About the middle of July $\frac{1}{8000}$ mg. of bacillary emulsion of bovine origin was administered; the temperature fell to normal and pains decreased.

It seemed as though the failure were associated with the human origin and the success with the bovine origin, and it was determined to repeat the experience.

On August 2nd, 1910, the patient weighed 7 st. 8½ lb., and $\frac{1}{8000}$ mg. T.B.E. was administered. It was increased to $\frac{1}{2500}$ mg. on the 13th and to $\frac{1}{1000}$ mg. on August 23rd and September 1st, after which the temperature became erratic. The question of over-dosage had to be considered, but on September 6th the girl weighed 8 st., a gain at the rate of 1 lb. a week; the idea of the wrong variety of tuberculin was therefore adhered to, and $\frac{1}{3000}$ c.cm. original bovine tuberculin was administered on September 13th.

The temperature fell suddenly on the eighth day. Increasing doses were given on September 23rd, October 6th, October 19th, and reached $\frac{1}{3000}$ c.cm. concentrated bovine tuberculin on October 26th.

The patient felt considerably better, and it was determined to attempt an investigation into the acidity of the urine under the action of the different varieties. No constant effect was found upon the total free acidity, and this was then divided into the mineral and organic portions, and the following results obtained for the ratio of organic to total acidity:

Increased Organic Acidity after Human Tuberculin on January 4th.

Before.	Injection.	After.
0.26	$\frac{1}{2000}$ c.cm. T. Koch	1.04 (2 days); 2.2 (5 days); 2.5 (6 days).

Decreased Organic Acidity after Bovine Variety on January 17th, 26th, and February 6th.

Before.	Injection.	After.
1.7	$\frac{1}{1000}$ c.cm. P.T.	1.6 (3 days); 1.5 (6 days).
2.5	$\frac{1}{750}$ c.cm. P.T.	1.1 (5 days).
1.0	$\frac{1}{500}$ c.cm. P.T.	0.56 (2 days); 0.4 (9 days).

An injection of $\frac{1}{1500}$ c.cm. T.K. on December 19th had sent the temperature to 100°, but no rise was noticed after that on January 4th, whilst after the bovine tuberculin on February 26th the temperature rose again to 100°, so this is some evidence that the difference in result is not dependent upon the weaker nature of the bovine variety.

As the effect of only one "human" injection had been tested the following confirmatory observations were made, and the effect upon the lime, magnesium, and phosphorus noted at the same time:

E. H.

February 12.				Feb. 15.	Feb. 20.	Feb. 28.
Lime in 24 hours	...	0.122 gram	Injection $\frac{1}{750}$ c.cm. T.K.	Grams. 0.288	Grams. 0.378	Grams. 0.254
Lime in 100 c.cm.	...	0.0135 "		0.026	0.031	0.026
Mg in 24 hours	...	0.536 "		0.277	0.708	0.431
Mg in 100 c.cm.	...	0.049 "		0.025	0.059	0.044
Ratio of organic to total acid	...	1.37		1.65	1.44	2.1
Ratio of phosphorus to total acid	...	0.2		1.2	0.7	0.5
Ratio of phosphorus to lime...	...	1.75		2.9	2.35	2.35

A. R.

				Oct. 27.	Nov. 1.
Lime in 24 hours	...	0.688 gram	Inject $\frac{1}{500}$ c.cm. T.K.	Grams. 0.790	Grams. 0.292
Lime in 100 c.cm.	...	0.055 "		0.046	0.03
Mg in 24 hours	...	0.979 "		0.884	—
Mg in 100 c.cm.	...	0.034 "		0.026	—
Ratio of organic to total acid	...	0.03		1.59	1.15
Ratio of phosphorus to total acid	...	0.02		0.3	0.26
Ratio of phosphorus to lime	...	11		0.8	1.5

These and four other experiments therefore confirm the increase of the organic acid ratio after administering human tuberculin, and show that it is not due to the lime and magnesium being reduced.

The methods used were as follows:

Total Acid.—Neutralization with decinormal NaOH after adding 1 per cent. neutral potassium oxalate, using phenolphthalein as indicator.

