
Ravid and Scharfman (1939)	1 case
Ravid and Scharfman (1940)	1 case
von Recklinghausen (1896)	1 case
Schmidt (1914)	1 case
Schottländer (1905)	1 case
Schültze (quoted by Ravid and Scharfman, 1940)	1 case
Schütze (1907)	1 case
Soler (1934)	2 cases
Stein (1903)	1 case
Strachan (1924)	1 case
Tommaseli (1935)	1 case
Votta (1934)	1 case
Wallart (1903)	3 cases
White (1925)	1 case

FIGURE 21.

Tuberculosis of endometrium from uterus with carcinoma of cervix.

Case 38.

Low Power view.

In the cases in the foregoing list various combinations of lesions were found. In some cases both carcinoma and tuberculosis occurred in the uterine body and in others the combined condition was found in the cervix. In other patients the tuberculous lesion was cervical and the carcinoma corporeal. In the following instances carcinoma of the cervix and tuberculosis of the body of the uterus were found to co-exist: Ahlfelder (1902), Bass (1899), Eisenstein (1908), von Franqué (1894), Matzdorff (1927), Nassauer (1894), Ravid and Scharfman (1939), Ravid and Scharfman (1940), Schültze (quoted by Ravid and Scharfman, 1940), Schütze (1907), Soler (1934) - Case 2, Stein (1903), Strachan (1924), Wallart (1903) - Case 3. This combination of pathological conditions is similar to that found in case 38 in the present series. Figure 21 shows tuberculosis of the endometrium from a uterus removed because of the presence of carcinoma of the cervix (case 38). It is probable that occasional cases of this type with cervical carcinoma and uterine tuberculosis are not detected, as most patients with carcinoma of the cervix are treated by radium and deep X-ray therapy and the endometrium is rarely examined histologically in these cases.

S E C T I O N VI.

BACTERIOLOGY.

Examination of Endometrium for Tubercle Bacilli.

The difficulty of finding tubercle bacilli in the endometrium in tuberculous endometritis has been emphasized by the following writers:- Alessandri (1910-1), Amann (1902-1), Barozzi (1898), Bergeret and Botelho (1919), von Braun-Fernwald (1906), Gais (1926), Jameson (1935), Pozzi (1893), Schottländer (1905), Stein (1903), Steven (1883), Stewart (1912), Strachan (1924), Tamis (1940), Teacher (1935), Thomson (1913), Vineberg (1903), Walter, Salmon and Geist (1941), Wiley (1939). The cases referred to by most of these authors were of the gross variety.

An attempt was made in the present series to find tubercle bacilli in the endometrium by the Ziehl-Neelsen method of staining and this procedure was carried out in 67 of the 74 specimens showing tuberculous lesions; in the remaining specimens no tissue was left in the blocks and the necessary extra sections could not be cut. Tubercle bacilli could not be found by this method in any of the sections examined. This is, however, not in any way to be taken as evidence against the tuberculous nature of the lesions, as is well known to anyone who has tried

to find the organism in sections of tuberculous lesions in other parts of the body. Staining of the vaginal secretions for tubercle bacilli as suggested first by Babès (1883) and Cummings (1912) was not employed in any of the present cases.

Guinea-pig inoculation.

Injection of a guinea-pig with tissue removed by endometrial biopsy was carried out in 29 of the patients in the present series. The method employed was as follows:- the material obtained by endometrial biopsy was placed in 1 to 2 c.c. normal saline and was left in the incubator for an hour or two until ready for use. The tissue was then ground up and mixed with the saline and the fluid was injected subcutaneously into the inner aspect of the thigh of the guinea-pig. The animal was killed with chloroform 6 to 8 weeks later and a search was then made for evidence of tuberculosis.

The tuberculous lesions after 6 weeks were usually very early and confined to the spleen; it was found to be better to leave the animals for 8 weeks, as the lesions are then much more extensive. In all cases where the material obtained by endometrial biopsy was sufficient, part of it was used for guinea-pig inoculation and the remainder was conserved for subsequent histological

examination. In cases where the available tissue was very scanty, the whole amount was employed for the injection of the guinea-pig.

The results obtained were as follows: in 12 of the 29 guinea-pigs no evidence of tuberculosis was found. As will be discussed later, these cases may very tentatively be regarded as possibly healed. A portion of endometrium, taken at the same time as that injected into the guinea-pig, was examined histologically in 9 of the 12 cases. No evidence of tuberculosis was found in any of these specimens.

In the other 17 animals evidence of tuberculous infection was present, and in most instances the lesions were extensive. This was confirmed in all cases by finding tubercle bacilli in smears taken from lesions in the spleen or local glands and stained by the Ziehl-Neelsen method. Endometrium taken at the same time as that injected into the guinea-pig was examined histologically in 13 of the 17 cases. Tuberculous lesions were seen in 12 of the 13 specimens examined. As has already been mentioned, a study of single sections of these specimens showed tuberculous lesions in only 9 cases; the other 3 cases were proved histologically only after cutting serial sections of all the tissue available.

It is thus reemphasized that while a positive

endometrial biopsy indicates that the tuberculous infection is still present, a negative biopsy does not in any way prove that the condition is healed. Negative serial sections are of more value than a negative single slide in assessing the progress of a case and negative guinea-pig inoculation is still more helpful in this connection. There is, of course, a much greater chance of including one or more tuberculous foci in the amount of endometrium used for guinea-pig injection than in a single microscopic section.

Culture.

In 15 of the 17 cases in which inoculation of a guinea-pig gave a positive result, inoculation of culture media was carried out. Löwenstein's medium was inoculated in every case and in several of the earlier cases Dorset's egg medium and Petrognani's medium were employed in addition. In 14 instances the media were inoculated from the splenic lesions in the guinea-pig; in the remaining case (case 22) the spleen showed advanced decomposition and the media were inoculated from lesions in the substernal glands. Direct culture from endometrium was not attempted. The results of culture are shown in Table VIII.

TABLE VIII.

Results of culture in present cases.

Case	Result of culture	Type of tubercle bacillus.
3	Negative	-
15	Positive	Human
16	Positive	Bovine
17	Negative	-
19	Positive	Human
22	Negative	-
26	Negative	-
28	Positive	Human
29	Negative	-
40	Negative	-
41	Negative	-
42	Negative	-
46	Positive	Human
48	Positive	Human
49	Negative	-

It will be seen from Table VIII that a growth of tubercle bacilli was obtained in 6 of the 15 cases in which inoculation of media was carried out. The diagnosis of the type of tubercle bacillus was made primarily on the cultural characteristics, which were typical in each

instance. As an additional safeguard, rabbit inoculation was employed in each case. The method used was that described by Griffith (1930). He states that in differentiating between the human and bovine types of tubercle bacillus, the animal which is most convenient and most generally employed is the rabbit. Although this animal is not insusceptible to the human type of tubercle bacillus, it is possible to differentiate between the two types if the dose of culture inoculated is carefully calculated.

If the intravenous method is used the dose of culture should not exceed 0.01 mgm., and if subcutaneous inoculation is employed the best dose is 10 mgm. Rabbits inoculated intravenously with 0.01 mgm. or subcutaneously with 10 mgm. of bovine tubercle bacilli invariably die of progressive general tuberculosis within about 5 weeks after intravenous and 10 weeks after subcutaneous inoculation. Rabbits inoculated with similar doses of human tubercle bacilli do not die from tuberculosis within 3 to 4 months.

In the present cases the subcutaneous method was used and in each instance 10 mgm. of culture were suspended in 1 c.c. of normal saline and injected subcutaneously into a rabbit. In one instance the rabbit died 9 weeks after inoculation and widespread tuberculosis was found; in this case the appearances on culture were

those of the bovine type of tubercle bacillus (case 16). In a second case the rabbit died from intercurrent disease 4 weeks after inoculation and it was not found possible to repeat the inoculation owing to lack of further culture material; in this case the appearances on culture were those of the human strain of tubercle bacillus (case 46). In the 4 remaining cases the rabbits were killed with chloroform 12 weeks after inoculation and no evidence of tuberculosis was found in any of these animals. The growth in each instance had the appearances of the human type of tubercle bacillus. It is of interest to note that in one of the patients with Type II tuberculosis of the endometrium, the organism was found to be of the human type (case 19).

These results are obviously too small to be significant, but they show that Type III tuberculosis of the endometrium may be due to either the human or the bovine type of tubercle bacillus. No reference to this subject could be found in the literature, apart from a statement by Wiley (1939) who says that the type of tubercle bacillus causing endometrial tuberculosis has not been determined.

S E C T I O N VII.

AETIOLOGY.

A great deal has been written in the literature on the subject of primary tuberculosis of the uterus. Dogra (1940) states that a most minutely performed autopsy in which no other tuberculous foci are found is necessary before a claim for primary tuberculosis of the uterus can be established. The following writers are of the opinion that primary uterine tubercle is rare: Adenot (1902), Barozzi (1898), Berkeley (1903), Daniel (1933), Eden and Lockyer (1935), Frank (1931), Lebert (1872), Léon-Archambault (1902), Tamis (1940), Thomson (1913). Amann (1902-2), Ghon (1922), Heynemann (1940), Klebs (quoted by Daniel, 1925-1) and Scanzoni (quoted by Daniel 1925-1) deny the existence of this condition.

Jameson (1935) states that a primary tuberculous focus in some other part of the body may have healed and clinically disappeared by the time the uterine lesion becomes manifest. He does not think that uterine tuberculosis is ever primary. Lackner, Schiller and Tulsky (1940) are of the opinion that tuberculosis of the endometrium is always secondary; they divide tuberculous endometritis into the type associated with gross pelvic tubercle and the type with normal tubes and ovaries which has developed from a primary

focus outside the pelvis, such as the lungs.

A number of authors have reported cases which they state are examples of primary tuberculosis of the uterus, though in many instances the diagnosis appears to have been made on clinical grounds alone: Adenot (1902), Cornil (1889), Daniel (1925-1), Frerichs (1882), Goerdeler (1913), Moura (1927), Niss (quoted by Daniel, 1925-1), Reclus (quoted by Daniel, 1925-1), Tourneux (1921), Walther (1897). Schockaert and Ferin (1939) are of the opinion that some of their cases may be examples of primary uterine tuberculosis, particularly those with patent Fallopian tubes.

The term "primary tuberculosis of the uterus" appears to be quite unsatisfactory, as it is impossible to prove that tuberculosis ever begins in the uterus. Although evidence of tuberculosis of other pelvic organs could not be found in any of the 50 patients in the present series, and although active tuberculous foci in other parts of the body were only found in a small proportion of the cases, there does not seem to be any justification for considering a case to be one of primary uterine tuberculosis on clinical grounds alone. The possibility of a sub-clinical tuberculous infection of the Fallopian tubes cannot be excluded, and it is also impossible to eliminate with certainty latent tuberculous lesions in other structures, particularly the lungs, lymph glands and peritoneum.

Health of Husbands.

It was not found practicable in this investigation to make an examination of all the husbands for evidence of genital tuberculosis. Five of the husbands were examined in the Urological Department of the Glasgow Royal Infirmary. No evidence of genito-urinary tuberculosis was found in any of these men, the only abnormality discovered being marked deficiency of spermatozoa in the seminal fluid in one case.

The patient was asked about the health of her husband in 36 of the present cases; this total includes the 5 husbands examined at the Glasgow Royal Infirmary. In 34 instances the husband was said to be healthy and in most cases was either engaged in heavy manual labour or was serving in the armed forces. The 2 remaining husbands were found to have died. One of them had died 12 years previously of cardiac disease (case 43). The other had died of pulmonary tuberculosis 4 years after the initial diagnosis of tuberculosis of the endometrium in the wife had been made; he had been ill for 10 years and was nursed by his wife (case 6).

The possibility of transmission of tuberculosis during coitus in cases in which the husband is suffering from tuberculous disease of the genital organs was first suggested by Cohnheim (1880) and Verneuil (1883). This question has since been discussed in numerous papers and it is generally

agreed that although such an occurrence is extremely rare, there is a definite possibility that primary tuberculosis of the cervix or body of the uterus may develop in this manner.

The following authors are also of the opinion that genital tuberculosis can be transmitted to the female during coitus: Amann (1902-1), Barozzi (1898), Bauereisen (1920), Cornil (1889), Counseller and Collins (1935), Cullen (1895), Curtis (1939), Dannreuther (1934), Derville (1887), Eichner, Bookatz and Hirsch (1942), Fernet (1884), Finlaison (1936), Forgue (1922), Fuhrmann (1921), Funk (1923), Grünstein (1932), Hegar (1897), Jones (1886), Jouin (1889), Keen (1913), de Lauretis (1927), Lenormant (1909), Léon-Archambault (1902), McArdle (1896), Murphy (1903), Norris (1921), Pozzi (1893), Simmonds (1909), Stevenson (1938), Verchère (1884), Williams (1894). Goodall (1943), on the other hand, states that no case of transmission of genital tuberculosis from an infected husband has ever been proved and doubts the existence of this mode of infection.

Cases of female genital tuberculosis following coitus with males suffering from tuberculous disease of the genital organs have been described by the following: Chaton (1908), Derville (1887), Martin (1905), Murphy (1903), Spinelli (1902). Duhrissen (quoted by Jameson, 1935) and Tedenat (quoted by Jameson, 1935) are said to have published

cases of undoubted ascending infection in female genital tuberculosis. Apart from the writers already quoted in this section, the routes of infection in female genital tuberculosis have been discussed by the following authors: Bakács (1927), Bauereisen (1912), Dobrolonsky (1889), Gaertner (quoted by Gorovitz, 1901-1), Gorovitz (1901-1), Jung and Bennecke (1906), Kienlin (1935), Landouzy and Martin (1883), Oncarini (1890), Péraire (quoted by Gorovitz, 1901-1), Popoff (1898).

It has also been suggested by a number of writers that primary genital tuberculosis may develop in the wife in cases in which the husband is suffering from pulmonary tuberculosis, even though he has no genito-urinary disease: Amann (1902-1), Bauereisen (1920), Cohnheim (1880), Fernet (1884), Funk (1923), Gottschalk (1903), Hammer (1900), Noboa (1892), Simmonds (quoted by Bauereisen, 1920), Verneuil (1883). Hammer (1900) and Noboa (1892) have reported cases in which the husband had phthisis and the wife subsequently developed genital tuberculosis. Simmonds (quoted by Bauereisen, 1920) has described a case in which an autopsy was performed on the widow of a man who had suffered from pulmonary tuberculosis; the only evidence of tuberculous disease was a local infection of the endometrium. As discussed earlier in this section, the only comparable patient in the present series was case 6.

In view of the fact that wives of men with pulmonary tuberculosis occasionally developed tuberculosis of the pelvic organs, a number of workers have attempted to prove experimentally that tubercle bacilli are present in the seminal vesicles and testes of phthisical men, even though no evidence of genital tuberculosis is apparent. The method usually adopted was to take portions of the testes or seminal vesicles from phthisical men at autopsy and inject the tissue into suitable animals. Positive results were obtained by Aubeau (1893), Derville (1887), Foa (1892), Jäckh (1895), Jani (1886), Sirena and Pernice (1887), Solles (1892), and Spano (1893). On the other hand, negative results were got by Aguet (1884), Rohlff (1885), Walther (1894) and Westermayer (1893). It is suggested by Straus (quoted by Gorovitz, 1901-1) that the methods used by Rohlff were faulty.

S E C T I O N VIII.

FOLLOW-UP.

Of the 50 patients in the present series 7 could not be traced after leaving hospital. The average duration of the follow-up in the remaining 43 cases was 2 years and 7 months, the longest period being 7 years and 11 months and the shortest one month. No routine follow-up was carried out by Schockaert and Ferin (1939) in their 12 cases of tuberculosis apparently confined to the uterus; this is the only group of cases found in the literature which can be compared with the present series. The various aspects of the follow-up will now be considered in turn:-

Pelvic Aspects.

Menstrual changes. In 4 patients profuse menstrual periods had become normal (cases 7, 16, 28 and 30). In one patient an irregular cycle had become regular (case 17) and in another a regular cycle had become irregular and infrequent (case 2). In 4 other patients an artificial menopause had been produced, one by deep X-ray therapy (case 1), the others by hysterectomy (cases 13, 38 and 50). Menstruation was unchanged in the remaining patients.

Pregnancy. Pregnancy had not occurred in any of the patients

traced. A number of authors, however, have reported cases in which pregnancy developed in a tuberculous uterus: Casper (1883), Chevrier and Delval (1910), Cooper (1859), Cuzzi (quoted by Höppner, 1931), Deymel (1927), Dubois (quoted by Daniel, 1932), Galatia (quoted by Daniel, 1932), Harbitz (quoted by Daniel, 1932), Kraus (1904), Mayer (1929), Mensing (1936), Schmorl and Kockel (1894), Schüll (1889), Thorn (1894). The facts available about most of these cases are very incomplete, and in several instances proof that the uterine tuberculosis was present before the start of the pregnancy appears to be lacking. The subject is discussed in detail by Fruhinsholz and Feuillade (1924). The following authors are also of the opinion that pregnancy is possible in a tuberculous uterus: Breuss (1887), Courriades and Jaulain (1935), Daniel (1925-1), Gorovitz (1901-1), Heidenthaler (quoted by Daniel, 1925-1), Jameson (1934), Jung (1911), Moulonguet (1933-1), Murphy (1904), Puccioni (1933), Thiercelin (1889), Varaldo (1906), Vineberg (1903). Browne (1943), on the other hand, states that no case of pregnancy in a tuberculous uterus has ever occurred.

Cornil (1889), Hoffman (quoted by Daniel, 1925-1), Leuret (1903) and Moulonguet (1933) consider that pregnancy may aggravate the tuberculous genital lesion in such cases, while Moulonguet (1933) states that the child may be affected by the tuberculous infection. In view of the fact that most of the reported cases of uterine tubercul-

osis in which pregnancy developed were of the gross variety, it appears that pregnancy is not impossible in the present type of uterine tuberculosis if the Fallopian tubes are not occluded. It should be noted here that the numerous cases reported in the literature of acute generalised tuberculosis arising in the puerperium and involving the uterus are outside the scope of the present discussion.

It is of interest to note that the number of cases of pregnancy in a tuberculous Fallopian tube which have been reported in the literature greatly exceeds the number of reported cases of pregnancy in a tuberculous uterus. It is difficult to explain this apparent anomaly satisfactorily, but it is probable that in most cases of uterine tuberculosis the Fallopian tubes are occluded, whereas in early tuberculous salpingitis, the tubes may still be patent in many instances.

Taylor (1910) is of the opinion that in tuberculous salpingitis we have the commonest cause of tubal pregnancy. Out of 64 cases of tubal gestation he found evidence of tuberculous salpingitis on 42 occasions, the pathological condition having been confirmed in the laboratory in each instance. No details are given about most of these cases and the pathological findings are not mentioned. No other author has supported Taylor (1910) in his view that the combination of tubal tuberculosis

and tubal pregnancy is common. Stevenson and Wharton (1939) state that this association is rare; in 47 years at the Johns Hopkins Hospital, Baltimore, 402 cases of tuberculous salpingitis and 516 cases of tubal pregnancy were reported in the Pathological Department and in only one instance did the conditions co-exist. Bland (1940) also thinks that the combination is rare and discusses the reasons for this in detail.

Apart from the 42 cases reported by Taylor (1910), the following writers have published cases of pregnancy in a tuberculous Fallopian tube, and many of them state that the co-existence of these pathological conditions is a rarity:-

Acconci (1922)	1 case
Alexander and Moskowicz (1900)	1 case
Anspach (1902-03)	1 case
Bland (1940)	1 case
Bovin (1915)	1 case
Busby and Fisher (1940)	1 case
Falco (1911)	1 case
Ferroni (1910)	1 case
Freericks (1898)	1 case
Höppner (1931)	1 case
Kröner (1916)	1 case
Limpach and Boy (1938)	1 case
Martius (1931)	4 cases
Mossa (1928)	1 case
Mühsam (1913)	1 case
Reifferscheid (1938)	1 case
Resinelli (1906)	1 case
Rojel (1941)	1 case
Schönberg (1936)	1 case
Schröder and Rau (1920)	1 case
Shannon and Heller (1943) ...	1 case
Shober (1898)	1 case
Stefanelli (1934)	1 case

Stein (1904)	1 case
Stein (1939)	1 case
Stevenson and Wharton (1939)	1 case
Tenney (1936)	2 cases
Tenney (quoted by Bland, 1940)	2 cases
Therkelsen (1932)	1 case
Warthin (1896)	1 case
Wetterdal (1924)	1 case
Werhatzky (1932)	1 case

The case reported by Werhatzky (1932) was one of secondary abdominal pregnancy, the pregnancy having occurred primarily in the right Fallopian tube. Müller (1920) describes a case of abdominal pregnancy occurring in a patient with bilateral tubal tuberculosis.

