contents, and are secondary. But is it necessary to make this assumption? May there not be a primary infection of mucous follicles such as occurs in the skin in the case of an ordinary boil, or for that matter in an ischio-rectal abscess? In one of my cases ischio-rectal abscess did occur two years before diverticulitis. If such an event had occurred a little higher up the bowel and within the peritoneal cavity, should we not have had diverticulitis? In another of my cases diverticulitis occurred ten years after a severe Whitehead's operation for piles, but whether there was any association between the two I could not say.

The earliest theories regarding the sac formation seem to me to be rather too mechanical. For instance, the belief in gas pressure and constipation was started and is still handed on, although this point is not insisted upon by surgeons in regard to appendicitis; my three cases were associated with looseness of the bowels. The diagnosis in two of them was confirmed by operation by two distinguished surgeons. One of these was found to be suffering from an acute kink resulting from adhesions of the sigmoid to the parietal peritoneum, and the other from a fistulous communication between the sigmoid and bladder.

We are still somewhat uncertain as to the constitutional and local causes at work before the condition declares itself, and I feel sure it would be illuminating to note in all cases the particular type and build and temperament of the patients, as well as any temporary condition of mental worry or powerful emotional disturbance. I have no doubt of the very close connexion between depressing emotion and pathological conditions of the large intestine. We find this to be a constant contributor to the common colitis of this country, and I would suggest that this is the first stage in the creation of diverticulitis; a sensitive and impassioned temperament being the most powerful predisposing factor. In men of this build the effect of acute emotional worry tells at once in some way on the large intestine. The colitis of worry evidently results from diminished trophic innervation and tissue resistance, whilst at the same time the natural digestive ferments are faulty in quantity and quality. Food and the mucous lining become morbidly septic. The *B. coli* becomes more and more virulently active. Probably many follicles are infected, which may account for diverticuli being multiple.

So far, I believe, no one has suggested a comparison with ischio-rectal abscess. May not these abscesses and diverticulitis in their respective origins have much in common? After the fifty-seventh year of life, the sigmoid would appear to be the more vulnerable locality of the two. Possibly many infected follicles of the mucous membrane undergo spontaneous cure by discharge into the bowel, whilst owing to distension and destruction of their lining the sacs thus produced may become what we have hitherto thought to be permanent or congenital diverticuli.

In my cases pain in the left lower quadrant of the abdomen led to some amount of tumour formation (fibrous hyperplasia), very apparent in the case with parietal adhesions and kinking, not so much so in the case in which the sigmoid adhered to the bladder and perforated into it. The latter case exhibited, in addition to the daily passage of flatus by the urethra, all the phenomena of intense *B. coli* toxæmia, showing in succession well marked rigors, fever, violent headaches lasting from two to four days, tinnitus and toxæmic vomiting; evidently the result of leakage of toxins and bacteria into the peritoneum. Two years before these events I saw this man suffering from an acute attack of colitis with diarrhoea, severe colic, and tenesmus.

DURING the year 1918 there were 19,018 cases of diphtheria in Australia, with 607 deaths, out of a population of about five millions.

A CONFERENCE of the "Nordiske Forening mod Tuberkulose" will be held on June 28th, 29th, and 30th, in Stockholm. The subjects to be discussed are (1) tuberculosis legislation in the Scandinavian countries; (2) work therapy in sanatoriums and the organization of colonies and settlements; (3) the special measures required in tuberculosis of the larynx; and (4) the surgical treatment of pulmonary tuberculosis, including treatment by artificial pneumothorax. Representatives from Finland and Iceland, as well as from the three Scandinavian countries, are expected to attend.

ETIOLOGICAL FACTORS IN ABORTION: A STUDY OF 100 CASES.*

BY

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INTRODUCTORY.