Ammonia.—After neutralization of 20 c.cm. as above, add 8 c.cm. freshly neutralized 40 per cent. formalin and continue the addition of decinormal NaOH.

Ethereal SO₄.—Difference between precipitation of urine by barium nitrate with and without previous oxidation by conc. HNO₃.

Mineral Acidity.—Add 5 c.cm. decinormal NaOH, ignite, oxidize, boil with excess of acid, neutralize, and estimate alkali lost. Deduct the ammonia and ethereal SO₄.

Organic Acidity = Total acidity — mineral acidity.

I have been unable to trace any similar experiment. If the prevailing opinion be correct, that there is no fundamental difference between the various tuberculins, we may as well settle the relative activities and cease to encumber ourselves with so many specimens. If incorrect, we ought to find their differences and discover the indications for each.

A YEAR'S EXPERIENCE OF DIORADIN IN SURGICAL TUBERCULOSIS.

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ALMOST a year ago I read a paper before this Section of the Academy, giving the results of treatment by dioradin of 15 cases of tuberculosis. Since then I have been more or less continuously engaged in the further treatment of these and other cases by the same means, and I desire to record the results I have obtained during fifteen months' trial of this remedy in cases of surgical tuberculosis, and the conclusions at which I have arrived as to the value of this method of treatment.

I shall first consider the cases which I reported a year ago; they were 15 in number, but to-night I shall only speak of 14 of these, as one of them was a case of pulmonary tuberculosis, and the number of this class of case has been too small to be worth recording the results at present. These 14 cases were divided into two classes according to whether they were complicated by sepsis or not.

Of the 5 uncomplicated cases each had received one course of injections, and one was apparently cured, and the other 4 were greatly improved, and they showed an average gain in weight of 8.3 lb. Four of these have since received a second course of injections, with the result that there are now 4 apparently cured, and 1 greatly improved, and the average gain in weight is 10.5 lb.

Of the 9 cases in the second class, that is, cases complicated by sepsis, there was 1 apparent cure, 2 greatly improved, 4 improved, and 2 not improved, with an average gain in weight of 2 lb. Four of these cases were given a second course of injections, and a fifth was given both a second and a third course, with the result that there were 3 more apparent cures and 1 greatly improved. The fifth, which was a case of tuberculous and septic hip which had been excised, improved further after a second course of injections, but about a month later developed acute nephritis and died. The average gain in weight of these 5 patients was 5.4 lb. As regards the other 4 of this group who did not receive a second course of injections, 1 was a case of multiple foci which left the hospital cured after the first course (No. v previous paper¹). The second, a septic hip in which there was always much doubt as to the presence of tuberculous disease, left hospital unimproved after the first course of injections (No. viii, previous paper). The third was a case of tuberculous cystitis with almost certainly a similar affection of both kidneys as well; he also left hospital unimproved after the one course of injections and died shortly afterwards (No. xii previous paper). And the fourth was a case

* Read before the Surgical Section of the Royal Academy of Medicine in Ireland, November 29th, 1912.

of lupus which left hospital improved after the first treatment; she reported since that the improvement continued, but she did not return for a second course (No. XIV previous paper). I shall now give a brief account of the treatment of a further series of 14 cases.

CASE XV.

T. E., male, aged 35, admitted January 20th, 1912, with tuberculous disease of left knee, started one and a half years before, had got rapidly worse in previous month. Bier's passive congestion was tried for a month after admission with no sign of improvement; left knee 2 to 3 centimetres larger than right, bulging spot with fluctuation on outside of joint, marked tenderness, increased local temperature; pain on movement, traction, or percussion of heel. Knee flexed to angle of 140°, movement of about 20° only. Put in plaster and given course of injections. Discharged April 11th, 1912. Pain relieved, and patient had put on flesh; unfortunately he had not been weighed before the injections were commenced. Readmitted July 25th; when the plaster was removed an abscess was found on point of bursting on outside of knee. This was opened and scraped on August 3rd; no direct entry into the joint could be found; a second course of injections was given from August 2nd to September 25th. The abscess closed rapidly, but a second formed lower down and was opened and scraped, September 14th; again no direct opening into the joint could be found; a third course of injections were given from October 9th to November 26th, when he was discharged with knee in plaster, both wounds soundly healed, the leg straight and painless, and the knee practically the same size as the other. His weight increased by 10½ lb. during his second stay in hospital.

