The Medical and scientific archives of the Adelaide Hospital. no. 4.

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THE

MEDICAL AND SCIENTIFIC ARCHIVES

OF THE

ADELAIDE HOSPITAL.

No. 4.

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CONTENTS.

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This is the fourth annual issue of these Archives, and the benefit derived from their publication seems quite clear. Fuller attention is paid to the elucidation of particular cases, and when these are once recorded in permanent form reference to them is easy. The Archives are still far from a complete record of the more interesting and important cases that enter the Hospital. There are a number of other rare and unusual diseases or pathological lesions of which the hard-pressed staff have been unable to prepare accounts for publication. As there is only one Registrar for the Hospital, and as he has many other duties to perform as well, he can only devote a very limited amount of time to the getting together of the necessary information. When a second Registrar is appointed to the staff, and there is also a resident pathologist, the work of the Editorial Committee will be much lightened, and the Archives will benefit materially.

The arrangement of cases reported follows that of previous years. In addition we have inserted a new heading, "Diseases of Australian Aboriginals," as it is felt that descriptions should be given, before it is too late, of the course of various forms of disease occurring amongst this long-isolated race of people, as well as descriptions of the pathological lesions.

The Committee would again like to express their appreciation for the hearty support accorded to these archives by the Ministerial head, by the Inspector-General of Hospitals, and by the members of the Board of Management of the Adelaide Hospital. They are also glad to note that this publication has been favorably received in other parts of the world.

I.—HYDATID DISEASE.

During 1924 seven cases of hydatid disease have been under surgical care at the Adelaide Hospital. These cases do not call for any special comment in this place. At autopsies hydatid cysts were found in five cases out of a total of 222 post-mortems. In all these cases the presence of such a cyst was entirely unsuspected. In four of the cases they were degenerated, and in no way contributed towards death, and probably for many years had given rise to no symptoms if they had ever done so. In the other case a very large degenerating cyst was present in the liver; the stomach, in consequence, had been pushed over to the left, and it was thought that the presence of this large cyst had probably contributed to the patient's death. As pointed out in previous numbers of the Archives, it would seem that about 2 per cent. of adults dying in this State are infested by hydatid cysts, usually unsuspected and undergoing degeneration.

(1) HYDATID DISEASE OF THE LUNG CAUSING CHRONIC EMPYEMA.

(Under the care of Dr. Cudmore, Hon. Surgeon. Notes by Dr. I. B. Jose, Registrar.)

E. P., male, *æt.* 63, was admitted on October 16th, complaining of pain in the chest and dyspnoea, which he had had for 10 months. He stated that he had had an hydatid of the liver operated on 27 years previously, followed by an hydatid of the lung, which ruptured into a bronchus, and for the last 25 years had caused periodical coughing-up of hydatid cysts. In January, 1924, he was X-rayed by Dr. King, of Mount Gambier. A dense shadow was apparent in the right axillary region of the chest. The chest was opened, and a large cavity found lined by calcified plaques and connected by a small sinus to a bronchus of the collapsed lung. The wound had discharged constantly since the operation, and had been painful. An X-ray showed a localised pneumothorax limited by thickened pleura and adhesions in the right costophrenic angle. No suggestion of an hydatid was apparent in the lung fields. On October 31st an operation was performed to increase the drainage opening and to resect portions of the adjoining ribs to allow the chest wall to fall in and obliterate the cavity. The wound had healed by November 17th, when he was discharged well.

(2) HYDATID CYST OF THE LIVER WITH JAUNDICE.

(Under the care of Dr. H. Newland, Hon. Surgeon. Notes by Dr. I. B. Jose, Registrar.)

A. J., male, *æt.* 34, was admitted on August 19th, complaining of pain in the right hypochondrium, of sudden onset three weeks previously. He had been in fair health before this. He had vomited food once soon after the onset of the pain, which was sharp and stabbing in attacks, with periods of aching, but comparative freedom. During this time he had been feverish, and on admission his temperature was 104° F. He had had dysentery in Egypt eight years ago, an attack of abdominal pain two years ago, and pain between the shoulder blade one year ago.

On examination the patient was jaundiced, and had several scratch marks and purpuric spots on the arms and chest. There was deep tenderness in the right epigastric region, and rigidity of the upper part of the right rectus, and a moveable mass could be felt projecting from under the right costal margin. A white cell count showed

14,500 per c.mm. The urine contained much bile and a trace of albumin. A diagnosis was made of empyaema of the gall bladder. On August 20th abdominal section was performed, and a distended gall bladder presented with large veins running over it and kinked upon itself. No stones could be felt in the bladder or ducts. To the left of the gall bladder part of an hydatid cyst could be seen well embedded in the liver between the two lobes. Also there was another small cyst under the peritoneum in front of the bile ducts near the hilum of the liver. The liver was rotated, the cyst brought up to the surface of the wound, the peritoneal cavity packed off, and the cyst (which was 3½in. in diameter) opened and evacuated of daughter cysts and endocyst. The cavity was swabbed with 1 per cent. formalin and marsupialised, and a drainage tube inserted. After the operation the blood gave a positive hydatid complement fixation test. A differential blood count showed 1 per cent. eosinophiles, 82 per cent. polymorphonuclears, 2 per cent. mononuclears, and 15 per cent. lymphocytes. The wall of the hydatid cyst, on microscopic examination, was found to contain numerous leucocytes. A fair amount of bile-stained drainage came from the cavity. Gradually the jaundice cleared, and the motions became colored. He was discharged on October 20th with still a small discharging sinus.

(3) DEGENERATED HYDATID CYST OF THE LIVER—EXCISION.

(Under the care of Dr. Newland, Hon. Surgeon. Notes by Dr. I. B. Jose, Registrar.)

C. S., female, *æt.* 42, was admitted on June 17th, 1924, complaining of flatulent dyspepsia with irregular attacks of pain coming on soon after food for eight months. Four days before admission she had had severe abdominal pain, vomiting, and fever, due to an attack of cholecystitis. Examination of the abdomen revealed a swelling in the region of the gall bladder which was tender, and over which the abdominal wall was "on guard." On June 26th, laparotomy was performed, and a large inflamed gall bladder containing two stones was excised. Also an obsolescent hydatid cyst was found fixed to the liver immediately to the right of the gall bladder. This was about 3in. in diameter. This cyst was only attached by a small portion of its surface, and it was shelled out from the liver entire, and the bare area of liver drawn together with catgut sutures. The abdomen was closed with drainage to the under surface of the liver. Convalescence was complicated by an attack of cystitis due to *Bacillus coli.*

(4) HYDATID CYST OF THE LIVER.

(Under the care of Dr. Smeaton, Hon. Assistant Surgeon. Notes by Dr. I. B. Jose, Registrar.)

R. B., a female, *æt.* 21, was admitted on June 26, 1924, complaining of a lump in the upper part of the abdomen, which she had noticed for four years. Attention had been first drawn to it by an attack of intermittent sharp pain in the lower chest. These attacks had been repeated several times, and had been getting worse recently. The lump appeared to increase in size during each attack, and get smaller in the intervals. The pain bore no relation to the taking of food. She also suffered from dysmenorrhoea, cystitis, and leucorrhoea. On examination of the abdomen a moveable elastic round swelling 4in. in diameter projected from under the anterior border of the liver in the epigastric region. The hydatid complement

fixation test was negative on July 1st. On July 4th laparotomy was performed, and a hydatid cyst was found arising from the under surface of the liver, and covered over by the lesser omentum. The abdominal cavity was packed off, and the cyst brought to the surface, evacuated of clear hydatid fluid and membrane (no daughter cysts were present), and marsupialised. Recovery was uneventful, and she was discharged to outpatient treatment on July 18th, with a small sinus discharging a little.

(5) GENERALISED HYDATID DISEASE OF THE PERITONEUM.

(Under the care of Dr. Cudmore, Hon. Surgeon. Notes by Dr. I. B. Jose, Registrar.)

P. C., male *æt.* 21, octoroon, was admitted on January 1st, 1924, complaining of pain in the unbilical and right iliac regions of sudden onset, and unaccompanied by nausea or vomiting or any urinary symptoms. He gave a history of having received a kick in the abdomen a year ago, which had laid him up for one week, and that he had had abdominal pain on and off since. On examination the muscles of the lower abdominal wall were "on guard," there was no hyperaesthesia, but a tender mass could be felt in the right iliac region. Rectal examination showed a tense cystic somewhat tender mass lying in front of the rectum. On January 2nd laparotomy was performed, and a hydatid cyst 3in. in diameter was found in the right iliac fossa atached to a long pedicle of omentum which had undergone torsion.

The pedicle and cyst were removed. A second cyst in the right lumbar pouch was also removed. A third cyst lying between the bladder and rectum was opened and evacuated of contents and membrane. The omentum was studded with thousands of minute cysts. Recovery from the operation was uneventful.

(6) RECURRENT HYDATID DISEASE OF THE ABDOMEN.

(Under the care of Dr. Mainwaring, Hon. Surgeon. Notes by Dr. I. B. Jose, Registrar.)

M. I., female, *æt.* 65, was admitted on January 2nd, 1924. She had had an operation for hydatid disease of the liver in February, 1905. In 1919 she had another operation for marsupialisation of a large hydatid of the under surface of the left lobe of the liver and removal of an obsolescent hydatid of the great omentum. She now complained of "nagging" pain in the sides and back, and a feeling of fullness in the liver region, and frequency and urgency of micturition. There was no vomiting or nausea as on the previous occasions. On examination of the chest, the percussion note was impaired over the lower lateral part of the right chest up to the fifth intercostal space in the mid-axillary region, and a friction rub was present. A smooth rounded mass could be felt extending into the abdominal cavity from the under surface of the right lobe of the liver opposite the tenth right costal cartilage. This was 3in. in diameter, moveable with the liver, and dull on percussion. Vaginal examination showed a soft cystic swelling in the pouch of Douglas, which was thought to be an hydatid cyst. Blood examination gave a weak positive hydatid complement fixation test and a weak positive precipitin test, and an eosinophilia of 3 per cent. X-ray examination of the chest showed an irregularity of the right diaphragmatic outline, probably due to adhesions, and a small round opacity at the left cardio-phrenic angle, which appeared to be a hydatid cyst connected to the

diaphragm. A posterior colpotomy was performed, and two hydatid cysts evacuated and drained with relief to the vesical symptoms of urgency and frequency. No operation was performed on the other hydatid cyst.

(7) RECURRENT HYDATID DISEASE OF THE ABDOMEN.

(Under the care of Dr. Smeaton, Hon. Assistant Surgeon. Notes by Dr. I. B. Jose, Registrar.)

G. B., male, *æt.* 46, was admitted on November 11th, 1924, complaining of attacks of abdominal pain for the previous six months, and a lump in the right side of the upper abdomen. The attacks of pain were severe, came on at any time, and often were associated with vomiting. Two years previously he had undergone an operation for hydatid disease of the peritoneum. Examination revealed a rounded mass 2in. in diameter just below the right costal margin, another mass just above the umbilicus, and a third in the suprapubic region. On November 17th laparotomy was performed, and numerous cysts of varying size and from the abdominal and pelvic cavities were drained, and their endocysts removed. Recovery from the operation was uneventful, and the patient was discharged on December 2nd.

HYDATID CYSTS MET WITH AT AUTOPSIES.

(J. B. CLELAND, Hon. Pathologist.)

(1) *Degenerated Hydatid Cyst of the Liver.*—Autopsy 13/24.—J. G., a male, *æt.* 77, who died of dysentery, had an old dead hydatid cyst with putty-like contents in the right lobe of the liver.

(2) *Degenerated Hydatid Cyst of the Liver.*—Autopsy 21/24.—Elsie S., *æt.* 39, a half-caste aboriginal woman, who had died of acute infective pericstitis of the scapula and lobar pneumonia, had a degenerated hydatid cyst, 3in. x 1½in. in size, in the right lobe of the liver in front of the diaphragmatic attachment.

(3) *Degenerated Hydatid Cyst of the Liver.*—Autopsy 151/24.—J. B., a male, *æt.* 64, who died from pulmonary tuberculosis, and who had a carcinoma of the stomach, showed a degenerated hydatid cyst, 3in. in diameter, in the right lobe of the liver in front of the diaphragmatic attachment. There was a depressed area where the cyst came near the surface, due to contraction of fibrous tissue in the adventitious capsule.

(4) *A Large Degenerating Hydatid Cyst of the Liver.*—Autopsy 157/24.—L. S., a woman, *æt.* 48, who died shortly after an operation for cholecystectomy as a result, in part, of intestinal haemorrhage that followed the removal, at the same time, of a small carcinoid growth of the duodenum, had the dome of the right lobe of the liver much enlarged through more than the posterior half of the lobe being occupied by a large degenerating hydatid cyst with folded bile-stained membrane. The stomach was found pushed over to the left by the hydatid cyst, and it was thought that the presence of this large cyst contributed to the patient's death.

(5) *Calcifying Hydatid Cysts of the Liver.*—Autopsy 170/24.—J. H., a male, *æt.* 70, who died from lobar pneumonia and heart failure, had on the upper surface of the liver under the diaphragm an obsolescent hydatid cyst about the size of a small ball, and three smaller cysts with some degree of calcification were present on the inferior surface in the neighborhood of the gall bladder.

A SUMMARY OF AUSTRALIAN CASES OF HYDATID DISEASE OF THE SPLEEN.

(J. B. CLELAND.)

In these Archives for last year (No. 3, p. 9, 1923) we have given details of a case of hydatid cysts of the spleen in a woman, aged 39. The hydatid cysts were removed by splenectomy, and the patient completely recovered.

It has seemed advantageous to epitomise briefly previous records of Australian cases in which hydatid cysts have been present in the spleen.

Abbreviations—

A.M.G.—Australasian Medical Gazette.
A.M.J.—Australian Medical Journal.

1872.—P. H. MacGillivray (*A.M.J.*, p. 213) gave details of 36 cases of hydatid disease, one of which affected the spleen. The patient was a woman aged 29, the wife of a farmer. She was tapped twice with a fine trocar, and a cure resulted.

1873.—Dr. John Blair, surgeon to the Alfred Hospital, Melbourne, read notes on a case of hydatid disease of the spleen, before the Medical Society of Victoria (*A.M.J.*, p. 102). A woman, *æt.* 38, was admitted to the Hospital in October, 1872. A tumor was felt in the left hypochrondriac region about the size of a child's egg (*sic*, presumably head). The tumor was puunctured with a needle, and found to contain purulent matter. Later it was punctured with a small trocar and canula, 8ozs. or 10ozs. of purulent material being drawn off. A small canula was left in for two days. Six days later the patient aborted, and then gradually became weaker and died. The post-mortem examination showed peritonitis. The spleen was enlarged, and had three abscesses, in the largest of which hydatid material was identified under the microscope. Dr. Blair stated that all that was left of the spleen were the walls forming a complete shell with three compartments occupied by hydatid fluid. Dr. Melbourne exhibited a preparation similar to that of Dr. Blair's, which occurred in a case in which hydatids were general throughout the body.

1879.—W. G. Howitt (*A.M.J.*, N.S.I., p. 394) reported a case of hydatid disease of the heart, pulmonary arteries, lungs and spleen, in a male aged 47. The patient's illness had begun in 1870 as a swelling in the neighborhood of the spleen. Four years later haemoptysis had developed, and had recurred at intervals over a period of a year. Material like grape-skins was brought up towards the end of 1875. He was admitted to hospital in June, 1879, with a large tumor over the spleen and a patch of dullness with rhonchi in the lungs, but with the heart-sounds normal. Sudden death occurred. At the autopsy the spleen was found to have been converted into a large globular cyst, weighing 6½lbs., full of primary and secondary gelatinous cysts and pultaceous fluid. In this material scolices were found, and cholesterol crystals. Hydatid cysts were also present in the lungs. In the apex of the right ventricle there was a cyst full of daughter cysts, which had bulged into the cavity of the right ventricle, and had finally burst. Small collapsed cysts were found lying in various branches of the pulmonary artery.

In the Report of Council, S.A. Branch B.M.A., 1879-80, p. 8 (reprinted from the *A.M.G.*), reference was made to a case of hydatid disease of the spleen reported by F. W. Bailey. No details are given.

1881.—H. B. Allen (*A.M.J.*, III., p. 197) summarised, in a long series of hydatid cases, the case described by Howitt in 1879.

1884.—In this year Davies Thomas published his monograph on "Hydatid Disease, with Special Reference to its Prevalence in Australia." Cases of infestation of the spleen are mentioned incidentally. From all sources (European, American, Australasian, etc.) Thomas collected references to 40 cases, giving a percentage to the total cases of hydatid disease of 2.108. In Victorian Hospitals he found reference to two cases in males in which there were single cysts, and one case in a woman. In cases where there were cysts in other organs as well, one male had the liver, spleen, bladder, and mesentery involved, and another had the lungs, heart, and spleen. In New South Wales Hospitals there had been two cases of hydatid cysts of the spleen, both in women.

Graham, in his work on "Hydatid Disease," refers to a case recorded by Thomas, where a few minutes after tapping a cyst of the spleen, the face became dusky, the hands and feet cold, the radial pulse imperceptible, and respiration labored and hurried, the patient nearly dying. A rash was distributed only on the face, neck, and arms.

1891.—In this year James Graham, of Sydney, published his work, "Hydatid Disease in its Clinical Aspects." In the chapter on Hydatids of the Spleen and Pancreas (p. 127), he refers to several cases affecting the spleen, and describes the general symptoms manifested. In a woman of 42 who died of exhaustion from a large suppurating hydatid on the liver, he found nearly the whole spleen replaced by an hydatid containing daughter bladders. In Plate XXX. he shows the spleen of a male aged 38, who died from valvular disease of the heart. The patient had a cyst deeply embedded in the spleen which contained several daughter cysts. There were no hydatids in other organs. In two of his cases, one in a boy aged 11, and another in a woman aged 25, where he drew off 2½ pints and 1 pint of hydatid fluid respectively from cysts in the spleen, alarming symptoms of collapse followed. In another case of a lad with a large hydatid in the spleen, aspiration was performed under chloroform, with the result that the collapse was avoided. He refers to the case of one of these boys further on, stating that 10 months later there was still fullness over the site of the cyst, and the boy was not in good health, being pale and thin, and complaining of pain over the region operated upon.

1892.—Professor Watson (*A.M.G.*, December, p. 347), at a meeting of the S.A. Branch of the B.M.A., exhibited specimens showing "incipient hydatids of the spleen and kidney." These were presumably human specimens.

1894.—L. A. Lendon, of Adelaide, published a second volume of Davies Thomas's "Hydatid Disease," consisting of a collection of papers on the subject, which he edited and arranged, and to which he contributed. In his section on Hydatid Disease of the Spleen, he mentions 45 cases in which this organ was alone affected, and 43 other cases in which it was affected together with other organs. He details the symptoms and physical signs of hydatid cysts in this location.

