

cases, one of which was operated on with a fatal result. Warren (*Annals of Surgery*, 1901) reports a successful case. 3. Splenic leukæmia. Splenectomy in this disease is almost invariably followed by a fatal result. Hagen reports 42 cases with four recoveries. Death is due to secondary hæmorrhage owing to the condition of the walls of the large vessels. 4. Banti's disease, or hypertrophy of the spleen with cirrhosis of the liver. Hagen gives 16 cases with three deaths. Banti describes three successful cases. 5. Wandering spleen. 6. Abscess of the spleen. 7. Rupture of the spleen. Berger tabulated 80 cases in which the spleen was removed for hæmorrhage; 35 recovered. 8. Sarcoma of the spleen. 9. Possibly hydatid of the spleen. The two cases in question come under the second heading in the list. In the first the spleen was markedly adherent, very large, and difficult to manipulate. In the second it was smaller and much less adherent. Vanverts, quoted by Bovée, found that in 39 cases of enlargement with marked adhesions 28 died, while in 35 without adhesions only two died.

CASE 1.—The operation in this case was performed on Oct. 27th, 1903. Under ether an incision ten inches long was made through the left rectus abdominis extending downwards some distance below the umbilicus. The structures were divided down to the peritoneum and on opening this the enlarged spleen came into view, the anterior border being fairly moveable but the posterior surface was fixed. The inner surface was examined and many adhesions were found around the hilum. On passing the hand between it and the diaphragm it was found markedly adherent and below firmly attached to the splenic flexure and descending colon. It was decided to attack it on the inner surface first so as to control the blood-supply. There were at least four large arteries and a large number of smaller ones requiring division but the real trouble lay in dealing with enormous veins. A clamp put on the uppermost one slipped and considerable disconcerting bleeding followed. Most of this, however, came from the distal end. Piece by piece, and working cautiously, the whole gastric surface was separated. No ligatures had been as yet applied, the bleeding being controlled by innumerable clamps. The posterior border was then divided. After dividing the lienorenal ligament an attempt was made to free the organ from above and from the colon. In this manœuvre a considerable rent was made in the colon, admitting four fingers. At this point—one and a half hours after beginning the operation—the anæsthetic, Dr. E. H. Embley, informed me that her condition was too hazardous, from the hæmorrhage and shock, for much further manipulation. It was impossible, however, to discontinue without removing the spleen and repairing the torn bowel. Two quarts of normal saline solution being injected into a vein of the arm and a tenth of a grain of strychnine hypodermically she rallied somewhat. The few bands holding the spleen were divided and the organ was removed. After ligating the vessels securely with silk the bowel, which meantime had been securely clamped by the fingers of my assistant (Dr. Cumpston), was now thoroughly cleansed and 24 interrupted sutures of silk were passed through all its coats. A tube and gauze drain were placed in position over the injured bowel and the wound was sutured in the usual way. The weight of the tumour after removal was seven pounds. On leaving the table the patient was in a condition of profound shock and her pulse was hardly perceptible. The whole operation took two and a half hours. She improved steadily. The tube and gauze drain were removed on the fifth day, the bowel sutures holding splendidly. On Nov. 5th the sutures were removed. The blood count showed 4,600,000 red cells per cubic millimetre. On the 12th she had a rigor lasting half an hour and vomited several times. The temperature was 100·8° and the pulse-rate was 108. On the following day she complained of great pain on the right side of the abdomen, but there was no distension or rigidity or tenderness at the site of the pain. I was told now for the first time that one of the sponges used at the operation was missing; and as it was supposed to have been used on that side of the abdomen and to be the possible cause of rather alarming symptoms—pain, fever, and vomiting—I reopened the abdomen in the right semilunar line and made a search for it. Nothing was found. The symptoms improved and gradually disappeared in eight days, and shortly afterwards she was transferred to Dr. Springthorpe's care again.