Pelvic examination. A pelvic examination was made in 41 of the 43 patients traced. One of the patients in whom this examination was not carried out was a young unmarried girl (case 7); the other patient was under treatment in a sanatorium and could only be traced by letter (case 13). In 39 of the patients in whom pelvic examination was performed the pelvic findings were exactly as before, apart from the results of hysterectomy (cases 38 and 50) or repair (cases 43, 44 and 45). There was gross involvement of both Fallopian tubes in one of the other cases (case 24); this pelvic spread was later confirmed at laparotomy. In the remaining patient (case 29) a small, right-sided ovarian cyst was found to have developed. It will be seen from the above findings that in cases of tuberculosis apparently confined to the endometrium, there appears to

be little tendency to early pelvic spread of the tuberculosis, as far as can be judged from clinical examination.

X-ray examination of the abdomen. Including the 4 patients in whom Lipiodol injection was carried out, the abdomen was X-rayed in 30 cases in the present series. Calcified glands were seen in 9 instances and in 2 of these they were present in large numbers (cases 45 and 48). In one other case tuberculosis of the dorso-lumbar spine was discovered (case 11). In the remaining 21 patients X-ray examination of the abdomen showed no abnormality of any kind. The patient with pelvic spread of the tuberculosis (case 24) is in this group. Four patients with a previous history of abdominal tuberculosis had the abdomen X-rayed; in only one of these was evidence of calcified mesenteric glands found (case 39).

Spread of Tuberculosis to Other Organs Outside the Pelvis.

Spinal involvement. In 2 of the patients in the present series tuberculosis of the spine was found to have developed. One patient ultimately died from this disease; the spinal lesion was not discovered until nearly 2 years after the diagnosis of endometrial tuberculosis had been made (case 11). The other patient is having sanatorium treatment; the uterus was removed because of the presence of multiple

fibroids, and the existence of spinal tuberculosis was not discovered until 3 years later (case 13).

Although in these patients the existence of tuberculosis of the endometrium was proved years before the spinal lesion was found, it is impossible to say with certainty that the tuberculous infection spread from the uterus to the spine. It is, however, probable that this was the case, in view of the fact that symptoms of spinal tuberculosis were absent in one instance (case 11) and only commenced a year after hysterectomy in the other (case 13).

A study of the literature reveals only one case in which spread of tuberculosis from the uterus to the spine was thought to have occurred (Turner, 1899). In this case a girl aged 20 years died from compression of the cervical portion of the spinal cord due to tuberculous disease of the axis. Gross tuberculosis of the uterus was found at autopsy and there was also tuberculous involvement of other pelvic structures. The reasons for considering the spinal lesion to be secondary are not stated. A number of authors have described cases in which uterine tuberculosis was later followed by tuberculous meningitis: Astrié (quoted by Daniel, 1925-1), Braye (1901-02), Henkel (quoted by Daniel, 1925-1), Paviot (quoted by Daniel, 1925-1), Weil (quoted by Daniel, 1925-1).

X-ray examination of the chest. The chest was X-rayed in

35 cases in the present series. The findings were quite negative in 22 of these patients. In one of the remaining cases the X-ray appearances were suspicious of early pulmonary tuberculosis, but when the X-ray examination was repeated one month later, no abnormality was found (case 17). In another patient, calcified mediastinal glands were observed, but no evidence of pulmonary tuberculosis was present; this is the patient who was receiving sanatorium treatment for spinal tuberculosis (case 13).

Healed tuberculous lesions were present in 8 further patients (cases 11, 39, 40, 44, 45, 46, 49 and 50). In one of these cases bilateral healed apical tuberculosis was found and at the same time active tuberculous disease of the spine was discovered radiologically; this patient later died from spinal tuberculosis (case 11). In a second case evidence of old pleurisy was seen in addition to the healed pulmonary lesions (case 45).

In the remaining 3 patients radiological evidence of active pulmonary tuberculosis was obtained. In one of these cases, as noted previously, well marked physical signs of active pulmonary tuberculosis were present when the patient was first seen (case 3). In the other 2 patients the chest had appeared normal on clinical examination when they were in hospital (cases

23 and 28). The pulmonary condition in one of these patients did not appear to be very active radiologically (case 28). The other patient had extensive bilateral pulmonary tuberculosis which later caused her death (case 23). It is of interest to note that X-ray examination of the chest was normal in the patient with pelvic spread of the tuberculous infection (case 24).

A history of definite or possible tuberculosis was given by 4 of the 8 patients with X-ray evidence of healed pulmonary tuberculosis and by one of the 3 patients with active pulmonary tuberculosis. These findings are shown in Table IX.

TABLE IX.

Relationship between pulmonary lesion and previous health.

Case.	Pulmonary lesion.	Previous illness.
28	Active	Pleurisy with effusion.
39	Healed	Abdominal tuberculosis.
45	Healed	Pulmonary tuberculosis.
46	Healed	Abdominal tuberculosis.
49	Healed	Tuberculous peritonitis.

The result of guinea-pig inoculation in one of the patients with active pulmonary tuberculosis is interesting (case 23). Guinea-pig inoculation with tissue

removed by endometrial biopsy was carried out 2 years and 4 months after the initial diagnosis of endometrial tuberculosis had been made; the result was negative and sufficient tissue for simultaneous histological examination was not obtained. At the same time the chest was X-rayed and tuberculous infiltration of both lungs was discovered. Fifteen months later the patient died from pulmonary tuberculosis. Although no clinical evidence of pulmonary tuberculosis was present when this patient was first seen, it is not possible to say whether the pulmonary condition developed by spread from the uterus, or whether the uterine lesion was secondary to a pulmonary infection which was undetected when the patient was in hospital.

The type of tubercle bacillus infecting the endometrium was identified in 2 of the present cases with radiological evidence of pulmonary tuberculosis (cases 28 and 46). In each instance the organism was found to be of the human type. The pulmonary lesion showed some activity in case 28 and was healed in case 46.

The relationship between tuberculosis of the lung and tuberculosis of the endometrium is discussed by Lackner, Schiller and Tulsky (1940). They did 134 endometrial biopsies in 125 patients with progressive pulmonary tuberculosis and no clinical involvement of the tubes or ovaries. In 2 cases unsuspected tuberculosis of

the endometrium was discovered. An interesting point in view of the present findings is that both patients were parous.

Curtis (1939) states that almost every case of uterine tuberculosis is associated with a pulmonary lesion, but the present investigation does not support this view. It is probable that he refers principally to the variety of uterine tuberculosis associated with gross involvement of other pelvic structures (Type I). Similar views have been expressed by Albrecht (quoted by von Bardeleben, 1912), von Bardeleben (1912) and Heynemann (1940). von Bardeleben (1912) states that the pulmonary lesion in such cases is often advanced. A case of tuberculosis apparently confined to the endometrium is described by Bulman (1933); the patient later developed pulmonary tuberculosis.

Spread of uterine tuberculosis following operation. A number of writers are of the opinion that there is a danger of spread of the tuberculous process following minor operations by the vaginal route in patients with tuberculosis of the uterus: Barthélemy (1924), Büngeler (1935), Daniel (1925-1), Diethelm and Ramsey (1935), Füth (quoted by Gerich, 1925), Gräfenberg (1910), Greenhill (1943), Heynemann (1940), Mönch (1917), Moulonguet (1933-1), Moulonguet (1933-2), Muret (1933), Olow (1926), Péraire (1920), Prochnownik (1913), Rochat (1933), Tamis (1940), Vogt (1928). Actual examples of this

occurrence have been reported by Barthélemy (1924), Diethelm and Ramsey (1935), Gräfenberg (1910), Mönch (1917), Muret (1933), Péraire (1920) and Prochnownik (1913). Muret (1933) and Vogt (1928), however, are of the opinion that such danger is slight.

In several of the cases cited it could not be ascertained whether the original tuberculous condition was confined to the uterus or whether the adnexa were also involved. In the cases described by Diethelm and Ramsey (1935) and Muret (1933), however, it is stated that pelvic examination was normal, and in the 2 cases published by Mönch (1917), there was adnexal involvement in one and doubtful adnexal involvement in the other.

If there is a serious risk that minor vaginal operations may lead to spread of the tuberculosis in cases where the lesion appears to be limited to the uterus, one would expect a much greater tendency to distant spread in cases of widespread pelvic tuberculosis treated surgically. The literature on the subject, however, does not suggest that this is the case.

Evidence of local or distant spread of the tuberculous process was not found in any of the present cases during their stay in hospital after operation. As has already been mentioned, 5 of the present patients showed probable spread of the tuberculous process at follow-up out of a total

of 43 traced. These cases and the operative treatment employed in each instance are shown in Table X. It is of interest to note that in the only patient in whom pelvic spread of the tuberculosis was found (case 24), tubal insufflation had not been carried out. From an analysis of the present cases, there does not seem to be any serious risk of a sudden extension of the tuberculous process following minor vaginal operations in patients with tuberculosis limited to the uterus.

TABLE X.

Relationship between spread of tuberculosis and operative treatment.

Case.	Site of probable spread.	Operative treatment employed before diagnosis of spread.
11	Spine	Tubal insufflation 3 times. Endometrial biopsy twice. Dilatation and curettage once.
13	Spine	Subtotal hysterectomy.
23	Lungs	Dilatation and curettage once.
24	Fallopian tubes	Dilatation and curettage once.
28	Lungs	Endometrial biopsy 3 times. Dilatation and curettage once. Tubal insufflation once.

S E C T I O N IX.

PROGNOSIS.

A great deal has been written in the literature on the prognosis of genital tuberculosis in general, but the prognosis in cases of tuberculosis apparently limited to the endometrium has received little attention. Bush (1933) is of the opinion that a tuberculous uterus cannot be left with impunity, although he does not think that the danger of leaving it is great. Courriades and Jaulain (1935) consider that the prognosis in such cases is grave. A similar view is expressed by Daniel (1925-1), who states that death may result; he says that in some instances the uterine lesion remains latent for a time and then abruptly becomes generalised, while in others there is progressive invasion of other pelvic structures. Consequently he advocates hysterectomy in every case.

According to Jameson (1935), the prognosis in cases of tuberculosis limited to the uterus must be guarded, although the disease may remain latent for long periods. Peterson (1922) states that nothing but removal will help uterine tuberculosis and that the continued presence of a tuberculous uterus is a constant menace to the patient. Taylor (1915) has conserved a tuberculous uterus in a number

of cases with no ill effect to the patient.

Of the present patients followed up, only one had any active treatment after the diagnosis of endometrial tuberculosis had been made; this patient was treated by deep X-ray therapy and 2 years later was free from symptoms and did not show any sign of spread of the tuberculous process (case 1).

A study of the present series shows that the prognosis in tuberculosis apparently confined to the endometrium must be guarded. Of the 43 patients traced over an average period of 2 years and 7 months, tuberculosis of the spine developed in 2 cases (cases 11 and 13) and caused the death of one of them (case 11). In 2 other instances active pulmonary tuberculosis was found to have developed (cases 23 and 28), the condition being confirmed by X-ray examination; this condition also caused the death of one patient (case 23). Spread to other pelvic structures occurred in a fifth case (case 24). The time elapsing between dismissal from hospital and discovery of the probable spread is shown in Table XI.

TABLE XI.

Time elapsing before discovery of spread.

Case.	Site of probable spread.	Time elapsing between leaving hospital and discovery of the spread.
11	Spine	3 years and 10 months.
13	Spine	2 years and 11 months.
23	Lungs	2 years and 5 months.
24	Fallopian tubes	8 months.
28	Lungs	1 year and 11 months.

The 2 patients with extensive tuberculosis limited to the uterus (Type II) did not show any evidence of spread of the tuberculous process (cases 19 and 43).

Healed cases. In the literature, when healing of uterine tuberculosis is said to have occurred, this statement appears to have been based only on clinical grounds in most of the cases and on histological grounds in the remainder. The only exception to this statement is the case of uterine tuberculosis described by Hedley (1933), in which guinea-pig inoculation with endometrium was subsequently found to be negative. A study of the present series will show that it is not possible to regard a case of uterine tuberculosis as healed on histological or clinical grounds alone. For satisfactory proof of healing

a series of negative histological and guinea-pig results over a considerable period of time is probably necessary. If possible, the biopsies should be made towards the end of the menstrual cycle and serial sections of the tissue removed should be cut.

Possibility of spontaneous healing. The possibility of spontaneous healing of tuberculosis of the endometrium must be considered in assessing the prognosis in this condition. Murphy (1904) denies that this can occur, but is obviously speaking of the gross type of uterine tuberculosis. Several writers, on the other hand, are of the opinion that spontaneous healing is possible in cases of uterine tuberculosis. Benthin (quoted by Vogt, 1928), Courriades and Jaulain (1935), Daniel (1925-1), Gerich (1925), Goodall (1943), Rochat (1933), Schröder (1921-1). Brown (1931) states that there is a general tendency to spontaneous healing in genital tuberculosis. Cases in which a healed tuberculous nodule was found in the uterus at operation for prolapse have been described by the following authors: le Beck (quoted by Daniel, 1925-1), Kaufman (quoted by Daniel, 1925-1), Klob (1864).

Four cases in the present series may possibly be regarded as examples of spontaneous healing of endometrial tuberculosis (cases 2, 5, 21 and 27). In one instance full curettage had been performed but a subsequent endometrial

biopsy was positive (case 5). In the remaining cases only endometrial biopsy had been carried out and not full curettage. The possibility of cure by curettage consequently does not exist in these patients. In all 4 cases guinea-pig injection gave a negative result. In 3 instances sufficient material was available to carry out histological examination as well as guinea-pig inoculation and in each case the histological findings were negative (cases 2, 21 and 27). As these negative findings were only obtained in 2 specimens from one patient (case 2) and in one specimen from the 3 remaining patients, the diagnosis of healing is by no means well substantiated. The period of time elapsing between the last positive biopsy and the final negative result is shown in the following list:

Case.	Time elapsing between last positive biopsy and final negative findings.
2	6 years and 9 months
5	4 months.
21	2 years and 8 months.
27	1 year and 11 months.

Possibility of cure following curettage. A number of writers have stated that tuberculosis limited to the endometrium may be cured by curettage: von Braun-Fernwald (1906), Brocq

(1933), Cuzzi (quoted by Höppner, 1931), Daniel (1933), Foster (1911), Goodall (1907), Gorovitz (1901-2), Halbertsma (quoted by Murphy, 1904), Hedley (1933), Hüssy and Vetter (1926), Jameson (1935), Kroemer (1911), Münchmeyer (quoted by Murphy, 1904), Muret (1933), Reinhart and Moore (1928-29), Rochat (1933), Schröder (1921-2), Simmonds (1909), Sippel (quoted by Murphy, 1904), Solomons (1923), Vogt (1928), Walther (1897), Willbrand (1930).

Actual cases of this occurrence have been reported by von Braun-Fernwald (1906), Daniel (1933), Halbertsma (quoted by Murphy, 1904), Hedley (1933), Münchmeyer (quoted by Murphy, 1904), Muret (1933), Schröder (1921-2), Sippel (quoted by Murphy, 1904), Walther (1897) and Willbrand (1930). The patients cited by Hedley (1933), Muret (1933), Schröder (1921-2) and Willbrand (1930) later became pregnant.

Eight patients in the present series may possibly be examples of cure of endometrial tuberculosis following curettage. In one of these patients, however, active pulmonary tuberculosis was discovered at the same time as the negative guinea-pig inoculation (case 23). In all 8 cases inoculation of a guinea-pig gave a negative result. Sufficient endometrium to permit of histological examination was obtained in 6 of the 8 cases and in each instance the result was negative (cases 34, 35, 37, 44, 45 and 47). In the 8 cases the negative findings were only obtained in one

specimen from each patient, so that the diagnosis of cure is by no means finally established. The period of time elapsing between the curettage and the negative guinea-pig and histological results is shown in the following list:

Case.	Time elapsing between curettage and negative findings.
23	2 years and 4 months
34	6 weeks.
35	1 year and 4 months.
37	1 year and 2 months.
39	9 months.
44	8 months.
45	7 months.
47	9 weeks.

In most of these cases the time elapsing between curettage and negative guinea-pig inoculation is under a year and in the case where the interval is longest, active pulmonary tuberculosis was found (case 23).

Possibility of cure following other forms of treatment.

(a) Hysterectomy with removal of the tubes and ovaries was not performed in any of the present cases. This operation would remove the infected uterus and at the same time would eliminate any subclinical tuberculous infection of

the adnexa.

(b) Hysterectomy with conservation of the appendages was carried out in 3 cases in the present series (cases 13, 38 and 50). In 2 of these cases the operation was performed for uterine fibroids (cases 13 and 50) and in the third patient vaginal hysterectomy was performed for carcinoma of the cervix. One of these patients later developed spinal tuberculosis (case 13); the others were well when followed up and showed no evidence of spread of the tuberculous process. The patient who had carcinoma of the cervix had also deep X-ray therapy after operation.

(c) Salpingectomy conserving the uterus and ovaries was not performed in any of the present cases. The theoretical purpose of such a procedure would be to remove the potential source of reinfection and to leave menstruation to shed off the existing endometrial lesions. Until more is known about the mode of infection of the endometrium in these cases, this form of treatment does not appear to be justifiable. While the high percentage of tubal occlusion in the sterility patients does suggest a sub-clinical tuberculous infection of the Fallopian tubes, there is no positive evidence that this is the case.

(d) Deep X-ray therapy causing cessation of menstruation

and consequently a radical functional alteration of the endometrium was employed in one case; when followed up, the patient was well and no evidence of spread to other organs was found (case 1).

S U M M A R Y.

Three main varieties of tuberculosis of the endometrium are recognised. The first is quite common and forms merely a trifling part of a widespread genital tuberculosis. The second type is rare and the tuberculous lesions are very gross but are limited to the uterine body. In the third type, which is also confined to the body of the uterus, the infection produces only small, isolated tubercles in the endometrium. This third type is generally thought to be even rarer than the second variety, but the findings of the present investigation show that it is relatively common.

In 7,882 specimens in which the endometrium was examined histologically, tuberculosis was found in 1.3 per cent. The tuberculous specimens were obtained from 79 cases, 29 of which were of the first type, 2 of the second and 48 of the third. The second and third groups form the subject of the present study. In all 50 cases the diagnosis was unsuspected before operation.

The primary complaint was sterility in 32 cases, uterine bleeding in 13 cases, vaginal discharge in 2 cases, "something coming down" in 2 cases and irregular menstruation in one case. The finding of tuberculosis in over 5 per cent of patients complaining of sterility

demonstrates the necessity for careful histological examination of the endometrium in all such cases. Tubal insufflation was performed in 30 patients and the Fallopian tubes were found to be blocked in 24 of these. In 4 out of 20 sterility cases in which the endometrium was removed premenstrually, a periodic or total anovulatory cycle was found. A history of previous illness indicating or suggesting tuberculosis was obtained in 14 of the 50 cases.

Tubercle bacilli were not found in the endometrium in 67 sections examined. In 29 cases injection of a guinea-pig with tissue removed by endometrial biopsy was carried out, simultaneous histological examination being made when possible. Tuberculosis developed in 17 of the 29 animals. Guinea-pig inoculation was found to be a more accurate test of activity than histological examination. In 6 cases the type of tubercle bacillus was identified; the organism was of the human type in 5 instances and of the bovine type in the remaining case.