CASE XVI.

B. G., female, aged 9, admitted September 14th, 1911, complaining of limp on right side. Patient fell on right hip some months before. A month later there was some pain in the hip, which continued on and off till admission. On examination there was apparent lengthening, slight flexion and abduction, pain on percussion of heel, the movement at the joint was greatly limited, and there was loss of tone of the gluteal muscles on the affected side. A course of injections was given between December 18th and February 14th. The patient was kept in bed with extension most of that time. She was put in plaster and allowed up on crutches on January 27th, and discharged soon afterwards. Her weight was the same as on admission. A second course of injections was started early in March, given every second day, as the patient attended as out-patient. She received twenty injections, then ceased to attend, but reported shortly afterwards that she was going about without crutches. She has not been heard of since.

CASE XVII.

A. G., female, aged 32, admitted April 18th, 1912. For the last eight years she had a swelling of the right wrist. She was operated on four years ago and again two months before admission. The swelling was most marked in front and on the ulnar side of the wrist. There was a scar 3 in. in length on the ulnar side with a sinus over the ulnar styloid. She also had a swelling of the base of the first phalanx of the right index finger. No extension of the wrist was possible; flexion was possible only to about half a right angle, and she was only able to partially close the fingers. There were several large glands in right axilla and one small one above the right clavicle. A skiagraph showed general blurring of the carpal bones and fusion of the semilunar and os magnum. A first course of injections was given from April 19th to June 7th. The swelling of the wrist became less and the sinus healed. There was less pain on attempted movement, and the weight increased 8½ lb. She was sent to the country with her wrist in plaster. She was readmitted on July 9th, 1912. There was no pain in the wrist, the swelling was further reduced, and the sinus was still healed; the movement was more extensive; loss of weight of 3 lb. had occurred. A second course of injections was given from July 11th to August 28th. She was sent back to the country on September 3rd in plaster; the glands in the axilla were greatly reduced in size and the patient had added over 3 lb. in weight, making a total increase of 8½ lb. since the commencement of treatment.

CASE XVIII.

K. C., woman aged 31, admitted July 8th, 1912. There was a history of pain in the back for about a year, and there was an enormous abscess in the left iliac fossa. An x-ray photograph showed extensive destruction of the third and fourth lumbar vertebrae. There was no visible deformity. On July 21st an incision was made above Poupart's ligament, and over a pint of tuberculous pus was evacuated; the cavity was douched out and partially filled with 2 per cent. formalin in glycerine, and the incision closed. Injections of dioradin were given from July 22nd to September 7th. A week after operation there was an escape of some dark-coloured serum from the wound, the lower end of which remained open, necessitating dressing twice a week. The sinus so formed was scraped on September 11th, when some tuberculous infection of the divided abdominal muscles was found. The wound was cleansed with carbolic acid and iodine, and rapidly healed, and the patient left hospital on September 23rd, 1912. Her weight had increased by 4 lb. 9 oz.

CASE XIX.

E. W., male, aged 26, admitted April 26th, 1912. He had pain in his back, said to be rheumatic, a year ago, and noticed a swelling in the right groin three months ago. On admission there was an enormous swelling of the right iliac fossa and the upper part of the thigh; fluctuation was present, both above and below Poupart's ligament. An x-ray examination showed disease of the third lumbar vertebra on the right side. There was no pain in the back or tenderness, but there was rigidity of the lumbar spine. On May 4th the abscess was opened above Poupart's ligament; about 1½ pints of tuberculous pus was evacuated, and the cavity injected with 2 per cent. formalin in glycerine and completely closed. Five days later a large quantity of blood-stained fluid was let out. After this there was a slight serous discharge necessitating dressing two or three times a week. Injections of dioradin were commenced on May 3rd and finished on June 20th. The patient was sent home on July 6th with the wound healed. Though he was not weighed, he appeared to have put on flesh.

CASE XX.