CASE 2.—The operation was performed on Jan. 19th, 1904. The abdomen was opened by an incision slightly to the left of the middle line, reaching from a little below the costal

margin to the level of the umbilicus. The stomach, intestines, and the left lobe of the liver were packed off with flat sponges and an attempt was made to bring the spleen into the wound. This being unsuccessful, part of the gastro-splenic omentum was ligated and divided. The viscus was then turned over and the lienorenal ligament severed. Copious hæmorrhage here suddenly ensued from rupture of several large veins. These were picked up with long pressure forceps and secured. The spleen was then brought out of the abdomen and the remainder of the gastro-splenic omentum was divided and ligatured. No adhesions were found. On Jan. 28th the sutures were removed. On Feb. 1st the blood count showed 4,120,000 erythrocytes and 10,000 leucocytes per cubic millimetre and the hæmoglobin was 80 per cent. On the 11th the erythrocytes were 4,820,000 and the leucocytes were 8000; the hæmoglobin was 85 per cent.

Although I am well aware that the median incision has the stamp of authority in any complicated case—such as the first—an incision to the left of the median line allows, perhaps, of better handling the adhesions of a large tumour. It is well, too, I think, to begin below and work upwards, having, of course, packed off the intestines well to the right. I would not, if such a case came my way again, depart from the plan of using forcipressure to control the bleeding, as, when the spleen has been removed, it is quite easy to ligate the vessels with much greater security than when working in the cramped area occupied by a large and adherent tumour. The veins, in spite of every care, are easily torn in the manipulations and the clamps used must be such as are not likely easily to slip. Some recommend in this and similar operations to leave a large quantity of saline solution in the abdominal cavity when the abdomen is closed, so as to minimise shock; but I have long since discarded it except in cases of ectopic gestation and, of course, with the soiling of the wound area by the contents of the colon, such a procedure would only have distributed the colon bacilli—if any were left after thorough sponging.

A CASE OF PNEUMOCOCCIC PYÆMIA WITH RECOVERY.

BY A. T. DAVIES, M.D. CANTAB., F.R.C.P. LOND.,

PHYSICIAN TO THE METROPOLITAN HOSPITAL, AND TO THE ROYAL HOSPITAL FOR DISEASES OF THE CHEST;

AND

W. LANGDON BROWN, M.D. CANTAB., M.R.C.P. LOND.,

SENIOR ASSISTANT PHYSICIAN TO THE METROPOLITAN HOSPITAL AND JUNIOR DEMONSTRATOR OF PRACTICAL MEDICINE, ST. BARTHOLOMEW'S HOSPITAL.

“PNEUMONIA is not a local but a universal disease; and the brunt of it may fall upon any part.”¹ Of the truth of this aphorism all are now convinced. The presence of pneumococci in the blood may be regarded as simply an integral part of the infective process.² Since it is admitted that pneumonia is usually a septicæmia it is not surprising that it occasionally leads to a pyæmic state. The following case of pneumococcic infection resulting in broncho-pneumonia, empyema, arthritis, and peritonitis, and ending in recovery appears worthy of record in view of our recently extended knowledge on these points.

A little girl, aged eight years, was admitted to the Metropolitan Hospital on Dec. 6th, 1903, with the history of having been taken ill two days before admission. She was anæmic and looked ill and in pain. The respirations were very rapid (60), the pulse was quick (128), and the temperature rose to 102·4° F. soon after admission. The left lung was dull to percussion in front and impaired behind; in front bronchial breathing and bronchophony and a few crepitations were heard. On the right side the note was dull at the base; bronchial breathing and crepitations were heard in patches. The heart was apparently normal. The abdomen was held rigidly and palpation over the right lumbar region was painful. The right knee-joint was swollen and tender. On the 8th the signs of consolidation on the right side extended all over the front. On the left side the signs were clearing up. The right knee appeared rather more inflamed. By the 11th the

¹ Gee: *Medical Lectures and Aphorisms*, p. 251.