In an average follow-up of 2 years and 7 months, pregnancy had not occurred in any of the 43 patients traced. Gross spread to other pelvic organs was found once in 41 patients examined vaginally. Tuberculosis of the spine had developed in 2 other instances. The chest was X-rayed in 35 cases; evidence of active pulmonary tuberculosis was found 3 times and healed pulmonary tuberculosis 8 times.

The prognosis in such cases must be guarded. Probable spread of the tuberculosis was found in 5 of the 43 patients traced and 2 of these died. In 12 cases the uterine condition may tentatively be regarded as healed, though the evidence in support of this is not conclusive.

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A P P E N D I X.

CASE RECORDS.

Case 1.

MRS. M.W. Admitted 13/2/35.

Dismissed 26/3/35.

Age 43 years. Married 20 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 16 years. Menstruation regular, 4/28, loss normal, painless. Last menstrual period - bleeding on admission.

Previous health. The patient has had no previous illnesses or operations.

Primary complaint. Excessive vaginal bleeding.

History of present illness. Eight months ago the patient had a normal menstrual period, which was followed by 2 months amenorrhoea. She then had normal menstruation for a further 2 months, followed by 3 months amenorrhoea. On 1/1/35 vaginal bleeding of moderate severity commenced, and this has since been present. She has had no pain and no bladder or bowel symptoms.

General examination. The patient appears to be in good general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed, slightly enlarged, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 15/2/35. Dilatation and curettage were performed under ether anaesthesia. At operation the endometrium was found to be thickened. Pathological report: "A few small tuberculous foci are present in the stroma. There is some glandular hyperplasia present and some of the glands show proliferation of the lining cells. The vessels are thickened and a number of round and plasma cells are present in the stroma".

Post-operative progress:-

17/2/35. Elevation of pulse and temperature present. No complaint apart from weakness.

18/2/35. Coliform infection of urinary tract found to be present.

19/2/35 to 21/3/35. Intermittent pyrexia present. Pulse variable but always rapid. Oedema of ankles and microcytic anaemia developed during this period.

23/3/35. Oedema and pyrexia absent. Urine clear. Still anaemic. Allowed up.

26/3/35. Transferred to Glasgow Royal Infirmary for investigation of anaemia.

26/3/35 to 20/4/35. In Glasgow Royal Infirmary. Patient made a gradual recovery from her anaemia and was well on dismissal.

Follow-up.

27/12/39. Patient reported. In view of the fact that she had had a recurrence of the excessive vaginal bleeding, it was decided to treat her by a menopausal dose of deep X-ray therapy.

12/6/40. Patient reported. She is generally well and has had amenorrhoea since January, 1940, following the completion of her course of deep X-ray therapy.

11/12/41. Patient reported. Generally she is well and has no complaint of any kind. She has had no further menstruation since her last visit. On pelvic examination no abnormality was found. Owing to nervousness and post-menopausal narrowing of the vagina, it was not found possible to carry out an endometrial biopsy. Chest and abdomen X-rayed. X-ray report: "There is no abnormality in the chest or abdomen". Her husband is healthy.

Case 2.

MRS. R.S. Admitted 26/10/34.

Dismissed 7/11/34.

Age 26 years. Married 3 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 16 years. Menstruation regular, 3/28, loss profuse, painless. Last menstrual period July, 1931.

Previous health. Appendicectomy in 1922. No other illnesses or operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 3 years and is very anxious to have a family. Intercourse with her husband has been regular, and she makes no complaint of dyspareunia. Menstruation became scantier one year before marriage and ceased altogether after marriage. During the past 6 months she has had a white vaginal discharge. Recently she has gained in weight. Throughout she has been nervous and depressed and is prone to sweating and flushing.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found. The scar of the previous operation is well healed.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is small in size, regular in outline, firm in consistence and freely mobile. The right ovary is small and is prolapsed.

Operation - 30/10/34. Dilatation of the cervix was performed under evipan and ether anaesthesia. Curettage was not carried out.

Post-operative progress:-

5/11/34. Allowed up.

7/11/34. Dismissed.

Follow-up.

26/2/35. Patient reported. She still has amenorrhœa.

14/3/35. Patient reported. Tubal insufflation and endometrial biopsy performed. Gas failed to pass at 200 mm. mercury. Pathological report:"The stroma is densely infiltrated with plasma cells and round cells. Many tuberculous foci containing giant cells are seen. Tuberculous endometritis".

9/4/35. Patient reported. She still has amenorrhoea.

30/3/37. Patient reported. She now has menstrual periods every 10 to 11 weeks and has not become pregnant.

25/11/41. Patient reported. She is well and now has menstrual periods every 6 weeks. Last menstrual period 3 weeks ago. She has not become pregnant. Pelvic examination as before. Endometrial biopsy performed. Sufficient tissue obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report:"The endometrium is in the late interval phase of the menstrual cycle. No evidence of tuberculosis is seen". Chest and abdomen X-rayed. X-ray report: "No abnormality is seen in chest or abdomen".

6/1/42. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

27/1/42. Patient reported. Generally she is well. Last menstrual period 7/1/42. Pelvic examination as before. Endometrial biopsy carried out. Small amount of tissue obtained. Guinea-pig inoculation repeated. Tissue insufficient for simultaneous histological examination. Her husband is healthy and is full-time air raid warden.

7/4/42. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

Case 3.

MRS. M.Q. — Admitted 6/9/35.

Dismissed 16/9/35.

Age 26 years. — Married 1 year.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 15 years. Menstruation regular, 3/28, loss normal. Severe lower abdominal pain for 2 days before menstrual period and during menstruation. Last menstrual period 22/8/35 to 24/8/35.

Previous health. The patient has had no previous illnesses or operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 1 year and has not become pregnant although she is anxious to have a family. Intercourse with her husband is regular and there has been no dyspareunia. Menstruation has always been painful and the pain has been more severe in the past 3 years. The pain is situated in the lower abdomen and is most severe on the left side. She also has backache before and during menstruation. A constant, profuse, white vaginal discharge has been present since marriage. The bowels are regular. Frequency of micturition is increased.

General examination. The patient appears to be in indifferent general health. She is thin and anaemic. A soft systolic murmur is audible at the apex and foot of sternum. The cardiovascular system is otherwise normal. There is impairment of resonance with scattered moist râles at the left pulmonary apex and base. Chest X-rayed. X-ray report: "There is relative narrowing of interspaces all down left side. On screen examination there was limitation of movement at left side of diaphragm and the film shows a degree of infiltration there. There is some fine infiltration at left apex and left interclavicular area, suggesting tuberculous infiltration. Similar but less pronounced changes are present at right apex". The urine is normal.

Abdominal examination. There is slight tenderness in the left iliac fossa. No other abnormality can be found.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and

is normal in all respects. The uterine body is anteflexed and is small in size, regular in outline, firm in consistence and freely mobile. A small retention cyst is present in the right ovary. No other adnexal abnormality is palpable.

Operation - 10/9/35. Tubal insufflation and dilatation and curettage were performed under ether anaesthesia. Gas failed to pass at 200 mm. mercury. Pathological report: "Numerous tuberculous giant-cell systems are present. Tuberculous endometritis".

Post-operative progress.

13/9/35. Well. Allowed up.

16/9/35. Dismissed.

Follow-up.

28/6/38. Patient reported. Last menstrual period 5/6/38. Endometrial biopsy performed. Pathological report:"No secretory changes are seen. Late proliferative phase. A few tuberculous giant-cell systems are seen".

5/5/43. Patient reported. She has not become pregnant. Pelvic examination as before. Endometrial biopsy carried out. Pathological report:"Extensive tuberculous infection of the endometrium is present".

24/6/43. Patient reported. Generally she looks and feels well and makes no complaint apart from sterility. Her general health is much improved and she is able to do heavy work in a munition factory. Menstruation is now 3-4/28, regular, normal in amount and painless. Last menstrual period began to-day. She now has no discharge or urinary disturbance. Her husband works as a labourer and is in good general health.

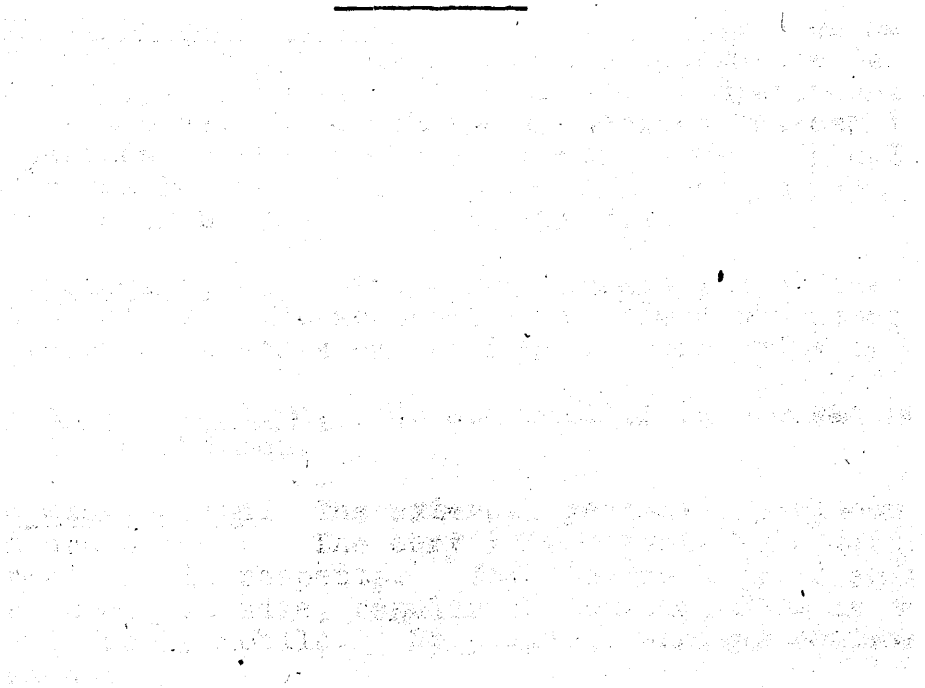
1/7/43. Patient reported. Abdomen X-rayed. X-ray report:"Single small opacity on left side of pelvis. This may be a calcified gland". Pelvic examination as before. Uterine cavity 3 inches by sound. Cervix healthy. Endometrial biopsy performed. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation.

Pathological report: "Proliferative phase. Tuberculous foci present in stroma".

10/8/43. Patient reported. She makes no complaint apart from sterility.

30/8/43. Guinea-pig killed with chloroform. Widespread tuberculous lesions present involving local glands, peritoneum, liver and spleen. Tubercle bacilli found in film from splenic lesions. Löwenstein's media inoculated from splenic lesions.

28/9/43. No growth obtained on culture.



Case 4.

MRS. A.B. — Admitted 17/2/36.

Dismissed 24/2/36.

Age 25 years. — Married 6 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 16 years. Menstruation regular, 3/28, loss normal, painless. Last menstrual period 9/2/36 to 12/2/36.

Previous health. The patient had diphtheria at the age of 15. She has had no other serious illnesses and no operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 6 years and has not become pregnant although she is anxious to have a family. She does not complain of dyspareunia. A slight, white vaginal discharge is present between the menstrual periods. She occasionally has missed a single menstrual period since her marriage. There has been no pain and no disturbance of bladder or bowel function.

General examination. The general condition of the patient is satisfactory. No abnormality of the respiratory or cardiovascular systems can be found. The urine is normal.

Abdominal examination. No abnormality is present on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 20/2/36. Tubal insufflation and dilatation and curettage were carried out under ether anaesthesia. Gas failed to pass at 200 mm. mercury. Pathological report: "Tuberculous endometritis".

Post-operative progress.

22/2/36. Well. Allowed up.

24/2/36. Dismissed.

Follow-up.

This patient could not be traced after leaving hospital.

Case 5.

MRS. M.B. — Admitted 19/8/36.

Dismissed 31/8/36.

Age 24 years. — Married 1½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 16 years. Menstruation regular, 3/28, loss normal, painless. Last menstrual period 27/7/36 to 30/7/36.

Previous health. The patient has had no previous illnesses or operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 1½ years and has not become pregnant, although she is very anxious to have a family. She makes no complaint of dyspareunia. In the past 4 years she has had occasional attacks of slight pain in the right iliac region. Apart from this she feels well. She has no vaginal discharge and no bladder or bowel symptoms.

General examination. The patient appears to be in good general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. There is slight tenderness in the right iliac fossa. No other abnormality can be found.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 22/8/36. Tubal insufflation and dilatation and curettage were carried out under chloroform anaesthesia. Gas failed to pass at 200 mm. mercury. Pathological report: "The endometrium presents features of the pre-menstrual phase. Tuberculous nodules are seen".

Post-operative progress.

28/8/36. Well. Allowed up.

31/8/36. Dismissed.

Follow-up.

2/12/37. Patient reported. Last menstrual period 9/11/37 to 12/11/37. Endometrial biopsy performed. Pathological report: "Premenstrual changes are present. Tuberculous nodules are seen".

16/12/37. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

8/8/41. Patient reported. Last menstrual period 28/7/41 to 2/8/41. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

25/8/41. Patient reported. Endometrial biopsy performed. Pathological report: "The endometrium is in the premenstrual phase of the menstrual cycle. Tuberculous foci are present in the stroma. Tuberculous endometritis".

11/12/41. Patient reported. Generally she feels well but is rather anaemic. She has not become pregnant. Menstruation is now regular, 4/28, loss normal, painless. Last menstrual period 17/11/41. Pelvic examination as before. Endometrial biopsy performed. The amount of tissue obtained was small and was used for guinea-pig inoculation. There was not sufficient for simultaneous histological examination. Chest X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis". Her husband is healthy and is in the army.

5/2/42. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

Case 6.

MRS. E.A. Admitted 4/4/37.

Dismissed 11/4/37.

Age 32 years. Married 14 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 13 years. Menstruation until 1 year ago was regular, 7/28, loss profuse, painless. During the past year menstruation has been profuse, prolonged and irregular. Last menstrual period - bleeding on admission.

Previous health. The patient has had no previous illnesses or operations.

Primary complaint. Excessive vaginal bleeding.

History of present illness. Until 1 year ago menstruation was normal. Since then menstruation has been profuse, prlonged and irregular, with occasional passage of clots. The duration of the menstrual periods is variable and is sometimes as long as 14 days. There is sometimes slight intermenstrual staining. During the past 7 months the condition has become worse and a yellow vaginal discharge has been present. There has been no pain and no disturbance of bladder or bowel function.

General examination. The patient generally appears to be healthy and the respiratory and cardiovascular systems show no abnormality. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals and perineum are normal. The vagina is narrow. The cervix is directed forwards and is slightly softened. A cervical erosion is present. The uterine body is retroflexed. It is normal in size, regular in outline and firm in consistence. Mobility seems slightly impaired. A cyst of the left ovary about the size of a small plum is present. No tubal lesion can be felt.

Operation - 5/4/37. Dilatation and curettage and cauterisation of the cervical erosion were carried out under chloroform and ether anaesthesia. The uterine cavity

measured 3½ inches by sound. The cyst of the left ovary was ruptured during examination. Pathological report: "Numerous tuberculous giant cell systems are present. Tuberculous endometritis".

Post-operative progress.

9/4/37. Well. Allowed up.

11/4/37. Dismissed.

Readmitted 26/9/41.

Dismissed 4/10/41.

History since previous admission. Until one year before readmission, menstruation was regular, 5/28, profuse and painless. Since then menstruation has been profuse, prolonged and irregular, with attacks of bleeding lasting 14 to 21 days and occurring every few weeks. Clots have been passed during the flow and there has been moderate lower abdominal pain with menstruation. Last menstrual period began on 22/9/41 and is still present.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found.

Pelvic examination. Pelvic findings generally are as before, but the mobility of the uterus is normal. No adnexal lesion is palpable.

Operation - 27/9/41. Dilatation and curettage were performed under ether anaesthesia. Pathological report: "Tuberculosis of the endometrium is present".

Post-operative progress.

1/10/41. Well. Allowed up.

4/10/41. Dismissed.

Follow-up.

This patient could not be traced after leaving hospital. Information about the health of her husband was obtained

from her family doctor. Her husband died recently from pulmonary tuberculosis after an illness lasting 10 years, during which he was nursed by his wife.

Case 7.

MISS L.M. — Admitted 19/4/37.

Dismissed 27/4/37.

Age 18 years. — Unmarried.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 16 years. Menstruation until the onset of the present complaint was regular, 7/28, loss normal, painless. Her last normal menstrual period was early in January, 1937. Since the beginning of February she has had continual vaginal haemorrhage.

Previous health. The patient has had no previous illnesses or operations.

Primary complaint. Continuous vaginal bleeding for the past 2½ months.

History of present illness. Since the beginning of February the patient has had vaginal bleeding which has been continuous, with the exception of a single week. Otherwise she has been well and has no other complaint. She has had no pain or vaginal discharge. Bladder function has been undisturbed. The bowels tend to be constipated.

General examination. The general appearance of the patient is healthy. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed, slightly enlarged, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 20/4/37. Dilatation and curettage were carried out under ether anaesthesia. Pathological report: "A number of tuberculous giant cell nodules are present. There is a great deal of interstitial haemorrhage and many round and plasma cells are seen in the stroma. Tuberculous endometritis".

Post-operative progress.

26/4/37. Well. Allowed up.

27/4/37. Dismissed.

Follow-up.

22/12/41. Patient reported. She looks and feels very well. After dismissal she attended a Public Health dispensary for 6 months and was then discharged. At the dispensary the chest and abdomen were X-rayed with negative result. Menstruation has since been regular, 3/28, loss normal, slight pain on first day. There has been no recurrence of the prolonged vaginal bleeding. She has no complaint of any kind. As the patient was unmarried it was considered undesirable to carry out either a vaginal examination or an endometrial biopsy without anaesthesia. Her chest was X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis".

Case 8.

MRS. J.M. Admitted 27/8/37.

Dismissed 10/9/37.

Age 49 years. Married 26 years.

Obstetrical history. The patient has had one full-time pregnancy in 1913. Delivery was spontaneous and the puerperium was uncomplicated.

Menstrual history. Puberty at 15 years. Menstruation regular, 6-7/28, loss normal, painless. Menopause at 47 years.

Previous health. The left breast and axillary glands were removed 4 years ago. The patient had pleurisy 3 years ago.

Primary complaint. Greenish vaginal discharge of 2 years duration.

History of present illness. During the past 2 years the patient has had a profuse, greenish vaginal discharge, which has a foul odour and is very irritating. In the past 2 months the discharge has been blood-stained on 2 occasions. The patient generally feels well and her appetite is normal. She has no cough or loss of weight. Bladder and bowel function are normal. She has slight breathlessness on exertion.

General examination. There is no note in the record of the patient's general condition. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. Findings are not recorded in the case record.

Pelvic examination. Although details are incomplete in the case record, it is noted that no pelvic abnormality is present and that the cervix and body of the uterus are normal.

Operation - 28/8/37. Dilatation and curettage were performed under chloroform anaesthesia. The curettings were scanty. Pathological report: "Tuberculous endometritis is present".

Post-operative progress. Not recorded in case record.

Follow-up. This patient could not be traced after leaving hospital.

Case 9.

MRS. A.T. — Admitted 17/6/35.

Dismissed 24/6/35.

Age 24 years. — Married 4½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 12 years. Menstruation regular, 3/28, loss normal. Pain throughout menstrual flow. Last menstrual period 12/6/35 to 14/6/35.

Previous health. The patient has had no previous operations. At the age of 12 she was in Ruchill Hospital for 9 months with tuberculosis of the abdominal glands.

Primary complaint. Sterility.

History of present illness. The patient has been married for 4½ years without becoming pregnant and is anxious to have a family. She has no dyspareunia. Since puberty she has had lower abdominal pain during the menstrual flow. At first this was slight but it has gradually become more severe, especially since marriage. She has slight, intermittent, white vaginal discharge. The bowels are regular and micturition is normal.

General examination. The patient looks healthy. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed forwards and is otherwise normal. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 20/6/35. Tubal insufflation and dilatation and curettage were carried out under ether anaesthesia. Gas failed to pass at 200 mm. mercury. Pathological report: "The glands are of post-menstrual type. Some oedema of the stroma and a few plasma cells are present".