S. M., female, aged 24, admitted April 11th, 1912. An angular deformity existed in the mid-dorsal region which had been coming on for about a year, with great pain in the back and also radiating round the lower part of the chest; paraplegia was also well marked. She was kept flat on her back for over four months. The paraplegia increased till all movement of the lower extremities was lost except slight contraction of the great toes. Pain also increased. An x-ray examination showed extensive disease of the fifth to the eighth dorsal vertebrae, with a large mediastinal abscess. On September 14th the right transverse process of the sixth vertebra was removed and the head and neck of the corresponding rib; the abscess was opened, and nearly a pint of pus and caseous material removed. The cavity was filled with 2 per cent. formalin in glycerine and the wound closed in layers. A slight serous discharge from the lower angle of the wound began after ten days, and has not quite ceased yet. Forty injections of dioradin were given between September 16th and November 5th. The condition of the patient has much improved; she has very little pain now and some movement of the legs has returned. It is hoped that she may be put in plaster shortly and got up and about with the aid of crutches. She has not been able to be weighed, but she has evidently put on flesh.

CASE XXI.

H. S., male, aged 18 months. Admitted November 6th, 1911. He was in hospital in the previous June with tuberculous dactylitis of the left middle finger, which was amputated; the wound healed slowly. On admission the patient had a discharging sinus of the right ankle, the finger stump was discharging, there were enlarged glands in the right submaxillary region, also in both groins, and there was a sinus on the right arm. He was given a course of forty injections of ½ c.cm. of dioradin between December 6th and February 12th. The os calcis was scraped out on November 14th. The submaxillary glands were removed on January 9th; his weight increased 2 lb. The finger stump healed, also the submaxillary incision; but the os calcis still discharged and necessitated further operations on February 20th and March 12th. He left hospital some time later with his condition not much improved.

CASE XXII.

E. Q., aged 7½, a delicate looking boy, was admitted on November 29th, 1911. Swelling and pain of the right knee began four months before. The joint was 1 in. larger than the left; an x-ray examination showed early erosion of the end of the femur. There was marked tenderness, and pain at night. There was no fluctuation. Forty injections were given between December 4th and February 8th. He developed diphtheria while in hospital, and was discharged with his knee in plaster on February 22nd. The gain in weight was 3½ lb. He was seen in the dispensary, and was going on well. Towards the end of May he developed signs of tuberculous meningitis, and died in ten days.

CASE XXIII.

J. A., male, aged 16. Admitted October 21st, 1911. He had pleurisy of the left side, but no signs of phthisis. While in hospital a lump was discovered in the left epididymis; it increased in size, and was tender. He was given eighteen injections of dioradin; he increased 3½ lb. in weight, but the nodule increased in size. He was operated on on December 9th. The testicle was removed; there was a large caseous mass in the epididymis, semi-liquid in the centre, which was beginning to burst through the coverings. The wound healed, and the patient was discharged December 23rd.

CASE XXIV.

M. L., female, aged 4. Admitted June 6th, 1912. She showed all the signs of early tuberculous disease of her left hip. Extension was applied, and she was given a course of forty injections of ½ c.cm. of dioradin. She was put in plaster, and discharged on July 27th. She was in the dispensary recently; the hip was still in plaster, and she was walking well without crutches and with no pain. The record of her weight was lost, but it had increased.

CASE XXV.

R. W., female, aged 18. Attended as out-patient from February 23rd to April 8th, 1912. She had enlarged glands in her neck, there were two scars on the right side, and one on the left where the glands had broken down, and discharged on

three occasions, the last time about six months before. She was given twenty-six injections of dioradin on alternate days. The glands disappeared, her general health greatly improved, and she increased 3 lb. in weight.

CASE XXVI.

J. D., male, aged 18 months. Admitted December 20th, 1911. The left eye had been eviscerated at the Royal Victoria Eye and Ear Hospital for anterior staphylocoma the result of tuberculous ulcer. There was a copious discharge from both ears, extensive ulceration under right eye, discharging ulcers on backs of both hands; the right foot was also discharging, and there was a large cold abscess on the left ankle. The temperature varied from 97° to 101°. The weight was 1 st. 1½ lb. Forty injections of ½ c.cm. of dioradin were given between December 22nd and February 16th. By this time his weight had increased by 1 lb., his temperature was normal, and he was taking his food better; the discharge from the ears and ulcers was about the same. On March 1st a large piece of dead bone was removed from under the right eye, after which this wound healed; otherwise the patient did not improve further, and was discharged some time later.