² *Journal of Infectious Diseases*, 1904, vol. i., p. 280.

areas of consolidation were all undergoing resolution but the dulness at the right base persisted. The knee, which had been placed upon a back splint, was less painful. On the 17th the patient did not appear so well. At the right apex the note was impaired still and crepitations were heard. At the base the dulness was very marked and the breath sounds were quite faint. The heart's apex was displaced outside the left nipple line. An exploring needle was introduced into the sixth right interspace in the posterior axillary line and pus was withdrawn. This pus was found to contain encapsulated diplococci staining with methylene blue and by Gram's method. The abdomen was distended and tender and moved badly; dilated veins appeared on the surface and there were signs of free fluid. The knee was swollen and painful. A blood count showed red corpuscles 4,000,000 and leucocytes 21,000 per cubic millimetre. Resection of a portion of the seventh rib was performed on the right side and about 20 ounces of pus were let out. A drainage-tube was inserted. The breathing was much relieved by the operation and the signs in the chest rapidly improved. On the 22nd, as the knee remained swollen and painful, Mr. W. D. Harmer explored it; he found about four ounces of pus in the knee-joint and tracking up under the quadriceps extensor. This was washed out with perchloride of mercury (1 in 5000) and drainage-tubes were inserted on either side of the patella. This pus contained diplococci of similar character to those found in the pus from the chest. On the 27th the right hip-joint was swollen, tender, and rather red. On the 29th Mr. Harmer put an exploring needle into this with a negative result. On Jan. 9th, 1904, the abdomen, which had been getting better since Dec. 17th, became more swollen again; on the 10th signs of free fluid reappeared. On the 14th the pulse became rather feeble and very rapid—140—and the child was sick twice. On the 16th a few petechiæ appeared on the abdomen. On the 19th the abdomen had become very distended; a Southey's tube gave exit to eight ounces of pus. Mr. Harmer therefore performed laparotomy and about three pints of pus were let out. Keith's tube and dressing were applied. Microscopically the pus showed no organisms. On cultivation a few colonies of streptococci grew probably from contamination. From this time on the child steadily improved. Previously very emaciated she began to put on flesh and lost her distressed expression. The only events in a rather prolonged convalescence were the occurrence of a slight vaginal discharge from Feb. 6th to 16th and a return of œdema round the knee-joint, apparently the result of deficient drainage. On April 5th, when she went to the convalescent home, the following was her condition. The lungs were clear, the abdominal wound was closed, and the abdomen appeared natural. The knee was still rather flexed (it had been treated by extension) but the sinus was closed and there was no swelling of the joint. The child was seen again in July. She appeared in excellent health and showed no ill-effects from her disease except the flexed and ankylosed knee, for which resection will probably have to be performed.

In this case no attempt was made to cultivate the pneumococcus from the blood, the presence of that organism in the pus from the knee-joint being sufficient evidence of dissemination. The principal cause of failure when this is attempted appears to be the employment of too small a quantity of blood. Cole,³ in examining 30 cases of pneumonia from Osler's clinic, added from eight to ten cubic centimetres of blood to 150 cubic centimetres of sterile litmus milk, using this large quantity of the medium to avoid the bactericidal effect of the blood. He found the pneumococcus in nine cases. Prochaska⁴ succeeded in doing this in 38 out of 40 consecutive cases of pneumonia.

Probably not pneumonia only but all pneumococcal infections tend to be septicæmic. Thus, at St. Bartholomew's Hospital during the last ten years 17 cases of meningitis without discoverable lesion elsewhere were proved to be pneumococcal. In three instances cultures of the spleen yielded a pure growth of pneumococci.