Post-operative progress.

22/6/35. Well. Allowed up.

24/6/35. Dismissed.

Follow-up.

18/5/36. Patient reported. Dysmenorrhoea is less severe. Menstruation is regular. No pregnancy has occurred.

9/11/37. Patient reported. Last menstrual period 26/10/37. Endometrial biopsy performed. Pathological report: "Chronic endometritis is present".

16/11/37. Patient reported. Endometrial biopsy performed. Pathological report: "Tuberculous endometritis is present".

23/11/37. Patient reported. She has not become pregnant. Endometrial biopsy performed. Pathological report: "The endometrium is not of the pre-menstrual type. 28th day of cycle". Pelvic examination as before. Attempts to persuade this patient to report for completion of the investigation were unsuccessful.

Case 10.

MRS. S.C. Admitted 1/11/37.

Dismissed 5/11/37.

Age 30 years. Married 6 years.

Obstetric history. Nulliparous.

Menstrual history. Puberty at 15 years. Menstruation regular, 3-4/28, loss normal, painless. Last menstrual period 27/10/37 to 30/10/37.

Previous health. Appendicectomy was performed in 1931. The patient has had no other operations and no illnesses of note.

Primary complaint. Sterility.

History of present illness. The patient feels well in every way and makes no complaint apart from her wish to have a family.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory system. A short systolic murmur is audible at the cardiac apex. The heart otherwise is healthy. The urine is normal.

Abdominal examination. No abnormality is apparent. The scar of the previous appendicectomy is well healed.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 2/11/37. Tubal insufflation was performed without anaesthesia. Gas failed to pass at 200 mm. mercury.

Post-operative progress.

4/11/37. Well. Allowed up.

5/11/37. Dismissed.

Follow-up.

20/11/37. Patient reported. Last menstrual period 25/10/37. Endometrial biopsy performed. Pathological report: "Some glandular hyperplasia is present, but no true pre-menstrual changes are seen. Chronic endometritis is present and small tuberculous nodules are seen. 25th day of cycle. Tuberculous endometritis".

27/11/37. Patient reported. Last menstrual period 22/11/37 to 24/11/37.

8/7/38. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

25/8/38. Patient reported. She has not become pregnant. Pelvic examination as before. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury. Lipiodol injection carried out. Tubal blockage confirmed by X-ray examination. No calcareous abdominal glands were seen in the X-ray film. Attempts to persuade this patient to attend for completion of the investigation were unsuccessful.

Case 11.

MRS. E.S. Admitted 25/11/35.

Dismissed 4/12/35.

Age 22 years. Married 6 years.

Obstetric history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation regular, 4/28, loss normal. Menstrual pain is present in the lower abdomen and is of moderate severity. In the past 6 years menstruation has been irregular, 4/28-56, loss normal. The pain with the menstrual flow has become more severe during this time. Last menstrual period 20/11/35 to 24/11/35.

Previous health. The patient has had no previous illnesses or operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 6 years and has not become pregnant, although she is very anxious to have a family. Intercourse with her husband is regular but has always been painful. Since her marriage menstruation has become irregular and less frequent than previously and menstrual pain has increased in severity. She has also had a white vaginal discharge during this time. She has had no intermenstrual pain or bleeding. The bowels are constipated. Bladder function is undisturbed.

General examination. The patient appears to be in good general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed forwards and is small and hard. The uterine body is anteflexed, normal in size, regular in outline, firm in consistence and freely mobile. A cyst about the size of a medium plum is present in the left ovary. The right ovary and both tubes are normal.

Operation - 26/11/35. Tubal insufflation and dilatation and

curettage were carried out under ether anaesthesia. Gas passed at 108 to 110 mm. mercury. Pathological report: "Endometrium of interval type".

Post-operative progress.

2/12/35. Well. Allowed up.

4/12/35. Dismissed.

Follow-up.

3/5/37. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

26/5/37. Patient reported. Next menstrual period expected any day. Endometrial biopsy performed. Pathological report: "Chronic endometritis is present. No premenstrual changes are seen".

8/6/37. Patient reported. Last menstrual period 6/6/37 to 8/6/37.

22/12/37. Patient reported. Last menstrual period 16/11/37. Endometrial biopsy performed. Pathological report:"The glands are of the interval type and show hyperplasia - a few are also cystic. The stroma is dense and infiltrated by round cells. Tuberculous giant cell systems are seen. 36th day of cycle".

22/9/39. Patient reported. She has not become pregnant. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

Readmitted 23/10/39.

Dismissed 4/11/39.

History since previous admission. The patient now complains of profuse, irregular vaginal bleeding of several months duration, accompanied by the passage of clots. She has had continuous vaginal bleeding since 10/7/39. She has not become pregnant. A greenish, foul-smelling vaginal discharge is now present.

General examination. The findings are as before.

Pelvic examination. The findings on pelvic examination are unchanged.

Operation - 26/10/39. Dilatation and curettage were performed under ether anaesthesia. Pathological report: "The glands are in the interval phase. There are a few masses of fibrin in the stroma, also lymphocytes and a few plasma cells".

Post-operative progress.

31/10/39. Chest and abdomen X-rayed. X-ray report: "Coarse mottling at apices due to calcified plaques. The findings point to probable healed tuberculous lesion. Potts' disease of the spine is present".

4/11/39. Dismissed.

Follow-up. A letter was received on 21/2/42 from the patient's sister to say that the patient had died on 18/1/42 from "spinal abscess" following a long period of ill health. She had had no pregnancy.

Case 12.

MRS. A.H. Admitted 25/5/38.

Dismissed 2/6/38.

Age 66 years. Married 47 years.

Obstetrical history. The patient has had 9 full-time children and 1 miscarriage. Her last child was born in 1909. No further particulars are available in the case record.

Menstrual history. Puberty at 12 years. Menopause at 50 years. No further particulars noted.

Previous health. The patient has had 3 abdominal operations. In 1912 her appendix was removed. In 1926 she had an operation for adhesions. In 1935 cholecystectomy was carried out. She has had no other operations or illnesses of note.

Primary complaint. Vaginal bleeding.

History of present illness. A week before admission the patient noticed a profuse, white vaginal discharge, which came on suddenly. This was followed by vaginal bleeding, which was copious for about 2 hours and then became scanty. This slight bleeding has since been present. She has no pain.

General examination. The heart sounds are very soft. No abnormality is apparent in the respiratory system. The urine is normal.

Abdominal examination. Not recorded.

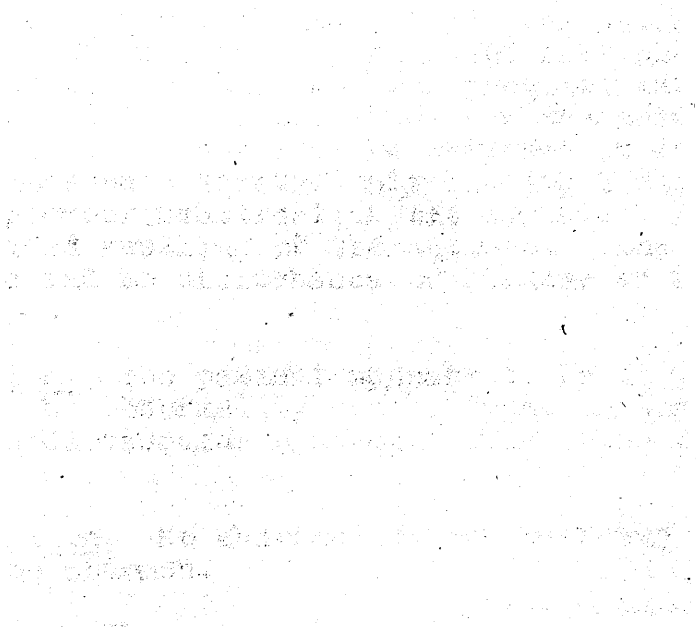
Pelvic examination. A small, hard nodule is present on the anterior lip of the cervix and is suggestive of an early carcinoma. No other pelvic abnormality is present.

Operation - 26/5/38. Dilatation and curettage, cervical biopsy from the suspicious area and insertion of 46.66 mgm. radium were performed under gas and oxygen anaesthesia. 10 mgm. radium were inserted into each lateral fornix and 26.66 mgm. radium into the uterine cavity. Pathological report: "Small portions of endometrium are present in which numerous tuberculous giant cell systems are seen. The portion of cervix is free from tuberculous lesions. There is no evidence of malignancy".

Post-operative progress. No information is available. It was ascertained from the X-ray Department that the patient did not have deep X-ray therapy.

Follow-up.

This patient could not be traced after leaving hospital.



Case 13.

MRS. M.M. Admitted 12/10/38.

Dismissed 7/11/38.

Age 43 years. Married 16 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 17 years. Menstruation regular, 5/28, loss normal, painless. For recent particulars see history of present illness. Last menstrual period 24/9/38 to 29/9/38.

Previous health. The patient has had no previous operations or serious illnesses.

Primary complaint. Irregular menstruation.

History of present illness. In May, 1938, the patient did not have her usual menstrual period and felt sick in the mornings. She thought that she was pregnant and went to the Glasgow Maternity Hospital where she was told that this was not the case. Menstruation returned in June and July and the periods were scanty, only lasting 2 days. In August and September menstruation was normal. She has recently noticed swelling of the abdomen. She has no vaginal discharge and no disturbance of bladder or bowel function.

General examination. The patient appears to be in good general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is slightly softened. The uterine body is anteflexed and is enlarged to about the size of a 3½ months pregnancy. The outline is regular, the consistence hard and the mobility normal. No palpable adnexal abnormality is present.

Operation - 15/10/38. Subtotal hysterectomy with myomectomy as a preliminary step was performed under ether anaesthesia.

The tubes and ovaries appeared healthy and were conserved. Pathological report: "The uterus is distorted by multiple fibroids. The largest is 3½ inches in diameter and has been ennucleated before receipt. This tumour is a cellular myoma showing only slight hyaline change. Tuberculous giant cell systems are present in the endometrium. Multiple fibromyomata. Tuberculous endometritis".

Post-operative progress.

26/10/38. Left leg painful and swollen.

29/10/38. Left leg now normal. Patient well.

3/11/38. Well. Wound healed. Allowed up.

7/11/38. Dismissed.

Follow-up.

2/1/42. On attempting to trace this patient it was found that she had been admitted to Robroyston Hospital on 9/10/41. She had had intermittent backache for the previous 2 years, becoming much more acute in the 2 months before admission to Robroyston. She was found to be suffering from active tuberculosis of the fifth and sixth dorsal vertebrae. The disease was extremely active and appeared to be extending, as a flaccid paralysis of the legs was developing. There was no evidence of abscess formation. The general condition remained good but the prognosis was thought to be poor. No genito-urinary symptoms had developed. This information was received by letter from Robroyston Hospital.

26/6/43. Further letter received from Robroyston Hospital. On 13/10/42 the dorsal spine was X-rayed and considerable destruction of the fifth and sixth dorsal vertebrae was seen. The activity of the disease was slight. Numerous calcified glands were seen in the mediastinum in addition to the spinal lesion. There was no evidence of pulmonary tuberculosis. The abdominal wound was well healed and no abdominal masses were palpable. The general condition of the patient remained good but it was deemed necessary to keep her in bed for a further 6 to 9 months.

Case 14.

MRS. M.W. — Admitted 2/9/38.

Dismissed 6/9/38.

Age 23 years. — Married 1½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 15 years. Menstruation regular, 3/28, loss normal, painless. Since marriage she has had slight premenstrual pain in the lower abdomen; menstruation has been otherwise unchanged. Last menstrual period 20/8/38 to 23/8/38.

Previous health. The patient had a persistent cough when a young girl, but gave no history of tuberculosis. She has had no operations and no other illnesses of note.

Primary complaint. Sterility.

History of present illness. The patient has been married for 1½ years and has not become pregnant, although she is very anxious to have a family. Intercourse with her husband has always been painful. She has no vaginal discharge. The bowels are constipated. Micturition is normal. In all other respects the patient feels well.

General examination. The patient's general condition is good and she looks healthy. She has had a cough during the past week and a few rhonchi are audible on the left side of the chest. No abnormality can be found in the cardiovascular system. The urine is normal.

Abdominal examination. There is a septic sore on the abdomen. No other abnormality is apparent.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and retroposed. It is normal in size, regular in outline, firm in consistence and freely mobile. No palpable abnormality of the tubes or ovaries is present.

Operation - 3/9/38. Tubal insufflation was performed without anaesthesia. Gas failed to pass at 200 mm. mercury. The patient had no shoulder pain afterwards.

Post-operative progress.

5/9/38. Well. Allowed up.

6/9/38. Dismissed.

Follow-up.

3/11/38. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

10/11/38. Patient reported. Last menstrual period 15/10/38. Endometrial biopsy performed. Pathological report: "Secretory changes are present. There are appearances in the stroma suggestive of tuberculous infection. A further specimen would be advisable".

29/11/38. Patient reported. Last menstrual period 11/11/38 to 14/11/38.

5/12/38. Patient reported. Endometrial biopsy performed. Pathological report: "Tuberculous foci are present in the stroma - slight secretory changes".

15/12/38. Patient reported. Last menstrual period 7/12/38 to 11/12/38. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

3/1/39. Patient reported. Endometrial biopsy performed. Guinea-pig inoculated with tissue obtained.

16/3/39. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury. No shoulder pain felt after insufflation.

11/4/39. Lipiodol injection carried out. X-ray examination showed that both tubes were blocked at the isthmus. No calcified abdominal glands were seen in the film.

12/4/39. Guinea-pig killed with chloroform. Caseous glands found at site of inoculation. Tubercle bacilli present in material from glands.

8/6/39. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

21/6/39. Patient reported. Last menstrual period 26/5/39. Endometrial biopsy performed. Pathological report: "Interval phase. Tuberculous foci are present in the stroma".

22/8/39. Patient reported. She has not become pregnant. Period after last biopsy was from 24/6/39 to 26/6/39. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury. Pelvic examination as before.

9/1/42. Letter received from patient. She has not become pregnant. Menstruation is regular and she has slight premenstrual vaginal discharge. Her husband is healthy.

Case 15.

MRS. M.F. This patient was investigated throughout at the Out-patient Department. Her first attendance was on 14/11/38.

Age 29 years. Married 4 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 13½ years. Menstruation regular, 3/28, loss normal, painless. Last menstrual period 2/11/38 to 6/11/38.

Previous health. The patient had pneumonia at the age of 4. In 1936 she had dilatation and curettage performed in another hospital for sterility. She has had no other illnesses of note.

Primary complaint. Sterility.

History of present illness. The patient has been married for 4 years and has not become pregnant, although she is very anxious to have a family. She feels well in every way and has no other complaint. Bladder and bowel function are normal. She has no vaginal discharge.

General examination. The patient appears to be in very good general health. She has healthy colour and is well nourished. No abnormality can be found in the respiratory or cardiovascular systems.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed, normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

14/11/38. Patient first attended at Out-patient Department. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

Follow-up.

22/11/38. Patient reported. Lipiodol injection carried

out. X-ray examination showed bilateral tubal blockage to be present. No calcified glands were seen in the film. Her husband has been examined at the Urological Department of the Glasgow Royal Infirmary and no evidence of genito-urinary disease was found.

30/11/38. Patient reported. Last menstrual period 2/11/38. Endometrial biopsy performed. Pathological report: "The endometrial glands are in the proliferative phase. Tuberculous giant cell systems are present in the stroma".

25/1/39. Patient reported. Next menstrual period due 30/1/39. Endometrial biopsy performed. Pathological report: "Slight secretory changes are present".

14/2/39. Patient reported. Last menstrual period 1/2/39 to 4/2/39. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

27/3/39. Patient reported. Endometrial biopsy performed. Pathological report: "Slight secretory changes are present. The stroma is oedematous".

18/4/39. Patient reported. Last menstrual period 1/4/39 to 4/4/39. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

25/5/39. Patient reported. Endometrial biopsy performed. Pathological report: "Premenstrual changes are present".

17/8/39. Patient reported. She has not become pregnant. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

19/2/42. Patient reported. She has not become pregnant. She looks and feels well. Last menstrual period 26/1/42 to 29/1/42. Menstruation is regular, 3/28, loss normal, painless. She has slight, intermenstrual, yellow vaginal discharge. Her husband is healthy and works as a butcher. Pelvic examination as before. Endometrial biopsy performed. Uterine cavity $2\frac{1}{2}$ inches by sound. Cervix healthy. Material obtained used for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "The endometrium shows

no evidence of tuberculosis". The patient was unable to wait for X-ray examination of the chest, but promised to return on 24/2/42 to have this done.

24/2/42. Patient failed to report.

14/4/42. Guinea-pig found to be moribund and was killed with chloroform. Widespread tuberculosis present, involving abdominal and thoracic viscera. Tubercle bacilli found in film from splenic lesions. Two Löwenstein's media inoculated from splenic lesions.

14/5/42. Moderate growth of tubercle bacilli obtained on culture. The appearances are those of the human type of organism.

28/8/42. 10 mgm. culture injected subcutaneously into rabbit after suspension in normal saline.

1/10/42. Rabbit died suddenly. No evidence of tuberculosis found.

10/11/42. Further 10 mgm. of culture injected into rabbit after suspension in normal saline.

7/2/43. Rabbit killed with chloroform. No evidence of tuberculosis found. This finally proves the tubercle bacillus in this case to be of the human type.

Case 16.

MRS. J.M. Admitted 27/10/36.

Dismissed 6/11/36.

Age 25 years. Married 2½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 15 years. Menstruation previously regular, 7/28, loss scanty to profuse. Severe lower abdominal pain for 1 week before each menstrual period. During the past 10 months she has had menstrual periods of varying length every 14 days. Loss has been variable during this time and the severe premenstrual pain has continued. Last menstrual period 20/10/36 to 27/10/36.

Previous health. The patient had scarlet fever in childhood. She has had no other illnesses of note and no operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 2½ years and has not become pregnant, although she is very anxious to have a family. During the past 10 months menstruation has occurred every fortnight, with varying loss, usually profuse, and severe premenstrual pain in the lower abdomen. The pain is accompanied by nausea but not by vomiting. She has had a white, intermenstrual vaginal discharge since her marriage. Recently she has complained of weakness, becoming more severe, and accompanied by occasional attacks of fainting. She has no urinary disturbance. The bowels are very constipated and only move about once a week.

General examination. The patient is thin and rather pale. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is

present.

Operation - 28/10/36. Tubal insufflation and dilatation and curettage were carried out under ether anaesthesia. Gas failed to pass at 200 mm. mercury. The endometrium was not sent to the Pathological Department.

Post-operative progress.

3/11/36. Well. Allowed up.

6/11/36. Dismissed.

Follow-up.

9/9/38. Patient reported. She has not become pregnant. Admission arranged for further investigation.

Readmitted 8/12/38.

Dismissed 20/12/38.

History since previous admission. In the past 2 years no pregnancy has occurred. Menstruation has been regular, 3/28, loss normal, painless. Last menstrual period 15/11/38 to 18/11/38. She has some premenstrual backache. During the past year she has had a persistent, white vaginal discharge.

General examination. The patient appears to be in satisfactory general health. Other findings are as before.

Abdominal examination. No abnormality can be found.

Pelvic examination. Pelvic findings are as before.

Operation - 9/12/38. Tubal insufflation and dilatation and curettage were performed under gas and oxygen anaesthesia. Gas failed to pass at 200 mm. mercury. The endometrium appeared to be normal. Pathological report: "Tuberculous foci are present in the stroma. The glands show pre-menstrual changes. Tuberculosis of the endometrium".

Post-operative progress.

17/12/38. Well. Allowed up.

20/12/38. Dismissed.

Follow-up.

2/1/42. Patient reported. She is generally well but has not become pregnant. Her appearance is healthy and she has not lost weight. Menstruation is regular, 3/28, loss normal, painless. There is still some premenstrual backache, but the severe premenstrual pain has not recurred. Last menstrual period commenced to-day. Her husband is healthy and is in the army.