CASE XXVII.

N. B., female, aged 16. Admitted June 19th, 1912. There was tuberculous disease of the right ankle, present for nearly a year; the joint was greatly swollen, and there was great pain on any movement, but the skin was unbroken. Forty injections were given between June 20th and August 14th, and the foot was put in plaster. The plaster was removed on September 10th, the swelling was greatly reduced, there was almost no pain on movement, and she had increased 2 lb. in weight. The plaster was reapplied, and the patient was sent to the country on October 7th, 1912.

CASE XXVIII.

K. L., female, aged 13. Admitted June 10th, 1912. She had tuberculous disease of the right ankle, which was enormously swollen, with several sinuses, both knees were contracted, and there were numerous superficial tuberculous lesions over both thighs, also enlarged glands in her neck. Forty injections were given between June 20th and August 6th. She increased 3 lb. in weight. She developed phlyctenular conjunctivitis and an ulcer, which healed. There was no definite improvement, and she left hospital on September 28th, 1912.

Dividing these 28 cases into two classes according to the presence or absence of sepsis, there were 15 in which there was no sepsis and 13 in which sepsis was a complication. In the first class there were 7 apparent cures (46.6 per cent.), 4 cases of great improvement, which will probably result later in cures (26.6 per cent.), 2 cases showing some improvement (13.3 per cent.), and 1 case which progressed steadily in spite of the injections and had to be operated upon. Finally, there was 1 case which first improved rapidly and gave hopes that it would go on to a cure, but afterwards developed tuberculous meningitis and died. In the second class of 13 cases there were 4 apparent cures, 2 were greatly improved and will probably become cured, 1 was somewhat improved, 5 showed no improvement, and 1 which improved for a time died later of acute nephritis.

Cases uncomplicated by Sepsis.

Case No.	Disease.	Apparent Cure.	Great Im- provement (Probable Cure).	Some Im- provement.	No Im- provement.	No. of In- jections.
I.	Pott's caries (early)	+				80
IV.	Tuberculous knee		+			80
VI.	Tuberculous ankle	+				80
IX.	Tuberculous hip (large abscess)	+				80
X.	Tuberculous hip (early)	+				40
XV.	Tuberculous knee		+			120
XVI.	Tuberculous hip (early)	+				60
XVIII.	Pott's caries (large iliac abscess)		+			40
XIX.	Pott's caries (large iliac abscess)		+			40
XX.	Pott's caries (mediastinal abscess)			+		40
XXII.	Tuberculous knee		+			40
XXIII.	Tuberculous epididymitis				+	18
XXIV.	Tuberculous hip (early)	+				40
XXV.	Tuberculous glands	+				26
XXVII.	Tuberculous ankle			+		40

* Died later of tuberculous meningitis.

Cases complicated by Sepsis.

Case No.	Disease.	Apparent Cure.	Great Im- provement (Probable Cure).	Some Im- provement.	No Im- provement.	No. of In- jections.
II.	Tuberculous cystitis	+				80
III.	Tuberculous hip (late septic)	+				120
V.	Multiple foci	+				40
VII.	Multiple foci	+				60
VIII.	Hip (septic)				+	40
XI.	Hip (late after excision)			+		80
XII.	Cystitis (probable nephritis)				+	40
XIII.	Ascites and fibroid phthisis		+			80
XIV.	Lupus			+		40
XVII.	Wrist		+			80
XXI.	Multiple foci				+	40
XXVI.	Eye, ear, and multiple foci				+	40
XXVIII.	Ankle and multiple foci				+	40

* This case died later of acute nephritis.

In the whole 28 cases there were 11 apparent cures—1 case of Pott's caries without abscess formation, 2 cases of multiple foci, 3 cases of hip disease in an early stage, 1 case of hip disease with a large abscess, 1 case of hip disease in very advanced stage with septic infection, 1 case of advanced disease of ankle, 1 case of cervical glands, and 1 case of cystitis.

