and died on April 7th, 1903. At no time did she complain of pain, except the "pain of weakness," and this was distressing. Twenty-four hours before death the urine was of the colour of black ink and scanty.

Necropsy.—The peritoneum was full of very dark-coloured fluid, and a nodule of growth about the size of a walnut found in the great omentum. The liver was studded with whitish deposits varying on the surface from the size of a pin's head to that of a crown-piece. The medium sized deposits were umbilicated and resembled the structure of the liver in the arrangement of the vessels. The pancreas was felt to be enlarged and hard from head to tail; it was extremely friable, and on pulling it up to the surface it broke across like a piece of carrot. It was quite white in appearance. The gall bladder was full of bile. There were no stones in either bladder or ducts. No albumen or sugar was present in the urine at any time during the illness.

CASE II.

Mr. H., aged 73, had been attended by me many times for giddiness and faintness, the result of cardiac degeneration. Four weeks ago he noticed a little dark coloration of the urine, and a week later some jaundice was observed, coming on painlessly. Up to ten years ago he had very severe attacks of "spasms," which could at times be averted by an aperient; but since that time he had been quite free from such attacks.

State on Examination.—He was very deeply jaundiced, the skin of the face, cheeks, and body bronze in appearance, and conjunctivae golden yellow. On scratching the skin with the finger-nail the track of the nail assumed a light heliotrope colour. The skin was itchy, loose, and flabby, and he looked as if he had lost much weight. The urine was very high-coloured, and dark like coffee. Part of the right lobe of the liver could be felt filling the space bounded by the right costal cartilages down to the tenth, and a line extending from this cartilage across to the middle line of the body. There was no pain on pressure over this mass, but if the fingers were inserted under its free edge and the mass lifted up pain was complained of at a spot near the middle line of the body. At a point $1\frac{1}{2}$ in. above the umbilicus and 1 in. to the left of the middle line, which could be covered by a shilling, there was a very tender spot on deep pressure. This painful spot could always be detected up to the last. No gall bladder could be felt. He complained of great weakness and loss of strength, but slept well. He had no appetite, and frequently vomited, and stated that everything he took tasted and smelt like his urine, which was as offensive as if it had undergone decomposition. No bladder or prostatic trouble was present.

Progress and Result.—The motions were invariably white, never constipated nor lumpy, and quite smooth on the surface. They appeared to have the consistency of soft putty, and resembled pieces of this material squeezed through a sausage machine. The quantity was extraordinary considering the intake, and so marked was this that it attracted the patient's and the friends' attention. On May 20th, 1903, vomiting increased and hiccough was very distressing. As much as six pints of gelatinous, tenacious, dark-coloured material was vomited during the night, although not more than $1\frac{1}{2}$ pint of fluid food had been administered during the day. All food by the mouth was stopped for eight days, and during this time the vomiting and hiccough ceased. On May 28th he had a prolonged rigor lasting two hours. When I saw him at 9 p.m. his pulse was hardly perceptible, the feet and legs cold up to the knees, and he was evidently dying. On the following morning the patient was still alive. Warmth had returned to his extremities, and for the first time during the whole illness the skin was acting. The tongue was cleaning at the edges and tip: large, dry, brown crusts were peeling off and leaving a moist surface. It was the best attempt at a recovery from death I have ever seen, as the patient declared he had been dead during the night, and I have no doubt that probably he was so. Food was now taken by the mouth with no return of vomiting or hiccough. On the 30th, however, he sank, conscious to the last. At no time during the illness was sugar or albumen present in the urine.

Necropsy.—There was a thick layer of fat in the skin, with peculiarly greasy soapy feeling. No free fluid was found in the peritoneum. The liver was slightly enlarged and of normal appearance except for whitish nodules about the size of a sixpence dotted here and there on its surface, and umbilicated in the centre. A prolonged search of over half an hour was made for the gall bladder, but none was present. There were two separate ducts leading from the liver, and as far as I could follow them down to the duodenum they remained separate. No gall stones were present in the ducts. The pancreas was white in appearance and slightly enlarged and harder than normal, but neither the enlargement nor the hardness was so marked as in Case I. It tore away easily.

REMARKS.

As to the diagnosis of pancreatitis, in general there should be no difficulty—the painless jaundice, the intense weakness, great wasting, and the enormous evacuations are characteristic. I believe if I were shown the evacuations alone I could diagnose the disease. The only one I ever read of who has laid claim to that diagnostic skill besides myself was the celebrated Dr. Hornbrook, made famous by the poet Burns.