1914.—R. A. Stirling, of Melbourne (Australasian Medical Congress, Tenth Session, Auckland), in an article on 10 cases of splenic aenemia, refers to a case of hydatid cyst of the spleen of enormous size in a robust young man, who only consented to operation when pyrexia, pain, and other signs of commencing suppuration forced it on him. To remove the daughter cysts it was necessary to make a section through a considerable thickness of the spleen which presented

in the depths of the wound. Bleeding was terrific, and could only be stopped by tamponage and subsequent ligature *en masse* of the cut edges of the splenic tissue. The after-course of the case is not detailed.

II.—FURTHER CASES RESEMBLING ENDEMIC TYPHUS FEVER (Brill's Disease).

DETAILS OF CASES.

Case I. (*under the care of Dr. F. S. Hone, Honorary Physician*).—E. H., male, aged 18, was admitted to Hospital on January 12th, 1924, complaining of headache, pains in the belly, and nausea. He had been quite well until seven days before; two hours after he got up he felt headache, which was so severe that he had to go to bed. The headache had persisted until he came into hospital. Sharp shooting abdominal pains and nausea came on two days after the onset. He had felt restless. His bowels had been opened regularly every day. A rash had appeared on his trunk and arms three days before admission; he thought it was fading. He had also had sore throat for two days. There was nothing of any importance in his family history or his previous health. His work was cabinet-making. There were rats about the works. At his home fowls were kept. Examination of his heart, lungs, urinary system, and central nervous system revealed nothing abnormal. His conjunctivae were suffused with blood, his cheeks mottled, his tongue red and furred at the edges, and over the whole of his trunk and limbs there was a maculo-papular rash, which diseappeared on pressure, and some indefinite subcuticular mottling. The following day his temperature reached 103° F. He felt drowsy. The rash had faded slightly. On January 14th his temperature was still elevated, but the rash had faded considerably, leaving a diffuse blush on the skin. His blood contained 4,500 white corpuscles per c.mm., and gave partial agglutination against *B. proteus* x 19 in a dilution of 1 in 150. *B. typhosus* was not recovered from his faeces or urine, and a blood culture failed to yield any pathogenic organisms. By January 17th the rash had entirely disappeared, and his temperature appeared to be subsiding by lysis. On January 20th and 21st his temperature was again elevated, and a broncho-pneumonic patch was discovered in his right lung. A specimen of blood taken on January 22nd contained 8,700 white corupuscles per c.mm., and gave complete agglutination against *B. proteus* x 19 in a dilution of 1 in 640, almost complete in 1 in 1280, partial in 1 in 2560. From this time on his convalescence was uneventful, save for some abdominal pain on January 26th. Blood taken on January 28th gave complete agglutination against *B. proteus* x 19 in a dilution of 1 in 160, and partial in dilutions of 1 in 320 and 1 in 640. He left hospital on February 8th.

Case II. (*under the care of Dr. F. S. Hone, Honorary Physician*).—M. B., male, aged 71, was admitted to hospital on February 1st, 1924, complaining of pain in the upper part of his belly and between his shoulders. He had been quite well until three weeks before, when he began to feel pains above the navel; these had become more severe, though not bad enough to keep him awake at night. He had felt hot during the evening for a fortnight, and had lost his appetite. He had headaches occasionally, and had been short of breath. He had not vomited; his skin had not been yellow, nor his motions in any way unusual. His bowels had been opened the day before admission, but he seldom had them opened oftener than twice a week, and sometimes

only three times in a fortnight. He had no urinary symptoms. He had had no previous illnesses except enteric fever 35 years ago. There was nothing noteworthy in his family or social history. He was a florid old man, rather taciturn, but not suggesting in his appearance any severe illness. He was dirty, but a very careful search did not discover any lice upon him or his clothing, nor did he have any scratch marks. His skin felt hot; his temperature on admission was 101.5° F., his pulse rate 96; systolic blood pressure 125mm. of mercury, diastolic 70; his respirations 30 to the minute. Examination of his heart showed nothing abnormal beyong a weak apex beat and muffled sounds. In his respiratory, urinary, generative, glandular, and central nervous systems nothing noteworthy was discovered. His tongue was furred on the dorsum, the sides and tip being red and glazed. His teeth were carious, he had pyorrhoea alveolaris. In his abdominal wall was a visible swelling about 1¾in. in diameter; it was tender and nodular, and could not be reduced. The upper part of the abdomen was held rather rigid, and did not move well as he breathed. On the night of admission two possible diagnoses were considered, viz., strangulated hernia and typhoid fever. With a view to the latter, a careful search was made for any signs of a rash, but none were discovered. Next morning at 8 o'clock he still had no rash, and his temperature was 99°. By 11 oclock the same morning he had a well-defined rash spread over the abdomen, chest, arms, and thighs. It consisted of macules and papules, which became more evident as one watched; most of the papules were reddish, and slightly irregular in outline; there were a few brownish spots also; the spots varied in size from about 3mm. in diameter to a pin's head; they did not entirely disappear on pressure. During the course of that day his temperature rose to 101°. He said he felt worse than he did the night before. About midday (*i.e.*, an hour after the rash was first seen) 5 c.c. of blood were withdrawn from his medial cephalic vein, and injected immediately into the peritoneal cavity of a guinea pig. One of the papules was excised at the same time for microscopical examination. In this no Rickettsia bodies were found. The guinea pig inoculated showed no reaction. By the next day fresh spots had appeared on his abdomen; on the arms they had spread towards the wrists, and on the lower limbs down below the knee. His bowels were opened after he had been given castor oil, and he felt fairly well though hungry; he was allowed a diet of custard and junket. His blood gave a negative Widal reaction against *B. typhosus*, and also a negative Weil-Felix reaction against *B. proteus* x 19. By February 5th the spots on the abdomen had almost entirely disappeared; on the other parts of his trunk a few brownish subcuticular spots and a few red rather large superficial spots were still visible. His temperature remained in the vicinity of 101° F. He complained of weakness. His stools were light yellow, contained no blood or mucus, and microscopical examination failed to reveal amoebae, cysts, or ova, and no typhoid bacilli were recovered. On February 6th his temperature was falling by lysis: he felt miserable and weak, and said he still had pain in his belly. The rash had almost disappeared from his trunk, but had spread to his hands and the back of his feet. A blood culture was negative. By February 11th the rash had disappeared everywhere except on the distal parts of his limbs. His temperature had been normal for four days, and blood was again taken. It gave a positive Weil-Felix reaction (complete agglutination against *B. proteus* x 19 in a dilution of 1 in 640, almost complete in a dilution of 1 in 2560). By February 15th there was nothing left of the rash but a subcuticular mottling on the limbs, and on the 19th not even this could be

seen. Blood taken on the 19th again gave a positive Weil-Felix reaction (complete agglutination against *B. proteus* x 19 in a dilution of 1 in 10240, almost complete in 1 in 20480). His convalescence proceeded uneventfully until February 27th, when he collapsed and died within five minutes.

Autopsy No. 28/24.—An elderly man with some pyorrhoea and stumps. The lungs showed some congestion with emphysema in front. The right lung at the apex showed a small indefinite patch of possible consolidation. The heart was normal. There was considerable atheroma of both coronary arteries with partial occlusion. The heart muscle was of good color, but a little soft. The spleen was a little enlarged and dark red, the liver dark-red in color and congested. There were some small cysts and one large one in the kidney. There were some distended lacteals in the jejunum. The stomach showed some congestion. The pia mater was slightly oedematous. There was some wasting of the convolutions of the brain, and some atheroma of the vessels at its base. The duodenum, bladder, prostate, testes, and suprarenal glands appeared normal. Death was attributed to coronary disease.

Microscopic examination of the lung showed some exudate and slight fibrosis. In the kidney there were occasional small collections of lymphocytes, and the epithelium of the tubules was ragged. The liver showed some fatty degeneration. In the spleen there was an increase of the reticulum at the expense of the lymphocytic cells. The heart wall showed no changes. No changes could be recognised in sections of the brain or in a section of the skin where the capillaries were especially examined. Sections of the papule exised during life showed no Rickettsia bodies.

Case III. (under the care of Dr. F. S. Hone, Honorary Physician).—J. S., male, aged 26 years, was admitted to Hospital on February 25th, 1924. His chief complaint was headache. He had had a cold a month before, and since then he had felt off color. Six days before admission he had severe headache in the evening, with vomiting, and pains in the back and limbs. He had had the headache since; it had been very severe, preventing sleep. A rash appeared on his abdomen five days before he came into hospital. He had not had any abdominal pain. He had had to take opening medicine frequently during the week before admission. His previous health had been good. No association with anyone with a similar illness could be traced. He worked in a grocer's shop On examination he was seen to be a rather pale young man, not at all apathetic. His temperature was 102° F., his pulse rate 100; no dicrotic wave could be felt in his pulse; his respirations 21 to the minute. His breath was fœtid, and the back of his tongue covered with a dirty white fur. Nothing adnormal was discovered in the examination of his heart, lungs, central nervous system, and glands. There was no distention or tenderness of the abdomen; his liver was not enlarged, but his spleen was readily palpable; splenic dullness was from the eighth costal interspace to ¾in. below the costal margin in the midaxillary line. On his abdomen, chest, back, upper and lower limbs was a maculo-papular rash, which did not disappear on pressure; the papules were of varying size, reddish and definitely elevated. They were not itchy. Numerous very small patches could be seen on close inspection; some of these had coalesced. The rash extended on to the back of his feet; there was none on the soles of his feet or on his palms; it was more profuse on the upper parts of his arms and on the extensor surface. His urine was acid, spec. grav. 1015, and contained no albumin, pus, blood, or sugar.

He was given morphia gr. 1/6 on admission, and hourly doses of one grain of calomel for five doses. Some of his blood was injected into the peritoneal cavity of a guinea pig. The guinea pig was not affected by the inoculation. On February 26th the rash was paler; his headache and general malaise had cleared up. His blood contained 8,600 white corpuscles per c.m.m.; it gave negative Wassermann, negative Widal and negative Weil-Felix reactions. *B. typhosus* could not be found in his faeces or urine. On February 27th his temperature reached 102.8° F. His conjunctivae were suffused with blood. On his skin there were more spots, but they were less conspicuous; close inspection showed many small spots which on casual examination one did not notice. By February 29th his rash had faded considerably, clearing up as a whole, and not in any particular region first. His temperature was still elevated (101° F.), but he felt fairly well. On March 3rd he felt quite well, his temperature normal, the rash was no longer visible, nor the spleen palpable; blood taken on this date gave a Weil-Felix reaction (complete agglutination against *B. proteus* x 19 in a dilution of 1 in 640). Blood collected on March 12th gave complete agglutination against *B. proteus* x 19 in a dilution of 1 in 1280, partial agglutination in a dilution of 1 in 5120. His convalescence was uneventful; blood collected on March 19th, when he was getting up, gave complete agglutination against *B. proteus* x 19 in a dilution of 1 in 640.

Case IV. (under the care of Dr. D. R. W. Cowan, Honorary Physician).—R. B., a single young woman, aged 17, was admitted to Hospital on March 26th, 1924, complaining of headache and pains all over her body. The only illness from which she had previously suffered was diphtheria eight years before. She had become ill eight days before admission with headache, two days later she became feverish, the next day she felt cold, she had aching pains all over her body. These were worse than the headache. She had been in bed for the last six days. She had no cough, had not bled from the nose nor vomited. Her bowels had been constipated, and her appetite was poor. Her temperature on admission was 101° F., pulse rate 104, respirations 26. Examination of the heart, lungs, reflexes, and urine showed nothing abnormal. Her tongue was furred, her abdomen was not distended, there were a few dull red spots on the abdomen and chest which disappeared on pressure, and scattered macules and papules on her back. Her spleen was not palpable. Her blood contained 5,000 leucocytes per c.mm. Blood taken on the 29th, when she had a generalized maculo-papular rash on her abdomen, chest and back gave a negative Widal but a positive Weil-Felix reaction (complete agglutination against *P. proteus* x 19 to a dilution of 1 in 160, partial to 1 in 640). On the 30th she felt better, the headache was gone, though her temperature was still about 100° F. Examination of her urine and faeces and her blood gave no result as far as typhoid bacilli were concerned. By April 1st her rash had almost disappeared, though her temperature still rose to 99.4°. By the 3rd her temperature had fallen by lysis to normal, and on April 13th she was discharged.

Case V. (under the care of Dr. Burston, Honorary Assistant Physician).—F. R., aged 56, an undertaker's driver, was admitted to hospital on April 12th, 1924, complaining of pain at the back of his head. He had not had any previous illness. He had to do all the stable work at the undertaker's for whom he worked. Dr. Burston, who had attended him at his house, said that the place was in a filthy condition. He had been quite well until twelve days before

admission, when he got a cold in the head, and his knees felt shaky; he had cold shivers and headache. He had had slight cough from the beginning. He took to his bed four days after the onset. He had bled from the nose three days before he came in. He had been constipated. He was a middle-aged man, not noticeably sick. His temperature was 99.6° F., his pulse rate 84, his respirations 20 to the minute. Examination of his nervous, cardio-vascular, respiratory, glandular, and genito-urinary systems showing nothing of note. His tongue was dry and furred, his abdomen slightly distended, his spleen readily palpable. On his abdomen and the lower part of his chest was a reddish brown, mainly subcuticular rash; some of the patches were larger than others, and were formed by the aggregation of a number of small spots; the rash did not fade on pressure, it was not raised. There were a few spots on the lower part of the back, but none on the extremities. His temperature fell by lysis and by April 15th the rash had disappeared; his spleen was just palpable, and he felt quite well. By April 24th his spleen could no longer be felt, and, apart from a transient rise of temperature on April 16th, the course of his convalescence was uneventful. His blood was taken on the day of admission; it gave a negative Widal reaction against *B. typhosus;* it gave a positive Weil-Felix reaction (complete agglutination against *B. proteus* x 19 in a dilution of 1 in 320). On April 22nd his blood gave complete agglutinations against *B. proteus* x 19 in a dilution of 1 in 320, almost complete to 1 in 1280, and partial to 1 in 2560. On April 28th complete agglutination was obtained to a dilution of 1 in 2560. A final examination on May 6th, three days before he was discharged, showed complete agglutination against *B. proteus* x 19 in a dilution of 1 in 160, almost complete in 1 in 320. Dr. Burston had attended the patient's son-in-law (who lived in the same house) for a similar illness a few weeks before. The Weil-Felix and Widal reactions were tried on his blood on May 2nd, but gave a negative result.

Case VI. (under the care of Dr. Cowan, Honorary Physician).—H. B., a male, aged 34, was admitted to hospital on May 17th, 1924. He complained of lassitude, headache, and pains in his limbs. A fortnight before admission he had began to feel tired and weak, and to have frequent headaches; he had had occasional headaches and constipation for two months before this. Six days before admission he had a cold in the head and pains in the limbs and back. A rash came out on the day that he entered hospital. His bowels were constipated; he had no trouble with micturition. He had not vomited nor bled from the nose. On admission his temperature was 103° F., his pulse rate 102, his respirations 24 to the minute. He looked well. His tongue was moist, with white fur on the dorsum and red papillae showing through. Nothing abnormal was discovered in the examination of his throat, heart, and lungs; his knee jerks and ankle jerks were difficult to elicit, but his central nervous system was otherwise normal. On his abdomen, chest, back, and limbs was a maculopapular rash; the spots varied in size from a pinpoint to an area 5mm. in diameter. They faded on pressure. There was no tenderness or distension of the abdomen. His urine was alkaline, specific gravity 1030; it contained urates, no sugar or albumin. He had 6,500 white cells per c.mm. of blood. On May 19th more rose spots appeared; some of the older spots did not fade on pressure. He still complained of headache. His blood gave a negative Wassermann reaction, negative Widal reaction, and complete agglutination against *B. proteus* x 19 in a dilution of 1 in 20 and 1 in 40, partial in dilution of 1 in 80. This was not regarded as a definitely positive Weil-Felix

reaction, and on May 23rd blood was again taken. This gave complete agglutination against *B. proteus* x 19 in a dilution of 1 in 40, partial in 1 in 80, slight in 1 in 320. By this time the rash had faded, and was morbilliform. The patient felt better; his temperature fell to 90° F. On May 25th it is noted that his spleen is palpable; it had not been palpable on May 19th. On June 3rd his blood gave complete agglutination against *B. proteus* x 19 in a dilution of 1 in 640, almost complete in 1 in 1280, partial in 1 in 2560. The Widal reaction was still negative. On June 6th he left hospital.

Case VII. (under the care of Dr. G. A. Lendon, Honorary Assistant Physician).—R. S., a male, aged 24 years, was admitted to Hospital on July 10th, 1924. Five days before he had had a "cold shiver;" then he began to have headache, his eyes were sore, he felt sore in his back and belly, he could not sleep though he felt tired. His bowels had been regular until he became ill, since then they had been constipated. No one else in his family had been ill lately. He had had appendicitis many years before, and "fluid round the heart" about the same time. On admission he was seen to be a robust looking young man, with apathetic expression and greasy skin. His temperature was 101° F., his pulse rate 96, and his respirations 20 to the minute. His tongue was rather dry and coated with a white fur. Examination of his throat, heart, lungs, central nervous system, and abdomen revealed nothing abnormal; his spleen was not palpable. There were a few hyperaemic macules scattered about his trunk. Urine: specific gravity 1024, acid, no albumin. His blood contained 5250 white cells per c.mm. On July 12th his temperature rose to 103°F. A macular red rash was visible all over his trunk and limbs. His spleen was just palpable. On July 13th the rash was thicker and distributed all over his body. During the following two days the rash came out in crops; there was no desquamation. On July 14th his blood gave a negative Widal and a negative Weil-Felix reaction. Four days later his blood gave a negative Widal reaction against *B. typhosus* and *B. paratyphosus* A and B. It gave complete agglutination against *B. proteus* x 19 in a dilution of 1 in 640. His temperature now began to fall; he felt better, and the rash was gradually fading. The subsequent course of his illness was uneventful, and he was discharged on August 12th.

Case VIII. (under the care of Dr. Cowan, Honorary Physician).—B. W., female, aged 46 years, was admitted to hospital on July 25th, 1924. Eight days before she had felt pain in the right side of her chest, worse when she took a deep breath; she had no cough, and brought up no sputum. Three days later a rash appeared, and her temperature rose to 102.5° F. For three days before admission she had a headache and felt sleepy. Her bowels were regular. She had had typhoid fever 25 years before, and rheumatic fever. On the day of admission her temperature was 102° F., her pulse rate 120, and her respirations 24 to the minute. Her tongue was clean and moist. Save for a mitral systolic murmur, nothing abnormal was discovered in the examination of her heart, lungs, abdomen, glands, or central nervous system. Her spleen was not palpable. On her abdomen and limbs there was a macular rash which disappeared on pressure. She had 12,500 white cells to the c.mm. of blood. Her blood gave a negative Widal reaction. Against *B. proteus* x 19 it gave complete agglutination in a dilution of 1 in 20, almost complete in 1 in 40, and partial to 1 in 320. Two days later her blood gave a positive Weil-Felix reaction (complete agglutination against *B. proteus* x 19

to a dilution of 1 in 320, almost complete to 1 in 640, partial to 1 in 2560). By July 31st her rash had disappeared; the following day her blood was found to give complete agglutination against *B. proteus* x 19 to a dilution of 1 in 640, partial to 1 in 2560. On August 11th she was discharged from hospital.