12/1/42. Patient reported. Last menstrual period 2/1/42 to 5/1/42. Chest X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis". Pelvic examination as before. Endometrial biopsy performed. Uterine cavity 2½ inches by sound. Cervix appeared healthy. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "There is no evidence of tuberculosis".

9/3/42. Guinea-pig killed with chloroform. Widespread tuberculosis found, involving local glands, lumbar glands, substernal glands, peritoneum, spleen and lungs. Film from local glands showed tubercle bacilli. The following media were inoculated from the splenic lesions: Löwenstein, Dorset's egg and Petrognani.

7/4/42. Growth obtained on Löwenstein's medium with appearance of bovine type of tubercle bacillus.

28/8/42. 10 mgm. culture injected subcutaneously into rabbit after suspension in normal saline.

29/10/42. Rabbit died. Extensive tuberculous lesions were present, finally proving this case to be infected by the bovine type of tubercle bacillus.

Case 17.

MRS. M.M.

Admitted 10/1/39.

Dismissed 24/1/39.

Age 26 years. Married 3 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 17 years. Menstruation irregular, 8/28-84, loss normal. Severe lower abdominal pain and backache on first 2 days of each menstrual period. Last menstrual period 8/1/39 and present on admission.

Previous health. At the age of 3 the patient was in hospital for several months with "consumption of the bowels". Her previous health has otherwise been uneventful. She has had no operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 3 years without becoming pregnant, although she is very anxious to have a family. Menstruation has always been very irregular and there is considerable general upset at each menstrual period, with severe lower abdominal pain and backache on the first 2 days. This menstrual pain has been much more marked since marriage. There is slight, white vaginal discharge shortly before each period. Increased frequency of micturition is present. The bowels are regular.

General examination. The patient generally appears to be in good health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 16/1/39. Tubal insufflation and dilatation and

curettage were carried out under gas and oxygen anaesthesia. Gas failed to pass at 200 mm. mercury. The endometrium was thickened for the stage in the cycle. Pathological report: "Tuberculous endometritis is present".

Post-operative progress.

21/1/39. Well. Allowed up.

24/1/39. Dismissed.

Follow-up.

8/1/42. Patient reported. Generally she looks and feels well, but has not become pregnant. Menstruation is now 3-4/28, regular, loss normal, painless apart from premenstrual backache. Last menstrual period 9/12/41 to 12/12/41. She has no nausea or discharge. Chest X-rayed. X-ray report: "Although there is no definite destruction of the lung parenchyma the appearances of the lungs are very suspicious and suggest a mild tuberculous infiltration. A comparative examination is advised in 4-6 weeks time". Her husband is healthy and is a railway worker. Pelvic examination as previously. Endometrial biopsy performed. Uterine cavity 2½ inches by sound. Cervix appeared healthy. Sufficient tissue obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "There is no evidence of tuberculosis. Definite secretory changes are present".

5/2/42. Patient reported. Generally she looks and feels well. Last menstrual period 12/1/42 to 15/1/42. X-ray of chest repeated. X-ray report: "No evidence of pulmonary tuberculosis is seen".

5/3/42. Guinea-pig killed with chloroform. Widespread tuberculosis found, involving local glands, substernal and lumbar glands, spleen, liver and peritoneum. Tubercle bacilli found in smear from local glands. Löwenstein's medium and Petrognani's medium inoculated from splenic lesions.

26/5/42. No growth obtained on culture.

22/6/43. Patient reported. She has not become pregnant.

Generally she looks and feels well. Menstruation is now regular, 4/28, loss normal, painless. Last menstrual period 20/5/43 to 23/5/43. Pelvic examination as before. Endometrial biopsy performed. Pathological report: "Early secretory phase. No evidence of tuberculosis seen". Abdomen X-rayed. X-ray report: "Nothing abnormal found in abdomen".

Case 18.

MRS. E.A. Admitted 11/12/35.

Dismissed 12/12/35.

Age 30 years. Married 3 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 15 years. Menstruation irregular, 3/28-35, loss normal. She has slight premenstrual pain in the lower abdomen. Last menstrual period 12/11/35 to 15/11/35.

Previous health. The patient has had no operations or serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 3 years without becoming pregnant, although she is very anxious to have a family. Intercourse with her husband has always been very painful. Occasionally she has slight, white vaginal discharge. The bowels are constipated. She has no urinary disturbance.

General examination. The patient is well nourished and appears to be healthy. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals and perineum are normal. The vaginal introitus is narrow and only admits one finger. The cervix is directed forwards and is normal in all respects. The uterine body is retroflexed and is slightly enlarged for a nullipara. Outline is regular, consistence firm and mobility free. No palpable adnexal lesion is present.

Operation - 12/12/35. Perineoplasty, tubal insufflation, dilatation and curettage were carried out under ether anaesthesia. Gas passed at 140 mm. mercury. The uterine cavity measured 3½ inches by sound. Pathological report: "Bulky endometrium of the late premenstrual type is present. A few plasma cells are seen".

Post-operative progress.

20/12/35. Well. Perineum healed. Allowed up.

23/12/35. Dismissed.

Follow-up.

29/4/37. Patient reported. She has not become pregnant. Menstruation is still irregular. Last menstrual period 15/4/37 to 20/4/37. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

10/5/38. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

1/12/38. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

2/2/39. Patient reported. Lipiodol injection carried out. X-ray examination showed blockage of both Fallopian tubes at isthmus. No calcified glands were seen in the film.

23/2/39. Patient reported. She has not become pregnant. Last menstrual period 19/1/39 to 23/1/39. Pelvic examination as before. Endometrial biopsy performed. Pathological report: "The endometrium is in the interval phase. In one portion a lesion suggesting tuberculous infection is seen".

22/1/42. Letter received from patient to say that she does not wish to come to the Hospital again as she has adopted a child. The investigation in this case could not be completed.

Case 19.

MRS. M.M. Admitted 9/5/39.

Dismissed 16/5/39.

Age 21 years. Married 2 years.

Obstetrical history. Nulliparous.

Menstrual history. The patient has never menstruated. She had slight vaginal bleeding lasting 1½ days, which started 3 days after her marriage.

Previous health. The patient has had no operations or serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married 2 years and has not become pregnant although she is very anxious to have a family. She has never menstruated, although she had a slight vaginal bleeding lasting 1½ days which started 3 days after her marriage. Her general health has always been good. She has no vaginal discharge. Bladder and bowel function are normal.

General examination. The patient appears to be in good general health. She has normal colour and is well nourished. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is acutely anteflexed. It is small in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 11/5/39. Dilatation and curettage were performed under chloroform and ether anaesthesia. The uterine cavity measured 2½ inches by sound. Pathological report: "The specimen contains no endometrial glands; it consists of tuberculous granulation tissue".

Post-operative progress.

14/5/39. Well. Allowed up.

16/5/39. Dismissed.

Follow-up.

19/5/39. Patient reported. Endometrial biopsy performed. Pathological report: "The tissue contains tuberculous foci - no endometrium seen".

3/11/41. Patient reported. During the past year she has had 2 scanty menstrual periods. Generally she is well. Endometrial biopsy performed. Pathological report: "The specimen consists of one or two minute fragments of endometrium. In one a small tuberculous focus is seen".

18/11/41. Patient reported. She looks and feels well, but has not become pregnant. Pelvic examination as before. Tubal insufflation and endometrial biopsy performed. Gas failed to pass at 200 mm. mercury. Amount of tissue obtained was very small and was used for guinea-pig inoculation. There was not enough for simultaneous histological examination. Chest and abdomen X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis. No calcareous glands are seen in the abdomen".

2/1/42. Guinea-pig killed with chloroform. No caseous glands or other local lesion found at site of inoculation. Spleen studded with small, yellowish nodules. No other evidence of tuberculosis found. Tubercle bacilli found in film from splenic lesions. Löwenstein's medium and Dorset's egg medium inoculated from splenic lesions.

9/2/42. No growth obtained on Dorset's egg medium. Well marked growth of tubercle bacilli obtained on Löwenstein's medium. Appearances are those of the human type of organism.

28/8/42. 10 mgm. culture injected subcutaneously into rabbit after suspension in normal saline.

25/11/42. Rabbit killed with chloroform. No evidence of tuberculosis found. This finally identifies the tubercle bacillus in this case as of the human type.

Case 20.

MRS. H.W. Admitted 11/5/39.

Dismissed 23/5/39.

Age 26 years. Married 3 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 16 years. Menstruation regular, 5/28, loss profuse. She has pain in the lower abdomen during the early part of each menstrual period. During the 3 months from December,1938,to February, 1939, menstruation was regular, 5/14, loss profuse, pain as before. Last menstrual period 29/4/39 to 2/5/39.

Previous health. Appendicectomy was performed in 1935. Her previous health has otherwise been uneventful.

Primary complaint. Sterility.

History of present illness. The patient has been married for 3 years and has not become pregnant, although she is very anxious to have a family. Her husband is healthy and there is no family history of sterility or impaired fertility. She has a profuse, white vaginal discharge. The bowels are constipated. Micturition is normal. She has epigastric pain half an hour after meals, accompanied by vomiting.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. The scar of her previous appendicectomy is well healed. No abnormality can be found.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 12/5/39. Tubal insufflation and dilatation and curettage were carried out under gas, oxygen and ether anaesthesia. Gas passed at 190 mm. mercury. The endometrium was thickened. Pathological report: "The endometrium is in the proliferative phase. In the stroma there are a few

tuberculous foci. Tuberculous endometritis".

Post-operative progress.

19/5/39. Well. Allowed up.

23/5/39. Dismissed.

Follow-up.

This patient could not be traced after leaving hospital.

Case 21.

MRS. M.M. This patient was investigated throughout at the Out-patient Department. Her first attendance was on 25/5/39.

Age 24 years. Married 5 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 13 years. Menstruation regular, 4/28, loss normal. Slight lower abdominal pain during the menstrual flow. Last menstrual period 1/5/39 to 4/5/39.

Previous health. Dilatation and curettage were performed in another hospital in 1938. Her complaint then was sterility. She has had no other operations and no serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 5 years and has not become pregnant, although she is very anxious to have a family. She has slight white vaginal discharge. Frequency of micturition is increased. She has no other complaint.

General examination. The patient appears to be in good general health, although she is rather nervous. No abnormality can be found on examination of the respiratory or cardio-vascular systems.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

25/5/39. Patient first attended at Out-patient Department. Last menstrual period 1/5/39 to 4/5/39. Endometrial biopsy performed. Pathological report: "Cystic glandular hyperplasia is present. There are

tuberculous foci in the stroma".

Follow-up.

2/6/39. Patient reported. Tubal insufflation performed. Gas passed freely at 60 to 80 mm. mercury. The patient's husband has been examined at the Urological Department of the Glasgow Royal Infirmary. Apart from great deficiency of spermatozoa in the seminal fluid, no evidence of genito-urinary disease was discovered.

30/6/39. Patient reported. Tubal insufflation performed. Gas passed freely at 60 to 80 mm. mercury.

17/8/39. Patient reported. Last menstrual period 23/7/39 to 26/7/39. Endometrial biopsy performed. Pathological report: "Secretory changes are present".

1/10/41. Letter from patient to say that she has not become pregnant.

29/1/42. Patient reported. She has not become pregnant. She is generally well and is doing heavy work, but is very nervous. She looks healthy and is well nourished. Menstruation 4/28, regular, loss normal, slight pain on first day. Last menstrual period 5/1/42 to 8/1/42. She has slight, white vaginal discharge between the menstrual periods. Pelvic examination as before. Endometrial biopsy performed. Cervix healthy. Uterine cavity 2½ inches by sound. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "The endometrium is in the premenstrual phase of the cycle. No evidence of tuberculosis is seen". The patient refused X-ray examination. Her husband is healthy and is in the army.

26/3/42. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

Case 22.

MRS. E.B. Admitted 1/8/39.

Dismissed 8/8/39.

Age 30 years. Married 5 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 15 years. Menstruation regular, 4/28, loss normal, painless. Last menstrual period 11/7/39 to 15/7/39.

Previous health. The patient has always been in good health and has had no operations or serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 5 years without becoming pregnant, although she is very anxious to have a family. During the same period she has complained of intermittent backache. Otherwise she feels well and has no other complaint. Bladder and bowel function are normal.

General examination. The patient appears to be in good general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed forwards and is normal in all respects. The uterine body is retroflexed and is small in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 2/8/39. Dilatation and curettage were carried out under chloroform and ether anaesthesia. Pathological report: "Early premenstrual changes are present. At one point there is a focus which has the histological appearance of tuberculosis".

Post-operative progress.

6/8/39 Well. Allowed up.

8/8/39 Dismissed.

Follow-up.

29/1/42. Patient reported. She has not become pregnant. Menstruation is regular, 4/28, loss normal, painless. Last menstrual period 10/1/42 to 13/1/42. She has no vaginal discharge. Her husband is healthy and is working as an engineer. Pelvic examination as before. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity $2\frac{1}{2}$ inches by sound. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "The endometrium is in the early secretory phase of the menstrual cycle. A single tuberculous focus is seen in the stroma". Chest X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis".

23/2/42. Guinea-pig found dead. Extensive post-mortem change present. Tuberculous lesions found in local glands, substernal glands, lumbar glands, peritoneum, spleen and liver. Tubercle bacilli found in film from local gland. 2 Löwenstein's media inoculated from substernal glands. Spleen was a mass of pulp and was obviously useless for inoculation of media.

25/2/42. Media grossly contaminated.

26/2/42. Patient reported. Generally she is well. Last menstrual period 6/2/42 to 9/2/42.

1/7/43. Patient reported. Generally she looks and feels well but has not become pregnant. Menstruation is 3-4/28, regular, loss normal, painless. She has no vaginal discharge, urinary disturbance or dyspareunia. Pelvic examination as before. Abdomen X-rayed. X-ray report: "Two small opacities in pelvis which may be calcified glands".

13/7/43. Patient reported. She looks and feels well and complains only of sterility.

Case 23.

MRS. J.H. Admitted 14/8/39.

Dismissed 23/8/39.

Age 22 years. Married 4 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation regular, 7/28, loss normal. She has moderate pain in the lower abdomen during the early part of the menstrual flow. Last menstrual period 10/8/39 - present on admission.

Previous health. The patient has always been in good general health and has had no operations or serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 4 years and has not become pregnant, although she is very anxious to have a family. Since marriage she has had frequent attacks of pain in the left iliac fossa, accompanied by nausea but not by vomiting. These attacks come on about once a week and last 2 to 3 days. The pain is of moderate severity. Her menstrual pain has been present since puberty. A thick, yellow vaginal discharge has been present since marriage. Frequency of micturition is increased.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is small. The uterine body is anteflexed, and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 19/8/39. Dilatation and curettage were performed under ether anaesthesia. The endometrium was found to be thickened for the stage in the menstrual cycle. Pathological report: "The endometrium is in the early interval phase of

the menstrual cycle. The stroma is dense and several foci with the histological appearance of tubercle are seen".

Post-operative progress.

21/8/39. Well. Allowed up.

23/8/39. Dismissed.

Follow-up.

23/12/41. Patient reported. She has not become pregnant. Generally she looks and feels well. Menstruation is now 3-7/28-31, loss normal, painless. Last menstrual period 13/12/41 to 16/12/41. She has no vaginal discharge and no abdominal pain. Her husband is healthy. Pelvic examination as before. Endometrial biopsy performed. Uterine cavity 2½ inches by sound. Cervix appeared healthy. Amount of tissue obtained sufficient only for guinea-pig inoculation and not for simultaneous histological examination. Chest X-rayed. X-ray report: "Tuberculous infiltration of both lungs is present".

17/2/42. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

5/7/43. On attempting to trace this patient again, it was found that she had died in Robroyston Hospital on 23/3/43. A letter was received from Robroyston Hospital stating that the patient was admitted on 26/10/42 with bilateral, active pulmonary tuberculosis. At that time her general condition was very poor. Later she developed laryngeal and abdominal tuberculosis and her condition rapidly deteriorated.

Case 24.

MRS. J.W. Admitted 22/8/39.

Dismissed 27/8/39.

Age 29 years. Married 9 years.

Obstetrical history. The patient has had no full-time children. In 1931 she had a 3 months miscarriage, from which she made a satisfactory recovery.

Menstrual history. Puberty at 13 years. Menstruation until 2 years ago regular, 5/28, loss normal. She has moderate pain in the lower abdomen before and during each menstrual period. During the past 2 years menstruation has been scanty, irregular and infrequent until 3 months ago. Since that time she has had continuous vaginal bleeding, which was still present on admission.

Previous health. The patient has always been in good general health. She has had no operations or serious illnesses.

Primary complaint. Vaginal bleeding of 3 months duration.

History of present illness. The patient was well until 2 years ago when she began to have scanty, irregular, infrequent menstruation, accompanied by considerable pain. For the past 3 months the bleeding and lower abdominal pain have been continuous. The bowels are constipated.

General examination. The patient appears to be in good general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and retroposed. It is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 23/8/39. Dilatation and curettage were carried out under evipan, chloroform and ether anaesthesia. The endometrium obtained was scanty. Pathological report: "The

endometrium is in the interval phase of the cycle. There is no evidence of recent pregnancy. At one point there is a focus with a histological appearance suggesting tubercle".

Post-operative progress.

25/8/39. Well. Allowed up.

27/8/39. Dismissed.

Follow-up. This patient was later treated privately by a member of the Hospital staff, who has furnished the following particulars. After dismissal, the patient complained of abdominal pain which became increasingly severe. On pelvic examination there was evidence of adnexal involvement, with bilateral tubo-ovarian masses. On 24/4/40 laparotomy was carried out and widespread tuberculosis was found. This involved the uterus, tubes, ovaries, intestine and peritoneum. Numerous adhesions were found and a localised pelvic abscess was also present. The right tube and ovary were removed and abdominal drainage was instituted. The left tube and ovary could not be removed owing to dense adhesions, and after a prolonged convalescence she made a satisfactory recovery. On dismissal, the abdominal wound was well healed. 3 months later she felt generally much improved, but still had moderate abdominal pain. Menstruation was scanty but regular.

Readmitted 31/1/43.

Dismissed 21/2/43.

History since last seen in August 1940. In the past 2½ years the patient has complained of severe lower abdominal pain, starting one week before each menstrual period and continuing through the period. Sometimes this pain is accompanied by nausea and vomiting. She has a slight, constant, white vaginal discharge between the menstrual periods. Menstruation has been regular, 2-3/28, scanty and painful.

General examination. The general condition of the patient is satisfactory. No abnormality can be found in the heart, lungs or urine.

Abdominal examination. The wound from her previous laparotomy

is well healed.

Pelvic examination. Compared with the previous examination, pelvic examination shows considerable local improvement. The left-sided adnexal mass is considerably smaller and the right lateral fornix is now clear. The condition of the uterus is as before, apart from slight impairment of mobility.

Operation - 8/2/43. Dilatation and curettage were performed under ether anaesthesia. The endometrium was not sent to the Pathological Department.

Post-operative progress.

18/2/43. Well. Allowed up. Chest and abdomen X-rayed. X-ray report: "There is no evidence of tuberculosis in chest or abdomen". Her husband is healthy.

21/2/43. Dismissed.

Case 25.

MRS. H.C. Admitted 13/10/39.

Dismissed 31/10/39.

Age 48 years. Married 28 years.

Obstetrical history. The patient has had 3 full-time children, (last 1916) and 1 premature child (1913). Her full-time deliveries were all instrumental and her premature delivery was spontaneous. She had puerperal sepsis after her third child. The remaining puerperia were uncomplicated. 3 children are still alive. She has had no miscarriages.

Menstrual history. Puberty at 14 years. Menstruation was previously regular, 3-5/21, loss normal. She has had severe lower abdominal pain before and during menstruation since the birth of her last child. During the past 4 months she has had profuse and irregular vaginal bleeding, lasting about a week and occurring every 10 to 14 days. The pain has remained unchanged. Last menstrual period - present on admission.

Previous health. The patient has had no serious illnesses. An ovary was removed in 1917. She has had no other operations.