As to the differential diagnosis between simple and malignant pancreatitis, in Case I there was no difficulty, as there were present the deep painless jaundice and the enlarged gall bladder pointing to cancer of the head of the pancreas—Courvoisier's law. In Case II no gall bladder

could be felt, for a very good reason, so that the diagnosis was difficult. I accordingly sent a specimen of the urine to Mr. Cammidge, of Wakefield, who kindly sent me the following report with permission to publish it.

The specimen of urine is free from dextrose and albumen, but contains a considerable amount of bile pigments and bile acid. It also gives a well-marked pancreatic reaction, and I should from the character of the reaction expect to find a chronic inflammation of the pancreas.

I sent Mr. Cammidge also portions of the liver and pancreas. The report is as follows:

The liver shows patches of secondary malignant disease. The cells are of a glandular character, and suggest the pancreas as the probable origin. In the section of pancreas the cells are neither normal in appearance nor in arrangement, and I should say that this is part of the pancreas showing early malignant disease, it would probably be more advanced in the head of the organ.

It can be seen from the above that during life it was very difficult to come to a correct diagnosis.

There are two questions which seem to be of interest to physiologists: (1) The fact that there was no constipation, although not a drop of bile entered the intestine throughout the duration of my attendance; (2) considering the destructive changes in the pancreas, the fact that in spite of these there was no sugar present in the urine. One might fairly have expected some change in the urine in one or both of these cases.

SOME UNUSUAL CONDITIONS IN GALL-BLADDER SURGERY.*

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It is perhaps scarcely true that, as Rutherford Morison says, gall-bladder surgery has only a history of ten to fifteen years, but there can be no doubt that it has greatly progressed during that period, and that, before asepsis was possible, it could hardly be said to exist as we know it now at all.

It may be possible at an early period to generalize our knowledge, and to formulate some rules with reference to this subject, but the time has scarcely yet arrived. At present it is of much more importance that anything unusual or peculiar should be duly noted and described, and it is with a view to this that I have brought forward to day certain cases of this kind.

The presence of biliary calculi in the gall bladder would appear to be a very common thing in persons over 40 years of age. Every *post-mortem* room is able to furnish examples; but large numbers of such cases pass through life without attention having been called to their existence. Kehr has estimated that only about 5 per cent. of the total number ever cause any symptoms. When this does happen, however, those symptoms produce usually intense distress and call imperatively for treatment.

And of all the symptoms thus evoked the most pressing are attacks of intermittent colicky pain, situated in or near the hypochondrium or in the epigastrium, radiating around the lower part of the right thorax, and often felt with equal severity in the dorsal region, near the apex of the right scapula. Such attacks are usually associated with vomiting, which often marks the acme of the attack, and appears to relieve it. It is noticeable that these attacks are often coincident with the time when the gastric contents begin to pass from the stomach into the duodenum; that is, two or three hours after a meal.

But these attacks do not always denote the presence of a calculus. They may occur in cases where, if an operation is performed, no stone may be found. Two other causes at least have been discovered which appear to be sufficient in themselves to explain the paroxysmal pain.

Normally, the gall bladder is attached to the under surface of the right lobe of the liver by some connective tissue, and by the peritoneal coat, which, covering the lower hepatic surface, is reflected over the bladder and maintains the two in contact. In most cases only the fundus is free, and occasionally, especially in shrunken, contracted gall bladders, even this portion is closely attached to the organ above it. But Krukenberg has described two cases in which the gall bladder, entirely free from the liver down to the cystic duct, has fallen downwards and away so as to kink that duct, and produce thereby the pain which accompanies an unduly distended

* Read at a meeting of the Lancashire and Cheshire Branch of the British Medical Association.

gall bladder, and its futile efforts to evacuate its contents. Although in the following case eighteen small calculi were present, it is quite open to question whether their presence produced the typical biliary colic of which the patient complained, or whether this was not equally if not entirely due to the kinked cystic duct.

CASE I.