LABORATORY EXAMINATIONS IN CONNECTION WITH CASES RESEMBLING ENDEMIC TYPHUS (BRILL'S DISEASE).

(Dr. L. B. BULL, Director of the Laboratory.)

The Weil-Felix reaction has been performed 30 times on sera from 13 cases of this disease. A positive reaction was obtained in the course of the disease in each case. Five of the cases were under the care of private practitioners, and the rest were admitted to Hospital. A summary of the results of the examinations of the sera from these cases is given in the acompanying table. The test has been performed as a routine on all sera coming to the laboratory for the Widal test, and in this way 93 additional tests have been done on the sera from enteric fever patients and pyrexias of unknown origin. Of these, 35 gave a positive Widal reaction, but all gave a negative Weil-Felix reaction.

In the past an agglutination with sedimentation in a dilution of 1 in 40, with partial sedimentation in the higher dilutions, has been taken to represent a positive Weil-Felix reaction. In one patient, however, such a result was obtained on one occasion, although a week before it was negative, and it became negative again ten days after this suggestive result. The patient was a girl, aged 14, and was found at autopsy to have tuberculosis of the lungs, liver, and spleen. It is apparent, therefore, that such a result cannot be regarded as a definite positive until a subsequent test performed within a week or ten days shows some increase in agglutinins.

For several years the Weil-Felix reaction has been performed on all sera sent to the laboratory for the Widal test, and the latter test has been performed on all sera sent for the former test. In only one instance in the several hundred tests performed has a serum given a positive reaction with both tests (*vide* W.B.C. in table). Unfortunately we were unable to investigate this serum further, only the one examination being performed. The patient, a man, aged 49, gave a history of having had typhoid fever 29 years ago, and the serum gave a positive Widal test, complete agglutination in a dilution of 1 in 60, and incomplete in higher dilutions up to 1 in 120. During the year several guinea pigs were inoculated directly into the peritoneal cavity with blood drawn from the veins of cases resembling typhus fever in the early stages. Records of the temperatures of these animals were kept, and although some elevation of temperature was observed in some of the animals, when compared with the temperatures of control normal animals we have not been able to satisfy ourselves that any reaction had taken place. The Weil-Felix reaction has been performed on the blood of these inoculated animals, but in every case with a negative result. This animal experimentation is being further investigated, and it is hoped that in the near future a complete record will be made.

Weil-Felix Reactions, 1924.

Case.	Patient.	Sex	Age	Days Ill.	Pyrexia	Weil-Felix Reaction.
I.	E. H. .	M	18	6	+	P. to 1 in 160
				13	None	C. 1 in 640, A. C. 1 in 1280, P. 1 in 2560
				21	None	C. 1 in 160, P. to 1 in 640
II.	M. B...	M	71	21	+	Negative
				28	+	C. 1 in 640, A. C. 1 in 2560
				35	None	C. 1 in 10, 240, A. C. 1 in 20, 480
Pr.	S.	M	68	10	+	C. 1 in 640, P. 1 in 2560
				21	None	C. 1 in 2560
III.	J. S....	M	26	5	+	Negative
				11	None	C. 1 in 640, P. 1 in 1280
				18	None	C. 1 in 1280, A. C. 1 in 2560, P. 1 in 5120
				27	—	C. 1 in 640, P. 1 in 1280
Pr.	H.	M	33	14	None	C. 1 in 80, P. 1 in 160
				21	None	C. 1 in 320, P. 1 in 640
IV.	R. B...	F	17	10	+	C. 1 in 160, P. 1 in 640
V.	F. R. ..	M	53	12	+	C. 1 in 320, A. C. 1 in 640
				About 21	+	C. 1 in 320, A. C. 1 in 1280, P. 1 in 2560
				26	None	C. 1 in 2560
Pr.	F. R. .	M	—	35	None	C. 1 in 160, A. C. 1 in 320, P. 1 in 1280
VI.	H. B...	M	24	14	+	C. 1 in 40, P. 1 in 80
				18	+	C. 1 in 40, P. 1 in 80
				28	None	C. 1 in 640, A. C. 1 in 1280, P. 1 in 2560
Pr.	W.B.C.	M	49	16	None	C. 1 in 160, A. C. 1 in 320, P. 1 in 1280
Pr.	A. H...	M	—	8 or 10	+	C. 1 in 320, P. to 1 in 1280
VII.	R. S. ..	M	24	Some days	+	Negative
				? 8	+	C. 1 in 640, A. C. 1 in 1280
VIII.	B. W.	F	46	? 4	+	C. 1 in 20, A. C. 1 in 40, P. 1 in 320
				10 to 15	+	C. 1 in 320, A. C. 1 in 640, P. 1 in 1280 and 1 in 2560
				13 to 18	None	C. 1 in 640, P. 1 in 2560
Pr.	C. E. G.	M	25	15	+	C. 1 in 160, P. 1 in 320, slight 1 in 640

Pr = Private case. C. = Complete agglutination. A.C. = Almost complete agglutination. P. = Partial agglutination.

III.—MEDICAL CASES.

(1) HODGKIN'S DISEASE (LYMPHADENOMA) PRECEDED BY PRURITUS.

(Under the care of Dr. de Crespigny, Honorary Physician. Notes by Dr. I. B. Jose, Registrar.)

B. J. V., a male, *æt.* 42, a gardener, living at Renmark, was admitted on January 23rd, complaining of intense itching of the skin of the whole body. This had commenced 18 months previously. He had noticed it first after getting wet in a shower of rain after he had been heated during some hard work. Just after this he had an attack of sciatica, which was followed by itching in the legs, which soon spread to the whole skin, causing scratching and excoriations. During the following 18 months the itching had been of varying intensity, and he had had several attacks of a severe burning sensation at night, preventing sleep, which lasted two to three days at a time. He frequently had come out in a perspiration all over the body. Numerous forms of medicinal treatment had been tried with practically no relief. About September, 1923, he was advised to have X-ray treatment, which was apparently applied in excessive exposures to include the whole surface of his body once, and he states the sum time of exposure during the course was six hours. Great relief followed for six weeks after this. Then recurrence of the itching occurred, getting rapidly worse. The X-ray treatment was repeated, with a further relief for six weeks. Early in January, 1924, the itching had become as bad as ever, and he was sent to the Adelaide Hospital. His only previous illnesses were rheumatic fever when 18 years old, and a recurrence two years later.

On examination, the skin of the whole body was slightly pigmented (due to X-ray exposures), and showed signs of numerous excoriations, healed and recent, from scratching. The epidermis over the soles of the feet was thickened, and the whole skin was dry (except during the sweating attacks) and rather rough. The patient was anaemic, and his blod count showed haemoglobin 72 per cent., erythrocytes 3,600,000, leucocytes 12,500, polymorphonuclears 80 per cent., lymphocytes 12.5 per cent., large mononuclears 4.7 per cent., eosinophiles 1.5 per cent., and basophiles 0.2 per cent. An enlarged gland was felt in the left posterior triangle of the neck, and lymph glands were felt enlarged in both axillae. On February 2nd he was noticed to have a cough, and occasionally vomited as well. Subsequently, though no abnormal physical signs could be detected in his lungs, an X-ray was taken of the chest, and showed the presence of a mass of glands at the hila of the lungs. The prominent gland in the neck was excised, and showed the histopathological picture of Hodgkin's disease. In April signs of fluid were present in the left side of the chest. In May the anaemia was more marked. On August 12th 35ozs. of clear straw-colored fluid were removed from the left pleural cavity, and on August 31st 60ozs. In September the feet and ankles became oedematous, and the patient, after becoming very pale, died on the 16th. During his stay in Hospital, he had recurrent attacks of pyrexia, lasting 10 to 16 days, and reaching occasionally to 103° F., with pyrexial intervals of several up to 12 days.

Autopsy 159/24. The skin was dark brown and pigmented. There was a large quantity of bright yellow ascitic fluid. Both pleural cavities and the pericardial sac contained fluid. The left lung was collapsed. The mediastinal glands were enlarged, some to the size of a hazel nut, and showed on section a pale surface. They were tough and discreet. The liver weighed 44¼ozs.; in the capsule both

on the anterior and posterior faces were a number of small white nodules the size of pin's heads; on section the substance was dark red with similar small whitish granules; there were enlarged glands in the hilum. It was difficult to separate the left kidney from the large mass of glands surrounding the aorta. The tail of the pancreas was also enveloped in a mass of large glands. These enlarged glands extended from the common iliac artery up to the pelvis of the left kidney, being especially enlarged on the left side. They were more or less discrete, though enveloped in thick fibrous tissue. On section they were pale and avascular and very tough, and areas suggestive of caseation were present. The mesenteric glands were not unduly enlarged. The spleen weighed 8ozs., was dark red, and showed small whitish granules in its substance. The glands in the neck and axillae were not palpable.

Histology.—In the retroperitoneal mass there was no trace of the original gland structure. There was a great deal of rather cellular fibrosis with irregular connective tissue cells and areas where there were numerous nuclei, some rather poorly-stained endothelial cells, and small multinucleated cells. There were a number of smaller nuclei, many apparently of polymorphonuclear cells, some perhaps of lymphoytes. The spleen showed areas of fibrosis with some small multinucleated cells. The small areas on the surface of the liver showed fibrosis with scattered connective tissue cells with processes. The nuclei of the hepatic cells showed often hydropic changes; the nucleus seemed to enlarge, a globule appeared in it, which gradually enlarged until finally large oval or spherical bodies with chromatin round the periphery were found. There were also inclusions in Kupffer's cells, sometimes resembling the foot of a gecko lizard, sometimes round deep-stained bodies. In view of Kofoid's opinion that Hodgkin's disease is due to invasion by an amoebic organism, the presence of these peculiar bodies in the liver cells is of interest.

(2) ENDOTHELIOMA OF LYMPHATIC GLANDS RESEMBLING HODGKIN'S DISEASE.

(*Under the care of Dr. de Crespigny, Hon. Physician.*)

J. E., æt. 49, male, was admitted on December 2nd, 1922. He complained of swellings in his neck, which he had first noticed as small separate masses twelve months before. These had increased until they were the size of small oranges. His general health had remained good, and he had not lost any weight. He was a stout, ruddy-faced man, with enlarged glands in the anterior and posterior triangles on both sides of his neck. The glands were firm, discrete, and not adherent to the skin. There were no palpable glands in his axillae, and those in his groins were not enlarged. On December 5th a gland was removed from his neck, and the report thereon stated that the histological picture suggested a neoplastic development on top of Hodgkin's disease. A radiogram of his thorax on December 7th showed increase of his hilic shadows. On December 8th his blood contained per c.mm. 5,000,000 red corpuscles and 12,000 white corpuscles, of which 78 per cent. were polymorphs and 8 per cent. eosinophiles. It contained 91 per cent. haemoglobin, giving a color index of 0.9. He was treated with arsenical preparations (soamin and novarsenobillon). On February 28th, 1923, examination of his blood showed 5,300,000 erythrocytes, haemoglobin 95.4 per cent., and leucocytes 14,000, of which 65 per cent. were polymorphs, 5 per cent. eosinophiles, 5 per cent. small lymphocytes, and 25 per cent. large lymphocytes. On March 8th he began to receive X-ray therapy. By March 23rd his glands were appreciably

smaller, especially on the right side. On April 11th he was not feeling so well, and the administration of arsenic was stopped. A gland was removed for section, which showed the histological picture of Hodgkin's disease with much fibrosis. The cells resembling neoplastic cells appeared to be suppressed, and very few were to be seen as compared with the previous section. Another radiogram at this time showed widening of the mediastinal shadow above the aorta, possible due to glandular enlargement. By the end of April he had had 21 applications of X-rays to his neck. His temperature began to rise in the evenings up to 102-104° F., and he still felt wretched. His blood showed 5,580,000 red blood cells, 6,400 white cells, and 86 per cent. haemoglobin. Soamin, which had been resumed on April 28th, was discontinued on May 2nd. By May 8th his temperature was again normal, he felt better, and continued fairly well during June save for shooting pains up the right side of the back of his neck. His carious teeth were removed. His blood on June 8th showed 5,400,000 red blood cells, 4,600 white cells, and 90 per cent. haemoglobin. A differential count showed 78 per cent. polymorphs, 16 per cent. mononuclears, and 6 per cent. eosinophiles. On July 14th, under local anaesthesia, two of the enlarged glands on the left side of his neck were removed. They were large and firm, and section showed dense fibrosis with cellular areas scattered throughout. The histological picture of the cellular areas was that of an endothelioma. The wound healed readily. On August 26th another radiograph of his chest showed increase of the hilic opacity since the previous examination, apparently due to glandular enlargement. On September 7th the administration of soamin was resumed. He complained of a good deal of pain in the right shoulder. He had a continual dry cough. The glands in his neck had by the end of January, 1924, become larger, and on February 13th the glands were again exposed to X-rays. He continued to have X-rays, and the glands remained about the same size until May, 1924, when, after about a month of increasing respiratory distress, he died.

During the patient's stay in Hospital his temperature showed no periodicity, occasionally reaching 99° F., rarely 100°, being usually subnormal, though on one occasion over a period of a week ranging in hectic fashion from subnormal to 102° or even 104°.

Autopsy, No. 71/24. (*Dr. D. L. Barlow*).—All the lymphatic glands on both sides of the ineck were much enlarged, very hard, and matted together. The mediastinal glands were also enlarged and hard. A nodule, resembling in structure the involved glands and about one inch in diameter, was adherent to the posterior surface of the manubrium sterni. There was a small calcareous nodule, probably an old tuberculous focus, in a lymph gland in the hilum of the right lung. The retro-peritoneal glands were enlarged, hard, and several looked as though they were becoming purulent. The mesenteric glands were not affected. There was an old calcareous tuberculous gland near the ileo-caecal junction. The spleen was larger than normal, moderately firm, and dark red. The liver was normal, save for several small white nodules apparently secondary growths. The kidneys, suprarenal glands, and pancreas showed no changes.

Histologically the lymph glands showed considerable fibrosis, with many degenerating nuclei showing polar or granular staining. There were also a number of more cellular islands composed of small irregular endotheliomatous-looking cells. The spleen showed thickened trabeculae, some fibrosis of the pulp, and much old blood pigment. The liver showed considerable congestion and also deposits

showing dense fibrous trabeculae and an infiltration through this fibrous tissue of small endotheliomatous cells, sometimes surrounding little spaces, sometimes embedded in a matrix.

A re-examination of the histological material has been made. In the first section examined there is a malignant new growth apparently of the endothelium. The tumor cell is large, with an ovoid nucleus and an indefinite, foamy cytoplasm. Mitotic figures are common. The tumor cells, for the most part, grow in well defined areas separated from one another by a stroma intensely invaded by eosinophile leucocytes. In the centre of these areas the tumor cells are often necrosed and invaded by neutrophile, eosinophile, and mononuclear leucocytes. In other parts the tumor cells do not form well-defined areas, it being impossible to tell which are tumor cells and which stroma. It would appear that the tumor cell does change its character, becomes spindle-shaped, and forms a supporting fibrous tissue. The stroma consists of a loose fibrous tissue containing endothelial cells, some lymphocytes, a few plasma cells, and numerous eosinophile leucocytes. There are small areas of necrosis apparently not connected with groups of neoplastic cells, but lying in the stroma. It is probable, however, that these necrotic areas do represent small groups of neoplastic cells which have degenerated.

In the section from the second gland to be removed the neoplasm is less in evidence. For the most part the tumor exhibits a more scirrhous type of growth. In one portion of the gland there is dense fibrosis invaded by eosinophile leucocytes and plasma cells. A few small islands of tumor cells are to be seen strangled, as it were, in the fibrous tissue and undergoing degeneration. In the more normal portions of the gland there are seen slight hyperplasia of the fixed cells, some new blood capillary formation, but little or no eosinophile infiltration. A very few multinucleated cells are to be seen. On the whole the histological picture is more suggestive of a Hodgkin's disease than that found in the previous section. It is not possible to determine what changes, if any, have been produced in the gland by the X-rays.

The next glands to be examined are very fibrotic, and the tumor growth more scirrhous in character. There are no eosinophiles to be seen in the section, nor is there any lymphatic tissue present. The tumor cells are active, and show numerous mitotic figures.

Histological examination of the mass in the mediastinum and the deposits in the liver show a malignant new growth, with a dense fibrous stroma giving an alveolar arrangement. There is no evidence of any granulomatous reaction associated with the neoplasm.

Comment.—From the histological evidence there is no doubt of the presence of a malignant new growth, apparently an endothelioma, in this case. There is, further, no doubt that the neoplasm had its origin in the lymph glands of the neck. At first it was believed that the neoplasm had arisen in lymph glands already affected with the granulomatous reaction characteristic of Hodgkin's disease. After a careful re-examination of the histological material one feels less certain that the reaction present is definitely that of Hodgkin's disease. It is possible that the reaction of the tissues to the presence of the neoplasm may have simulated the reaction found in Hodgkin's disease, and that the condition was neoplastic from the beginning. The absence of anaemia and of the relapsing pyrexia of the Pel-Ebstein type might be taken to support the latter view. The disease had been in existence for at least 12 months before the patient was admitted to Hospital, and the mediastinum was already involved. At this late stage it was impossible to determine definitely whether

the condition had been primarily a lympho-granuloma. The evidence obtained is merely suggestive of the possibility of the neoplasm having arisen in glands involved in the granulomatous reaction of Hodgkin's disease.

(3) CHRONIC LYMPHATIC LEUKAEMIA WITH AN UNUSUAL EXANTHEM AND SKIN NODULES.

(Under the care of Dr. Hone, Honorary Physician.)

J. L., a gas fitter's assistant, *æt.* 68, was admitted on February 5th, 1923, complaining that he had collapsed on a hot day a fortnight before, and had been in bed since. He came of a healthy family; his father had died of a stroke at the age of 70, and his mother was aged 99 and still living. He had four children, all healthy; his wife had had three miscarriages. He had lived mostly in the open air, was of temperate habits, and denied having had any venereal disease. He had enteric fever 12 years before; at that time a growth was removed from his buttock. Apart from quinsy 13 years before he had not had any other definite illness, but for the last 12 years he had felt that he could not do quite so much work as formerly. It was then that he first noticed lumps in his neck. These gradually got bigger, but were never tender or painful; two years ago he noticed lumps in his armpits and groins also, and began to feel really knocked out. He had treatment for two months at a "hot-water cure" institution—it did him no good. Since then he had been getting weaker and weaker, had lost much weight, and had become very pale. His appetite had fallen off; his bowels were often constipated.