The patient in the present case was eight years old. Now the liability to secondary pneumococcal infections seems to be greatest in early life. Kanthack⁵ found that in 170 fatal cases of pneumonia no less than 64 per cent. of those under 21 years of age died from secondary infection, whereas in his whole series only 35.7 per cent. died in this way. In the series we have collected (see Table I.)

the average age at which death occurred from general pneumococcal infection was 15½ years. Yet the prognosis of pneumonia becomes increasingly grave with advancing years, suggesting that while the local lesion is sufficient to cause death in older persons the more resistant young can tolerate an extensive invasion before succumbing. This tolerance may be found in very early years. Thus Parker⁶ records a case of broncho-pneumonia in a child aged only 17 months which lasted about three months before proving fatal from general infection. The vigour with which the body reacted to invasion was shown by a leucocytosis of 73,000. In the present case there can be little doubt that the infection occurred through the lung—the commonest route. Infection has also been shown to occur through the middle ear,⁷ the nasal cavities and tonsils,⁸ the appendix,⁹ the stomach and other mucous membranes,¹⁰ including the endometrium.¹¹ The constitutional symptoms differ widely in different cases. Parker's case was apyretic throughout, Nuthall and Billington¹² call attention to the typhoid state and markedly remittent character in their cases, while in others the patient appears overwhelmed at the outset by the virulence of the infection. Two good examples of this type have been recently recorded by Newton Pitt¹³ and by Shaw and French.¹⁴ The present example was remittent in type but showed nothing of the typhoid state, the child being quite conscious throughout and keenly alive to all that was going on.

It may be as well briefly to discuss in turn the signs of metastasis presented by this case.

Empyema.—The pneumococcus is so well recognised as a cause of empyema that little need be added. At St. George's Hospital during 1901 it was found in 11 out of 13 cases of empyema; nine of these had had pneumonia.¹⁵ In the cases here collected empyema was apparently the starting-point of a general pneumococcal infection in eight cases (20 per cent.) and occurred as a complication of such an infection in seven cases (17.5 per cent.).

Peritonitis.—This is regarded as a comparatively rare complication. Out of 162 cases of pneumococcal infection reported by Netter the peritoneum was involved in only two, and in five years 182 fatal cases of lobar pneumonia at Guy's Hospital showed infection of the peritoneum in only five (Fawcett). But the peritoneum may be the primary point of infection (Bryant). We have been able to find ten fatal cases recorded at St. Bartholomew's Hospital in which the peritoneum was involved; in two instances no other lesion could be discovered, in one it was accompanied by acute nephritis, in five cases it followed empyema, in one pyo-salpinx, and in one only, broncho-pneumonia. To these may be added Duckworth and Marsh's case¹⁶ of appendicitis, followed by pneumococcal peritonitis and empyema, that recovered. The multiplicity of the serous membrane infected is decidedly interesting. Thus the peritoneum, pericardium, and pleura were all involved in three cases, the peritoneum and pleura in three, and the peritoneum and pericardium in two. As a direct sequel to pneumonia or broncho-pneumonia, on the other hand, we may regard peritonitis as decidedly rare. In the discussion at the Clinical Society on Jan. 8th, 1904, the view was expressed that the infection might be secondary to the lung through the blood stream, or to the alimentary canal, especially through the appendix. Quite lately Shaw and French¹⁷ have recorded an instance of this last variety which was fatal in 48 hours. Most of the cases, however, show a somewhat chronic course, a tendency to relapse, and a tedious convalescence. The present case exemplifies all these points. That the peritoneal pus was sterile need not surprise us considering how easily the pneumococcus dies out in culture media and how long the laparotomy was performed after the original infection.

Arthritis.—At the time of publication of Leroux's paper in 1899 and Cave's¹⁸ in 1901 this was considered a rare

⁶ Loc. cit.

⁷ Spitta: Brit. Med. Jour., vol. ii., 1902, p. 1579.
⁸ Pfisterer: Jahresbericht für Kinderheilkunde, Band v., Heft 4, S. 417.

⁹ Duckworth and Marsh: Clinical Society of London, THE LANCET, Jan. 16th, 1904, p. 159. Shaw and French: Brit. Med. Jour., vol. ii., 1904, p. 18.