In 7 cases there was great improvement, which in some will probably result in cure—1 diseased wrist, 2 cases of Pott's caries with large psoas abscess, 1 case of ascites and fibroid phthisis, and 3 cases of disease of the knee; one of the latter, however, died later from tuberculous meningitis.

In 4 cases there was some improvement—1 case of lupus, 1 case of Pott's caries with mediastinal abscess, 1 ankle, and 1 late case of hip disease after excision and with septic infection, which after considerable improvement died of acute nephritis. In 6 cases there was no definite improvement—1 case of advanced septic hip, where it was doubtful if there was tuberculous disease, 1 case of advanced cystitis with probable involvement of both kidneys, 3 cases of very extensive and advanced multiple foci, and 1 case of acute epididymitis; this latter is really the only marked case of failure, the other 5 were all very bad advanced cases where no treatment could be expected to do much or any good, but this, though an early case, progressed steadily and rapidly while the injections were being given, and at operation the process was found spreading extensively.

As the result of this extended trial of dioradin, I have come to the following conclusions:

1. Dioradin injections are not a certain cure for all cases of tuberculosis; in some cases they will produce a cure more rapidly and more certainly than any other treatment I have had experience of.

2. Early cases of joint disease treated by injections, combined with ordinary methods of rest, good food, etc., will recover more rapidly and more surely than when treated without these injections. The same is probably true of glandular and other surgical affections.

3. In advanced cases with abscess formation, if injections are started before or at the time the abscess is opened, the abscess will usually heal rapidly, the tuberculous process apparently comes to an end, and a cure results in a large proportion of cases.

4. Finally, in those cases complicated by septic infection dioradin injections will generally reduce the temperature to normal, increase the appetite and weight, and lessen the amount of discharge, and in some cases even bring about a final cure, as in Cases III, V, and VII.

After giving over 3,000 injections I can say that I have never seen any harm, either local or constitutional, result from them; it is usually advised that they should be given intramuscularly, but it is just as good to give them subcutaneously: they cause no pain, and have never in my

experience led to abscess formation. Disease of the kidneys is usually mentioned as a contraindication, and Case XI, which died of acute nephritis after two courses of injections, might be thought to point to this; however, the symptoms of nephritis did not start for more than three weeks after the second course was concluded, and there had been septic absorption with a septic temperature off and on for more than twelve months. Also in a case of advanced phthisis, when the urine was loaded with albumen, I gave forty injections on alternate days with no apparent harm to the kidneys. So, if care is exercised and the injections are given every second day instead of daily, even kidney disease need prove no insuperable bar to this method of treatment.

In conclusion, I must acknowledge my indebtedness to Dr. Bernheim of Paris, who has generously provided me with the material used in the treatment of these cases, and also to my colleagues at the Royal City of Dublin Hospital, who have kindly allowed me to try this method on some of their patients, and have seen and examined many of the cases whose history I have brought before you to-night.

REFERENCE.

¹ *Medical Press and Circular*, March 27th, 1912.

GASTRIC HAEMORRHAGE AND OTHER COMPLICATIONS IN A CASE OF CHILDBIRTH.

By W. D. STURROCK, M.A., M.D. OXON.,
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In recording the following case I wish to state facts rather than to draw conclusions, and to seek information rather than attempt to impart it; at the end of the description, however, I have ventured on a few tentative suggestions.

The patient, a primipara aged 43, was delivered on August 9th, 1912. The history of the confinement and of the post-partum period is somewhat remarkable.

The ante-partum history was uneventful save in one particular—that for three weeks before labour micturition was performed with great difficulty. The urine was examined from time to time during this period, but showed no trace of either pus or albumen; nor were there any other symptoms of pyelitis.