S. E. W., aged 50; sent to Ancoats Hospital by Dr. Paton, of Manchester, March 3rd, 1904. A stout, florid woman of healthy appearance; married twenty-nine years; six children; no miscarriages. Her youngest child was 16 years of age, and it was whilst suckling her four months after birth that the first attack was experienced. The milk somewhat suddenly ceased to be secreted. Spasmodic pain with vomiting came on and lasted for thirteen hours, being ultimately relieved by morphine, hypodermically given. For seventeen days she took nothing by the mouth, being entirely fed by nutrient enemata. During this time no stool was passed. The first evacuation after this was "as white as lard." So far as she knows, this was the only occasion on which bile was absent from the dejecta. Urination was all through regular, and easy.

For some six years she has suffered from eczema of the legs. For this she was sent to Harrogate, and there she took the water for some time. After drinking this for a fortnight she had another severe attack, which began after supper, and lasted for three hours. During the month she remained in Harrogate she had four or five attacks.

On returning home she had another severe attack. In 1899 another, and since then several milder ones until a month before admission, when I saw her in consultation with Dr. Paton, in consequence of perhaps the most severe attack of pain and persistent vomiting she had ever experienced. So severe was it that Dr. Paton feared that acute general peritonitis was present. From this attack, however, she recovered, and arrangements were made for her admission to hospital with a view to operation.

During all her attacks no marked jaundice was ever observed. There was no history of typhoid fever or dysentery, and she had never been abroad. On March 7th, 1904, a vertical incision was made near the outer edge of the right rectus muscle, passing through over 2 in. of subcutaneous fat, from 1 in. below the costal margin to the umbilicus. When the peritoneum was opened it was drawn up on either side and pinned to the skin by Allis's forceps. I have found this manoeuvre very useful in wounds of such a depth, since the fatty walls are thereby protected from damage during the intraperitoneal manoeuvres, and not becoming bruised are more likely to unite by primary intention.

The gall bladder was easily found, but was entirely free from the liver, and hung down from it at an angle, which was situated at the commencement of the cystic duct. The cystic duct was firmly attached. The bladder was full, but not distended, and lay behind the first part of the duodenum, to which it was not adherent. In it, and near the duct end, were eighteen small, angular, faceted calculi, composed of cholesterolin and bile colouring matter. These were removed, a rubber tube tied into the open fundus, and the abdominal wall closed. She made a rapid and complete recovery. The tube came away on the ninth day, and she returned home a fortnight later.

But pain of a paroxysmal character and associated with vomiting may be found in another set of cases, when on operation no stone is found. In these adhesions are discovered between the gall bladder, the liver, the colon, the duodenum, the stomach, or the omentum; most frequently perhaps between it and the last structure. Here the sequence of events would appear to be this. A mild attack of cholecystitis, followed by the formation of a calculus. Passage onwards of this concretion, the irritation of its passage setting up some local peritonitis around the gall bladder, and its consequent adhesion to the viscera around. Pressure upon or kinking of the cystic duct produced by the contraction of these adhesions. It is in the differentiation of these cases from those in which calculi are still actually present that Murphy's test has appeared to me to be specially useful. There is the same pain and vomiting in both, possibly also the same evanescent jaundice, but in the cases where adhesions only are present Murphy's test gives a negative result, whilst in those associated with actual calculi the characteristic check to inspiration yielded by this test is always found. Of such cases I have had several. Two only are given here in any detail.

CASE II.

Mrs. G., aged 58, sent to Ancoats Hospital July 23rd, 1900, with a sinus in the epigastrium, from which bile and muco-pus were exuding.

The history given was that for fourteen years she had suffered from "gastric fever, colic, and ague" at intermittent periods. These attacks were associated with pain in the epigastrium and right hypochondrium and vomiting of watery fluid. There was also a great deal of retching. During the previous April she suffered from a severe stitch in the right side for about a week, at the end of which time the skin gave way near the median line, about $2\frac{1}{2}$ in. below the sternum and $\frac{1}{2}$ in. to the right, the point at which the opening of the sinus was seen. Much pus and greenish-yellow material escaped, but no fragments of calculi, and this fluid had been discharging in small quantities ever since. She was a stout, healthy-looking woman, and had never been jaundiced. Previous to its giving way a hard, firm mass with rounded outline had been detected by her medical attendant beneath the right lobe of the

liver. This could no longer be detected. Murphy's test gave a negative result.

On July 25th a probe passed down the sinus detected no foreign body. A vertical incision was made internal to the sinus through the right rectus and the peritoneum opened. Nothing could be felt in the gall bladder, with which the sinus was continuous, nor in the ducts. Extensive and firm adhesions between the bladder, omentum, and transverse colon were found. The sinus was laid open down to the gall bladder, which was drained with gauze. The rest of the abdominal incision was closed. No bile escaped on slitting up the sinus, and the wound gradually healed.