¹⁰ Foulerton: THE LANCET, April 12th, 1902, p. 1027.

¹¹ Cohn: Münchener Medicinische Wochenschrift, 1899, p. 1558.

¹² Nuthall and Billington: Birmingham Medical Review, January, 1903.

¹³ Newton Pitt: Brit. Med. Jour., 1904, vol. i., p. 665.

¹⁴ Loc. cit.

¹⁵ Spitta: Brit. Med. Jour., 1902, vol. ii., p. 1579.

¹⁶ Loc. cit.

¹⁷ Loc. cit.

Cave: THE LANCET, Jan. 12th, 1901, p. 82.

³ Cole: Johns Hopkins Hospital Bulletin, June, 1902.

⁴ Quoted by Parker: Brit. Med. Jour., 1903, vol. i., p. 1081.

⁵ Kanthack and Lance: St. Bartholomew's Hospital Reports, 1896.

TABLE I.—CASES OF MULTIPLE PNEUMOCOCCAL INFECTION.

No.	Age.	Sex.	Lesion.	Complication.	Evidence of pneumococcal infection.
1	45 years.	M.	Right lobar pneumonia.	Infective aneurysm of the aortic valve; meningitis.	Pneumococci in clot and valves.
2	15 "	F.	Infective endocarditis.	Embolism of the right middle cerebral artery; infarction of the spleen and kidneys.	Diplococcus pneumoniae abundant in vegetations.
3	18 "	F.	Multiple abscesses of liver (no focus found).	Pleurisy.	Pneumococci cultivated from pus.
4	31 "	M.	Pneumonia (right).	Mitral stenosis with recent endocarditis.	Pneumococci in vegetations.
5	38 "	M.	Otitis media (suppurative).	Infective endocarditis on malformed (two-cusped) aortic valve; infarction of the left kidney and left lung; pneumonia, left lower lobe; submeningeal and subperitoneal hæmorrhages.	Pneumococci in cardiac vegetations.
6	26 "	M.	Double pneumonia.	Pericarditis.	Pneumococci in the heart's blood, lung, and pericardial fluid. Confirmed by inoculation experiment on mouse.
7	1 year.	F.	Diphtheria and broncho-pneumonia.	Abscess of the lung.	Pus from cavity showed pneumococci but no diphtheria bacilli.
8	14 years.	M.	Double empyema.	Small peritoneal abscess; superficial abscesses of the legs.	Diplococci found in films; cultures sterile.
9	13 "	M.	Pneumonia.	Empyema; meningitis; pericarditis.	Lungs: pneumococci by culture and inoculation. Spleen: pneumococci by culture. Meningeal exudate showed pneumococci by films, culture, and inoculation.
10	16 "	F.	Otitis media.	Mastoid suppuration; thrombosis of the lateral sinus; secondary abscesses in the lungs.	Stained films from meningeal exudate yielded almost pure pneumococci.
11	3 "	F.	Broncho-pneumonia.	Empyema (left); pericarditis; otitis media.	Pneumococci found in heart's blood, spleen, and mediastinal glands.
12	7 months.	F.	Broncho-pneumonia.	Meningitis.	Cultures from brain yielded pneumococci.
13	54 years.	M.	Pneumonia.	Meningitis.	Meningeal exudate contained diplococci pneumoniae.
14	60 "	F.	Pneumonia.	Pleurisy; semi-purulent pericardial effusion.	Pericardial fluid showed numerous pneumococci, but cultures sterile.
15	2 "	M.	Empyema.	Meningitis.	Pus from meninges showed very abundant pneumococci.
16	6 months. 1 year 6 months.	M.	Broncho-pneumonia.	Empyema (left); dry pleurisy (right).	Cultures of heart's blood, pericardial and peritoneal fluid, and of pus from empyema all yielded pneumococci.
17	4 months.	M.	"	Double empyema; pericarditis; peritonitis; meningitis.	Pneumococci in pus from meninges; cultures sterile.
18	1 year 9 months.	M.	Purulent peritonitis.	Acute nephritis.	Pneumococci from heart's blood and peritoneum.