Primary complaint. Profuse, irregular vaginal bleeding of 4 months duration.

History of present illness. During the past 4 months the patient has had profuse, prolonged, frequent and irregular menstruation. For many years she has had a profuse, offensive vaginal discharge. Since her last delivery she has had stress incontinence of urine.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. Not recorded in case record.

Pelvic examination. The external genitals are normal. The perineum is torn and a moderate degree of cystocele and rectocele are present. The cervix is directed forwards and is nodular and considerably thickened. Ectropion of the cervix is present. The uterine body is anteflexed and is slightly

enlarged, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 18/10/39. Dilatation and curettage and biopsy of cervix were carried out under ether anaesthesia. The uterine cavity measured 3½ inches by sound. The endometrium was slightly thickened. Pathological report: "The endometrium is in the interval phase. A few tuberculous foci are seen in the stroma. The cervix shows chronic inflammatory changes. There is no evidence of malignancy. Tuberculous endometritis".

Post-operative progress.

27/10/39. Well. Allowed up.

31/10/39. Dismissed.

Follow-up.

This patient could not be traced after leaving hospital.

Case 26.

MRS. E.C. Admitted 27/9/39.

Dismissed 4/10/39.

Age 28 years. Married 4½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation regular, 3/28, loss normal, painless. Last menstrual period 4/9/39 to 6/9/39.

Previous health. When aged 17 the patient had pleurisy and a gastro-intestinal upset which kept her in bed for 6 weeks. Her previous health has otherwise been uneventful.

Primary complaint. Sterility.

History of present illness. The patient has been married for 4½ years and has not become pregnant, although she is very anxious to have a family. She has had a profuse, offensive, yellow vaginal discharge since her marriage. She has no dyspareunia.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 30/9/39. Tubal insufflation was performed without anaesthesia. Gas failed to pass at 200 mm. mercury.

Post-operative progress.

2/10/39. Well. Allowed up.

4/10/39. Dismissed.

Follow-up.

26/10/39. Patient reported. Last menstrual period 2/10/39 to 5/10/39. Endometrial biopsy performed. Pathological report: "Secretory changes are present. Tuberculous foci are present in the stroma". Her husband has been examined in the Urological Department of the Glasgow Royal Infirmary and no evidence of genito-urinary disease was discovered.

18/12/39. Patient reported. Endometrial biopsy performed. Pathological report: "Slight secretory changes".

10/2/42. Patient reported. Generally she looks and feels well. She has not become pregnant. Menstruation is regular, 3/28, loss normal, painless. Last menstrual period began to-day. Her husband is healthy and is in the army. She has slight vaginal discharge for one week before each menstrual period. Chest X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis".

24/2/42. Patient reported. Pelvic examination as before. Endometrial biopsy performed. Uterine cavity 3 inches by sound. Cervix appeared healthy. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Tuberculous foci are seen in the endometrial stroma".

24/3/42. Patient reported. Generally she looks and feels well. Pelvic examination as before.

15/4/42. Guinea-pig died to-day. Local glands, lumbar glands and spleen involved in tuberculous infection. Tubercle bacilli found in smears from spleen and local glands. 2 Löwenstein's media inoculated from splenic lesions.

26/5/42. No growth obtained on culture.

Case 27.

MRS. M.L. — This patient was investigated throughout at the Out-patient Department and was not in hospital at any time. She first attended on 21/12/39.

Age 27 years. — Married 3 years.

Obstetrical history. Puberty at 14 years. Menstruation regular, 5/28, loss normal. She has slight lower abdominal pain during the early part of each menstrual period. Last menstrual period 26/11/39 to 30/11/39.

Previous health. The patient has always been in good general health. She has had no operations or serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 3 years and has not become pregnant, although she is very anxious to have a family. She feels well in every way and has no other complaint. She has no vaginal discharge. Bladder and bowel function are normal.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found in the respiratory or cardiovascular systems.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

21/12/39. Patient first reported at Out-patient Department. Last menstrual period 26/11/39 to 30/11/39. Endometrial biopsy performed. Pathological report: "Glandular proliferation - secretory changes doubtful".

8/2/40. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury. The patient's husband has been examined at the Urological Department of the Glasgow Royal Infirmary and no evidence of genito-urinary disease was found.

4/3/40. Patient reported. Endometrial biopsy performed. Pathological report: "Some secretory changes are present. In the stroma there are focal lesions suggestive of tuberculous infection".

28/3/40. Patient reported. Last menstrual period 3/3/40 to 7/3/40. Endometrial biopsy performed. Pathological report: "The glands are in the interval phase. Tuberculous foci are present in the stroma".

30/5/40. Patient reported. Last menstrual period 31/3/40 to 4/4/40. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

17/2/41. Patient reported. She has not become pregnant. During the past year she has not been well and has been suffering from "blood-poisoning". She looks pale and listless and has ulcers on both legs. Menstruation has recently been 5/24-30, loss normal, pain as before. Last menstrual period 6/2/42 to 10/2/42. She has slight, white vaginal discharge before the menstrual periods. Her husband is healthy and works as a plumber. Chest X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis". Endometrial biopsy performed. Pelvic examination as before. Uterine cavity 2½ inches by sound. Cervix appeared healthy. Sufficient tissue obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "No evidence of tuberculosis is seen".

14/4/42. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

25/6/43. Letter received from patient to say that she is unable to report as she is now suffering from an exacerbation of the skin condition of which she complained at her last attendance. She has not become pregnant.

Case 28.

MRS. H.S. Admitted 13/4/40.

Dismissed 20/4/40.

Age 28 years. Married 1½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation regular, 2-3/28, loss normal. Slight pain in lower abdomen just before each menstrual period. During the past 2 years menstruation has been regular 7-9/28, loss profuse, pain as before. Last menstrual period 23/3/40 to 30/3/40.

Previous health. The patient has had no operations. In 1935 she had pneumonia with pleural effusion. She has had no other serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 1½ years without becoming pregnant, although she is very anxious to have a family. Intercourse with her husband has always been painful. During the past 2 years the menstrual periods have been profuse and prolonged. During the past few months she has had pain in the left lower abdomen, present intermittently and most severe before menstruation. The pain is gnawing in character and is accompanied by nausea.

General examination. The patient appears to be in good general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed forwards and is normal in all respects. The uterine body is retroflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 15/4/40. Dilatation and curettage were carried out under gas and oxygen anaesthesia. The endometrium was thickened. Pathological report: "The glands show slight secretory changes. Tuberculous giant cell systems are present in the stroma. Tuberculous endometritis".

Post-operative progress.

18/4/40. Well. Allowed up.

20/4/40. Dismissed.

Follow-up.

31/7/41. Patient reported. No pain with menstrual periods. Endometrial biopsy performed. Pathological report: "The endometrium is in the late interval phase of the menstrual cycle".

4/8/41. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

7/8/41. Patient reported. Endometrial biopsy performed. Pathological report: "The endometrium is in the early secretory phase of the menstrual cycle. There is no evidence of tuberculosis".

28/8/41. Patient reported. Last menstrual period 9/8/41 to 14/8/41. Endometrial biopsy performed. Pathological report: "The endometrium is in the late interval phase of the menstrual cycle".

17/3/42. Patient reported. She has not become pregnant. Generally she looks and feels well. Menstruation is regular, 4-8/28, loss normal, painless. Last menstrual period 28/2/42 to 5/3/42. She has no vaginal discharge. Her husband is healthy and works as an engineer. Chest X-rayed. X-ray report: "At both lung apices there is irregular mottling. The appearances are those of early apical tuberculosis. There is a fair amount of calcification. The condition may be quiescent". Pelvic examination as before. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity 2½ inches by sound. Sufficient material obtained for (1) histological

examination and (2) guinea-pig inoculation. Pathological report: "Tuberculous foci are present in the endometrial stroma".

2/5/42. Guinea-pig killed with chloroform. Tuberculosis of local glands, peritoneum, omentum, lumbar glands and spleen present. Tubercle bacilli found in film from splenic lesions. 2 Löwenstein's media inoculated from splenic lesions.

4/6/42. Well marked growth of tubercle bacilli obtained on culture. The appearances are those of the human type of tubercle bacillus.

28/8/42. 10 mgm. culture injected subcutaneously into rabbit after suspension in normal saline.

25/11/42. Rabbit killed with chloroform. No evidence of tuberculosis found. This case can finally be regarded as an example of infection with the human type of tubercle bacillus.

Case 29.

MRS. M.H. Admitted 22/3/38.

Dismissed 4/4/38.

Age 22 years. Married 2½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation regular, 4-7/28, loss normal. She has slight lower abdominal pain during menstruation. Since her marriage menstruation has been irregular, 3/14-28, loss profuse with passage of clots. Severe pain in the lower abdomen is now present before and during each menstrual period. Last menstrual period 8/3/38 to 11/3/38.

Previous health. The patient has always been in good health. She has had no operations and no serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 1½ years and has not become pregnant, although she is very anxious to have a family. Since marriage, menstruation has been irregular, profuse and painful. She has a brown vaginal discharge between the menstrual periods. There is no disorder of bladder or bowel function.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 28/3/38. Dilatation and curettage were carried out under chloroform and ether anaesthesia. The endometrium was not sent to the Pathological Department.

Post-operative progress.

2/4/43 Well. allowed up.

4/4/43 Dismissed.

Follow-up.

18/4/40. Patient reported. Endometrial biopsy performed. Pathological report: "The glands are in the interval phase. Tuberculous foci are present in the stroma". The patient's husband has been examined in the Urological Department of the Glasgow Royal Infirmary and no evidence of genito-urinary disease was found.

24/2/42. Patient reported. Generally she looks and feels well, but has not become pregnant. Menstruation is irregular, 7-10/21-28, loss moderate, pain marked. She has occasional spells of amenorrhoea lasting 2 to 3 months; the last time this occurred, during August to October, 1941, she was thought to be pregnant, but this was later found to be a mistake. Last menstrual period 1/2/42 to 8/2/42. Continual white vaginal discharge is present between the menstrual periods. Her husband is healthy and is in the R.A.F. Chest X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis." Pelvic examination as before, apart from cyst of right ovary about the size of a golf ball, which has developed since the last examination. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity $2\frac{1}{2}$ inches by sound. Sufficient material obtained for (1) Histological examination and (2) Guinea-pig inoculation. Pathological report: "Tuberculous endometritis is present".

20/4/42. Guinea-pig killed with chloroform. Tuberculous lesions present in local glands, lumbar glands, spleen and liver. Tubercle bacilli found in film from splenic lesions. 2 Löwenstein's media inoculated from splenic lesions.

26/5/42. No growth obtained on culture.

Readmitted 22/5/42.

Dismissed 3/6/42.

History since previous attendance. The patient has not become pregnant. She still complains of profuse, painful menstruation. Last menstrual period 17/5/42 to 21/5/42. She has been readmitted for further investigation.

General examination. Satisfactory.

Abdominal examination. As before.

Pelvic examination. Findings on pelvic examination are unchanged.

Operation - 2/6/42. Examination under anaesthesia. In view of the fact that no pelvic lesion was found apart from the small ovarian cyst previously noted and that both tubes were normal on examination, it was decided not to carry out any further operative treatment at present.

3/6/42. Abdomen X-rayed. X-ray report: "There is no evidence of tuberculosis". Patient dismissed.

Case 30.

MISS J.S. Admitted 19/4/41.

Dismissed 29/4/41.

Age 19 years. Unmarried.

Obstetrical history: Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation previously regular, 3-4/28, loss normal, painless. In the past 4 months she has had almost constant vaginal bleeding. The last haemorrhage was from 8/4/41 to 18/4/41.

Previous health. In December 1940, the patient had appendicectomy performed in another hospital. At operation it was noted that tuberculous mesenteric glands were present. Her previous health has otherwise been uneventful.

Primary complaint. Excessive vaginal bleeding of 4 months duration.

History of present illness. Since her operation 4 months ago the patient has had almost constant vaginal bleeding, with occasional intervals of a few days. About one day a week the bleeding is more severe than at other times and clots are passed. She has constant pain in the left iliac fossa and intermittent pain in the hypogastrium. A brown vaginal discharge is present between the attacks of bleeding. There is no disturbance of bladder or bowel function.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. The wound from her appendicectomy is well healed. No abnormality can be found in the abdomen.

Pelvic examination. The external genitals and perineum are normal. The vagina is narrow. The cervix is directed forwards and is normal in all respects. The uterine body is retroflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 21/4/41. Dilatation and curettage were performed

under gas, oxygen and ether anaesthesia. The endometrium was scanty. Pathological report: "The endometrium is in the early secretory phase of the menstrual cycle. The endometrial stroma is densely infiltrated with lymphocytes, plasma cells and polymorphs. In several places, lesions are present with an appearance suggestive of tuberculosis. No definite evidence of tubercle is present. On examination of further sections, several foci of tuberculosis are seen in the endometrial stroma".

Post-operative progress.

26/4/41. Well. Allowed up.

29/4/41. Dismissed.

Follow-up. Letter received to say that patient has now regular menstruation, 14/28, loss profuse, pain severe. Generally she is not in good health and feels very tired at the end of each menstrual period.

3/6/42. Patient reported. She was married 4 months ago. Menstruation has since been profuse and irregular. Last menstrual period 15/5/42 to 23/5/42. Abdominal pain is severe. Pelvic examination was unsatisfactory and readmission was arranged for further investigation.

Readmitted 15/12/42.

Dismissed 28/12/42.

History since last attendance. The patient has been married 10 months and has not become pregnant, although she is anxious to have a family. She has had profuse, irregular vaginal bleeding every 3 weeks, accompanied by premenstrual and menstrual pain. During the past 5 months menstruation has been regular, 4-5/28, loss normal, pain moderate. Intercourse has always been painful. Her general health is improving and she is gaining in weight.

General examination. Condition satisfactory.

Abdominal examination. Findings as previously.

Pelvic examination. The findings on pelvic examination are

unchanged.

Operation - 16/12/42. Tubal insufflation, dilatation and curettage and perineoplasty were carried out under gas, oxygen and ether anaesthesia. Gas failed to pass at 200 mm. mercury. The endometrium was scanty. Pathological report: "The endometrium is in the proliferative phase of the cycle. No well defined tuberculous foci are seen, although in places the appearances are suggestive of this lesion. In further sections of the endometrium, definite tuberculous foci are seen".

Post-operative progress.

26/12/42. Well. Allowed up. Perineum healed.

28/12/42. Dismissed.

Case 31.

MRS. J.S. Admitted 13/10/39.

Dismissed 19/10/39.

Age 29 years. Married 8 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 18 years. Menstruation regular, 3/28, loss scanty, painless. Last menstrual period 22/9/39 to 25/9/39.

Previous health. In 1934 the patient had an operation for tuberculous glands of the neck. Her previous health has otherwise been good.

Primary complaint. Sterility.

History of present illness. The patient has been married for 8 years and has not become pregnant, although she is very anxious to have a family. She has no dyspareunia but intercourse is infrequent and only occurs about once a month. The bowels are very constipated. She has no urinary disturbance. Her husband is healthy.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 14/10/39. Dilatation and curettage were carried out under chloroform and ether anaesthesia. The endometrium was scanty and was not sent to the Pathological Department.

Post-operative progress.

17/10/39. Well. Allowed up.

19/10/39. Dismissed.

Follow-up.

20/11/39. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

23/9/41. Patient reported. She has not become pregnant. Last menstrual period 29/8/41 to 1/9/41. Endometrial biopsy performed. Pathological report: "Several tuberculous foci are seen in the endometrial stroma. The glands show no evidence of secretory activity".

8/12/41. Patient reported. She has not become pregnant. Period after last biopsy was 25/9/41 to 27/9/41. Pelvic examination as before. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity 2½ inches by sound. Sufficient material was obtained for (1) histological examination (2) guinea-pig inoculation. Pathological report: "Tuberculosis of the endometrium is present". Chest and abdomen X-rayed. X-ray report: "There is no evidence of active tuberculosis in the chest or abdomen". Her husband is healthy and is in the army.

19/1/42. Guinea-pig killed with chloroform. The only evidence of tuberculosis found was a single, small nodule in the spleen. Tubercle bacilli were found in a film from this nodule. No culture media were inoculated because the amount of tuberculous material was minute and was only sufficient to make the film.

Case 32.

MRS. M.W. Admitted 16/1/39.

Dismissed 23/1/39.

Age 23 years. Married 2½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation regular, 4/30, loss normal, painless. Last menstrual period 15/1/39 to 19/1/39.

Previous health. The patient had scarlet fever in childhood. Her previous health has otherwise been uneventful. She has had no operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 2½ years and has not become pregnant, although she is very anxious to have a family. She feels well in every way and has no other complaint, apart from constipation.

General examination. The patient appears to be in good general health. No abnormality can be found in the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. The right ovary is cystic and is enlarged to about twice normal size. No other palpable adnexal abnormality is present.

Operation - 21/1/39. Tubal insufflation was performed under ether anaesthesia. Gas passed freely at 80 mm. mercury. This was confirmed by ausculation of the abdomen.

Follow-up.

17/10/41. Patient reported. She has not become pregnant.

Last menstrual period 28/9/41 to 2/10/41. Tubal insufflation performed. Gas passed at 80 to 120 mm. mercury. Shoulder pain felt.

22/10/41. Patient reported. Pelvic examination as before. Endometrial biopsy performed. Pathological report: "Tuberculosis of the endometrium is present. The glands are in the interval phase of the menstrual cycle".

28/10/41. Patient reported. Pelvic examination as before. Endometrial biopsy performed. Pathological report: "There is basal vacuolation of the gland cells suggesting an early secretory phase, though this is not in keeping with the time in the menstrual cycle. No evidence of tuberculosis is seen". When the tissue from this biopsy was reorientated and reembedded and fresh sections were cut, tuberculous foci were seen.

Attempts to persuade this patient to attend again in order to complete the investigation were unsuccessful.

Case 33.

MRS. N.G. Admitted 11/11/41.

Dismissed 18/11/41.

Age 32 years. Married 2 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 13 years. Menstruation regular, 4/26, loss normal, painless. Last menstrual period 18/10/41 to 1/11/41.

Previous health. The patient has always been in good health. She has had no operations or serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 2 years and has not become pregnant, although she is very anxious to have a family. She has always complained of dyspareunia. She has no vaginal discharge. There is no disturbance of bladder or bowel function. Her husband is healthy.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals and perineum are normal. The vaginal introitus is rather narrow. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 12/11/41. Dilatation and curettage were carried out under ether anaesthesia. Pathological report: "Tuberculous endometritis is present".

Post-operative progress.

16/11/41. Well. Allowed up.

18/11/41. Dismissed.

Follow-up. This patient could not be traced after leaving hospital.

Case 34.

MRS. F.C. Admitted 14/11/41.

Dismissed 2/12/41.

Age 47 years. Married 23 years.

Obstetrical history. The patient has had 4 full-time children (last 1924). In each case the delivery was spontaneous and the puerperium was uncomplicated. 3 children are still alive. She has had no miscarriages.

Menstrual history. Puberty at 14 years. Menstruation irregular, 2-7/28-42, loss profuse, slight pain before onset of flow. During past 4 months menstruation has been irregular, 7/14-28, loss profuse with clots, pain as before. Last menstrual period 20/10/41 to 27/10/41.

Previous health. In 1930 the patient had "rheumatism" for 6 months. In May, 1941, she was in the Royal Samaritan Hospital for Women, where a complete prolapse of the uterus was treated by Donald-Fothergill operation and colpo-perineorrhaphy. She has had no other operations or serious illnesses.

Primary complaint. Profuse, frequent menstruation during the past 4 months.

History of present illness. The patient made a satisfactory recovery from her operation in May, but shortly after dismissal she began to complain of irregular, profuse and frequent menstruation. Frequency of micturition is increased. The bowels are regular. She has slight, white vaginal discharge between the menstrual periods.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals are normal. The perineum is well healed and there is no laxity of the vaginal walls. The cervical stump is well healed but is still somewhat irregular. The uterine body is retroflexed and is normal in size, regular in outline, firm in consistence

and freely mobile. No palpable adnexal lesion is present.