CASE III.

Mrs. L., aged 55, admitted to Ancoats Hospital January, 1904, under Dr. Melland. For the last three years she had suffered from pain across the back, just below the angles of the scapula, and for the last four months she had been confined to bed. The pain was gnawing in character. There had been no vomiting; some jaundice was present. There was no pain in front below the costal border. Menstruation had been regular, and the menopause occurred twelve years since. As Dr. Melland discovered an ill-defined resistance below the right hepatic lobe, he very kindly transferred the patient to my care.

The pelvic organs were all healthy: the uterus in good position, and not prolapsed. There was some enteroptosis. The right kidney was very markedly movable downwards and inwards. The left kidney was in its normal position, and not mobile. The liver was not enlarged. Beneath its right lobe could be felt on deep pressure an increased resistance, with indefinite outline; percussion note over this was clear. Murphy's test gave a negative result.

On February 18th an exploratory incision was made in the usual vertical line near the outer edge of the right rectus muscle. There was no fat necrosis. No gall stones could be felt. There was no enlargement of the pancreas. There was, however, firm adhesion of the duodenum to the under surface of the liver, and below it the small contracted gall bladder was found.

Other changes in the gall bladder, probably after-effects of the irritation set up by previous lodgement of gall stones, are sometimes found. A case sent to the hospital by my friend, Dr. Willis, of Gorton, illustrates one of these.

CASE IV.

Mrs. G., aged 51, admitted to Ancoats Hospital, November 19th, 1903. This patient had suffered from three or four attacks of severe abdominal pain, the first attack occurring twelve months before admission. The pain was very acute, extended from the right costal arch to the umbilicus, and was followed by vomiting. After the first attack there was jaundice, which lasted for a few months. Each attack was associated with the passage of high-coloured urine and stools of a light colour. The pain passed round the right lumbar region, never higher than the level of the ninth or tenth ribs in the scapular line. The last attack was fourteen days before admission, and was cut short by morphine.

At the time of examination there was no jaundice, but the face was sallow. The patient was inclined to be stout, and there had been no loss of weight. Murphy's and Robson's tests gave a negative result.

November 30th, 1903. The abdomen was opened in the usual line. There was no fat necrosis. The gall bladder was found firmly adherent to the colon and omentum. After separation of these adhesions, the gall bladder was seen to have an hour-glass contour, the fundus being constricted off from the rest by a narrow constriction, as if a ligature had been tied round it. No gall stones could be felt in the bladder or ducts. After packing around with sponges, this portion was opened and clear mucus found within. On introducing a probe, at first no communication could be found between this distal cyst and the rest of the gall bladder, but after a while a pinhole opening was detected. On passing through this, a very slight movement with the instrument broke down what appeared to be a slight and thin adhesion of the mucous lining, and then bile escaped. A drainage tube was fixed in the gall bladder and the abdominal wound closed. This came away on the ninth day, and the wound was perfectly healed on December 22nd, 1903.

The condition found suggested adhesion of an ulcerated mucous membrane consequent upon the previous presence of a gall stone, which had long since passed into the intestine through the normal channel. Possibly a similar explanation might account for the appearances presented in the next case, though this is hardly probable, since the dissepiments found within the gall bladder were so many, and the various cavities formed so various in shape and size.

CASE V.

Mrs. S., aged 42, was sent to Ancoats Hospital by my friend, Dr. Harburn, of Buxton, in November, 1900. She was a widow, of perfectly regular menstrual habit, and had never had any children or miscarriages. She looked perfectly healthy. She said that she had been liable to bilious attacks but had had none for the last two years; that she had had two transitory attacks of jaundice; the last eight years before examination. She was in perfect health, however, until eighteen months since, when she began gradually to complain of a heavy, dull, sickly pain in the left lower quadrant of the abdomen and over the sacrum. About the same time there was some oedema of the ankles. The latter symptom, however, had been less during the last twelve months, and was now barely discernible. She had never had pain beneath the right costal margin, where Dr. Harburn had discovered a swelling.