19	30 years.	F.	Pyosalpinx.	Peritonitis; pleurisy; purulent pericarditis.	Pericardial fluid showed diplococci. Cultures; no growth.
20	47 "	M.	Pneumonia.	—	Subarachnoid fluid teeming with pneumococci; films and cultures.
21	1 year 5 months.	M.	Broncho-pneumonia.	Thrombosis of longitudinal and left lateral sinus; subarachnoid hæmorrhages.	Fluid from meninges yielded abundant pneumococci in films, cultures, and subcultures.
22	35 years.	M.	Pneumonia.	Abscess of lung; meningitis.	Cultures from brain yielded pneumococci; cultures from spleen were sterile.
23	53 "	F.	Infective endocarditis of tricuspid valve.	Infarcts in lung.	Blood cultures yielded pneumococci.
24	8 "	M.	Otitis media.	Thrombosis of lateral sinus; necrosis of temporal bone; extra-dural abscess; cerebral abscess.	Pneumococci cultivated from cerebral abscess.
25	8 "	M.	Empyema.	Purulent peritonitis; otitis media.	Films of peritoneal fluid; abundant pneumococci. Cultures; no growth.
26	4 months.	M.	"	Meningitis.	Cultures of meningeal fluid and spleen yielded pneumococci.
27	6 "	M.	Broncho-pneumonia.	Purulent meningitis.	Pneumococci from cultures of meningeal fluid.
28	2 years	F.	Empyema.	Purulent pericarditis; purulent peritonitis.	Pneumococci found in pericardial fluid.
29	9 months.	M.	Pneumonia.	Pericarditis.	Pneumococci in pericardial fluid and heart's blood.
30	8 months.	F.	Purulent meningitis.	Hæmorrhagic pleurisy; purulent pericarditis; commencing broncho-pneumonia.	Heart's blood contained pneumococci.
31	9 "	F.	Broncho-pneumonia.	Empyema.	Heart's blood, pericardial fluid, and fluid from the third ventricle of the brain all yielded pneumococci on cultivation.
32	2 years.	F.	Double empyema.	Purulent pericarditis; purulent meningitis.	Pneumococci in peritoneal pus.
33	4 "	F.	Empyema.	Purulent peritonitis.	Pneumococci cultivated from blood during life.
34	26 "	M.	Infective endocarditis of malformed aortic valve and of mitral and tricuspid valves.	Infarction of spleen and kidneys; embolism of right popliteal artery; pleurisy.	Films from vegetations and clot showed pneumococci. Cultures of the vegetations, heart's blood, and spleen grew pneumococci. Confirmed by inoculation of mouse. (Horder and Garrod: THE LANCET, June 4th, 1904, p. 1561.)
35	13 "	F.	Otitis media.	Infective endocarditis (mitral); rupture of chordæ tendineæ; infarcts in the spleen and kidneys; suppurative arthritis of the right shoulder- and wrist-joint.	Pneumococci cultivated from vegetations.
36	—	M.	Pneumonia.	Pericarditis.	Gram staining diplococcus resembling pneumococci in films from pericardial fluid; cultures sterile.
37	40 "	M.	Lobar pneumonia.	Infective endocarditis (aortic and mitral); pleural effusion; pericardial effusion; aneurysm of the superior mesenteric artery.	Cultivations from heart's blood, pericardial effusion, and spleen all yielded pneumococci.
38	1 year 6 months.	F.	Broncho-pneumonia.	Purulent pericarditis.	Pericardial fluid contained pneumococci.
39	7 years.	F.	Empyema.	Purulent peritonitis and pericarditis; pus in the Fallopian tubes and uterus.	Spleen cultivations gave pure growth of pneumococci.