On admission his temperature was 99.2° F., his pulse rate 100, his respirations 28 to the minute. He was a big grey-haired man of pale complexion. His teeth were artificial. Examination of his cardio-vascular, respiratory, genito-urinary, and nervous systems showed nothing abnormal. His liver and spleen were palpable, both reaching about 3in. below the costal margin. Enlarged firm movable glands were felt in his neck, axillae, and groins. One of the glands in his neck was excised: microscopic sections of it showed lymphocytic hyperplasia. His blood picture was:—Haemoglobin, 54.3 per cent; red blood corpuscles, 2,520,000 per c.mm.; leucocytes, 256,500 per c.mm. The film was indicative of lymphatic leukaemia, a differential count showing:—Small lymphocytes, 80 per cent.; large lymphocytes, 18 per cent.; neutrophil polymorphonuclears, 1 per cent.; myelocytes, 1 per cent.; many of the lymphocytes were embryonic in type. He was given six decimils of benzol thrice daily.

A week later he felt better. A biochemical examination of his blood showed it to contain 4.8 per cent. total protein, of which albumen comprised 44 per cent. and globulins 56 per cent., thus giving a high globulin ratio (normal 25-35 per cent.) and a low total protein, indicating a dilute serum. The wound in his neck where the gland had been excised had by this time healed. On February 28th his blood was again examined:—Leucocytes, 352,300 per c.mm.; erythrocytes, 3,600,000; Hb., 64 per cent.; total protein, 6.2 per cent., of which albumins comprised 87 per cent., globulins 13 per cent. The Wassermann reaction was negative. On March 8th the dose of benzol was increased to one mil three times a day. On March 20th his leucocytes numbered 215,000; Hb. was 55 per cent. On March 10th he was still feeling well, but his spleen was a little larger. On March 25th the dose of benzol was further increased to 13 decimils thrice daily. He continued to feel and look well. His blood on April 4th contained 200,000 white cells per c.mm. He was discharged from Hospital with a mixture containing 13 decimils of benzol, which he

was to take thrice daily. He was readmitted a year later (February 22nd, 1924). Since he left Hospital he had felt constantly weak, short of breath, and sleepy. He took the medicine given him for three weeks, and then stopped taking it. The swellings remained about the same size, though at times they became smaller for a few days. The feet swelled up, especially in the mornings. He had not bled from anywhere. His immediate cause for coming in to hospital again was a swollen eyelid and scalp. He had knocked his eye and the top of his head with a vine a week before, and the parts had become swollen and painful. His bowels had been regular; he passed his urine five or six times a day and three or four times at night. When he came in his temperature was 101.8° F., his pulse rate 84, his systolic blood pressure 115 mm. of Hg., diastolic 50. He was short of breath and somnolent. His face was pale, with slightly elevated reddish patches, from which the color disappeared on pressure. His left eyelid was bluish-red and swollen, with a small scab on it, and surrounded by a whitish infiltrated area of skin. A similar appearance was seen on several areas on the crown of the head. The skin between these patches was purplish-red. At the back of his neck, on the upper part of his back, on the front of his chest, and his upper right arm were reddish elevated nodules in the skin. Wherever his glands were accessible to palpation they were found considerably enlarged. His liver edge was 4½in. below the costal margin in the right midclavicular line. The spleen was also greatly enlarged. He had some oedema of the legs. Examination of his blood showed 650,000 leucocytes per c.mm.; 2,600,000 red cells per c.mm.; Hb., 32 per cent.; color index, 0.6. Differential count:—99 per cent small lymphocytes, 0.7 per cent. polymorphonuclears, 0.05 per cent. eosinophiles.

The lumps in his skin multiplied. On February 26th they were rather larger than those present on admission, red, raised, some of them vesicular, and some pustular. One of these lumps was excised. Microscopical examination showed a round celled infiltration beneath the epithelium, with erosion of the epithelium in parts. These lesions were fewer on February 29th, when another of the early vesicular ones was excised; section of this showed an area of oedema immediately beneath the epidermis, in and around which was an accumulation of polymorphs. In the deeper tissues, particularly around the sweat glands, there was an accumulation of lymphocytes. "One would hesitate to regard the lesion as directly due to the leukaemia, but would suggest rather that it was due to some infection."—(Dr. Bull.) By March 3rd his rash had cleared up. When he came in he had been given six decimils of benzol thrice daily. On March 4th his white cells numbered 544,000 per c.mm. The dose of benzol was increased on March 8th to one mil, and on March 15th to 15 decimils thrice daily. He continued well, apart from a brief attack of diarrhoea, until the beginning of April, when his temperature began to rise steadily day by day. He became stuporose on April 7th, and died on April 14th from broncho-pneumonia.

The changes in his leucocyte count were as follows:—25/2/24, 650,000; 4/3/24, 544,000; 10/3/24, 530,000; 13/3/24, 620,000; 18/3/25, 580,000 (R.B.C., 1,920,000; Hb., 27 per cent.; C.I., 0.7); 21/3/24, 768,000; 25/3/24, 750,000; 1/4/24, 754,000; 7/4/24, 756,000.

Autopsy No. 48/24.—On opening the abdomen the pelvic glands were found much enlarged, so that the rectum passed through a tunnel but slightly larger than itself. The glands were very haemorrhagic, and extended along the abdominal aorta on either side. There were huge masses along the lesser curvature of the stomach. A row of enlarged glands the size of marbles was attached to the upper surface

of the diaphragm below and in front of the pericardium. There were enlarged soft and greyish white glands in the hila of both lungs. The lungs showed a good deal of mottling with small haemorrhages, and there were patches of broncho-pneumonia in each. There was a reddish-grey infarcted area quarter of an inch long in the right lung. All the mediastinal glands were considerably enlarged, some up to a size of two inches in diameter, forming collars round the trachea and great vessels. The glands looked haemorrhagic on the surface, and on section were greyish white and soft. The much enlarged liver (weight 90½ozs.) showed many small indefinite circumscribed whitish spots about the size of pinsheads. The color on the cut surface was somwhat brownish, suggesive of haemosiderin. There were several enlarged glands the size of marbles in the hilum of the liver. The spleen weighed 29½ozs.; it was flabby, but still retained its shape. On section it was red near the normal tint, and somewhat speckled with indefinite slightly haemorrhagic areas and with some ill-defined whitish specks. There was a mass of enlarged glands in the hilum of the spleen and in the tail of the pancreas. There was no enlargement of Peyer's patches or the solitary follicles of the intestine. There were no lesions of moment in other parts.

Sections of a lymphatic gland showed no differentiation between cortex and medulla, the tissue being packed with lymphocytes at the expense of the reticulum. The liver showed extensive infiltration with lymphocytes between the hepatic cells and in the portal areas. The kidney showed a similar infiltration between the tubules. In the lung there was infiltration of the alveolar walls with lymphocytes, with some large localised collections.

(4) FATAL CEREBRAL HAEMORRHAGE IN A GIRL AGED SIXTEEN YEARS.

(Under the care of Dr. de Crespigny, Honorary Physician.)

T.B., a female, *æt* 16, was admitted on August 3rd, 1924. She had been taken ill 24 hours before, becoming suddenly unconscious, and had remained so. She was quite unable to answer questions, and was breathing stertorously. She had occasional restless movements. A general examination showed nothing abnormal beyond a rapid weak pulse and the presence of much reducing substance and ketone bodies in the urine, the specific gravity of which was 1040. Her temperature was 97° F. She was regarded as suffering from diabetic coma, and was given 40 units of insulin intravenously, followed five hours later by 20 units of insulin. She was given large quantities of water containing glucose. She became suddenly worse one hour after receiving the second dose of insulin. The right pupil became widely dilated and the left pupil small. She died 20 minutes later.

Autopsy No. 123/24 *(J. B. Cleland).*—The thoracic and abdominal organs appeared normal. The kidneys showed merely congestion. The heart, which weighed 10½ozs., did not show any definite hypertrophy. The thymus gland was still unduly prominent. The lymphoid follicles of the spleen appeared as conspicuous white specks. In the brain a large haemorrhags extended on the right side just above and external to the lateral ventricle from the posterior part of the parietal area to 1½in. from the occipital pole. In the middle of its extent it nearly reached the upper surface of the brain, coming within half to a quarter of an inch of the surface, and in the occipital region some blood had effused into the pia-arachnoid and some deep sulci. The haemorrhage at its broadest part was about 2½in. in lateral extent, and in depth about 1¼in. It was solid, and did not show obvious ploughed-up brain substance. The surrounding edges were in places

slightly infiltrated by blood, but there was no suggestion of a neoplasm. There had been some effusion into the lateral ventricle below. The blood had diffused into the ventricle of the other side, and had trickled down the iter. The vessels at the base of the brain appeared to be healthy. Microscopic sections from the neighborhood of the haemorrhage failed to reveal evidence of any neoplasm or disease of the vessels.

Comment.—We can offer no explanation in this case for the occurrence of the haemorrhage.

(5) PROFOUND ANAEMIA OF PREGNANCY WITH ULCERS OF THE SMALL INTESTINE AND NECROTIC INFLAMMATION OF THE OESOPHAGUS.

(Under the care of Dr. Hone, Honorary Physician.)

E. S., a female, *æt.* 25, was admitted on May 13th, 1924. Four months before admission, when she was eight months pregnant, she lost her appetite, felt weak and run down, and had diarrhoea. This continued until she was delivered, three months before admission. The child was healthy. She rested in bed for 10 days, and improved. Then she got up, and began to work again. The symptoms returned, and were worse than before. The diarrhoea was more frequent. She became weak and tired, and troubled by a dry cough. Small round ulcers appeared in her mouth on the inside of her cheek and on her gums, and were painful when they began a week after the confinement, but had since improved. She had lost a good deal of weight, and her skin had become sallow and yellowish. Her previous health had been good. Her menses had not reappeared since the child was born. Her family history revealed nothing of note. Her temperature on admission was 100° F. The pulse rate was 120, systolic blood pressure 96, and diastolic 56 mm. mercury, respirations 24 to the minute. She was a thin young woman, with a muddy, yellow complexion, the exposed parts of her skin pigmented. Her sclerotics were bluish white, her tongue clean and flabby, her teeth decayed, and her mucous membranes generally pale. A few small raised nodules on the inner side of her lower lip and some small ulcers and scars on the inside of her cheek were present. On the front and lateral aspects of her legs were small subcutaneous haemorrhages, about six on each leg. The rest of the examination showed nothing abnormal, save that the urine reduced Fehling's solution and contained diacetic acid. Her blood on May 17th contained 2,250,000 red blood cells per c.mm., 50 per cent. of haemoglobin, and 6,800 white cells. The color index was 1. The red cells showed anisocytosis, poikilocytosis, and basophilic degeneration. The picture somewhat suggested a pernicious anaemia. There was 0.1 per cent. sugar in her blood. Lactose was present in the urine, as shown by the osazone test. Her faeces showed no dysentery, typhoid, or paratyphoid bacilli, and there were no ova or parasites, no occult blood, and no pus or mucus. Her urine contained urobilin and no haemosiderin. Her blood on May 22nd contained 1,500,000 red blood cells, 9,300 white cells, 40 per cent. haemoglobin, color index 1.2. The red cells showed poikilocytosis, anisocytosis, and some megalocytosis. Her blood on May 22nd contained 14 mg. of urea nitrogen per 100 c.c., and gave a negative Wassermann reaction. The urine had a diatase value of 45 units. Her skin was becoming more yellow and less muddy in color, but her general condition remained the same. Her blood was examined again on May 26th, and contained 1,340,000 red blood cells, 5,400 white cells, 21.6 per cent. haemoglobin, and a color index of 0.73. There was partial coagulation in 5½ minutes, complete in 6 minutes. The fragility test

showed slight haemolysis at 0.54 per cent. of saline, increasing to 0.36 per cent., but not complete at that. A fractional test meal gave the following result:—Resting gastric juice alkaline; first and second specimens collected at quarter-hour intervals contained no free HCl; No. 3 contained free HCl 8, total acidity 28; No. 4, free HCl 16 and total acidity 36; No. 5, HCl 24, total acidity 36; No. 6, no free HCl; no occult blood present.

On the 29th, her sister, whose blood group was the same as her own, Group IV., gave 650 c.c. of blood, which was transfused into the patient. Her temperature rose that night to 102.4° F. Next day she felt better and looked better. The differential white cell count on the 30th (*i.e.*, next day) showed 54 per cent. polymorphs, 26 per cent. small lymphocytes, 20 per cent. myelocytes, 1 per cent. eosinophiles. She had 2,000,000 red blood cells, 5,000 white cells, 50 per cent. haemoglobin, and a color index of 1.1. On the 30th a piece of skin was excised from her abdominal wall. It contained no haemosiderin, but there was melanin in the epithelial cells of the rete mucosum. Her blood on June 3rd contained 2,150,000 red blood cells, 6,500 white cells, 45 per cent. haemoglobin, and the color index was 0.94. On the 8th she vomited several times, and on the 9th her blood contained 3,000,000 red blood cells, 6,000 white cells, and 50 per cent. haemoglobin, and the color index was 0.76. An examination of her blood by another observer on the 10th gave 2,140,000 red cells and 50 per cent. haemoglobin, and the color index was 1.1. On the 13th the same observer found 1,830,000 red blood cells and 40 per cent. haemoglobin, and the color index was 1.1. Her temperature at this time was raised to 100.6° F. in the evenings. Her blood gave a regative complement fixation test for hydatid disease and a negative precipitin test. She was still vomiting on the 14th. On the 17th she was still vomiting, and she had epistaxis two days before. Her blood contained 1,264,000 red blood cells and 30 per cent. haemoglobin, and had a color index of 1.05. The film showed anisocytosis, poikilocytosis, and a few nucleated red cells. There were 70 per cent. polymorphs, 20 per cent. lymphocytes, 6 per cent. hyalines, 1.5 per cent. eosinophiles, and 3 per cent. myelocytes. Her vomiting was thought to be due to a mixture of iron and arsenic which she had been having since May 19th. On the 10th she had been put on rhubarb and soda, and on the 12th she was given her diluted HCl 1.2 mils, with 3 decimils of liquor strychninae hydrochloricus. This was discontinued on the 19th, and she was given a mixture containing bismuth and chalk, which relieved her vomiting. On the 24th, on account of persistent cough, a careful examination of her lungs was made, and a slight diminution of the percussion note and a prolongation of expiration were observed at the angle of the right scapula. Her blood at this time contained 1,200,000 red blood cells, 5,750 white cells, and 27.1 per cent. haemoglobin, with a color index of 0.84. On the 26th she was again put on diluted hydrochloric acid (six decimils three times a day). On the 29th her colour was still yellow, and she looked weak and listless. Her pulse was weak, the systolic pressure 86, and the diastolic 56. Another blood transfusion of 550c.c. was done on the 29th. She felt better after this. On the 30th her blood showed 76 per cent. polymorphs, 4.7 per cent. large lymphocytes, 9 per cent. small lymphocytes, 10 per cent. myelocytes, and .8 per cent eosinophiles. There were 2,230,000 red blood cells, 50 per cent. haemoglobin, and a color index of 1. By July 5th she was a little worse. She had been vomiting every evening about 5 o'clock. Her temperature was usually subnormal. She had 2,310,000 red blood cells, 31 per cent. haemoglobin, and a color index of 0.6.

She was put on liquor arsenicalis hydrochloricus, 18 centimils, three times a day, to be gradually increased until she was having three decimils thrice daily. On the 8th she was getting worse, she was drowsy, had no appetite and there were continual oozing of blood from the right nostril, sores on her lips, and general emaciation. On the 9th she passed several ounces of bright blood by the bowel. On the 10th she passed 10ozs. more. She was given haemostatic serum, 2 c.c., and a 1/12 of a gram of morphia; the next day another 2 c.c. of haemostatic serum were given. She was put on a mixture containing a gram of calcium lactate, to be taken hourly, and was given a hazeline suppository. She became worse. Her blood on the 17th contained 785,000 red blood cells, 3,800 white cells, and 12 per cent. haemoglobin, and the color index was 0.69. She got weaker still, and on the 14th numerous small petechial spots appeared on her abdomen and neck just before she died.

Autopsy No. 112/24.—The body was greatly emaciated. Small petechiae were numerous in the lower part of the neck and the upper part of the abdomen. There was an excoriation of the lower lip. The teeth were sound save for three stumps in the upper jaw. There was a petechial patch around one lower canine. There were several ounces of blood-stained fluid in the pleural cavities, and both lungs were intensely flecked with minute petechiae, especially below and behind. The heart was atrophic with a wrinkled surface. There were some reddish lymph glands around the origins of the great vessels. The liver was dark in color, with a brownish tint. A haemosiderin reaction was not obtained. The bile was thick. The spleen was somewhat enlarged, firm, and dark red. The kidneys had very pale cortices, which were browner than normal, and not well separated from the medullas. Sections had a glazed appearance. There were a few granules of gravel in the right pelvis. The retroperitoneal glands along the aorta were vascular, and connected by lines of vascularised lymphatics. Lymph nodules in the mesocolon near the intestine were unduly prominent and rather red. The mesenteric glands were slightly enlarged, the upper ones pale, those draining the caecal region reddish. The stomach was normal, with no apparent atrophy, with the usual stomach odor, but without hydrochloric acid in its contents. Peyers' patches in the ileum were somewhat swollen and congested. In the last foot of the ileum were a number of transverse ulcers, together with one which extended longitudinally with contraction of its base. The ulcers did not resemble either tuberculous or enteric ulcers. The caecum and colon showed no lesions. Around the epiglottis, uvula, lower part of the pharynx, and whole length of the oesophagus was an ulcerated condition, partly haemorrhagic and discolored greenish, partly with little raised white necrotic areas. The oesophagel ulceration ceased abruptly at the stomach with the termination of the squamous epithelium. The base of the tongue showed slightly serpiginous, slightly raised areas surrounded by vascular rings. The bone marrow in the femur showed a red reaction accompanied with a grey-like appearance. Microscopic section of the red lymph glands showed numerous vascular channels in the lymphoid tissue, with much endothelial proliferation and blood pigment granules in many of the endothelial cells. The Malpighian bodies were prominent in the spleen, whose endothelial cells lining the blood spaces were unduly prominent. There was cloudy swelling in the kidneys. There were numerous haemosiderian granules in the liver cells. The ulcers in the intestine showed diffuse haemorrhagic infiltration in the submucosa. The veins were filled with blood. There was a tendency to the formation of small areas of coagulation

necrosis over the surface. There was a diffuse infiltration with fibrin and red cells, and the epithelium had necrosed off. This condition was possibly due to infarction. The oesophagus showed loss of the surface epithelium, with replacement by necrotic amorphous material with remnants of nuclei, followed by a zone where there were numerous disentegrating polymorphonuclear cells, then a zone of numerous non-degenerated leucocytes, and finally near the muscular coat a mixture of polymorphs and rounded cells.

