Nitrogen in twenty-four hours.			
Calculated from the urea and uric acid.		Found by combustion analysis.	
18.96 grammes.		19.05 grammes.	
19.05	"	19.03	"
15.00	"	15.98	"
23.56	"	24.75	"
37.74	"	38.92	"
38.89	"	38.79	"
32.60	"	32.73	"
29.16	"	29.31	"

Chlorine was estimated from the incinerated residue by dissolving with hot water acidulated with nitric acid, precipitating with argentic nitrate, washing the precipitate of argentic chloride, and drying at 212° F. As much of the precipitate as could be separated from the filter-paper was then transferred to a weighed porcelain capsule, the filter ignited on a platinum wire, and the ash added to the contents of the capsule. After the addition of a few drops of hydrochloric acid, to convert any reduced silver to chloride, the whole was warmed to expel the excess of hydrochloric acid, and weighed.

Sulphuric acid—50 c.c. of the urine were taken, and a little hydrochloric acid added. The sulphuric acid was then precipitated as baric sulphate by means of baric nitrate. The precipitate was collected on a filter-paper, washed, dried at 212° F., transferred to a weighed platinum capsule, the filter-paper ignited as in the estimation of chlorine, the ash added to the contents of the capsule, and the whole weighed.

Phosphoric acid was estimated volumetrically by means of uranic nitrate. The reagents employed were the uranic nitrate solution of such a strength that 1 c.c. was equivalent to .005 gramme of anhydrous phosphoric acid; and the sodic acetate solution, which was prepared by dissolving 100 grammes of sodic acetate in 900 c.c. of distilled water, and adding 100 c.c. of ordinary acetic acid. In carrying out the process of analysis, 50 c.c. of the urine were taken, and 5 c.c. of the sodic acetate solution added. After the mixture had been well warmed, the uranic nitrate solution was added until all the phosphoric acid was precipitated as uranic phosphate. The point of complete precipitation was found by means of potassic ferrocyanide, which gave an immediate indication when the uranic nitrate was no longer appropriated in producing a precipitate. A drop of the liquid, after each addition of uranic nitrate, being brought into contact with a drop of a solution of potassic ferrocyanide on a white slab, the slightest presence of uranic nitrate in excess was revealed by the reddish-brown colouration produced.

Soda and potash.—15 c.c. of the urine were mixed with 15 c.c. of the baryta solution used in Liebig's process for the estimation of urea. The mixture was filtered, and 20 c.c. of the filtrate, representing 10 c.c. of the urine, were evaporated to dryness over the water-bath in a platinum capsule. The residue was ignited in the capsule, and the contents washed out into a beaker with warm water. Ammonic carbonate was then added to precipitate the excess of barium present, and after filtration, the filtrate and washings, acidulated with hydrochloric acid, were evaporated to dryness over the water-bath, and gently ignited to drive off the excess of ammonic salts, care being taken to prevent loss by decrepitation. The residue was again taken up with water, and a little ammonic carbonate and ammonia added, filtration being subsequently performed if, as sometimes happened, a precipitate occurred. The liquid, which now only contained the soda and potash of the urine in the form of chlorides, together with some ammonic salts, was evaporated to dryness in a weighed platinum capsule, and gently ignited to expel the ammonic salts, the same precautions being taken to prevent loss by decrepitation as before. The capsule and its contents, being weighed, gave the amount of soda and potash expressed as chlorides. The contents of the capsule were next dissolved in water, platinic chloride added, and the whole evaporated to dryness over a water-bath in a porcelain capsule. The residue, which consisted of the double chlorides of platinum and potassium, and of platinum and sodium, together with the excess of the platinic chloride employed, was treated with alcohol, which dissolved the sodio-platinic chloride, and the excess of platinic chloride, leaving the yellow crystals of

the potassio-platinic chloride. These crystals were thrown on a weighed filter paper, washed with alcohol, dried at 212° Fahr., and then weighed. Thus was furnished the amount of potash in the form of chloride. Deducting this from the amount of sodic and potassic chlorides previously ascertained, gave the amount of sodic chloride in the mixture. With these data, calculation now sufficed to furnish the amounts of potash and soda respectively present.