The patient was of excellent physique and constitution, with a roomy pelvis, and there was no reason to fear any special difficulties, though a prolonged labour was likely, in view of the age of the patient, and consequent rigidity of the soft tissues. This was exactly the case so far as the mechanical processes of labour were concerned; there was no bony obstruction, but the cervix dilated with extreme difficulty, and, further, the uterine contractions were for twenty-four hours distinctly weak. Progress was, therefore, extremely slow, and the application of

H, Gastric haemorrhage; A, acetonaemia; E, septic endometritis, *B. coli* and staphylococci; R, rigors.

high forceps was considered, but, since the general condition remained excellent, was rejected for the time being. Shortly after this decision the pains became much more vigorous and progress more rapid; but before long, though the pulse-rate never exceeded 84, the patient became noticeably restless, and very noticeably thirsty. In view of this state of affairs, and since the perineum was obviously offering great resistance, I applied forceps.

Severe Gastric Haemorrhage.

Here we obtained evidence of the first untoward occurrence. Under the anaesthetic (chloroform) the patient vomited a very

large quantity of blood, which I should judge had been lost into the stomach some three or four hours previously. To judge of quantities under such circumstances is obviously extremely difficult, but to all of us present an estimate of two pints appeared very moderate. This haemorrhage, together with the length of the labour, fully explains the restlessness and thirst described above; it is only remarkable that there was no greater effect on the pulse.

Delivery was effected as rapidly as possible; the uterus contracted reasonably well, the placenta was delivered intact, and there was no remarkable bleeding; the uterine haemorrhage, however, together with the gastric, constituted a serious loss of blood and necessarily caused some anxiety. The good condition of the pulse was fortunately reassuring, and it soon became evident that the patient, though seriously weakened, was no longer in imminent danger. The weakness and the bruising and laceration of the soft tissues made the patient particularly liable to septic trouble. I did not, however, give an intra-uterine douche but ordered vaginal douching; I do not, as a rule, douche either uterus or vagina.

The gastric haemorrhage led to further trouble from the fact that it produced intense heartburn, which practically prevented the patient from taking any nourishment. She was encouraged to take frequent small drinks of water; in addition to this the usual fluid nutriment was tried in turn, but for forty-eight hours the only practicable diet was peptonized milk in drachm doses. In consequence of this limitation of diet the patient was still further weakened; as was natural, the secretion of milk was entirely suppressed.

Acetonaemia and Acidaemia.

By the fourth day, though nourishment was much better taken, and though the pulse was good and the temperature normal, fresh symptoms supervened; the patient was drowsy, listless, and mentally confused, her memory greatly at fault, and her conversation irrational. She was obviously extremely ill, but I was greatly puzzled to find the cause; true mental disturbance naturally suggested itself, but I did not believe this to be the correct solution.

By the aid of Dr. Eardley Holland, whom I called in in consultation, and to whom my best thanks are due, the cause was eventually found in the presence in the urine of large quantities of acetone and di-acetic acid. To relieve the acidaemia rectal injections were given containing sodium bicarbonate and glucose in solution; though they were retained for some time, there was practically no absorption of fluid. I believe recovery was commencing before this treatment was adopted; none the less, it is very possible that, though the bulk of each injection was returned, the crystalloid substances in solution may have been partly absorbed. In any case, however, the patient improved rapidly, the injections were discontinued, and by the seventh day she appeared to be out of danger.

Septic Endometritis (*B. coli* and *Staphylococci*).

On the eighth day the temperature rose to 100.2°; coincident with this rise there was marked tenderness of the breasts, which, in the absence of any sign of uterine trouble, appeared amply sufficient to account for the disturbance. Three rigors, however, supervened, in the last of which the temperature rose to 105° and the pulse to 150; the breasts at the same time became less tender, and it was clear that a further cause must be sought. The lochia had throughout been inoffensive but not suppressed, and there was no uterine tenderness; involution had, however, not been perfect, and the organ was somewhat

P, Pyuria, *B. coli*.

flabby. Examined under an anaesthetic by Dr. Holland, the cervix was found to be rather patulous, and the endometrium smooth and thickened; there was no visible discharge, but culture tubes inoculated from the uterine cavity developed a few small colonies of *B. coli* and staphylococcus, the former preponderating. Two blood cultures which I prepared the next morning were entirely negative. Vaccines were prepared from the culture colonies and held in readiness, but were never used, and treatment consisted of intrauterine douching twice daily and quinine by the mouth. The uterus contracted well, and the temperature soon fell, but rose again on the sixteenth day to 103.2°; the patient again went through a spell of fever,