IV.—SURGICAL CASES.

(1) SEPARATION OF THE LOWER FEMORAL EPIPHYSIS BY DIRECT VIOLENCE.

(Notes by Dr. I. B. Jose, Registrar.)

G. H., a male, single, *æt.* 16, admitted on March 8th, had been sitting with his left leg hanging over a bench, when a heavy iron girder fell across the lower end of the thigh, just above the knee, and rolled down his leg, dragging the patient to the ground with it, and finally pinning his leg to the ground.

On admission he was suffering greatly from shock. There were skin abrasions just above the knee cap, a large amount of swelling, and a deformity in the region of the femoral condyles just above the knee, with a posterior and upward displacement of the lower fragment, which, from the site of the fracture, the age of the patient, and the transverse direction of the lower end of the upper fragment, pointed to a separation of the lower epiphysis of the femur. The distal part of the condyles of the femur could be felt in place on the top of the tibia, though the whole lower fragment and lower leg with it were drawn backwards and upwards, giving a large amount of shortening and a large projection in the popliteal space. In addition there was a compound fracture at the junction of the mid and lower thirds of the tibia and fibula, the bones being comminuted, and the ends projecting from a ragged wound. The wound was bleeding fairly freely, showing that the popliteal vessels had not been compressed by the backward displacement of the femoral epithysis.

It was found impossible, owing to the fracture in the lower leg, to reduce the separated epiphysis by hyperflexion of the knee or by extension applied to the leg for 10 days. A further attempt was made, by passing a steel bar above the separated portion, under an anaesthetic, to get more efficient extension, and as this was also unsuccessful, it was decided to amputate the leg. This was done by a Stokes-Gritti operation, just above the femoral condyles and application of the anterior half of the patella to the cut end of the femur.

(2) UNSUSPECTED RUPTURE OF THE DIAPHRAGM WITH HERNIATION OF THE STOMACH INTO THE THORAX IN CASES OF MULTIPLE INJURIES.

During the year three instances of this condition were found *post-mortem*. Two of these autopsies were performed at the Adelaide Hospital and the other at the city morgue by Dr. A. F. Lynch. In the Hospital cases the patients were victims of severe multiple injuries resulting from motor accidents, and the signs of the abdominal lesion were obscured by those due to a crushing injury to the thorax. Both patients died a few hours after the accident.

(3) TRAUMATIC RUPTURE OF THE OESOPHAGUS.

(Under the care of Dr. Scott, Honorary Assistant Surgeon. Notes by Dr. Lewis, House Surgean.)

L. B., a male, *æt.* 49, was admitted on the evening of June 6th, 1924. He had been struck from behind by a tramcar that afternoon. He was unconscious, breathing stertorously. His breath smelt strongly of alcohol. He had two lacerated scalp wounds. His heart, lungs, and abdomen revealed, on examination, nothing abnormal beyond an elongated lump in the left iliac fossa. His right upper and lower limbs were spastic, with active deep reflexes; his left leg was flaccid, and no deep reflexes were elicitated. His pulse rate became gradually slower for an hour and a half, and then began to rise, and his breathing became gurgling and more stertorous than before. Lumbar puncture yielded blood-stained fluid. Sixteen hours after admission he died.

At the autopsy a fracture of the vertex of the skull was found running from an inch behind the lambdoidal suture to the left jugular foramen. There was pulping of the left cerebellar hemisphere with clotted blood in the basal fossae. Exudation of blood had occurred into the tissues of the neck over the atlanto-occipital junction, where there was laceration of the ligaments. Another effusion was found in the subcutaneous tissues over the first and second dorsal spines. Immediately above the diaphragm the oesophagus was ruptured, the divided ends being connected by the gastric branches of the vagus nerve, one on either side. The edges of the rupture were ragged. In the left pleural cavity a pint and a half of blood-stained fluid was found. The lower lobe of the left lung was partially collapsed. Nothing noteworthy was observed in the other organs.

V.—DISEASES OF THE EAR.

(1) AN UNUSUAL CASE OF CRANIAL ABSCESS.

(By Dr. H. M. Jay, Honorary Aural Surgeon.)

W. A., *æt.* 57, a farm laborer, was admitted on October 7th, complaining of a discharging left ear and of a lump behind the left ear. He had had an attack of influenza 10 weeks previous to admission. This was followed by earache in the left ear for about one week. Then the ear commenced discharging, and had continued to do so since. The discharge was profuse and yellow. Four weeks after the discharge began he received a blow over the ear from the jaw of a horse, and one week later noticed a slight swelling behind the affected ear. This gradually increased in size, and gave rise to pain, which spread over his head, keeping him awake at night. There was no history of any previous ear trouble. His general health was good.

On examination he was a thin anaemic man, temperature 99° F., pulse 100 and regular, respirations 20. The left ear was full of odorless greenish-yellow pus. The details of the tympanic membrane could not be seen owing to swelling of the canal walls. Behind the ear, covering the mastoid region and extending backwards under the skin of the scalp for about 3in., was a tense, fluctuant, slightly painful swelling. The right ear was normal. Hearing was much impaired in the affected ear. The general examination revealed nothing abnormal save a furred tongue and dirty teeth. On the day of admission, under a general anaesthetic, the swelling behind the left ear was incised through a curved incision one and a half inches long, over the swelling, and an inch behind the ear. The pus was sub-

periosteal, and much was evacuated. On exploring the wound a small orifice was found situated in the centre of an area of bare bone one inch behind the mastoid antrum. A gauze drain was inserted, and foments were subsequently applied. A laboratory examination of the pus revealed streptococci in the film and culture. Draining the swelling removed all pain and tenderness. The swelling subsided, and the temperature remained normal. Ten days later, under ether, the mastoid antrum was opened. The bone was much congested. No pus but a few granulations were found in the antrum. On making a horizontal incision posteriorly at the level of the canal, an irregular opening in the cranium was exposed. It was quarter of an inch across. On enlarging the opening a cavity the size of a hazel nut was found extending through the bone. This was lined with a granulation tissue. No connection was found with the mastoid antrum or cells. The mastoid was closed by the blood-clot method. A glove drain was inserted into the posterior portion of the wound, the abscess cavity itself not being interfered with in any way. A plain gauze plugging was placed in the ear. For the next few days there was a fair amount of serous discharge from the wound, which was otherwise quite healthy looking. The temperature, pulse, and respiration remained normal. The patient made an uninterrupted recovery, though on November 15th there was still a trace of pus in the middle ear. The wound over the abscess cavity had healed.

VI.—PATHOLOGICAL LESIONS.

(1) ANEURYSMS OF THE CIRCLE OF WILLIS.

(By J. B. Cleland, Honorary Pathologist.)

During 1924 aneurysms of the Circle of Willis were met with three times at autopsy. During the previous four years three additional cases occurred. This gives a total of six cases in one thousand post-mortem examinations. It has seemed advisable to summarise the main features of these six cases.

In one (Case V.) the aneurysm was unruptured, and had probably been symptomless. The left facial paralysis and coma that the patient developed were attributed to uraemia and toxaemia from infective nephritis.

In the other five cases the aneurysms had ruptured, and the blood had been extravasated into the meshes of the pia-arachnoid at the base of the brain, and in some instances into the ventricular system and the spinal canal. The patients on admission were unconscious or irrational, or were said to have had a stroke. Paralysis of the seventh and twelth nerves and of the arm and leg on one side was noticed in one case, and symptoms of meningeal irritation with retraction of the neck and Kernig's sign in another case. In the single male patient, unconsciousness had been preceded by pains in the head for a month.

Five of the six patients were women of ages varying from 34 to 56. The male patient was aged 76.

Of the six patients two showed the presence of interstitial nephritis, with hypertrophy of the left ventricle. In another the right kidney was almost destroyed by a hydronephrosis. In the patient who died from uraemia and toxaemia there was an infective nephritis with intestitial changes in addition, and in two patients the kidneys were apparently normal.

Case I.—S. P., a woman, *æt.* 34, was admitted under Dr. Angas Johnson on April 25th, 1921, in an unconscious condition, with a

history of sudden onset. She died the same day. The autopsy (No. 60/21) showed extensive extravasations of blood in the meshes of the pia-arachnoid at the base of the brain, extending along the Sylvian fissures into the median longitudinal fissure, and into the left lateral ventricle. The haemorrhage came from a ruptured small saccular dilatation on the commencement of the right middle cerebral artery. Another aneurysmal dilatation was present in the short branch connecting the anterior cerebrals.

Case II.—L. de R., a woman, *æt.* about 56, was admitted under Dr. Hone on June 22nd, 1922. Owing to mental confusion no satisfactory history could be obtained. The pupils were equal, the knee-jerks absent, and the blood pressure S. 190 = D. 115. The urine contained a large quantity of albumen, sugar, diacetic acid, and acetone. The patient died on July 1st.

Autopsy, No. 28/22.—There were no special changes seen in the thoracic or abdominal organs. The heart weighed 12ozs. There were only traces of atheroma in the aorta. The pancreas did not seem altered, and the kidneys were deeply congested. There was an extravasation of blood in the pia-arachnoid, plastered round the Circle of Willis, the pons and medulla. On washing this away a small pea-sized aneurysmal dilatation was found on the right side just beyond the division of the basilar artery. The lateral ventricles, iter, and fourth ventricle were filled with clotted blood. There was no evidence of direct rupture through into the ventricles.

Case III.—M. G., a woman, *æt.* 51, was admitted to Hospital under Dr. Johnson on September 7th, 1922. She had been brought in by the police with a history of epistaxis and a "stroke." She was stuporose. The pupils were equal, and reacted to light. There was paralysis of the seventh and twelfth nerves and of the arm and leg on the left side. The biceps' jerk on the left side was exaggerated, the knee-jerk absent on that side, and sluggish on the right, the plantar reflex extensor on the left and flexor on the right. On September 9th she was conscious, but irrational. Next day there were signs of broncho-pneumonia. The patient died on September 11th.

Autopsy, No. 114/22.—There were two infarcts in the lower lobe of the right lung. The right kidney was almost destroyed by hydronephrosis, the left kidney being hypertrophied. There was extensive haemorrhage in the pia-arachnoid extending into the Sylvian fissures. There was a small aneurysm just posterior to the origin of the middle cerebral from the internal carotid artery, in size about that of a dried pea. In the corresponding Sylvian fissure blood clot increased in amount as this was followed outwards, and the blood had finally entered the brain substance and extended into the commencement of the descending horn of the lateral ventricle. The ploughed-up brain substance included part of the lenticular nucleus. There was also a cystic space in the frontal lobe of the same side extending almost to the anterior pole. This had a wall of softened tissue, and was separated from the lateral ventricle by a thin partition. The space contained a small quantity of blood clot, and probably was an old area of softening.

Case IV.—F. H., a woman *æt.* 48, was admitted on February 20th, 1924, under Dr. Grant, in a semi-conscious state. She was unable to give an account of herself. The day after admission she developed symptoms of delirium tremens, and two days later developed signs of meningeal irritation, with retraction of the neck and Kernig's sign. Lumbar puncture showed the presence of blood.

At the autopsy (No. 24/24) an extensive extravasation of blood was present over the surface of the right cerebral hemisphere, round the base of the brain, and down into the spinal canal. An aneurysm was dissected out in the Circle of Willis at the termination of the left internal carotid artery. The heart, kidneys, and other organs showed no special changes.

Case V.—J. S., a woman *æt.* 46, was admitted on October 9th, 1924, under Dr. Ray, and died two days later. She had been drinking for some time, and could give no account of herself. She was noisy on admission. She developed left facial palsy and then coma. Her death was thought to be due to uraemia.

At the autopsy (No. 179/24) there was found a moderate amount of interstitial nephritis, together with foci of infective nephritis. There was no hypertrophy of the left ventricle. In the brain the vessels of the Circle of Willis were not atheromatous, but on the left posterior communicating branch just behind the internal carotid artery there was an irregular pea-sized aneurysmal dilatation which was firm and whitish in places, and evidently organising. The third nerve was loosely adherent to the aneurysm.

Comment.—Death in this case was probably due to uraemia and toxaemia. The aneurysm of the Circle of Willis had not ruptured or contributed towards death.

Case VI.—J. S., male, *æt.* 75, was admitted under Dr. Ray in November, 1924. He had had pains in his head for a month. He suddenly became unconscious two days before admission. He regained consciousness in 24 hours, but died suddenly after being in Hospital for one week. At the autopsy (No. 204/24) there were found some hypertrophy of the left ventricle, moderate interstitial nephritis, with a small adenomatous nodule in the right kidney, and atheroma of the aorta and vessels at the base of the brain. The appearances in the aorta were somewhat suggestive of the presence of syphilitic aortitis as well as atheroma. In the Circle of Willis, where the left internal carotid artery joins it, was a bulge the size of a dried pea, with an orifice plugged by clot. A similar bulge occurred on the opposite side. From the former, blood had extravasated into the meshes of the pia-arachnoid around the base of the brain. Both lateral ventricles were distended with blood-stained fluid, but contained no clots. The left branch of the anterior cerebral artery was considerably dilated.

(2) RENAL DWARFISM WITH HEALED RICKETS.

(Under the care of Dr. Newland, Hon. Surgeon.)

A. H., *æt.* 16. a schoolboy, born in England, and 14 years in South Australia, was admitted on February 5th, suffering from genu valgum. He was stated to have had rickets and to have been in a home for cripples for some years. He had always been backward mentally, but had improved of late. His legs had been getting worse. His knees knocked and interfered with his walking.

On examination he was an undeveloped, undersized boy for his age. He looked a child. He had a small round head, and a full, plump, freckled face with an unintelligent expression. The body was rather flabby and fat. The thoracic and abdominal organs appeared to be quite healthy. There was very marked bi-lateral genu valgum. The urine was 1018, acid, with no albumen and no sugar.

On February 18th, under gas and oxygen, followed by open ether, a bi-lateral supracondylar osteotomy of the femur was performed refusing food and vomiting everything he did take. The vomiting

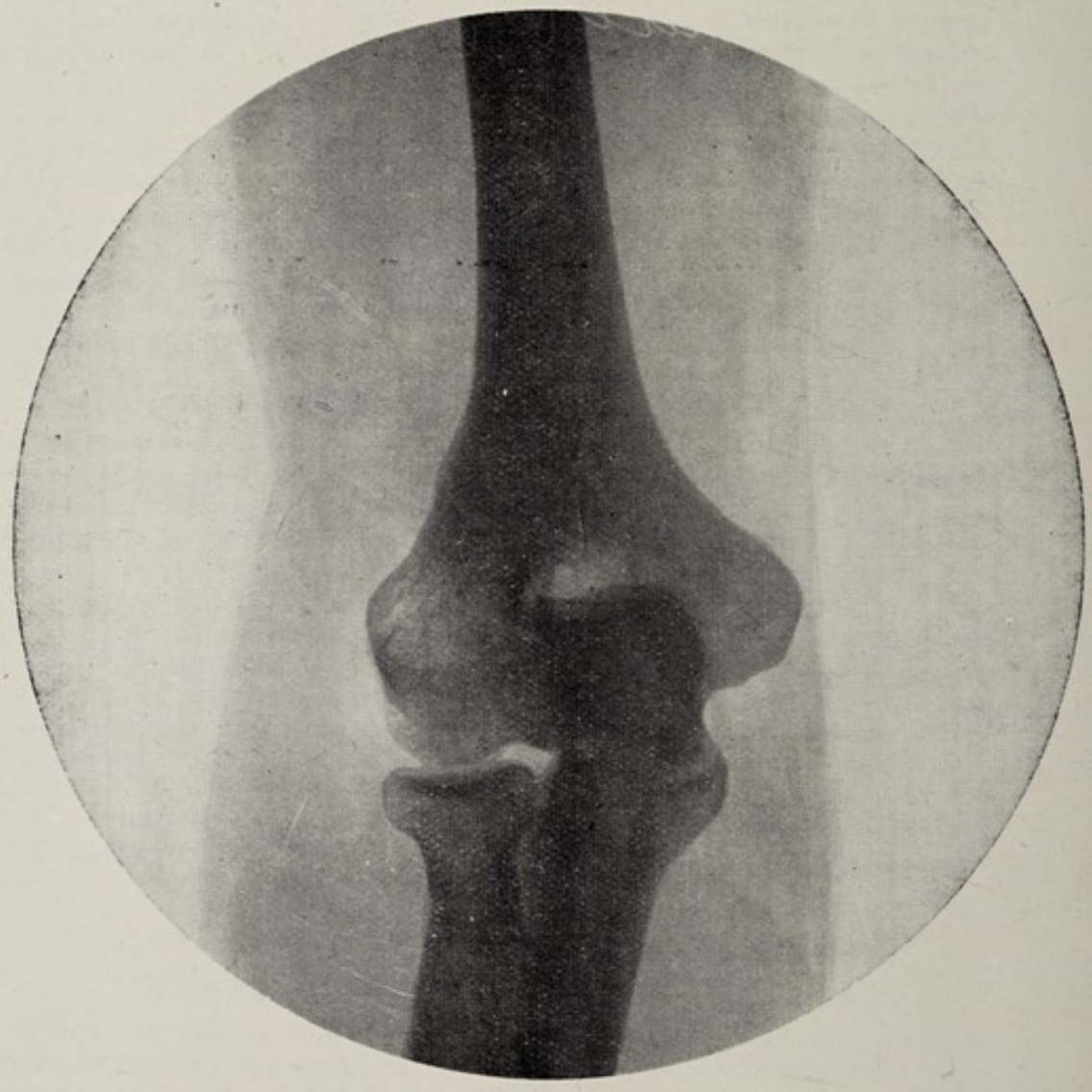

Plate I.—Case 3, showing Rarefaction in Vicinity of Elbow.

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after Macewen's method. On February 24th the patient was was projectile in type. On February 28th he was still vomiting. The tongue and mouth were getting sore. The fundus oculi was normal on each side. The urine was 1012, and contained albumen. On March 1st the bowels were regular, but he had overflow and incontinence of urine. To be catheterised daily. Temperature, respiration, and pulse were natural. Next day he was much worse, and picking at the bedclothes. He cried out, and would not answer questions. His reflexes were all equal and active. By March 3rd there was retraction of the neck, and Kernig's sign was present. The catheterised urine was 1006, with much albumen, and acetone was present. On March 4th lumbar puncture was attempted, but only a few drops of blood-stained fluid were obtained. The patient was unconscious, with retraction of the head, and looked like a typical case of meningitis. Death took place on March 5th. The temperature went up to 103° just before he died.