pneumococcal lesion. Now that attention has been called to it it will probably be found to occur more frequently than was formerly thought. Thus Raw¹⁹ has met with seven cases following pneumonia—i.e., in about 1 per cent. Dudgeon and Branson²⁰ have carefully described five cases seen in a short space of time at the East London Hospital, Shadwell. Yet we have only been able to find three cases of arthritis at St. Bartholomew's Hospital during the last ten years proved to be due to the pneumococcus alone. In two cases the knee was attacked, in the third the shoulder and wrist. It usually appears during the height of the primary disease.²¹ Despite the grave prognosis the constitutional symptoms are not usually so severe as in streptococcal infections.²² Generally, it is the synovial membrane that is attacked, though sometimes the suppuration spreads to the peri-articular tissues, as in the present case. The fluid may be thin or creamy pus or almost clear fluid inclosed in a gelatinous membrane. Dudgeon and Branson²³ attach prognostic importance to this, thin pus being an unfavourable sign, whereas encapsulation of the fluid is a good omen. Oedema or brawny induration in the neighbourhood of the affected joint is frequently absent. If the bone is attacked it is generally the outer part near the epiphyseal line that suffers. Pneumococcal osteomyelitis has not as yet been described. The knee is the joint most commonly attacked. Though usually confined to one or two joints the arthritis and osteitis may become wide-spread. Thus in a case recorded by Murray²⁴ the knee, thigh, ankle, and leg were all attacked.

Vulvitis.—This only appeared after the opening of the abdomen; it must have often happened that the profuse discharge ran down on to the vulva. It yielded to simple antiseptic lotions, so in all probability this was simply an accidental contamination and sprang from no deep-seated cause. But, as has been already pointed out, pneumococcic endometritis may occur and, indeed, all the mucous surfaces have been attacked by this organism²⁵ In the series of cases here recorded the endometrium was involved once and the Fallopian tubes twice.

In conclusion we have tabulated the 39 fatal cases occurring at St. Bartholomew's Hospital between January, 1894, and August, 1904, of multiple lesions bacteriologically proved to be due to the pneumococcus alone (Table I.). As there is some difference of opinion as to what is sufficient evidence on this point, the pathological report is appended in each case. In calculating the percentages we have added to this table (see Table II.) the case²⁶ that recovered. Even when all the clinical and post-mortem evidence has been taken into account, it is sometimes difficult to decide which was the primary lesion, and the table only indicates what was the probable course of events.

TABLE II.
Primary Discoverable Lesion.

	Number of cases.	Percentage.
Lobar pneumonia	11	27·5
Broncho-pneumonia	9	22·5
Empyema	8	20·0
Otitis media	4	10·0
Infective endocarditis	3	7·5
Appendicitis, hepatic abscess, meningitis, } peritonitis, and pyosalpinx	1 each ...	2·5
<i>Signs of Metastasis.</i>		
Pericarditis	14	35·0
Meningitis	11	27·5
Peritonitis	8	20·0
Empyema	7	17·5
Pleurisy (dry or hæmorrhagic)	6	15·0
Infective endocarditis	4	10·0
Abscess of lung	3	7·5
Thrombosis of lateral sinus	3	7·5
Otitis media	2	5·0
Aneurysm of superior mesenteric artery, } arthritis, commencing broncho-pneu- } monia, endometritis and pyosalpinx, } cerebral abscess, acute nephritis, pneu- } monia, subdural abscess, and superficial } abscesses.	1 each ...	2·5

¹⁹ Raw: Brit. Med. Jour., 1901, vol. ii., p. 1803.

²⁰ Dudgeon and Branson: THE LANCET, August 1st, 1903, p. 316.

²¹ Piesterer: Jahresbericht für Kinderheilkunde, Band v., Heft 4, S. 417.

²² Dudgeon and Branson: THE LANCET, August 1st, 1903, p. 316.

²³ Ibid.

²⁴ Murray: THE LANCET, June 7th, 1902, p. 1604.