Operation - 25/11/41. Dilatation and curettage were carried out under ether anaesthesia. The uterine cavity measured 3½ inches by sound. The endometrium appeared normal. Pathological report: "Tuberculosis of the endometrium is present".

Post-operative progress.

30/11/41. Well. Allowed up.

1/12/41. Chest X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis".

2/12/41. Dismissed.

Follow-up.

8/1/42. Patient reported. Generally she feels well but looks rather pale. Last menstrual period 11/12/41 to 16/12/41. Loss at that time was normal. Slight, white vaginal discharge occurred before and after this period. Pelvic examination as before. Endometrial biopsy performed. Uterine cavity 3½ inches by sound. Sufficient material obtained for (1) histological examination (2) guinea-pig inoculation. Pathological report: "The glands are in the interval phase. There is no evidence of tuberculosis". Her husband is healthy.

5/2/42. Patient reported. She is generally well. Her last period was normal - 26/1/42 to 30/1/42.

5/3/42. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

Case 35.

MRS. A.I. — Admitted 24/6/38.

Dismissed 5/7/38.

Age 23 years. — Married 1½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation regular, 3/28, loss normal, slight pain before onset of flow. Last menstrual period 20/6/38 to 23/6/38.

Previous health. Appendicectomy was performed in 1930. The patient's previous health has otherwise been uneventful.

Primary complaint. Sterility.

History of present illness. The patient has been married for 1½ years and has not become pregnant, although she is very anxious to have a family. The bowels are constipated. There is no urinary disorder. Generally she feels well.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory system. A short systolic murmur is audible at the cardiac apex but is not propagated. The cardiovascular system is otherwise normal. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen. The scar of the previous appendicectomy is well healed.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects, apart from a small erosion. The uterine body is anteflexed and is small in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 29/6/38. Dilatation and curettage and cauterisation of the cervical erosion were carried out under chloroform and ether anaesthesia. The uterine cavity measured 2½ inches by sound. The endometrium was not sent to the Pathological Department.

Post-operative progress.

3/7/38. Well. Allowed up.

5/7/38. Dismissed.

Readmitted 2/2/42.

Dismissed 20/2/42.

History since previous admission. The patient still complains of sterility. Menstruation is as before. Last menstrual period 12/1/42 to 16/1/42. She has no dyspareunia.

General examination. Condition as before.

Abdominal examination. As previously.

Pelvic examination. Findings as before, except that erosion of cervix previously present has healed.

Operation - 10/2/42. Tubal insufflation and dilatation and curettage were carried out under ether anaesthesia. Uterine cavity 2½ inches by sound. Gas failed to pass at 200 mm. mercury. Endometrium scanty. Pathological report: "The endometrium is in the proliferative phase of the menstrual cycle. At one point in the stroma there is a focus with the histological appearances of tuberculosis".

Post-operative progress.

17/2/42. Well. Allowed up.

20/2/42. Dismissed.

Follow-up.

29/5/43. Patient reported. She has not become pregnant. Generally she looks and feels well. Menstruation regular, 3-4/28, loss normal, painless. Last menstrual period 9/5/43 to 12/5/43. She has no pain, dyspareunia or urinary disturbance. There is occasional, slight vaginal discharge. Her husband is healthy and is in the army. Chest and abdomen X-rayed. X-ray report: "Nothing abnormal found in chest or abdomen".

12/6/43. Patient reported. Last menstrual period 6/6/43 to 9/6/43. Pelvic examination as before. Endometrial biopsy performed. Uterine cavity 2½ inches by sound. Cervix appeared healthy. Sufficient material obtained for

(1) histological examination and (2) guinea-pig inoculation. Pathological report: "Proliferative phase. No tuberculous foci seen".

7/8/43. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

2/10/43. Patient reported. She looks and feels well but has not become pregnant. Menstruation is regular, 3-4/28, loss normal, painless.

Case 36.

MRS. H.W.

Admitted 10/5/42.

Dismissed 21/5/42.

Aged 48 years. Married 26 years.

Obstetrical history. The patient has had 5 full-time children (last 1925). The first, second and fourth deliveries were instrumental and the others were spontaneous. In each instance the puerperium was normal. She has had no miscarriages.

Menstrual history. Puberty at 14 years. Menstruation previously regular, 5-6/28, loss normal, painless. During the past year she has had profuse, irregular bleeding. Last menstrual period 16/4/42 to 21/4/42.

Previous health. In 1933 the patient had dilatation and curettage performed in another hospital. In 1936 she had pleurisy. Her previous health has otherwise been uneventful.

Primary complaint. Profuse, irregular vaginal bleeding for one year.

History of present illness. During the past year the patient has had profuse, irregular vaginal bleeding. Between the menstrual periods a constant, foul-smelling, bloodstained vaginal discharge is present. She sometimes has dragging pain in the left iliac fossa. Generally she is listless and easily tired and feels unable to do her usual housework. The bowels are regular and she has no urinary disturbance.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. Blood-pressure is 150/94. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals are normal. The perineum is deficient and the vaginal walls are lax. Adhesions are present around the vaginal vault. The cervix is directed backwards and is thickened, patulous and eroded. The uterine body is anteflexed and is normal in size, regular in outline

firm in consistence and freely mobile. No palpable abnormality is present in the tubes or ovaries.

Operation - 11/5/42. Dilatation and curettage and cauterisation of the cervical erosion were carried out under gas, oxygen and ether anaesthesia. The uterine cavity measured $3\frac{1}{2}$ inches by sound. The endometrium was thickened. Pathological report: "Widespread miliary tuberculosis of the endometrium is present".

Post-operative progress.

18/5/42. Chest and abdomen X-rayed. X-ray report:"There is no evidence of pulmonary tuberculosis or calcified abdominal glands". No further post-operative notes were recorded.

Follow-up. This patient could not be traced after leaving hospital.

Case 37.

MRS. A.O. Admitted 18/5/42.

Dismissed 1/6/42.

Age 26 years. Married 1 year.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 15 years. Menstruation previously regular, 4-6/28, loss normal, painless. During the past 2 years menstruation has been regular, 6-14/28, loss profuse with passage of clots, painless. Last menstrual period 24/4/42 to 4/5/42.

Previous health. The patient has always been in good health. She has had no serious illnesses or operations.

Primary complaint. Profuse, prolonged menstrual periods of 2 years duration.

History of present illness. During the past 2 years, the patient has complained of profuse, prolonged menstrual periods, which have gradually become more excessive. For the same length of time she has had a yellow vaginal discharge between the periods, causing irritation of the vulva. She has not become pregnant, although she is anxious to have a family. There is no urinary disturbance.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal apart from the presence of a small erosion. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. The right ovary is enlarged to about twice normal size owing to the presence of a small cyst. No other palpable adnexal abnormality is present.

Operation - 23/5/42. Dilatation and curettage and cauterisation of the cervical erosion were performed under ether anaesthesia. The uterine cavity measured 2½ inches by sound. The endometrium was thickened. Pathological report: "The endometrium is in

the premenstrual phase of the cycle. Many tuberculous foci are seen in the stroma".

Post-operative progress.

29/5/42. Well. Allowed up.

1/6/42. Dismissed.

Follow-up.

27/5/43. Patient reported. Generally she looks and feels well but has not become pregnant. Menstruation since dismissal has been irregular, 6-9/13-28, loss moderate, painless. Last menstrual period 12/5/43 to 19/5/42. She has slight intermenstrual vaginal discharge and slight, intermittent lower abdominal pain unrelated to menstruation. She has no urinary disturbance or dyspareunia. Her husband is healthy and works as an insurance agent. Chest and abdomen X-rayed. X-ray report: "The chest and abdomen are normal". Pelvic examination as before, except that cervical erosion is now healed. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity $2\frac{1}{2}$ inches by sound. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Early secretory phase. No evidence of tuberculosis seen".

22/6/43. Guinea-pig died of intercurrent disease. No evidence of tuberculosis found.

17/7/43. Patient reported. She is generally well, though the periods are still profuse. She has not become pregnant. Pelvic examination as before. Endometrial biopsy performed. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Early secretory phase. No tuberculous foci seen".

17/9/43. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

Case 38.

MRS. M.M. Admitted 10/6/42.

Dismissed 22/7/42.

Age 31 years. Married 2 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 16 years. Menstruation previously regular, 5-9/28, loss normal, painless. During past year irregular, 9-10/14, loss profuse with passage of clots, painless. Last menstrual period 28/4/42 - present on admission.

Previous health. The patient had pneumonia when aged 19. She has had no other serious illnesses and no operations.

Primary complaint. Profuse, irregular vaginal bleeding of 12 months duration.

History of present illness. During the past year the patient has had profuse, frequent, irregular menstruation, accompanied by the passage of numerous clots. She has no pain. During the past 8 months she has lost about a stone in weight. Recently she has had attacks of dizziness at work. She does not sleep well. The bowels are regular and there is no urinary disturbance.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory system. The cardiac sounds are pure but frequent extra-systoles are present.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is very bulky and a friable tumour about the size of a small plum is present in the posterior lip. There is no evidence of extension to the vaginal vault or parametria. The uterine body is anteflexed and is normal in all respects. No palpable adnexal lesion is present. The cervical condition appears to be a Stage I carcinoma of the cervix.

Operation - 11/6/42. Vaginal hysterectomy was performed under gas, oxygen and ether anaesthesia. Pathological report: "The

uterus including the cervix measures 3¼ inches by 1½ inches by 1 inch. The uterine body is small. The cervix is very bulky and the vaginal portion measures 2 inches by 1½ inches by 1 inch. A rounded tumour measuring 1 inch in diameter is present on the posterior lip. The surface of the tumour is ulcerated. On microscopic examination the cervical tumour is seen to be a squamous cell carcinoma. The endometrium is thickened and widespread tuberculous foci are present. No tuberculous foci are seen in the myometrium".

Post-operative progress.

12/6/42. Patient well. Pulse and temperature slightly elevated.

23/6/42. Patient well. Removal of vaginal packing completed. Pulse and temperature normal.

24/6/42. Deep X-ray therapy commenced.

28/6/42. Allowed up.

21/7/42. Deep X-ray therapy completed.

22/7/42. Well. Dismissed.

Follow-up.

21/8/42. Patient reported. Generally well. No bleeding since dismissal.

22/10/42. Patient reported. Pelvic examination satisfactory. No palpable adnexal lesion present.

31/5/43. Patient reported. Generally well. Chest and abdomen X-rayed. X-ray report: "There is no evidence of tuberculosis of the lungs. Calcified mesenteric glands are seen in the abdomen". Her husband is healthy and is in the army. Pelvic examination as on 22/10/42.

Case 39.

MRS. M.M. Admitted 3/8/42.

Dismissed 14/8/42.

Age 31 years. Married 3 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 13 years. Menstruation previously regular, 3/28, loss normal, painless. For menstrual history since marriage see history of present illness. Last menstrual period 27/7/42.

Previous health. When aged 19 the patient had abdominal tuberculosis, from which she made a satisfactory recovery. She has had no other serious illnesses and no operations.

Primary complaint. Sterility.

History of present illness. The patient has been married 3 years and has not become pregnant, although she is very anxious to have a family. She was married in 1939 and for 6 months menstruation was absent. Since then menstruation has been regular, but the periods have been scanty and only last for one day. She has had continuous backache since October 1941. Intercourse has always been painful. She has no discharge. Bladder and bowel function are normal.

General examination. The patient appears to be in good general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed forwards and is normal apart from a small erosion. The uterine body is retroflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 4/8/42. Tubal insufflation, dilatation and curettage and cauterisation of the cervical erosion were carried out under gas, oxygen and ether anaesthesia. The

uterine cavity measured 2½ inches by sound. Gas failed to pass at 200 mm. mercury. The endometrium appeared to be normal. Pathological report: "Tuberculosis of the endometrium is present".

Post-operative progress.

11/8/42. Well. Allowed up.

14/8/42. Dismissed.

Follow-up.

31/5/42. Patient reported. Generally she feels fairly well but has recently lost some weight. She has not become pregnant. Backache is still present and menstruation is unchanged. Last menstrual period 17/5/43. She has no vaginal discharge. Bladder and bowel function are normal. She still has dyspareunia. Her husband is healthy and works as a miner. Chest and abdomen X-rayed. X-ray report: "There is calcified tuberculosis at both apices with fibrosis. Radiologically probably negative. In the abdomen a fairly large, opaque shadow is seen overlying the sacrum. It has an unusual shape for calcified mesenteric glands and has not the usual appearance of a calcified fibroid. Could be due to either of these". Pelvic examination as before. Endometrial biopsy performed. Cervix healed. Uterine cavity measures 2½ inches by sound. The amount of material obtained was sufficient only for guinea-pig inoculation and simultaneous histological examination could not be carried out.

19/6/43. Patient reported. She looks and feels well. Menstruation unchanged. Last menstrual period 7/6/43.

30/7/43. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

7/8/43. Patient reported. She looks and feels well, but has not become pregnant.

Case 40.

MRS. L.C. Admitted 20/8/42.

Dismissed 29/8/42.

Age 35 years. Married 5 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation until marriage was regular, 3/28, loss scanty, painless. Since then the amount of menstrual loss has diminished and menstruation has gradually changed to regular, 1/28, loss scanty, painless. Last menstrual period 6/8/42 to 7/8/42.

Previous health. The patient has always been in good health and has had no operations or serious illnesses.

Primary complaint. Sterility.

History of present illness. The patient has been married for 5 years and has not become pregnant, although she is very anxious to have a family. Intercourse with her husband is regular but painful. Since her marriage the menstrual periods have become scanty. She has no pain. There is no disturbance of bladder or bowel function.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 21/8/42. Tubal insufflation and dilatation and curettage were carried out under gas, oxygen and ether anaesthesia. Gas failed to pass at 200 mm. mercury. Pathological report: "The endometrium is in the early secretory phase of the cycle. At one point in the stroma tuberculous foci are seen".

Post-operative progress.

27/8/42. Well. Allowed up.

29/8/42. Dismissed.

Follow-up.

24/9/42. Patient reported. Last menstrual period 1/9/42. Endometrial biopsy performed. Pathological report: "The endometrium shows secretory changes. Tuberculous foci are seen in the stroma".

22/10/42. Patient reported. Last menstrual period 25/9/42 to 28/9/42. Pelvic examination as before. Endometrial biopsy performed. Pathological report: "Secretory changes are present. No evidence of tuberculosis is seen".

25/3/43. Patient reported. She is generally well but has not become pregnant. Pelvic examination as before. Endometrial biopsy performed. Amount of material obtained was small and was used for guinea-pig inoculation. There was not sufficient for simultaneous histological examination.

19/5/43. Guinea-pig killed with chloroform. Tuberculous lesions found in local glands and spleen. Tubercle bacilli discovered in film from splenic lesions. 2 Löwenstein's media inoculated from splenic lesions.

1/6/43. Patient reported. She has not become pregnant. Generally she looks and feels well. Her husband is healthy and is in the navy. Menstruation is now regular, 3-4/28, loss normal, painless. Last menstrual period 6/5/43 to 9/5/43. She has no vaginal discharge, dyspareunia or urinary disturbance. Chest and abdomen X-rayed. X-ray report: "A few old calcified glands are seen at the lung roots and in the right perihilar region, not of present significance. Left-sided calcified mesenteric glands are seen in the abdomen."

16/6/43. No growth obtained on culture.

Case 41.

MRS. E.F. — Admitted 21/9/42.

Dismissed 16/10/42.

Age 39 years. — Married 3 years.

Obstetrical history. — Nulliparous.

Menstrual history. Puberty at 15 years. Menstruation until 2 months ago, was regular, 4/28, loss normal, painless. During the past 2 months, menstruation has been regular, 4/21, loss normal, painless. Last menstrual period 10/9/42 to 14/9/42.

Previous health. The patient has had no operations. Three years ago she had acute nephritis. On 14/9/42 she attended the Out-patient Department of the Samaritan Hospital and endometrial biopsy was performed. Pathological report: "Tuberculosis of the endometrium is present". Admission for investigation was arranged.

Primary complaint. Sterility.

History of present illness. The patient has been married for 3 years and has not become pregnant although she is very anxious to have a family. She has no dyspareunia. General health is good. Bladder and bowel function are normal.

General examination. The patient appears to be in good general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation (1) - 22/9/42. Dilatation and curettage were performed under gas and oxygen anaesthesia. Pathological report: "Tuberculous foci are present in the stroma.

The glands are in the proliferative phase of the cycle".

Operation (2) - 29/9/42. Tubal insufflation was performed without anaesthesia. Gas passed at 60 to 80 mm. mercury.

Operation (3) - 12/10/42. Endometrial biopsy was performed without anaesthesia. Last menstrual period 4/10/42 to 8/10/42. Pathological report: "Tuberculous foci are present".

Post-operative progress.

14/10/42. Well. Allowed up. Chest and abdomen X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis or of calcified glands in the abdomen".

16/10/42. Dismissed.

Follow-up.

1/6/43. Patient reported. She generally looks and feels well but has not become pregnant. Menstruation is regular, 3-4/28, loss normal, painless. Last menstrual period 14/5/43 to 17/5/43. She has no vaginal discharge, dyspareunia or urinary disturbance. Her husband is in good health and is in the army. She has intermittent backache. Pelvic examination as before. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity 2½ inches by sound. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Proliferative phase. Tuberculous lesions present in stroma".

29/6/43. Patient reported. She is generally well. Pelvic examination as before.

12/7/43. Guinea-pig found dead in morning. Tuberculous lesions found only in spleen. Tubercle bacilli found in smear from splenic lesions. 2 Löwenstein's media inoculated from splenic lesions.

28/9/43. No growth obtained on culture.

Case 42.

MRS. I.L. Admitted 9/10/42.

Dismissed 26/10/42.

Age 26 years. Married 6 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation before marriage regular, 3-4/28, loss normal, painless. Since marriage menstruation has been irregular, 6-10/14-21, loss profuse, moderate lower abdominal pain before and during the menstrual periods. Last menstrual period 29/9/42 to 7/10/42.

Previous health. The patient had pleurisy when aged 13. She has had no other serious illnesses and no operations.

Primary complaint. Sterility.

History of present illness. The patient has been married for 6 years and has not become pregnant, although she is very anxious to have a family. Since marriage she has also complained of profuse, irregular menstruation, preceded and accompanied by dragging lower abdominal pain. Frequency of micturition is increased.

General examination. The patient appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 13/10/42. Dilatation and curettage were performed under ether anaesthesia. The uterine cavity measured 3 inches by sound. The endometrium was scanty. Pathological report: "The endometrium is in the proliferative phase of the cycle. Scattered tuberculous foci are present in the stroma".

Post-operative progress.

20/10/42. Well. Allowed up. Chest X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis.

22/10/42. Endometrial biopsy performed. Pathological report: "No tuberculous lesions seen".

26/10/42. Dismissed.

Follow-up.

2/11/42. Patient reported. Endometrial biopsy performed. Pathological report: "The specimen consists mainly of necrotic debris infiltrated with numerous polymorphs. Only minute fragments of endometrial stroma are present. No evidence of tuberculosis is seen".

9/11/42. Patient reported. Endometrial biopsy performed. Pathological report: "A single tuberculous focus is seen in the stroma".

1/3/43. Patient reported. Generally she is well. Pelvic examination as before.

3/6/43. Patient reported. Generally she is well but has not become pregnant. Menstruation is now regular, 10-12/28, loss profuse, painless. Last menstrual period 9/5/43 to 21/5/42. She has intermittent lower abdominal pain unrelated to menstruation and constant white vaginal discharge between the periods. Frequency of micturition is increased. She has no dyspareunia. Her husband is healthy and works as a galvaniser. Abdomen X-rayed. X-ray report: "No evidence of calcified mesenteric glands or any other abnormality in the abdomen". Pelvic examination as before. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury. Endometrial biopsy performed. Uterine cavity 3 inches by sound. Cervix appeared healthy. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Early secretory phase. No evidence of tuberculosis seen".

30/7/43. Guinea-pig killed with chloroform. Tuberculous lesions present in lumbar glands, omentum and

spleen. Tubercle bacilli found in smear from splenic lesions. Two Löwenstein's media inoculated from splenic lesions.