Autopsy, No. 49/24.—The body was 4ft. high and 14in. across the shoulders. The teeth were sound. The heart was small, weighing 5¼ozs., but the left ventricle was relatively large and distinctly hypertrophied. The spleen was firm and dark. Both kidneys were small, being 5.5cm. long by 3cm. wide, and weighing about 15 grams each. The intermedullary cortex was granular and red-looking, and small in amount. The cortex was reduced almost to a line, and the capsules peeled imperfectly, leaving a smooth, irregular, congested surface. The uterers seemed relatively large for the size of the kidneys. The arteries were not enlarged, thickened, or tortuous. The thyroid, thymus, and other organs were apparently healthy. The operation wounds were healthy, and had healed, but no union had yet occurred of the bones which had been operated on. The ribs showed a very evident rickety rosary.

Comment.—The case is a good example of renal dwarfism associated with healed rickets. In an attempt to remedy the genu valgum by operative measures, the extra strain led to the development of uraemia. Probably such an end would have come in any case within a short period of time.

(3) RAREFACTION OF THE LONG BONES WITH SPONTANEOUS FRACTURES.

(Under the care of Dr. de Crespigny, Honorary Physician.)

E. M., a married woman, *æt.* 45, was admitted on July 3rd, 1923. She had first been taken ill two years before with pains in her thighs and in her back, and then the pains had begun to pass down her legs to her feet. She had been treated by a doctor with injections. The pains were very severe, and lasted from a minute or two to half an hour. Movement aggravated the pain in her knees, and she had recently had pains in her forearms. She had been unable to walk for 12 months. Her appetite was good, her bowels were opened regularly, and she had to get up twice in the night to pass urine. Her periods came on regularly, lasting from five to ten days with considerable loss. She had noticed this increased loss for 12 months. She had two children, both healthy. She had had no miscarriages, and no previous illness. Her temperature on admission was 98° F., pulse rate 96, regular, and respirations 20. She had a slight prominence in the front of her neck corresponding to the thyroid gland. Examination of her heart, lungs, and abdomen showed nothing abnormal. On the left arm there was a hard swelling over the upper part of the back of the ulna, which was fixed to the bone. The skin was movable over

it. It was tender. There was no evidence of any articular change. Her right hip-joint could be flexed to only a right angle. There was thickening about her right knee-joint, which was also tender, but with very slight limitation of movement. The other joints showed the same changes. In the upper part of the left calf there was a thickened area which was tender, and the tissues over the antero-lateral border of both tibiae were thickened. There was tenderness over the lower lumbar and sacral vertebrae. The urine contained no abnormal constituents. The pains were relieved after she had been given salicylates. Her blood gave a negative Wassermann reaction. A skiagram taken on August 13th showed general rarefaction of all bones, espeially in the vicinity of the large joints. There were also irregular areas of almost complete lime-salt absorption giving a worm-eaten appearance. The neck of the right fibula, the shaft of the left fibula, and the shaft of the left ulna were fractured without deformity, and without any evidence of regeneration. (Plates I., II., and III.) The condition was regarded as osteomalacia. The patient was given a grain of parathyroid gland three times a day. This was continued until September 19, when the dose daily of parathyroid was increased by a grain every other day. She was also given 30 grains of calcium lactate thrice daily. The calcium content of her blood on September 13th was 9mg. per 100c.c. of serum (normal 9.5 to 11.5mg.). By the middle of October the tenderness over the various fractures had become less, but a skiagram taken on October 8th showed no evidence of bony callous formation. and the bones were still irregularly porous. On October 2nd she tried to walk, but had severe pains in her left leg afterwards. By the middle of October she was having 25 grains of parathyroid daily. She was then given also a tablespoonful of cod liver oil thrice daily. She was sent home in November feeling fairly well. She was then receiving 30 grains of parathyroid daily.

Comment (Dr. H. C. Nott, Hon. Radiologist).—From an X-ray point of view, the diagnosis in this case rests between Osteomalacia and Osteogenesis Imperfecta (*syn.*: Fragilitas Ossium, Idiopathic Osteopsathyrosis); the two conditions are much confused, but according to some authorities are pathologically distinct.

According to Rotch, Osteomalacia is a disease which occasionally occurs in children, but more frequently in adults. It causes softening of the bones, due to decalcification of previously formed bone, with simultaneous formation of new bone deficient in calcium salts. Radiographically, the bones are normally developed, but very transparent with thinned cortex. Bending of the bones and spontaneous fractures occur; the latter fail to unite, due to deficient bony callus formation.

Osteogenesis Imperfecta is characterised by brittleness of the bones and multiple fractures. It is a disease which is intra-uterine in origin, and presumed to be due to a nutritional disorder. Pathologically it is characterised by an imperfect development of bone from cartilaginous structures and not to decalcification of previously formed bone; epiphyseal ossification is delayed. Clinically the bones are smaller than normal, and deformed, and are prone to multiple fractures which usually tend to unite.

Osteomalacia, according to Thompson and Miles, is a term applied to a condition in which the bones of adults become soft and porous, and prone to bending and fracture; it is much more common in females than males, and in the former during pregnancy or the puerperium. It is considered to be closely allied to, if not the same pathological process as, Rickets.

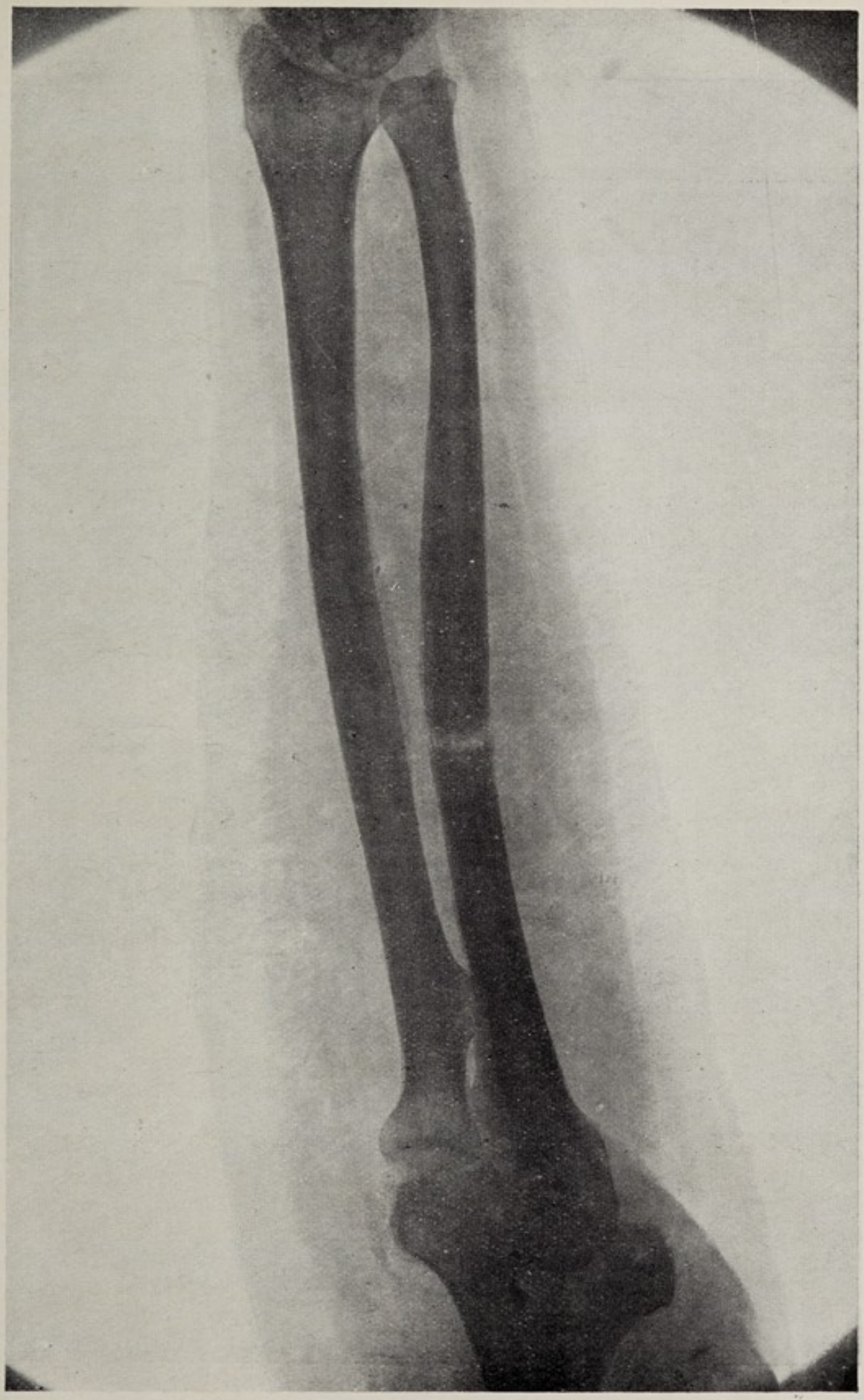

Plate II.– Case 3, showing Fracture of Shaft of Ulna.

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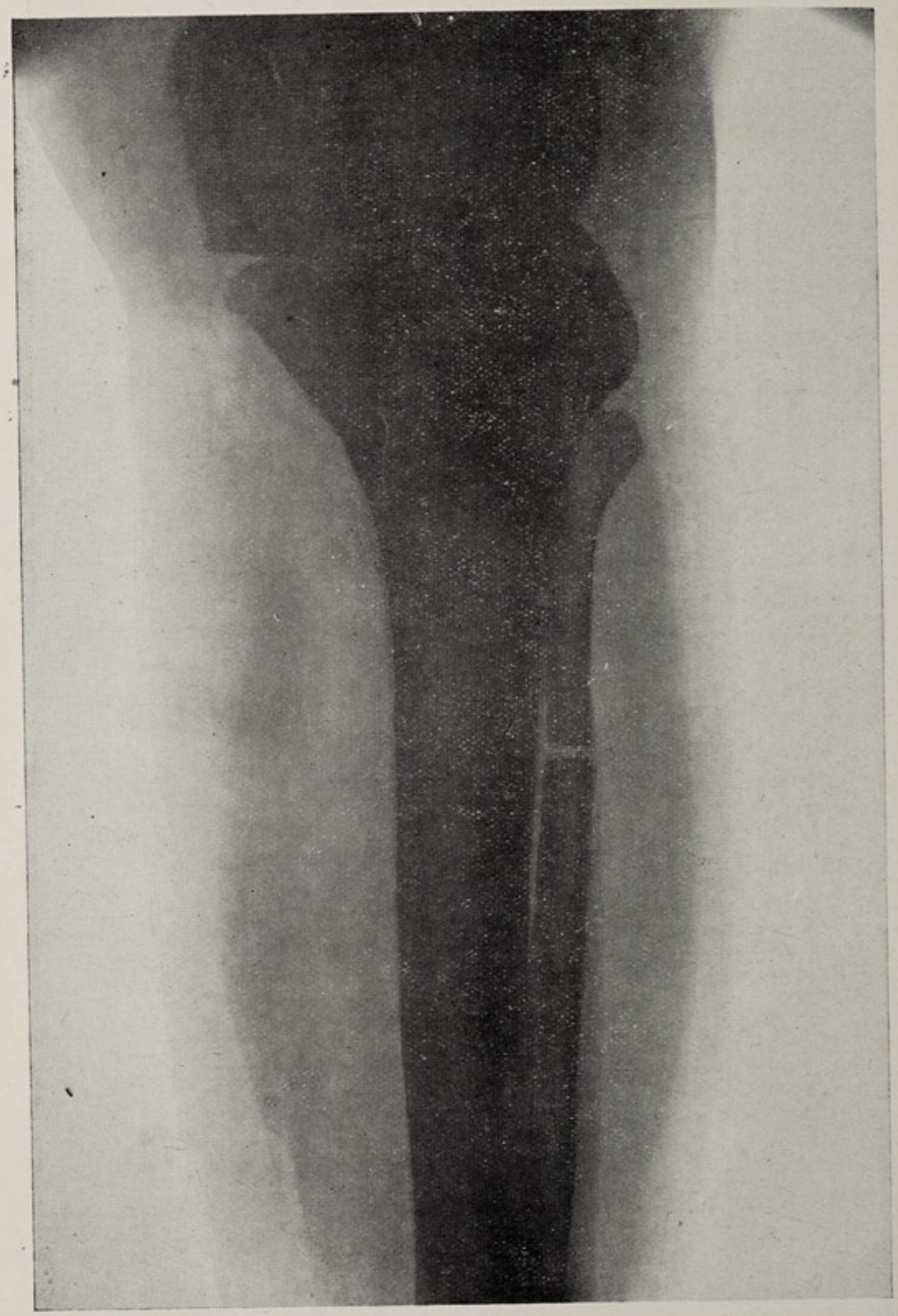

Plate III.—Case 3, showing Fracture of Shaft of Fibula, with no evidence of bony callus formation (taken two months after admission).

Osteogenesis Imperfecta (or "Foetal Rickets") is a congenital predisposition to multiple fractures, which may be attended with excess of callus. Radiographically the bones are thin and atrophied with increase of the medullary cavity at the expense of the cortex.

Rose and Carless state that Osteomalacia is a general bone disease predisposing to fracture, but with little effort at repair, often none; it produces atrophy and rarefaction of the bones, and is almost limited to females.

Fragilitas Ossium is a disease of children characterised by a tendency to multiple fratures which often unite perfectly, though with deformity.

Johanssen considers Osteogenesis Imperfecta to be a form of Osteomalacia beginning in intra-uterine life.

MacCallum states that Osteomalacia is histologically almost identical with Rickets, except that it occurs in adults whose endochrondal ossification is complete. It occurs in women mostly, with exaccerbations during pregnancy and lactation. Decalcification occurs in previously calcified bone, rendering the bones soft and prone to deformity and fracture.

Osteogenesis Imperfecta, on the other hand, is a condition occurring in infants. Nicklas, quoted by MacCallum, considers Osteogenesis Imperfecta to be different from Osteopsathyrois or Osteogenesis Imperfecta Tarda, which occurs in adult life, the nature of which is still doubtful.

The present case does not, radiographically, conform to either condition completely, but has certain features of both.

It is characterised by a general patchy rarefaction throughout the bony skeleton, but more pronounced at the epiphyseal ends; the bones themselves are well developed, in which respect it would appear to be a disease originating in adult life; there is little, if any, tendency to bending of the bones, but there are at least four fractures present (as described in the X-ray report), which show practically no effort at repair. Also the subject is a female.

On the whole, the condition resembles Osteomalacia rather than Osteopsathyrosis.

VII.—NEOPLASMS.

CARCINOMATA OF THE STOMACH, ACCOMPANIED BY UNUSUAL FEATURES.

(1) Carcinoma of the Stomach with Extensive Secondary Infiltration of the Lungs suggesting Pulmonary Tuberculosis.

(Under the care of Dr. Cowan, Honorary Physician.)

F. W., a woman, *æt.* 33, was admitted on May 21st with a history of cough, dyspnoea, weakness, and anorexia of two months' duration. There had been considerable loss of weight and severe cough, mostly in the morning, accompanied by yellowish sputum, and pain in the left side of the chest. She was a thin woman with some respiratory distress. There was diminished respiratory excursion at both apices, with impairment of the percussion note, and bronchial breathing was heard in the right supra and infraclavicular regions. Many crepitations were present in both lungs, most marked at the apices, at the right base in front, and over the left lower lobe behind. There was tenderness of both rectus muscles of the upper part of the abdomen,

probably from coughing. The diagnosis of pulmonary tuberculosis was made, though the sputum examination was negative. The dyspnoeic condition gradually became worse, and she died on May 29th.

Autopsy No. 111/24 (*Dr. D. L. Barlow*).—In the stomach a small ulcer was found about 1½in. from the pylorus. Its edges were hard, rounded, and heaped up. The right ovary was enlarged, being 2½in. x 1½in. x 1in. in size, and presented a malignant-looking appearance. Both lungs were extensively infiltrated by consolidated areas of a pale yellowish color, with irregular ill-marked outlines, the distribution and appearance in the hardened specimen suggesting a broncho-pneumonia.

Microscopic sections of the wall of the ulcer of the stomach showed a chronic inflammatory reaction below the mucosa, in which were scattered probable carcinomatous cells. In the ovary there was a growth of a spheroidal celled carcinoma showing a tubular arrangement in parts. In the lung the firm yellow areas showed numerous small seconday deposits of the same type of growth. In addition, many of the alveoli were filled with proliferated foamy catarrhal cells presenting a striking picture. Sections from several parts of the lung presented the same appearance. No tuberculous lesions were detected.

Comment.—In this case the primary growth is believed to have been in the stomach. The distribution of secondary deposits throughout the lungs is unusual. The clinical diagnosis of tuberculosis suggested by the distribution was not confirmed by the finding of tubercle bacilli.

(2) Polyp of the Stomach with Carcinomatous Ulceration at its Base.

(Under the care of Dr. Hone, Honorary Physician.)

U. F., a male, *æt.* 67, died a few hours after admission from broncho-pneumonia, probably of influenzal type. He had been drinking heavily. At the autopsy (No. 124/24) two polyps were seen in the mucosa of the stomach, one in the middle of the lesser curvature, the other opposite to it on the greater curvature. The latter was surrounded at its base by an ulcer the size of a florin, with everted edges. Sections of the wall of the ulcer showed carcinomatous invasion.

Comment.—The case is of interest as indicating one predisposing cause to cancer of the stomach, viz., the presence of a simple polyp, whose base probably became dragged upon, irritated, and chronically inflamed.

(3) Carcinoma of the Stomach, with very Extensive Pulmonary Turerculosis of Unusual Type.

(Reported by J. B. Cleland, Honorary Pathologist.)

J. B., a male, *æt.* 64, was admitted to the Cancer Block on July 8th. He had been ill for 12 days with diarrhoea. He had been having such attacks at varying intervals for four or five years. For 10 days he had had a cough accompanied by a sharp pain in the ribs. He had felt weak for a few days, and had lost an indefinite amount of weight recently. There was no vomiting or abdominal pain. On examination he was found to be an extremely emaciated man, showing signs of consolidation over a small area at the left apex, and with a friction rub on the right side. An X-ray examination showed the refilling of a projection from the lesser curvature high up, and an irregularity of the cardiac end of the stomach. There were numbers of irregular opacities in both lung-fields in central positions.

At the autopsy (No. 151/24) a large fungating carcinoma with gyrose elevations and about 4in. in length was present about the middle of the lesser curvature of the stomach. In the middle of the upper lobe of the left lung were small caseous areas. In the upper part of the lower lobe were scattered a number of small caseous foci the size of wheat grains, with intervening somewhat consolidated lung tissue. The lower third of the upper lobe of the right lung was consolidated, and scattered through it were whitish caseous masses embedded in pneumonic tissue. In the lower lobe a large central mass was necrosing and bathed in pus, and in its anterior portion was an area of white coagulation necrosis 3in. by 3in. in size. There was an old degenerating hydatid cyst of the liver.