On examination, a firm elastic mass could be felt below the lower edge of the right lobe of the liver in the gall-bladder area, which moved with respiration. Its outlines were rounded, and its lower extremity could be plainly outlined just above the level of the umbilicus. Its size was approximately that of a small cocoa nut. Its upper outline was lost beneath the liver. The abdominal veins were visible, and were, if anything, more marked on the left side. The size of the tumour appeared to her to have varied from time to time since it had been pointed out to her.

On December 3rd, 1900, a vertical incision was made through the right rectus muscle, over the tumour in the usual line. On opening the peritoneum a bluish grey tumour was seen, surrounded by omentum, which was loaded with fat, but was not adherent in any way to the mass. The tumour was easily turned out of the abdominal cavity, and was seen to be the greatly enlarged gall bladder. It was evidently transformed into a multilocular mass, the outer wall showing the outlines of the various cavities. To its lower extremity intestine was firmly adherent, and the adhesions contained large veins. As separation of these seemed undesirably risky, the lower extremity of the mass was stitched all round to the parietal peritoneum, after paracentesis of one or two of the larger cavities failed to bring about any notable diminution in its size. The main mass was then cut away, and the pedicle, which had a diameter of over an inch, left fixed in the abdominal wall. Some bleeding points in its circumference required a few ligatures. Gauze was packed around and over this.

Four days later she was somewhat jaundiced, and she was annoyed by a slight, but persistent cough. Bile had been escaping by a crescentic opening near the lower edge of the pedicle, but not to any great extent. There was for a time some abdominal distention, which was rapidly relieved by turpentine enemata. The stools varied in colour, sometimes light, sometimes evidently containing a normal amount of bile. The urine contained bile, but also in varying amounts.

As the wound had healed around the stump, but this remained practically unchanged, on January 28th, 1901, Paquelin's cautery was applied to its surface until it was mummified. After this it pretty rapidly contracted, but when she left the hospital on February 6th a biliary fistula still remained. This, however, closed entirely during the next two months.

In January, 1902, she married a second time, having been perfectly well in the meantime, and unfortunately became infected with the gonococcus almost immediately. In September she died with acute peritonitis following double salpingitis. I had the opportunity of inspecting the area of operation *post mortem*. The stump still lay in the abdominal wall, but was entirely covered by epithelium. Its continuation inwards was a normal cystic duct. Some small cystic cavities containing clear fluid were still discernible in the fragment of stump remaining; there were no secondary deposits, and no sign of new growth about the part still in existence. There were no gall stones.

The tumour on examination showed a large number of cystic cavities, of all sizes, generally polygonal in shape, owing to counter-pressure, containing clear mucoid fluid, but no calculi. The septa between them were composed of a central thin layer of connective tissue, lined on either side by mucous membrane. No sarcomatous or carcinomatous elements could be found.

It is far more usual to find a number of calculi in those cases in which they exist than single unfaceted specimens. It is, therefore, somewhat curious that I should have had 3 cases of single gall stones in a list of 35 upon which I have operated. One of these is of additional interest because of its probable causation.

CASE VI.

In April, 1903, I was asked by my friend Dr. Willis, of Gorton, to see with him a maiden lady, aged 48, who gave the following history.

When she was 4 years of age she was taken by her parents to New Zealand, where she lived for eighteen months; then she returned to England and has lived in this country ever since.

When 16 years of age she had a severe attack of pain in the right hypochondrium at the same point as she felt it in all succeeding attacks. This attack did not last long.

When 20 years of age she had a severe illness, which lasted about eight months, during four of which she was confined to bed. At this time she was deeply jaundiced, but has never been so since. This illness culminated in the suppuration and bursting through the epigastrium of a hydatid cyst.

For the last five or six years she had had intermittent attacks of paroxysmal pain. These attacks began as a dull ache over the hepatic region or with a feeling of dyspepsia; this might become gradually more acute, or the intense pain might begin suddenly. At times there was a dull pushing sensation in the gall-bladder area, at times it appeared to shoot, so that it made her jump. There accompanied all this an aching pain across the back below the scapulae, which was worst on the right side. The last attack of pain had been on April 10th, lasting for several hours, but not very intense. There was then an interval of a few hours, after which it returned again, and was only relieved by hypodermic morphine. The attacks had occurred every week or fortnight, but during the last few weeks before examination, they had been as often as two or three in a week.

Since morphine had been used, some vomiting had been noticed, but she believed that the drug was losing its effect, both as relieving pain, and as causing rejection of food.