THE material on which this paper is based has been obtained from a clinical and pathological examination of a hundred unselected cases of abortion admitted to the maternity department of the St. Mary's Hospitals, Manchester. This is too small a number on which to base authoritative statistics, but the conclusions arrived at indicate the lines along which a more extensive investigation should be carried out.

A majority of the cases belonged to the class of incomplete abortion, and in these the whole ovum was not available for pathological examination.

Our thanks are due to Professor H. R. Dean of the pathological department, University of Manchester, who kindly arranged to carry out the work in connexion with the Wassermann reactions, and to members of the honorary medical staff of the St. Mary's Hospitals, Manchester, for allowing us to examine cases of abortion admitted under their care.

The following table shows the period of gestation at which abortion occurred:

TABLE I.—Period of Gestation at which Abortion Occurred.

	Per Cent.
4 weeks ...	0
6 (inc.) to 8 weeks ...	3
8 (inc.) to 12 " ...	12
12 (inc.) to 16 " ...	40
16 (inc.) to 20 " ...	15
20 (inc.) to 24 " ...	12
Doubtful ...	18

The 18 cases in which the period of gestation was doubtful were all early abortions. The great majority therefore occurred during the first half of pregnancy and 40 per cent. between the third and fourth months.

Table II gives the number of previous full term labours and abortions.

TABLE II.—Previous Full Term Labours and Abortions.

	Full Term.					Premature.							
Pregnancies ...	0	1	2	3	4 and over	0	1	2	3	4	5	9	
No. of cases ...	20	15	17	11	37	60	24	8	1	5	1	1	

In 17 per cent. of the cases there was no previous pregnancy; 80 per cent. had previously had full-term children, 37 per cent. more than three; 40 per cent. gave a history of previous abortions, but in more than half of these abortion had only occurred once.

THE CAUSES OF ABORTION.

(a) Clinical Investigation.

To the question what produced the abortion, the patients replied as follows:

	Cases.
Strain ...	7
Falls ...	6
Kicked abdomen ...	1
Shock ...	2
Injury to foot ...	1
Instruments ...	1
Syringing ...	1
Lead pills ...	8
Sexual excess ...	1
Unknown ...	72

Excluding the above cases, the following abnormal

* From a paper read before the North of England Obstetrical and Gynaecological Society, March 19th, 1920.

conditions were found either during the clinical examination or at the time the uterine contents were evacuated.

	Cases.
Mitral stenosis	1
Chronic bronchitis	1
Phthisis	1
Severe anaemia	1
Influenza	3
Fibroids	2
Fibroids and placenta praevia	1
Placenta praevia	2
Foreign body in vagina	1
Retroversion or flexion uteri	5
Hydatid mole	1
Previous abdominal operations	3
Total	22

Twelve patients gave a positive Wassermann reaction. In six of these no other cause could be found to account for the abortion. A possible cause could therefore be ascertained clinically in 56 per cent. of the cases.

(b) Pathological Investigation.

In 54 specimens gross pathological changes were found as follows:

	Specimens.
Fetal circulation obstructed	2
Hydatid mole	1
Extensive placental infarction with associated arterial degeneration	6
Placenta oedematous	1
Haemorrhage into placenta (including three cases with red infarction, and three associated with accidental haemorrhage or placenta praevia)	9
Haemorrhage on fetal surface of placenta under amnion	2
Haemorrhage into decidua (including two cases of fibroid polyp, one placenta praevia, and eight blood moles)	33
Total	54

In the remaining 46 specimens various conditions were met with, but were either too limited in extent to be of decisive importance or the specimens examined were too incomplete for satisfactory results to be obtained.

ANALYSIS OF THE CASES GIVING A POSITIVE WASSERMANN REACTION.

In twelve patients the Wassermann reaction was positive.

(a) Clinical Observations.

Signs of active syphilis were present in one case—a patient with specific ulcers on her legs. One patient only was aware that she had syphilis. This was a single girl whose blood had been previously examined and shown a positive Wassermann reaction.