²⁵ Foulerton: THE LANCET, April 12th, 1902, p. 1027. Cary and Lyons: American Journal of the Medical Sciences, vol. cxxii., 1901, p. 298.

²⁶ Duckworth and Marsh: THE LANCET, Jan. 16th, 1904, p. 159.

NOTES ON A CASE OF QUADRUPLETS.

By ANNIE C. GOWDEY, M.B. LOND.,

ASSISTANT MEDICAL SUPERINTENDENT, ST. PANCRAS INFIRMARY (SOUTH).

CASES of four children at one birth occur with such extreme rarity as to justify the publication of this note. According to Fothergill the ratio is 1 in 387,000.

The patient, aged 36 years, was admitted to the lying-in ward on Sept. 15th, 1904, at 8 P.M. She stated that at 3 o'clock the same afternoon while lifting a heavy saucepan off the fire she felt something "snap" inside her. Soon after a considerable quantity of fluid came from her which she attributed to a temporary loss of control over the bladder. Pains which she described as "slight and lingering" began a few hours after and she left her work and went to the St. Pancras Infirmary.

On admission she gave a history of five and a half months' pregnancy and of having quickened about a month previously. She had noticed herself unusually large but had no pressure symptoms other than a great feeling of heaviness and difficulty in stooping. On examination the abdomen was greatly distended, the upper limit of the uterus being three fingers' breadth below the ensiform cartilage; the foetal parts were not satisfactorily felt. There was a loud uterine souffle on the right side but no foetal heart sound could be detected. The os was dilated, the membranes having ruptured, and a foetal head, soft, as if unossified, was felt towards the right side. The cord, which was prolapsed and pulsating, was easily returned. Pains had now subsided, but as the woman appeared extremely comfortable interference was deemed unnecessary. The patient had a good night and slept well. About 3 A.M. a few slight niggling pains were felt. She was seen again at 9.30 A.M. when the child was found to be presenting transversely in the dorso-anterior position; the hand prolapsed outside the vagina could not be returned. Forceps were applied to the breech and delivery was rapid and easy. The child, a female, measured 13 inches long, weighed 1 pound 4 ounces, and survived 13 hours. Shortly afterwards uterine contractions returned and within the next 20 minutes three other children, two males and one female, were expelled. These were all stillborn and of them the first was a breech presentation, the next a transverse with arm prolapsed, as in the first case of all, and the last a vertex. In length they measured 12½, 13, and 11½ inches respectively and their weights were 1 pound 10 ounces and 1 pound 4 ounces each of the remaining two. After another 20 minutes the placenta were delivered, the last one manually. Two were quite separate. The remaining two had coalescing margins with separate chorions to each. There were no complications and the patient made a rapid recovery.

As regards her former history the patient had had five previous pregnancies, none of which were multiple; there had been severe hæmorrhage in two of these. On the mother's side is a complete absence of any constitutional or hereditary tendency; the paternal influence is difficult to obtain.

Remarks.—Cases of multiple pregnancy are notoriously liable to post-partum hæmorrhage, mainly for two reasons—an over-distended uterus favouring inertia and the presence of a large placental site. In this case post-partum hæmorrhage was conspicuous by its absence. This is all the more surprising when one considers the unusually prolonged second stage, coupled with the fact that in previous pregnancies she suffered severely from this complication. The very prolonged delay in the second stage of labour in this instance can readily enough be explained by the over-distension of the uterus, a condition brought about by the two factors present—viz., the plural pregnancy and the considerable amount of hydramnios.

Anomalies of presentation and also premature labour are the rule rather than the exception in multiple pregnancies. The case in point well illustrates both these, for of the presentations two were transverse and one was a breech. As regards the duration of pregnancy, judging by the appearances presented by the infants, it was probably six and a half months, although the mother denied a longer period than five and a half months.

A further point worth noting is the uniovular development of each child, as indicated by the presence of separate