28/8/43. No growth obtained on culture.

Case 43.

MRS. E.L. Admitted 17/10/42.

Dismissed 12/11/42.

Age 62 years. Married 30 years.

Obstetrical history. The patient has had 3 full-time children, (last 1919), and 1 premature child (1913). All deliveries were instrumental. The puerperia were uncomplicated. Two children are still alive.

Menstrual history. Puberty at 15 years. Menstruation regular, 7/28, loss normal, painless. Menopause at 49 years.

Previous health. The patient has always been in good health and has had no serious illnesses or operations.

Primary complaint. A feeling of "something coming down".

History of present illness. Since 1913 the patient has had a feeling of "something coming down" in the vulvar region. Frequency of micturition is increased and she has stress incontinence of urine. The bowels are constipated. She has no vaginal discharge. Recently she has noticed some loss of weight and has complained of a dry, irritating cough and profuse sweating at night.

General examination. The patient appears to be in good general health for her years. No abnormality can be found in the respiratory system. Blood-pressure is 170/80 and haemoglobin 70 per cent. The cardiovascular system otherwise shows no abnormality. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals are atrophic and a urethral caruncle is present. The perineum is deficient and a small rectocele is present. The cervix is atrophic and eroded and is flush with the vaginal vault. The uterine body is anteflexed and is very small, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 23/10/42. Dilatation and curettage, cauterisation of the cervical erosion and urethral caruncle and colpo-

perineorrhaphy were performed under gas, oxygen and ether anaesthesia. Pathological report: "The endometrium is entirely replaced by tuberculous granulation tissue which shows extensive necrosis".

Post-operative progress.

1/11/42. Well. stitches removed. Perineum healthy.

8/11/42. Perineum healed. Allowed up.

12/11/42. Dismissed.

Follow-up.

3/6/43. Patient reported. Generally she looks and feels well. She has had no vaginal bleeding or discharge since dismissal. On pelvic examination the perineum was found to be well healed. The cervix was represented by a small scarred area at the vaginal vault. Examination was otherwise as before. An endometrial biopsy could not be performed owing to the absence of the cervix. Patient's husband died of cardiac disease in 1931. Chest and abdomen X-rayed. X-ray report: "No evidence of tuberculous infiltration in the lungs. Right-sided calcified mesenteric glands".

31/7/43. Patient reported. Generally she is well and has no complaint.

Case 44.

MRS. M.M. Admitted 24/10/42.

Dismissed 19/11/42.

Age 40 years. Married 14 years.

Obstetrical history. The patient has had 3 full-time children (last 1938) and 1 miscarriage (1929). The first full-time delivery was instrumental and the others were spontaneous. Apart from a breast abscess after the birth of her last child, the puerperia were uncomplicated. Two children are still alive.

Menstrual history. Puberty at 11 years. Menstruation until a few months ago was regular, 7/30, loss normal, moderate backache during the menstrual flow. Since then menstruation has been regular 3-4/30, loss profuse with occasional passage of clots, pain as before. Last menstrual period 17/10/42 to 21/10/42.

Previous health. The patient had diphtheria when aged 8. She has had no other serious illnesses and no operations.

Primary complaint. "Something coming down" of 5 years duration.

History of present illness. During the past 5 years the patient has had a feeling of "something coming down" in the region of the vulva, accompanied by severe backache. Frequency of micturition is increased and she has stress incontinence of urine. The bowels are constipated.

General examination. The patient appears to be in satisfactory general health, although she is rather plethoric. Blood pressure is 154/100. Apart from this, no abnormality can be found on examination of the respiratory or cardiovascular systems.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals are normal. The perineum is torn and a complete prolapse of the uterus is present. The cervix is considerably hypertrophied. The uterine body is retroflexed and is slightly enlarged, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 30/10/42. Dilatation and curettage, Donald-Fothergill operation and colpo-perineorrhaphy were carried out under gas, oxygen and ether anaesthesia. The uterine cavity measured 3½ inches by sound. The endometrium was considerably thickened. Pathological report: "The endometrium is in the proliferative phase of the cycle. Tuberculous foci are present in the stroma".

Post-operative progress.

9/11/42. Patient is well. Stitches removed. Perineum healed.

16/11/42. Patient is generally well. Perineum healed. Allowed up.

19/11/42. Dismissed.

Follow-up.

8/6/43. Patient reported. Well since dismissal. Menstruation regular, 3-7/30, loss normal, painless. Last menstrual period 12/5/43 to 16/5/43. She has no pain, vaginal discharge or dyspareunia. The backache and feeling of "something coming down" are now absent. Her husband is healthy and works as a plumber. On pelvic examination the perineum is well healed, the vaginal walls are normal and the cervical stump is satisfactory. The uterine body is anteflexed and is otherwise as before. No adnexal lesion is palpable. Endometrial biopsy performed. Uterine cavity 3½ inches by sound. Cervix healthy. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Early secretory phase. No evidence of tuberculosis seen". Chest and abdomen X-rayed. X-ray report: "No evidence of active tuberculosis in the lungs. There is a little old calcification in the right apex. Calcified mesenteric glands in abdomen".

2/8/43. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

Case 45.

MRS. E.C. — Admitted 18/11/42.

Dismissed 10/12/42.

Age 38 years. — Married 20 years.

Obstetrical history. The patient has had 5 full-time children (last 1932) and 1 miscarriage (1938). The third and fifth full-time deliveries were instrumental; the others were spontaneous. The puerperia were uncomplicated. Four children are still alive.

Menstrual history. Puberty at 13 years. Until 18 months ago menstruation was irregular, 4-5/25-28, loss normal, moderate lower abdominal pain before and during flow. During the past 18 months menstruation has been irregular 4-10/7-21, loss profuse with passage of clots, pain as before. Last menstrual period 3/11/42 to 13/11/42.

Previous health. The patient was in a sanatorium in 1924, 1934 and 1941 with pulmonary tuberculosis. In 1930 she had dilatation and curettage and a perineal repair performed.

Primary complaint. Profuse, prolonged menstrual periods of 18 months duration.

History of present illness. During the past 18 months menstruation has been profuse, prolonged and irregular, with passage of numerous clots. She has lower abdominal pain of moderate severity before and during the menstrual periods and backache during the flow. For five years she has had profuse, white vaginal discharge. Frequency of micturition is increased and she has stress incontinence of urine. The bowels are constipated.

General examination. The patient appears to be in satisfactory general health. On examination of the respiratory system slight impairment of resonance is present at the right pulmonary base. No abnormality can be found in the cardiovascular system. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals are normal. The perineum is deficient. Cystocele and rectocele are present. The cervix is directed backwards and is normal in all respects.

The uterine body is anteflexed and is slightly enlarged, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 19/11/42. Dilatation and curettage, anterior colporrhaphy and colpo-perineorrhaphy were performed under gas, oxygen and ether anaesthesia. The endometrium was thickened. Pathological report: "The endometrium is in the proliferative phase of the cycle and occasional glands are cystic. Tuberculous foci are present in the stroma".

Post-operative progress.

29/11/42. Patient well. Stitches removed. Perineum healthy.

7/12/42. Perineum healed. Allowed up.

10/12/42. Dismissed.

Follow-up.

8/6/43. Patient reported. Generally she looks well. Menstruation since dismissal has been irregular, 6-7/14-56, loss still rather profuse with small clots, pain as before. Last menstrual period 15/4/43 to 22/4/43. She has constant, profuse, white vaginal discharge between the menstrual periods and intermittent pain in the left lower abdomen unassociated with menstruation. Urinary function is now normal. Her husband is healthy and works as a labourer. On pelvic examination the repair is well healed and findings are otherwise as before. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity 3 inches by sound. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Proliferative phase. No evidence of tuberculosis seen". Chest and abdomen X-rayed. X-ray report: "Elevated right dome of diaphragm with adhesions and thickening of pleura, the result of an old pleurisy. Some fibrosis at right apex, probably due to healed tuberculosis. Extensive calcified mesenteric glands in right side of abdomen".

2/8/43. Guinea-pig killed with chloroform. No evidence of tuberculosis seen.

Case 46.

MRS. G.I. — Admitted 6/1/43. Dismissed 15/1/43.

Age 23 years. — Married 3 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation irregular, 4/28-42, loss scanty to normal, painless. Last menstrual period 14/12/42 to 18/12/42.

Previous health. When aged 16 years appendicectomy was performed for chronic appendicitis. At 17 years she was in Robroyston Hospital for 2 months with abdominal tuberculosis. Previous health has otherwise been uneventful.

Primary complaint. Sterility.

History of present illness. The patient has been married for 3 years and has not become pregnant, although she is very anxious to have a family. The bowels are regular and urinary function is normal.

General examination. The patient appears to be in good general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen. The wound from the previous appendicectomy is well healed.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. A small cyst about the size of a walnut is present in the left ovary. Apart from this, the tubes and ovaries feel normal.

Operation - 9/1/43. Tubal insufflation and dilatation and curettage were performed under ether anaesthesia. The small cyst of the left ovary ruptured during examination. The uterine cavity measured 2½ inches by sound. Gas failed to pass at 200 mm. mercury. The endometrium was scanty. Pathological report: "Tuberculous endometritis is present".

Post-operative progress.

13/1/43. Well. Allowed up. Chest and abdomen X-rayed. X-ray report: "There is an old, calcified lesion at the right apex, but no indication of active tuberculosis. Nothing abnormal found in the abdomen".

15/1/43. Dismissed.

Follow-up.

25/5/43. Patient reported. Generally she looks and feels well but has not become pregnant. She has slight pain in the left lower abdomen, unconnected with menstruation. Menstruation since dismissal has been irregular, 1-2/21-28, loss scanty, painless. Last menstrual period 27/4/43 to 28/4/43. Pelvic examination as before. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity $2\frac{1}{2}$ inches by sound. Amount of tissue obtained scanty and only sufficient for guinea-pig inoculation. Simultaneous histological examination could not be carried out. The patient's husband is healthy and works as a motor driver.

21/6/43. Guinea-pig moribund and was killed with chloroform. Tuberculous lesions found in peritoneum, omentum and spleen. Tubercle bacilli found in film from splenic lesions. Two Löwenstein's media inoculated from splenic lesions.

15/7/43. Patient reported. She is generally well but has not become pregnant.

18/7/43. Well marked growth of tubercle bacilli obtained on culture. The appearances are those of the human type of tubercle bacillus.

28/9/43. 10 mgm. culture injected subcutaneously into rabbit after suspension in normal saline.

26/10/43. Rabbit died from intercurrent disease. No evidence of tuberculosis found. There was not enough of the original culture left to repeat the rabbit inoculation and subculture on 28/9/43 showed no growth.

Case 47.

MRS. S.F. Admitted 2/4/43.

Dismissed 14/4/43.

Age 31 years. Married 5 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Menstruation regular, 2-3/28, loss normal, painless. Last menstrual period 29/3/43 to 31/3/43.

Previous health. The patient has had no operations. She had attacks of pleurisy when aged 18 and 22 and on each occasion received sanatorium treatment.

Primary complaint. Sterility.

History of present illness. The patient has been married for 5 years and has not become pregnant, although she is very anxious to have a family. The bowels are regular and urinary function is normal. Generally she feels well and has no other complaint.

General examination. The patient appears to be in good general health. No abnormality can be found on examination of the cardiovascular or respiratory systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal abnormality is present.

Operation - 6/4/43. Tubal insufflation and dilatation and curettage were performed under ether anaesthesia. The uterine cavity measured 2½ inches by sound. Gas failed to pass at 200 mm. mercury. Pathological report: "The endometrium is in the proliferative phase of the cycle. No definite tuberculous foci are seen, but there is a moderate round-celled infiltration of the stroma. In further sections tuberculous foci are seen in the stroma".

Post-operative progress.

11/4/43. Well. Allowed up.

12/4/43. Chest and abdomen X-rayed. X-ray report: "No evidence of active tuberculosis is seen".

14/4/43. Dismissed.

Follow-up.

20/5/43. Patient reported. Generally she is well. Menstruation commenced today. Her husband is healthy and works as a labourer in a steel mill.

10/6/43. Patient reported. She has no complaint. Pelvic examination as before. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity $2\frac{1}{2}$ inches by sound. Amount of tissue obtained was sufficient for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Early secretory phase. No tuberculous foci seen".

7/8/43. Guinea-pig killed with chloroform. No evidence of tuberculosis found.

9/8/43. Patient reported. She is generally well but has not become pregnant.

Case 48.

MRS. J.M. Admitted 20/4/43.

Dismissed 5/3/43.

Age 39 years. Married 19 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 16 years. Menstruation regular, 4-5/28, loss normal, painless. Menopause at 27 years.

Previous health. The patient had scarlet fever at 15 years. Dilatation and curettage were performed in another hospital at 24 years. Her previous health has otherwise been uneventful.

Primary complaint. Vaginal discharge.

History of present illness. The patient has had intermittent vaginal discharge since her premature menopause in 1932. During most of this time the discharge has been yellow in colour and occasionally offensive. Since October, 1942, it has been constant, profuse and frequently offensive. Six months ago she had slight vaginal bleeding which lasted for 3 days. She has had frequent attacks of backache since the menopause and also occasional pain in the left iliac fossa. The bowels are regular. Frequency of micturition is increased.

General examination. The patient is rather obese but appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal, apart from an erosion. The uterine body is anteflexed and is normal in size, regular in outline, firm in consistence and freely mobile. No palpable adnexal lesion is present.

Operation - 21/4/43. Dilatation and curettage and cauterisation of the cervical erosion were carried out under gas and oxygen anaesthesia. Pathological report: "A well marked degree of

tuberculous endometritis is present".

Post-operative progress.

27/4/43. Chest and abdomen X-rayed. X-ray report: "Very extensive glandular calcification in the abdomen. Probably tuberculous in origin. No evidence of active pulmonary tuberculosis".

5/5/43. Dismissed.

Follow-up.

25/5/43. Patient reported. Generally she looks and feels well. She has had slight vaginal discharge since dismissal but has had no bleeding. She has no other complaint. Her husband is healthy and works as a railway shunter. Apart from the fact that the cervical erosion was now healed, pelvic examination is as previously. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity $2\frac{1}{2}$ inches by sound. Amount of material small, but was sufficient for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Two minute fragments of endometrium are present. In both the stroma shows marked chronic inflammatory change and in one a single, tuberculous focus is present".

22/6/43. Guinea-pig died. Tuberculous lesions present in spleen. Tubercle bacilli found in film from splenic lesions. Two Löwenstein's media inoculated from splenic lesions.

3/8/43. Patient reported. She looks and feels well, and has now no complaint.

6/8/43. Well marked growth of tubercle bacilli obtained on culture. The appearances are those of the human type of tubercle bacillus.

28/9/43. 10 mgm. culture injected subcutaneously into rabbit after suspension in normal saline.

16/11/43. Patient reported. She looks well and has no complaint.

21/12/43. Rabbit killed with chloroform. No evidence of tuberculosis found. This finally proves that the tubercle bacillus in this case is of the human type.

Case 49.

MRS. M.R. This patient was investigated throughout at the Out-patient Department and was not in Hospital at any time. Her first attendance was on 16/5/43.

Age 23 years. Married 3½ years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 13 years. Menstruation regular, 6-7/28, loss profuse with passage of clots. Severe lower abdominal pain before and after each period. Last menstrual period 7/5/43 to 14/5/42.

Previous health. When aged 15 the patient had her appendix removed and was in hospital for 3 months. She was then transferred to Robroyston Hospital where she remained for 2 years with tuberculous peritonitis. Since then she has been in good health.

Primary complaint. Sterility.

History of present illness. The patient has been married for 3½ years and has not become pregnant, although she is very anxious to have a family. Menstruation has always been profuse and accompanied by pain. She has had constant, white vaginal discharge during the past 5 years. She has no dyspareunia. Bladder and bowel function are normal.

General examination. The patient appears to be in very good general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. The wound of the previous appendicectomy is well healed. No abnormality can be found on examination of the abdomen.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed forwards and is normal in all respects. The uterine body is retroflexed and is normal in size, regular in outline and firm in consistence. Mobility is slightly impaired, though a moderate range of movement is present. No adnexal lesion is palpable.

16/5/43. Patient first attended at Out-patient Department.

Endometrial biopsy performed. Pathological report: "The endometrium is in the proliferative phase of the cycle. Tuberculous foci are seen in the stroma".

Follow-up.

27/5/43. Patient reported. Her husband is healthy and works as a painter. Pelvic examination as before. Endometrial biopsy performed. Cervix appeared healthy. Uterine cavity 2½ inches by sound. Sufficient material obtained for (1) histological examination and (2) guinea-pig inoculation. Pathological report: "Early secretory phase. Tuberculous lesions present in stroma". Chest and abdomen X-rayed. X-ray report: "There is a very small calcified area in the left apex which is possibly the site of an early healed focus. The remainder of the chest is negative. Nothing abnormal found in the abdomen".

3/6/43. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

14/6/43. Patient reported. Tubal insufflation performed. Gas failed to pass at 200 mm. mercury.

12/7/43. Guinea-pig found dead in morning. Tuberculous lesions present in local glands and spleen. Abscess at site of inoculation. Tubercle bacilli found in film from splenic lesions. Two Löwenstein's media inoculated from splenic lesions.

15/8/43. No growth obtained on culture.

Case 50.

MRS. R.M. Admitted 7/5/43.

Dismissed 2/6/43.

Age 34 years. Married 9 years.

Obstetrical history. Nulliparous.

Menstrual history. Puberty at 14 years. Until 3 months ago, menstruation was regular, 4/28, loss normal, painless. Since then menstruation has been regular, 7-14/28, loss profuse with passage of clots, severe pain in lower abdomen before onset of period. Last menstrual period 19/4/43 to 1/5/43.

Previous health. The patient has always been in good health and has had no serious illnesses or operations.

Primary complaint. Profuse, prolonged menstrual periods of 3 months duration.

History of present illness. During the past 3 months the patient has complained of profuse, prolonged menstrual periods, preceded by severe pain in the lower abdomen. During the past 3 weeks she has also had severe backache which has been continuous. She has no vaginal discharge. Slight dyspareunia has always been present since marriage. Recently she has had increased frequency of micturition. Her husband is healthy and is in the army.

General examination. The patient is rather anaemic but otherwise appears to be in satisfactory general health. No abnormality can be found on examination of the respiratory or cardiovascular systems. The urine is normal.

Abdominal examination. A hard, rounded swelling is present in the lower abdomen, rising out of the pelvis to the level of the umbilicus. The swelling has a regular outline and is not tender.

Pelvic examination. The external genitals, perineum and vagina are normal. The cervix is directed backwards and is normal in all respects. The uterine body is enlarged to the size of a 5 months pregnancy and is regular in outline and hard in consistence. Mobility is impaired. The tubes and ovaries cannot be felt.

Operation - 10/5/43. Total hysterectomy was performed under

ether anaesthesia. A cervical fibroid about the size of a 5 months pregnancy was found to be present. The tubes and ovaries appeared to be normal and were conserved. Pathological report: "The uterus measures 6½ inches by 5½ inches by 4½ inches. A cervical fibroid measuring 5½ inches by 5 inches on section is present and shows extensive central red degeneration. The uterine body is small and is perched on top of the fibroid. On microscopic examination the endometrium is seen to be in the proliferative phase of the menstrual cycle and a single tuberculous focus is seen in the stroma. The myometrium shows no changes of note. The fibroid shows extensive central necrosis".

Post-operative progress.

15/5/43. Well. Wound healthy.

20/5/43. Well. Wound healthy.

28/5/43. Well. Wound well healed. Allowed up.

1/6/43. Well. Chest and abdomen X-rayed. X-ray report: "There is no evidence of pulmonary tuberculosis. An old calcified Ghon's focus is present towards the right base, not of any present significance. No calcified mesenteric glands are seen in the abdomen".

2/6/43. Dismissed.

Follow-up.

13/7/43. Patient reported. She looks and feels well. The abdominal wound is well healed. The condition of the vaginal vault is satisfactory and no palpable adnexal lesion is present.