Of the twelve patients eleven had previous full-term children, and all were born alive except in one case, where three were stillborn. One patient had nine and one seven full-term living children. Six patients had had previous abortions but in only one case more than one.

Repeated abortions therefore are not necessarily associated with a positive Wassermann reaction. In fact, of seven patients in the complete series with four or more previous abortions not one gave a positive Wassermann reaction.

TABLE III.—Details of Previous Full Term Labours and Abortions in Cases in which the Wassermann Reaction was Positive.

	Full Term.				Premature.				
	1	2	3	4 and over	0	1	2	3	4
Pregnancies	1	2	3	5	5	6	1	0	0
No. of cases	1	2	3	5	5	6	1	0	0

A patient with a positive Wassermann reaction need not necessarily abort but may go to full term. It is therefore fallacious to suppose that when abortion does occur it must be caused by the syphilitic virus. Such a woman is just as much exposed to the influence of other factors which produce abortion as one in whom the reaction is negative.

Obviously, however, secondary syphilis may lead to separation of the ovum in the same way as any other

acute infection, and tertiary lesions, if affecting the fetus, placenta, or decidua, may have a similar result, or, at any rate, act as predisposing causes.

In the twelve cases under consideration the following alternative factors were present:

	Cases.
Falls and strains	2
Previous Caesarean section and adhesions between uterus and abdominal wall	1
Fibroid polyp in uterine cavity	1
Marked retroflexion of uterus	1
Previous operation for ectopic gestation	1
Obstruction of vessels in umbilical cord	1

The two cases attributed to accident may be objected to on the ground that the only evidence is the patient's own statement. Both were married women with families and appeared to be telling the truth. In one case abortion took place a week after a fall downstairs, in the other after lifting a heavy tin box.

An adherent uterus after Caesarean section and a fibroid polyp in the uterine cavity are just as likely to be the cause of abortion as syphilis.

The case with marked retroflexion of the uterus had no symptoms of incarceration, but the congestion caused by the faulty position might easily account for the engorged decidua and haemorrhage into the placenta observed on subsequent examination.

Ectopic pregnancy is very frequently associated with lesions due to pelvic infection, and these may lead to abortion. If post-operative adhesions are also present abortion is more likely to occur.

Obstruction of the vessels in the umbilical cord undoubtedly led to fetal death in the case referred to, but this appeared to be due to an amniotic adhesion which in turn may have been produced by syphilitic disease. No obvious syphilitic lesions were to be found in the fetus or placenta, however.

(b) Pathological Observations.

No specimen presented the typical naked-eye appearances of syphilis. No osteo-chondritis of the long bones or miliary gummata of the liver were observed in the four cases in which the fetus was available for examination, nor could spirochaetes be found in the liver in these cases. The placentas showed no gross abnormalities other than infarction and blood infiltration. The microscopic appearances varied considerably, but no conditions were found which were not present in other cases in which the Wassermann reaction was negative. A careful search was made for spirochaetes but without success.

To sum up, 12 per cent. of cases gave a positive Wassermann reaction. In more than half of these other abnormal conditions were present which by themselves might produce abortion. In two cases (adherent Caesarean section scar and fibroid polyp) we feel justified in saying that syphilis was not the cause of the abortion. In two others (retroflexion of uterus and obstruction of vessels in umbilical cord) we think it extremely unlikely that syphilis was the deciding factor.

We therefore estimate at 10 per cent., and probably less, the cases in which syphilis leads to abortion.

CONCLUSIONS.

(a) The commonest period for abortion to occur is between the third and fourth months.

(b) Abortion is comparatively uncommon in primiparae, less than one-fifth belonging to this category. Most women who abort have borne previous full-term children, and in a majority of cases more than one. Frequent abortions in the same patient are uncommon, and when they do occur are not necessarily due to syphilis.

(c) As regards etiology, accidental or reflex causes are present in 18 per cent. of cases.