Microscopically the stomach growth was a columnar epithelioma. Sections of the lung showed very large areas of coagulation necrosis traversing the lung tissues in bands, with some of the areas surrounded by some fibrosis, but with hardly any giant cells. Very many tubercle bacilli were present in the necrosed tissues.

Comment.—The occurrence of carcinoma and pulmonary tuberculosis, both in an active state, is of interest in view of the statement sometimes made that these diseases are mutually exclusive. The very exensive coagulation necrosis gave an unusual appearance to the lungs. The condition was probably so acute that giant cells had not had time to form.

(4) Papillomatous Carcinoma of the Stomach.

(Under the care of Dr. de Crespigny.)

C. H., a male, *æt.* 65, gave a history of cardiac failure, and at the time of death had a huge bed sore over the left buttock. Near the pylorus was a curious elevation 1½in. long x ¾in., composed of fine agminated papillomatous processes.

Microscopically there was extensive infiltration by a spheroidal-celled carcinoma, with a tendency in places to tubule formation, extending into the muscular coat.

Comment.—The only interesting point in this case is the finding accidentally at autopsy, of a carcinoma of the stomach of an unusual (papillomatous) type.

(5) Carcinoma of the Stomach with Adenomatous-looking Thyroid Deposits in the Neck.

(Under the care of Dr. Hone, Honorary Physician.)

D. D., a colored Portuguese, *æt.* 46, was admitted on November 23rd, and died on December 17th. He had symptoms referable to carcinoma of the abdominal cavity, with pyloric obstruction, and a distended stomach. The Wassermann reaction was positive, and there was a secondary anaemia. No enlarged glands were detected during life on the left side of the neck, although the autopsy showed that there were such enlarged glands.

Autopsy No. 216/24 (*J. B. Cleland*).—Malignant nodules were present in the omentum and on the serous coat of the stomach. On the lesser curvature of the stomach were two necrotic ulcers. The wall of the stomach showed malignant infiltration which extended into the adherent body of the pancreas. Deposits also extended along the front of the vertebral column towards the hila of each kidney and downwards to the sacral promentory. The growth also extended to the hilum of the spleen, and there were some affected glands round the lower part of the thoracic aorta. The left suprarenal gland was infiltrated with growth. There were deposits in the hilum of liver,

and in the liver itself three or four small deposits. In the situation of the left lobe of the thyroid was a semi-translucent yellowish growth the size of a large marble, with a calcified irregular area in its centre. There were several other small similarly affected glands, showing deposits, in the surrounding tissues extending to the bifurcation of the carotid on the left side. To the left of the trachea, and slightly pressing on it just as it entered the thorax, was another yellow semi-translucent gland the size of a large marble. Microscopic sections of the stomach-wall and of the pancreas showed extensive infiltration with a nearly solid adeno-carcinoma. A deposit in the liver appeared as a columnar-celled epithelioma. In an aortic gland from above the diaphragm both these types of growth were found present in the same gland, the line of juncture between the two types being sharp and the cells differing slightly. The growths in the neck showed thyroid adenomata with colloid, resembling closely the normal gland. The calcified area in the growth in the thyroid gland itself showed also the presence of cholesterol.

Comment.—The primary growth was probably in the stomach. With carcinoma of the stomach secondary deposits in the glands on the left side of the neck are not uncommon, and help sometimes in establishing the diagnosis. In this case they were searched for but not detected, and yet the glands were found at autopsy to be enlarged. Strange to say, however, the enlargements were not due to secondary deposits from the stomach growth, but to adenomatous-looking thyroid growths. The occurrence of two neoplasms in one patient is of interest.

(6) Pernicious Anaemia and Subsequent Carcinoma of the Stomach.

(Under the care of Dr. Ray, Honorary Physician).

G. S., a male, *æt.* 58, was admitted to Hospital on June 26th, 1923. He complained of weakness. He had been quite well until the middle of March, 1923, when he gradually began to get weak. This weakness had been getting worse, and he had been getting shorter of breath, and had lost about a stone in weight during the six weeks preceding admission. His mouth had been sore, and he had had a cough, bringing up a whitish thick fluid. He had not had any pain. His bowels were often constipated. He had no dysuria or frequency. His previous history and family history contained nothing of note. He was a teetotaller.

On admission his temperature was 97.8° F., his pulse rate 88 to the minute, and respirations 20. His skin was yellowish, with a malar flush. His pupils were small and equal, and reacted to light and accommodation. He only had one tooth in his head, and that was carious. His tongue was moist and red round the tip and edges. Examination of his heart, lungs, and abdomen showed nothing abnormal. His spleen was not palpable. His knee-jerks were not elicited. His urine was 1022, acid, and contained no abnormal constituents. His blood contained 1,330,000 red blood cells and 4,500 white cells per c.mm., with 33 per cent. of haemoglobin, and a color index of 1.2. The red cells showed anisocytosis, poikilocytosis, and megalocytosis. The picture suggested that of pernicious anaemia. He was given 3 minims of liquor arsenicalis thrice daily, being increased by a minim every third day. His gastric contents contained no free hydrochloric acid. They gave a positive chemical test for occult blood, and showed a faint trace of lactic acid. He was also given 10 minims of dilute hydrochloric acid three times

a day. On August 7th his blood contained 47 per cent. of haemoglobin. On the 20th a fractional test meal was done, and this showed no free hydrochloric acid. On August 31st his haemoglobin was 62 per cent. On that date also his sensations were carefully tested, and no alteration could be found. On September 18th his haemoglobin was 73 per cent.; on the 20th, 80 per cent. A further blood film showed anisocytosis with an occasional macrocyte. The film was not now suggestive of pernicious anaemia.

He was readmitted on January 29th, 1924, complaining of diarrhoea, shortness of breath, and general weakness. He had been fairly well until five days before admission. On examination his tongue was glazed. The rest of the physical examination was as before. He was again given dilute HCl, minims 10 thrice daily, and liquor arsenicalis. His blood on February 4th contained 1,460,000 red blood cells and 5,000 white cells per c.mm., with haemoglobin 45 per cent., and a color index of 1.28. The red cells showed anisocytosis, poikilocytosis, and megalocytosis. The picture was again that of a pernicious anaemia. On February 21st his blood contained 4,000 white cells, 1,200,000 red cells per c.mm., and haemoglobin 36 per cent., with a color index of 1.4. The films showed megalocytosis and erythroblasts. On February 25th another fractional test meal was done. No free HCl. was precent, and the gastric contents gave a strong reaction for lactic acid, a positive chemical reaction for coccult blood and bile was present in all the specimens. On March 4th his blood contained 1,250,000 red cells per c.mm., 32 per cent. haemoglobin, and 2,600 white cells, and had a color index of 1.3. The film showed poikilocytosis, anisocytosis, and some of the red cells showed basophilic staining. His diarrhoea was very obstinate, and he died on March 7th, his temperature having shown irregular rises during his stay in Hospital.

Autopsy, No. 31/24.—On the lesser curvature of the stomach, extending down 3in. from the cardiac orifice, was a projecting carcinomatous mass which was very ragged and friable. On the greater curvature opposite to this was a small reddish polypoid projection the size of a peppercorn. The liver weighed 78ozs., was soft, but red in color, and gave a slight Prussian blue reaction for free iron. The kidneys, weighing 7½ozs. and 8ozs., were somewhat brick-red in color. The spleen weighed 10ozs., and was large, dark red, and soft. The heart muscle showed moderate fatty degeneration. There was an erythroblastic reaction in the bone marrow of the femur. Micropscopically the growth in the stomach was carcinomatous, and there was a cellular reaction in the bone-marrow.

Comment.—As this patient was shown to have a carcinoma of the stomach it may be suggested that the anaemia was the result of this, and that the diagnosis of pernicious anaemia is probably incorrect. The blood picture is typical of pernicious anaemia when a high color index, a leucopenia, and megalocytosis of the red cells are taken as typical signs. The reaction to treatment by arsenic, when the haemoglobin value of the blood increased from 33 per cent. to 80 per cent. in three months, is not what one would expect if the anaemia were the result of the carcinoma. The tumor of the stomach no doubt complicated the picture, and was responsible for the loss in weight which is not characteristic of pernicious anaemia. We believe that the presence of a leucopenia is essential before a diagnosis of pernicious anaemia can be made. In anaemia due to a carcinoma of the stomach a high color index may be found, but in our experience the white blood cells are always normal or above normal in numbers during the course of the disease. Whether the

carcinoma precipitated the attack or actually produced the pernicious anaemia in this case we cannot say, as the etiology of pernicious anaemia is unknown. In the light of our present knowledge, however, there can be no doubt that this patient did have pernicious anaemia as well as a carcinoma of the stomach.

NEOPLASMS ACCOMPANIED BY MULTIPLE SUBCUTANEOUS DEPOSITS.

(7.) Carcinoma of the Stomach Secondary to Chronic Ulcer With Multiple Secondary Subcutaneous Fibrosing Nodules.

(Under the care of Dr. Newland, Hon. Surgeon.)

E. H., a male, *æt.* 30, was admitted on March 22nd, 1923, complaining of pain in the abdomen, which he had had for four years. It had become more severe during the last three or four weeks. The evening before admission he had a severe attack, which had awakened him, and had continued for three hours. It commenced in the pit of his stomach, and then gradually worked down, and "went all over his belly." The pain made him reach and vomit. The latter relieved him. The pain came on as a rule two or three hours after a meal, and was preceded by acid eructations, which could be relieved temporarily by taking food. In the intervals when there was no pain the patient felt extremely hungry. He had never vomited any blood, but had lost a stone in weight during the last two years. He had had typhoid fever eight years before. He was a teetotaller, and denied having had any venereal disease.

On admission his temperature was 97° F., pulse 80, and respirations 20 to the minute. He was rather thin, and examination showed nothing abnormal except slight tenderness on deep pressure of his epigastrium. A test breakfast on March 29th showed HCl. 70 and total acidity 82. An opaque meal showed a small five-hour residue in the stomach, and on refilling there was a pseudo-hourglass appearance in the stomach, with a large crater due to a penetrating ulcer of the lesser curvature. On April 9th laparotomy was performed, and a large ulcer with considerable fibrosis around it was found on the lesser curvature of the stomach. It was adherent to the pancreas, and had extended into its substance. A partial gastrectomy was performed. The tissues removed were examined microscopically, and after the examination of many sections, and after the employment of different staining methods, it was decided that a carcinomatous change was present. On January 21st, 1924, a cutaneous nodule was removed from his skin, which showed fibrosis without any evidence of a malignant deposit. On March 6th another nodule was removed, and showed dense fibrosis extending into the subcutaneous tissues. At the deep edge there was a cellular reaction and fibrosis involving the adipose tissue. "Tumor cells could not definitely be recognised, although it is conceivable that a few carcinoma cells might be present in the cellular area without showing clearly enough to be recognised as such. Even so that would hardly explain the dense fibrosis." On the 13th a mass could be felt under the old operation scar. Glands in the right and left axillae were enlarged, as were the supraclavicular glands on the right side. He was vomiting and losing weight. On April 7th he was readmitted to Hospital complaining of stoppage of his bowels. He had felt fairly well until three days before. He thought he had been gaining a little weight, but four days before admission his bowels had not been opened, in spite of purgatives and enemas. On admission he was given a turpentine enema, which relieved him. He looked rather

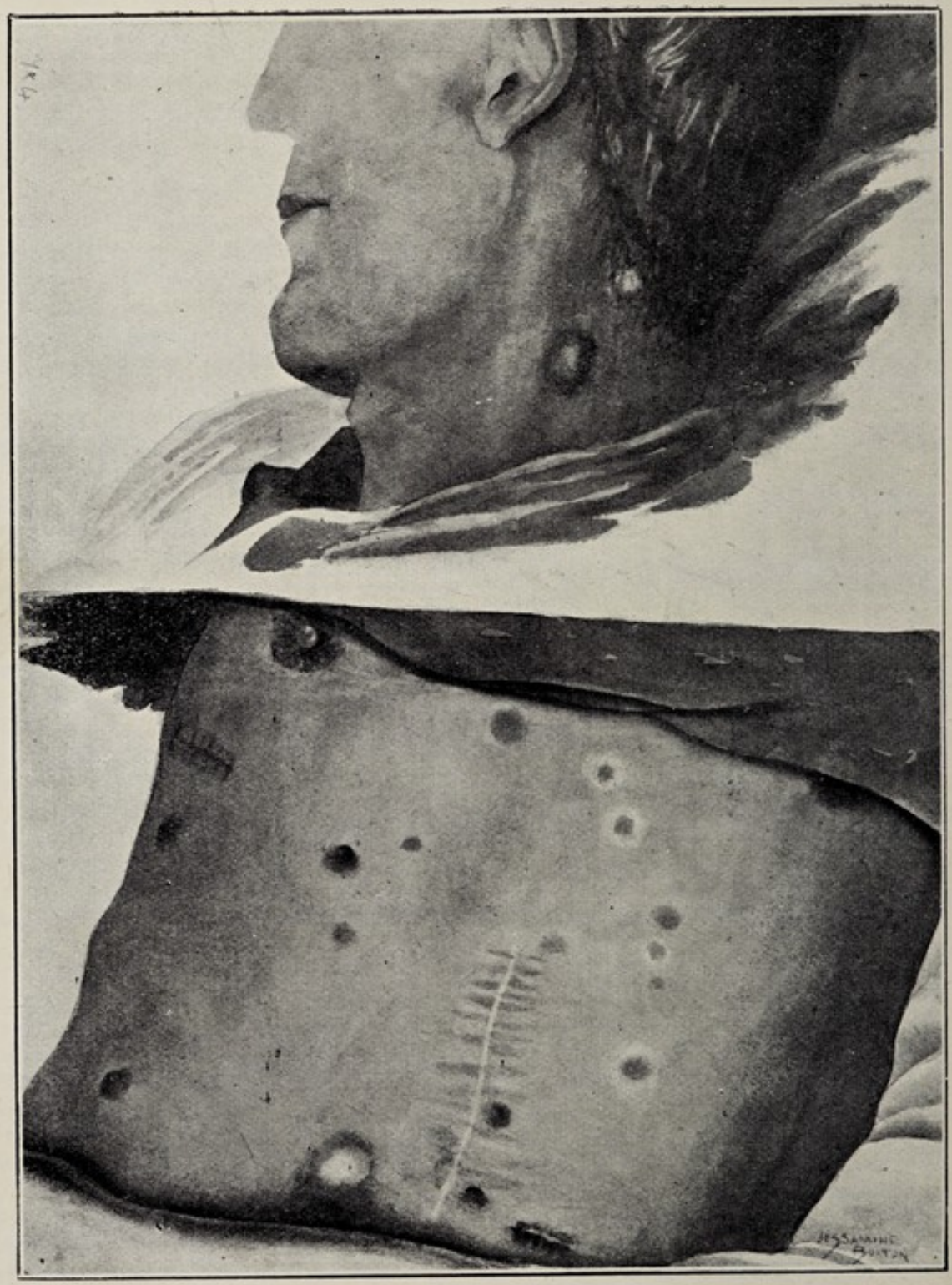

Plate IV.—Case 7, E.H., 30 years. Multiple Subcutaneous Fibrosing Nodules, secondary to Carcinoma of the Stomach.

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cachectic, thin, and pallid. On his trunk, neck, head, and arms there were small nodules in the skin of varying sizes. (Plate IV.) The skin over them was reddish blue. In his abdomen a mass could be felt in the old operation wound. It was hard and irregular. A lymphatic gland from his axilla had been excised on March 14th, and showed a fibrosis of the gland with no evidence of carcinomatous deposit. On May 14th another skin nodule was excised, and sections showed numerous fibroblasts in the corium and subcutaneous tissues. In the deeper parts, occurring in strands in the cellular area, were occasional large degenerating cells or vacuolated cells, possibly carcinoma cells. These sections were much more suspicious than previous ones, and suggested a cancerous deposit being overcome by a cellular reaction.

Autopsy, No. 90/24 (*Dr. D. L. Barlow*).—The lumen of the stomach was very small, and with the exception of about 3in. from the cardiac orifice the whole wall was infiltrated with carcinoma. The splenic flexure of the colon was adherent to the mass. There were numerous large carcinomatous deposits in the liver, and on its under surface a large hard mass of carcinomatous glands. The lungs showed considerable pigmentation and fibrosis with numerous scattered fibrous nodules, which showed no sign of caseation or other appearances suggestive of tuberculosis. In the subcutaneous tissues were numerous soft flat projections of uncertain nature.

Comment.—The interesting points in connection with this case were:—

1. The age of the patient—31 years.
2. The excision surgically of a typical looking chronic ulcer. The microscopic report on it stated that carcinoma was developing in the wall.
3. In confirmation of the microscopic report and in opposition to the clinical symptoms and macroscopic appearances, the development later of secondary deposits, first indicated by the appearance of subcutaneous nodules.
4. These nodules were intensely fibrotic, and the cancer cells that gave rise to them had usually disappeared at the time that a nodule was excised. This extensive skin seeding, temporary establishment of the cancer cells, and early destruction by fibrosis is a very unusual feature.

(8) Renal Carcinoma with Secondary Deposits in the Subcutaneous Tissues, Muscles, Heart, and Lungs.

(*Under the care of Dr. Smeaton, Honorary Assistant Surgeon.*)

J. D., a male, *æt.* 41, had, as his first symptom three weeks before he came into Hospital, pain in the right knee. When he was admitted to Hospital (April 1st, 1924) the pain was chiefly in his right loin and hip. He had had slight nocturnal frequency of late, and his urine had been rather red. He had lost a little weight. He had noticed during the last two days lumps under his skin. He thought they had got bigger and more numerous. He was a thin man with a mass in his right loin, which had the characteristics of a kidney tumor. On his chest, arms, neck, and back were small firm elastic nodules embedded in the muscles just subjacent to the skin. Some nodules were actually in the skin. One of the nodules was excised, and microscopically showed a deposit of a malignant new growth, probably a renal carcinoma. The patient died on April 13th.

Autopsy No. 45/24.—The body showed numerous scattered nodules in the skin and subcutaneous tissues of the neck and arms as far as the elbows, and in the pectoral muscles. The nodules on section

were white and cheesy-looking. There were further firm whitish nodules in the muscles of the abdominal wall and in the serous membrane of the abdomen. In the right kidney there was a growth roughly triangular in shape (5in. x 4½in.) replacing the lower half of the kidney. The centre of the tumor was yellowish in places, haemorrhagic in others, and firm at the periphery. A haemorrhagic necrosing mass 1½in. in diameter was present in the pelvis of the kidney opposite the opper pole of the organ. There was blood clot in the lower half of the pelvis. Neither suprarenal gland was affected. There was a small deposit the size of a pea in the head of the pancreas. The lungs presented a most unusual appearance, their surfaces being studded with numerous rather spherical projecting deposits varying in size from quite minute up to 1in. in diameter. On the left side some of the projecting masses had run together to form a malignant mass that had become adherent to the pleura. On section there were numerous deposits throughout the lungs. There was a small whitish deposit in the posterior wall of the left ventricle near the apex, extending from the surface almost to the endocardium. There were no lesions of moment in the other organs.