The bowels had always been somewhat costive, but usually acted every day or every alternate day. The stools had never been white.

On April 19th, 1903, the abdomen was opened in the usual line. A

long Riedel's lobe was found hanging downwards from the right hepatic lobe, marked outside at the level of the costal arch by an obliquely transverse line of fibrous tissue, which however did not penetrate through its whole tissue. Behind this, a small contracted gall bladder which was adherent to stomach, colon, and duodenum contained one unfaceted calculus; its surface dark brown, and covered with small irregular eminences, about the size of a hazel-nut. No other stone could be felt. The adhesions were separated, and a drainage tube placed in the gall bladder, which contained, besides the calculus, a small quantity of muco-pus. The tube was removed on the third day. Bile continued to flow by the wound for about two months, but ultimately the wound entirely healed. Dr. Willis writes, March, 1904: Our patient has made a perfect recovery.

In this case, the sequence of events strongly suggests that the nucleus of the stone has probably been formed by one or more hydatid hooklets.

A CASE OF LEAD ENCEPHALOPATHY.

By W. ROSSELL JUDD, M.R.C.S.ENG., L.R.C.P.LOND.,
Ashton-under-Lyne.

At 11 p.m. on February 16th of this year I was called to see a young man, W. R., aged 23, and was told that he had been in a fit since 9 p.m.. He left home in the evening for the purpose of attending a cricket meeting, and was apparently in good health when at the above-mentioned time he was seized with a fit.

Previous History.—He was a plumber by trade, and up to four years ago enjoyed good health, when he had a similar fit, from which he recovered, and up to the last illness again enjoyed good health. He was very abstemious, never had colic, and was never troubled with constipation. On inquiry from relatives no history of neurosis could be elicited in his antecedents or in any living members of his family.

State on Examination.—On my arrival at his residence I found the patient in a state of violent epileptiform convulsions, almost amounting to acute delirium. On examination I found him to be well developed but slightly anaemic. The teeth were in a fairly good condition; there was no blue line on the gums; the tongue was slightly furred, and the breath not offensive. The pupils were contracted and did not react to light. The knee-jerk was present, and the plantar reflexes were exaggerated. Temperature was subnormal. The pulse was frequent during the height of the convulsions and almost imperceptible during the quiescent stage. The tension was poor.

Progress.—An enema was given, with the object of thoroughly emptying the bowel. Sinapisms were applied to the neck, precordium, and calves. The convulsions showing no signs of subsiding, I gave a rectal injection of chloral and potassium bromide. An hour after this no change having taken place, I gave a hypodermic injection of hyoscine hydrobromate ($\frac{1}{16}$ gr.). This quieted the patient, and he remained in this quiescent condition until the following morning. I saw him at 8 a.m. on the 17th, and found him in a semi-comatose condition. The same evening he again became very convulsed and passed urine involuntarily. The hyoscine was repeated with renewed quiescence. This alternate condition of semi-coma and convulsions went on until the morning of the 19th, when on my arrival I found him severely convulsed. I decided to abstract a little blood, with the object of relieving any cerebral congestion; not having a wet-cupping apparatus at hand I applied leeches to the cervical region, and by this means abstracted about 6 drachms of blood.

Result.—The patient, however, gradually sank into a state of coma and died the same day, so that from the beginning of his illness on the 16th to his death on the 19th he never regained consciousness.

REMARKS.

Fortunately for diagnostic purposes the patient passed some urine prior to his leaving home on the evening of the seizure. On analysis the urine presented the following features: Specific gravity 1020, fair quantity of albumen, no sugar, no casts, presence of lead. The presence of lead was detected by Von Jack's test much advocated by Abram and Marsden, of Liverpool.¹ A deposit of lead was noticed upon the magnesium within an hour. I allowed the magnesium to remain in the urine for twelve hours, and after carefully washing and drying, on the application of a crystal of iodine and warming, a yellow discolorization took place due to the formation of iodide of lead. The presence of lead was further verified by confirmatory tests. I may add that to the busy practitioner the test is one of great simplicity, provided that reliance can be placed upon the agents used—that is, to be free from any lead contamination.

The case is of interest from the fact that although this was the first case under my personal care, two other cases seen during my hospital career had a fatal termination, so that one must agree with Dr. Oliver² that of all the lesions which plumbism gives rise to, lead encephalopathy is the most grave. The question arises, what is the actual cause of the convulsions?