General disease of the mother, disease or displacement of her genital organs, and gross abnormalities of the fetus or placenta (other than those due to haemorrhage or infarction) are found in 25 per cent.

Syphilis, as represented by a positive Wassermann reaction, accounts for 12 per cent., but its influence as the actual cause of the abortion is probably much less, and nearer 8 per cent.

From the remaining 52 per cent. has to be deducted the figure for the self-induced group, which is probably not less than 20 per cent. In the present series 8 per cent.

admitted taking lead pills, and a number of these showed clinical evidence of lead poisoning. This leaves over 30 per cent. of cases with no cause assigned. Pathological investigation throws little additional light on the subject, as most of the morbid changes found do not produce the abortion, but occur during the operation of some other cause.

It would appear, however, that the mother is primarily at fault as the result of some diseased condition, whether it be of an organic nature, or merely an increased irritability of the centres presiding over the expulsive action of the uterus.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE MYOCLONIC TYPE OF EPIDEMIC ENCEPHALITIS.

AFTER reading with great interest Dr. Piero Boveri's article in the JOURNAL of April 24th, p. 570, I record the following case, which occurred recently in my own practice:

On February 9th I was called to see a man, aged 62, who had been suddenly stricken with severe spasmodic pains in the limbs, chest, and face. For two days the pains persisted, but had then gradually diminished in severity, giving place to sudden painful contractions of the extensors of the legs, the abdominal muscles, sternomastoids, pectorals, intercostals, and diaphragm (as evidenced by hiccough). Twitching occurred about every two seconds. The patient sweated profusely, and was slightly cyanosed. There was considerable muscular weakness and some ataxia. The superficial reflexes were in abeyance, Kernig's sign was absent, but the head was a little retracted. The deep reflexes were slightly exaggerated, but no ankle clonus was present, and the plantar response was flexor. There was no apparent disorder of sensation. The discs were slightly injected, but there was no optic neuritis. The only cranial nerve involved was the seventh, there being occasional twitches of the alae nasi and occipito-frontalis. At this stage, although there was no actual lethargy, there was a curious prolongation of the reaction time to aural stimuli—this I have observed, however, previously in patients on chloral and bromide, as was this patient—but it roused suspicion. The blood pressure was 170 mm.

In a day or two these symptoms abated *pari passu* with the advent of lethargy, passing into stupor; tremors of the right hand (only) now appeared, and the patient assumed the mask facies of paralysis agitans.

The cerebro-spinal fluid, which was quite clear and under slight pressure, was examined by Dr. Arthur Sladden, pathologist to Swansea Hospital, who reported a cell count of 5 to 6 per c.mm., a trace of albumin, and negative cultural results; the Wassermann reaction in the blood and cerebro-spinal fluid was negative.

The patient, after beginning to improve, died quite suddenly of what was evidently either (gross) cerebral haemorrhage or thrombosis. A *post-mortem* examination, even partial, was discountenanced by the relatives.

The temperature varied between 100° and 99°, and the pulse rate gradually increased from 80 to 120 and diminished again to 80. There was no history of influenza, but there was some coryza with a thin watery discharge throughout. Profuse sweating was a marked feature of the whole course of the disease. This case is of interest, firstly, in that it showed the chief seat of the morbid process to be in the thalamic region, with probable involvement of the red nucleus, and secondly, in that it bridges the gulf between the more usual clinical type of the disease and that type described by Dr. Boveri, exhibiting the lethargy of the former as a late manifestation and the myoclonic spasms of the latter. Of further interest, too, may be an undoubted case seen by me eight months ago, in which the disease was ushered in by right hemiplegia with aphasia; after running a typical course for three weeks it ended in such a measure of recovery that all that can now be said of the patient is that he is not quite so methodical an accountant as he formerly was.

In both these cases there was a history of considerable and prolonged mental strain.

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HAEMATOPORPHYRINURIA.