Histological Examination.—The growth in the kidney was a solid spheroidal-celled carcinoma, in appearance not suggesting the ordinary Grawitz tumor. The deposits in the myocardium and lung presented the same appearances.

OTHER NEOPLASMS.

(9) Bilateral Suprarenal Carcinomata with Deposits accompanied by Calcification and Bone Formation.

(Under the care of Dr. Verco, Honorary Gynaecologist.)

E. P., a woman, *æt.* 23, was admitted on October 10th, and died on November 4th. She came to Hospital for the purpose of having Gilliam's operation done for a retroflexed uterus. She had always been more or less delicate, and her general health had been poor, and she had suffered greatly from constipation. A week before death she developed diarrhoea, having two or three offensive stools daily, and three days later she passed a large amount of blood-clot by the rectum. This continued; she became progressively weaker, and died. At the autopsy (No. 190/24) two ulcers were noticed on the left leg above the internal malleolus—the largest the size of a sixpence, and covered with heaped-up epidermis, which left behind an irregular reddened surface. Both suparenal glands were very much enlarged with multiple adenomatous looking masses. The left had a solid tumor the size of a large marble attached to it. The right contained several adenomata, one of which shelled out at once on incising the tissue surrounding it. In the left gland there was also a fluctuant area the size of a sixpence, which contained purulent-looking fluid and had a smoth wall. The color of the nodules was greyish-red, not that of the suprarenal cortex. In the liver several white spots were present in the capsule and scattered through the substance of the gland. A nodule the size of a sixpence was present in the inferior margin of the right lobe in the vicinity of the gall-bladder. A marble-sized deposit was present in the middle of the organ. The deposits were pale and yellowish in color. There was a doubtful small nodule in the spleen. Behind the manubrium sterni were several very hard yellowish glands, each as large as a pigeon's egg. On cutting through them they appeared osseous in texture in places. Similar glands but not so large were found in the hila of the lungs and in the vicinity of the great vessels. In the pleura of the lungs were numerous plaques, some whitish and some yellow, varying in

size from a pin's head to a shilling. In places several plaques had become confluent. They were very hard and difficult to cut, but shelled out easily when the pleura was incised over them. A few similar bodies were found in the substance of the lung. In the heart a small white nodule was found in the wall of the left ventricle, and a plaque about half an inch long was present on the pulmonary artery protruding from the external coat. The lower 2ft. of the ileum and the whole of the colon were intensely congested, and showed numerous small rounded ulcers presenting a worm-eaten appearance. The ulceration involved mainly the mucous coat. The adjacent mucous membrane was atrophic and yellowish. Microscopically the suprarenal growth was composed of very large irregular cells, with granular protoplasm tending to degenerate into globules, loosely arranged in alveoli, the alveolar masses separated by delicate connective tissue, in which ran thin-walled capillaries with hardly more than their endothelial lining. Some tumor cells were very large, irregular, and angular, and their nuclei also very large and irregular. The deposits in the liver, pleura, and glands presented a somewhat different appearance. A well-marked fibrous tissue reaction was infiltrated by rather small spheroidal cells arranged in small irregular acini, with at times a tendency to lumen formation. Sometimes when the acinous formation was more definite the lining cells became more columnar. In a section of the liver there was an alveolar arrangement, with large solid masses of tumor cells, many undergoing degeneration; calcification had appeared in a number of small areas occurring in the cellular parts. The mediastinal mass showed groups of smallish polygonal or spheroidal malignant cells, with the nucleus usually on one side of the cells, in spaces in a trabecular network; the capillaries had again often only an endothelial lining, and some red cells had escaped amongst the malignant cells; the stroma, sometimes considerable, separating the masses had often undergone a hyaline change or showed calcified areas, and there were in addition considerable sheets of bone with bone corpuscles and canaliculi. The deposits in the lung showed a similar hyaline change in the stroma and areas of calcification, but actual bone was not detected. In the deposit in the heart the stroma was fibrous, and calcification had occurred not only in the stroma but also in some of the malignant cells. The intestines showed a dysenteric ulceration extending down to the muscular coat.

Comment.—This is a remarkable case. The patient was only 23 years old. She was admitted to Hospital, presumably in her average health, for the purpose of having a comparatively simple gynaecological operation. This was successfully carried out, but later diarrhoea developed. Blood was passed, and the patient died. Dysenteric ulceration was the cause of death. The autopsy revealed, however, large bi-lateral suprarenal adenomata. In the mediastinal glands and covering the pleura, and to a slight extent in the liver, were malignant deposits presumably from the suprarenal growths, which were accompanied by dense fibrosis, calcification, and actually ossification.

(10) Squamous Epithelioma of the Lip in a Young Man of Twenty-three.

(Under the care of Dr. Smeaton, Honorary Assistant Surgeon. Notes by Dr. Cornish, House Surgeon.)

C. M., *æt.* 23, was admitted on April 16th, complaining of an ulcer on his lower lip. During the last three summers he had had badly cracked lips, the lower being the worse; they were quite normal in

winter time. During the last summer his lower lip had become ulcerated as well, and the ulcer had spread a little downwards below the lip, and was becoming larger. It did not bleed. The patient felt well, and his general condition was normal. He was a light smoker and a teetotaller, and denied venereal disease. Examination of the lower lip showed an indurated area, the size and shape of an equilateral triangle, with sides 1in. in length, situated more on the right side. The lip margin part of the growth was ulcerated and covered with a dirty scab. The growth was not adherent to the jaw. The submental and right submaxillary glands were palpably enlarged and hard.

A section was taken, and found to be a squamous epithelioma. The growth was removed by an extensive V incision, and glands of both anterior triangles of the neck removed by block dissection. The growth showed on microscopic section a diffuse squamous epitheliomatous infiltration, with occasional cell-nests. Recovery was quick, and the patient was under X-ray treatment of one pastille every three weeks up till June 21st, when no evidence of recurrence had occurred.

(11) Multiple Melanotic Growths in the Suprarenal Gland, the Right Lung, the Brain, Lymphatic Glands and Mesentery, Melanotic Ulcers of the Stomach and Jejunum, and a Melanotic Polyp of the Gall-Bladder.

(*Under the care of Dr. de Crespigny, Honorary Physician, and Dr. Guy Lendon.*)

J. S., a female, *æt.* 62, was admitted on March 24th, 1924. She had never been seriously ill before. She had four children alive; two of her children had died in infancy. Her previous health had been good. She complained of loss of power in her left arm and leg, and change in her speech. Ten days before admission she noticed her left arm and leg becoming gradually weaker. She had a giddy feeling for a week thereafter, and the weakness and some difficulty in speaking plainly had persisted.

On examination she had hemiplegia of the left side of her body, including her face. The urine contained no abnormal constituents. She became worse (drowsy and cyanosed), and showed ptosis of both upper lids, her right pupil was larger than the left, she had right external strabismus, and the tongue was paralysed. On the 31st she died of pulmonary oedema. Her mental condition was thought to be due either to haemorrhage or thrombosis.

Autopsy No. 37/24.—The body was that of a middle-aged woman, with hair turning grey, and very fat. Embedded in the fatty tissue below the left breast were two pea-sized melanotic nodules. There was a small subcutaneous nodule on the inner and back aspect of the left upper arm. In the mediastinum, just above the pericardium to the left of the aorta, was a melanotic mass the size of a walnut becoming semi-cystic. Above this was a large deeply pigmented growth 2in. in diameter somewhat adherent to the tissue at the bifurcation of the trachea. There was a malignant deposit, greyish-white in color with melanotic patches, 1½in. in diameter, in the upper lobe of the right lung. The hilic glands of the left lung were rather black and soft. In the mesentery of the small intestine were two large melanotic masses the size of walnuts, and there were also scattered melanotic specks in the subserous fat. There was a large pigmented mass on the left side of the cardiac end of the stomach. The medulla of the left suprarenal showed a cystic cavity the size of a large marble, with black inky contents. On opening the stomach

there were found seven scattered melanotic patches, ¼in. to ½in. in length, with irregular stellate margins and slightly raised above the rest of the surface, and near the oesophogeal opening was a large melanotic ulcer nearly an inch long. In the jejunum were a number of oval melanotic ulcers with their surfaces definitely raised and the bases ulcerated. Seven large melanotic ulcers, half inch or more in diameter, were present, and a number of smaller ones. Some of the ulcers were round. The gall bladder contained a number of knobby pale yellow gallstones the size of peas to marbles, and also some shreddy blackish material, probably derived from a soft melanotic polypoid patch, about a quarter of an inch in diameter, in the fundus of the gall bladder. On the summit of the left ovary was a small melanotic growth the size of a grain of wheat. There was a small pigmented gland on the left side of the root of the tongue. The brain showed a number of melanotic deposits with the following distribution. In the right frontal lobe is a deposit reaching from the anterior pole 2½in. backwards, centrally and upwards, coming to the surface on the vertex 3in. from the anterior pole, being usually about half an inch in diameter. In the roof of the right lateral ventricle is a deposit the size of a swollen pea, and a similar but smaller one in the roof of the left ventricle. A large more diffuse deposit, at its maximum 1½in. laterally and 1in. vertically, becoming more definite as it extends backwards, occupies the right thalamic region and its neighborhood. Another deposit, which is breaking down, invades the posterior horn of the right lateral ventricle, posteriorly extending as a solid mass, gradually tailing off as it reaches the posterior pole of the occipital lobe. Scattered over the surface of the cerebral hemispheres are three further deposits the size of swollen peas. In the right side of the pons is another small irregular growth in proximity to the sixth nerve, and cutting off the fibres of the fifth nerve. There were no deposits in the kidneys, pancreas, liver, spleen, heart, or uterus. The eyes were excised, and showed no recognisable new growth.

Comment.—During life the pathological condition was unsuspected, the patient's condition being attributed to cerebral haemorrhage or thrombosis. It does not seem clear where the primary growth originated; possibly it was in the suprarenal gland. No obvious source of origin could be found in the skin or the eye. Melanotic deposits were numerous in the brain. The occurrence of melanotic ulcers in the stomach and small intestine and a melanotic polyp of the gall bladder must be very rare.

VIII.—INFECTIVE GRANULOMATA.

(1) ACTINOMYCOSIS OF THE LIVER.

(Under the care of Dr. Mainwaring, Honorary Surgeon.)

S. P., a seaman, *æt.* 21, who had lived in the country in New South Wales until 1917, was admitted on October 25th, 1923, complaining of a lump in the upper part of his belly. For the last three months he had had vague throbbing pains in this region. Eleven days before admission he had observed the swelling, which got noticeably bigger during the next three days, since when it had remained much about the same. Lifting, straining, or coughing caused pain at the site of the swelling. There was nothing noteworthy in his family history;

his previous health had been good. On admission his temperature was 96.4° F., his pulse rate 88, his respirations 20. He had a firm tender tumor in his epigastrium; it was not fluctuant. Otherwise a general examination showed nothing abnormal. He had a leucocytosis of 15,900. During the next four days the patient's temperature rose, the swelling became more tender and softer, and on October 29th an incision was made into it, and pus evacuated. The cavity was packed with iodoform gauze. No organisms were found in the pus. His blood gave a negative Wassermann reaction, a negative complement fixation test for hydatid, and a negative precipitin for hydatid. During the following month he had occasional attacks of pyrexia, and there was a good deal of discharge from the wound. On December 6th the cavity was reopened in order to effect better drainage. The cavity was packed with gauze soaked in Calot's fluid. A little of the excised tissue was examined microscopically, and showed a subacute inflammatory reaction. By December 20th the wound was healing, but he had profuse night sweats, his temperature rose to about 100° F. every evening, and he complained of pain about the wound. A radiograph of his thorax showed nothing abnormal. On December 31st a superficial abscess was incised, and an ounce and a half of pus escaped. This yielded an abundant growth of *Staphylococcus aureus* and gram negative bacilli. On January 3rd his sputum was examined for tubercle bacilli, but none were found. On January 11th another specimen of pus was sent to be examined, especially for actinomyces. No streptothrix elements were found, but again an abundant growth of *Staphyloccus aureus, S. albus,* and gram negative bacilli was obtained. During February he had fluctuations of temperature and a persistent discharging epigastric sinus around which every three or four days a cubic centimetre of Calot's fluid was injected by the house surgeon. At the beginning of March he had an occasional cough, and on March 5th, 1924, the wound was reopened. The sinus was found to lead down to the lower border of the liver. In the liver were many yellow hard granules, and similar yellow masses were found in the adhesions about the liver. The wound was partly closed, leaving a large opening for drainage. Portion of the liver was excised, and sections of this showed a subacute inflammatory reaction with abscess formation and fibrosis. There was no evidence of actinomycosis or tuberculosis. On April 17th a streptothrix was found in the pus from the epigastric sinus. Cultures showed streptococci, *S. albus,* and gram negative filamentous bacilli. From these a vaccine was prepared and given. During the remaining two months of his life he was treated with X-rays and large doses of potassium iodide, but he became gradually worse, with rigors, rapid weak pulse, loss of appetite, wasting, diarrhoea, and pulmonary complications, to which he succumbed on June 27th, 11 months after the beginning of his symptoms.

Autopsy No. 101/24 (*Professor J. B. Cleland*).—The left lobe of the liver was found much shrunken, was surrounded by adhesions, possessed a thick semi-translucent fibrous capsule, and on sectioning showed a very unusual marbled appearance, being apparently entirely converted into a degenerated tissue of yellowish-white appearance, marbled with greyish trabeculae and streaks. (Plate V.) In the adjacent part of the right lobe of the liver were two or three small yellowish white areas, the largest about three-quarters of an inch long. The right lobe of the liver had undergone considerable hypertrophy, extending downwards much lower than was normal. A sinus led down from the surface in the midline below the xiphoid cartilage towards the

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Plate V.—Actinomycosis of the left lobe of the Liver.

left lobe of the liver. There were numerous adhesions between the upper surface of the liver, the front of the stomach, and the anterior abdominal wall. Amongst these adhesions was some green pus. In the right lung the upper lobe showed some small patches of consolidation, and the lower lobe was riddled with cavities up to the size of shelled almonds. They had greyish necrotic walls, and contained greenish-grey foul pus. There were also patches of bronchopneumonia. The left lung was compressed against the vertebral column, with 25ozs. of thick green non-smelling pus occupying the left pleural cavity. The other organs showed no lesions of moment. An anaerobic culture from the left lobe of the liver failed to grow any streptothrix elements. Microscopic sections of the liver showed areas of actinomycotic granulomatous tissue. The mycelial masses were surrounded by cells mostly lymphocytes, with a few polymorphonuclears, and beyond these was a zone of young fibrous tissue. Sections of the base of the right lung showed much necrosed tissue, infiltration with polymorphonuclear cells and some masses of mycelium.

(2) ACTINOMYCOSIS OF THE CHEST WALL.

(Under the care of Dr. Cudmore, Hon. Surgeon.)

A. C., *æt.* 16, female, was admitted to hospital on December 21st, 1922, complaining of swelling of the left foot and ankle, shortness of breath, and a dull pain in the left side of the chest. Her temperature was 99° F. on admission. She had what were regarded as signs of fluid collection in the left pleural cavity. Aspiration on two occasions failed to yield any fluid. On December 22nd, 1922, Dr. Cudmore made an incision into a tender lump situated posteriorly over the left lower ribs, and a large abscess cavity was laid open, lined by shaggy necrotic tissue, and filled with shreddy pus. The cavity was superficial to the ribs. Section of portion of the wall of the abscess cavity showed a granulation tissue containing colonies of actinomyces. She was treated with potassium iodide, 90 grains a day, increased to 120 grains daily. She left here and went to Victoria, where she was treated at the Melbourne Hospital with X-rays, diathermy, potassium iodide, collosal iodine intravenously and novarsenobillon. None of these was of any avail in arresting the progress of the disease, so that on re-admission here in September, 1923, she was wasted and very ill, with evidence of pleural and some pulmonary affection beneath a large irregular mass in the site of the abscess previously opened, surrounded by other smaller granulomatous areas discharging yellow pus. Oral and intravenous administation of various forms of iodine was tried, but the signs of disease in the lungs increased, and she died on January 21st, 1924.

Autopsy No. 10/24.—Over the lower part of the left side of the chest posteriorly were some discharging sinuses as well as the scars of healed lesions. The lower lobe of the left lung was fibrosed in its posterior part and abscesses were present in it. These lesions connected up with the sinuses opening from the ribs. Extending along the borders of the vertebrae from the fourth dorsal to the lower lumbar region was a series of abscesses, many of the vertebral bodies showing caries. Histological examination showed the presence of tuberculous lesions in the left lung with no evidence of actinomycosis. Sections from the chronic inflammatory tissue near the vertebrae showed a granulomatous reaction with patches of necrosis and plasma cells, but again no evidence, however, of actinomycosis.

(3) PYAEMIC ACTINOMYCOTIC ABSCESS OF THE BRAIN.

This case has been briefly reported on by Dr. De Crespigny at a meeting of the Medical Sciences Club of South Australia (*M. J. of A.*, August 30th, 1924, p. 236). A fuller account will be published in our next issue.

IX.—DISEASES OF AUSTRALIAN ABORIGINALS.

(1) PROSTATIC CALCULI IN AN AUSTRALIAN ABORIGINAL.

(*Notes by Dr. I. B. Jose, Registrar.*)

L. L., a male, full-blooded aboriginal, *æt.* 70, living at Point Pass, was admitted on January 30th complaining of trouble with his water. He said it had commenced three weeks before with a smarting pain in the hypogastrium before and during micturition, and for periods of several hours at a time he was unable to pass his urine, and he had noticed a swelling in the hypogastrium. He was able to pass his urine between the attacks of retention and difficulty of micturition, and he noticed that it was easier to pass urine in the evening when he rested. He had had previous trouble with his water.

On examination there was tenderness in the hypogastrium and the bladder was not distended. The prostate felt moderately enlarged, firm and nodular, but not tender. On February 3rd he had an attack of retention of urine. A rubber catheter could not be passed, and a suprapubic puncture was performed. Next day a metal prostatic catheter was introduced, an obstruction being overcome in the prostatic region of the urethra. This catheter was tied in and connected to a drainage apparatus for seven days, so as to decompress the bladder gradually. The blood urea test on February 3rd showed 37 mg. of blood urea nitrogen per 100 c.c., and after decompression on February 14th 19 mg. of blood urea nitrogen. On February 18th, under an anaesthetic, a metal catheter was passed and an obstruction was encountered in the prostrate which gave a metallic tinkle against the catheter. A suprapubic incision was therefore made, and two prostatic calculi, the largest oval and half an inch in its longest diameter, were removed. A suprapubic drainage tube was left in the bladder, and the bladder washed out daily. He voided some urine naturally on February 26th.