DR. WYATT-SMITH, in his article on the treatment of delirium tremens (BRITISH MEDICAL JOURNAL, December 6th, 1919, p. 743), says that he has never met any one who has seen a case of haematoporphyrinuria from the use of sulphonal. He and others may be interested in the following extract from my note book:

Miss A. B., aged 35, came under my care on October 22nd, 1901, suffering from a complication of ailments. Some six months before she had such constant vomiting, accompanied at one time by severe haematemesis, that the diagnosis of gastric ulcer was made, and at one time it was feared that there might be malignant trouble. There had been great loss of flesh and she suffered severely from neuralgia and insomnia, for which morphine, phenacetin, and sulphonal had been freely prescribed.

When first I saw her she had been carefully fed and had regained much of the weight she had lost, but the muscles were flabby and she was intensely weak. She had a heavy, drowsy appearance, with eyelids which seemed loth to lift; her speech was dragging; there were no superficial or deep reflexes. Sensation was normal. She complained of pain in the right renal region, where there was an enlarged tender movable kidney, and of intense pains in the legs. Constipation was very obstinate. The urine was of a dark brown-purple colour, almost like port wine, and gave in the spectrum the bands characteristic of haematoporphyrin. It contained no albumin, corpuscles, casts, or sugar. The specific gravity was 1020. The temperature was normal. I found that she was taking 30 gr. of sulphonal every night, and had done so without intermission since January, 1898, her English medical advisers having told her that it was safe to do so. For the four previous years she had taken sulphonal and phenacetin freely. She had also been in the habit of drinking a large amount of alcohol, though the exact amount I found it impossible to elicit.

I immediately stopped the sulphonal, giving bromides instead, and administering a tonic with strychnine. After this she slept well, and took her food satisfactorily, and seemed much better, though the urine still retained its abnormal colour.

After about ten days marked paresis of the lower limbs appeared, and soon increased to complete paralysis. The upper limbs followed suit. Later she had incontinence of urine and faeces, and still later all power of phonation was lost. There was no loss of sensation. Her mind became more and more clouded, and she died on November 6th, 1901. She took her food well to the last.

At the *post-mortem* examination all the tissues and organs were found very deeply stained with the same brown-purple colour. The kidneys were congested and the capsules slightly adherent. The liver was congested and enlarged. The spleen was quite disorganized, and so liquid that none could be saved for examination. The brain was normal, save for some adhesions of the arachnoid, which exhibited some cloudiness. Rigor mortis was not marked, though the examination was made six hours after death.

It is interesting to remark that in this case, as in other recorded cases, death was preceded by peripheral neuritis. The course of the symptoms is strongly suggestive of those accompanying Landry's acute ascending paralysis.

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G. E. ANSON, M.D. Cantab.

SCLEREMA NEONATORUM ASSOCIATED WITH PLACENTA PRAEVIA.

As the pathogeny of sclerema neonatorum is practically unknown, it may be worth while to record the following case: Mrs. N., 3-para, aged 34, was confined on December 17th, 1919. Labour was ushered in with a sharp haemorrhage at 5.30 a.m.; there was practically no pain, and the os barely admitted one finger. At 8.30 a.m. the os admitted two fingers, and there had been no more bleeding to speak of; I detached the placenta round the rim of the os as far as I could reach—the anterior edge of the placenta was just at the rim of the os at this stage—and gave pituitrin 1 c.cm. No further bleeding occurred. At 2.15 p.m. I ruptured the membranes and gave another injection of pituitrin; pains rapidly improved, and the child was born at 3.15 p.m. At birth the boy was blue and limp, and it was some minutes before respiration was satisfactorily established. The placenta was delivered normally at 3.40 p.m., and was of the type usual in these cases; the area I had detached was clearly distinguishable, and measured approximately six square inches. When bathing the child a little later, the nurse commented on the hardness—"like frozen meat"—of many of the muscle