Lime and magnesia—100 c.c. of the urine were taken, made alkaline with ammonia, and then slightly acidulated with acetic acid. A slight excess of ammonic oxalate was then added to precipitate the lime as oxalate. After being allowed to stand for two or three hours in a warm place, the precipitate was thrown on a filter, washed, dried, and ignited with the filter paper in a platinum capsule. A little ammonic carbonate was now added to convert any lime into carbonate, and a gentle heat applied to drive off the excess of ammonic salt. The crucible and its contents being weighed, and the weight of the ash of the filter paper deducted, yielded the amount of lime expressed as carbonate.

To the filtrate from the calcic oxalate a slight excess of ammonia was added. In this way the magnesia was precipitated as ammonio-magnesian phosphate. After being allowed to stand for twelve hours, the crystalline precipitate was thrown on a filter, washed with cold water containing a little ammonia, dried, ignited strongly in a weighed platinum crucible, and weighed as magnesian pyrophosphate, allowance being made for the weight of the filter-ash.

A WEEK'S SURGERY IN THE NEWCASTLE-ON-TYNE INFIRMARY.

By W. C. ARNISON, M.D.,
SURGEON TO THE INFIRMARY.

THE following cases were admitted under my care during the week Nov. 2nd—8th, 1876.

CASE 1.—J. F—, aged thirty-one, admitted Nov. 3rd. On October 22nd a boy threw a stone at him, which struck him on the right frontal eminence, producing a small wound, which was dressed, and soon healed, and the patient felt no ill-effects until a week afterwards, when he was seized with epileptic convulsions, during which he was unconscious. The fits recurred about every half hour, both sides of the body being affected.

On his admission the epileptic fits were very frequent, of prolonged duration, and most violent character. The aspect was dull, intellect much clouded, but he replied sensibly to questions; the pupils slightly and equally dilated and sluggish; a small starred cicatrix at the site of the wound. Taking all the circumstances of the case into consideration, the indications for trephining seemed clear, although fracture or depression of bone were both improbable. At 6.30 p.m. chloroform was administered, a crucial incision made through the scar, and a large trephine applied. When the disc of bone was removed, the dura mater appeared healthy, but, on touching it, it was found to fluctuate; an incision was made into it, and about a teaspoonful of pus discharged. The piece of bone appeared healthy, but, after washing it, a very fine crack, about half an inch long, was seen in the inner table. The wound was lightly closed and bandaged, a purge of calomel and croton oil administered, and an ice-bag applied to the head. The pulse and temperature rose soon after the operation to 112 and 102.4°. Tincture of aconite was then given, a minim and a half every ten minutes for two hours, and afterwards every half hour. Under its use the pulse and temperature fell to 80 and 100°. During the night there were eight violent epileptic fits, which continued with great frequency and violence through the day. But the fits gradually abated, both in frequency and violence, and by Nov. 5th they were reduced to seven in twenty-four hours, the left side only being affected. His condition in other respects, however, was not good; there was cerebral hernia, which slowly enlarged, and increasing mental torpor. Bleeding also took place from the surface

of the protruding mass, and a compress, soaked in solution of perchloride of iron, was applied. On Nov. 6th a portion of the hernia was cut away, being nearly detached. The ice was discontinued, and warm fomentations applied. There were only three fits in twenty-four hours, but the patient was becoming more and more torpid. Coma gradually came on, and he died on Nov. 9th.

Autopsy, twenty-eight hours after death.—The internal surface of the dura mater, corresponding to the upper half of the right hemisphere, was covered with pus. The tip of the right frontal lobe was hollowed out into a fungating cavity, and there were patches of pus and lymph here and there over both hemispheres. There was marked purulent deposit all over base of brain. The brain-substance was tough, and the left lateral ventricle contained a small quantity of purulent fluid.

CASE 2.—J. C—, aged sixteen, admitted Nov. 3rd, with railway smash of lower end of right femur, done at noon, but not admitted till 5.30 P.M. He was in such a state of depression from cold, shock, and loss of blood, that amputation was out of the question, but by stimulants, beef-tea, &c., administered by mouth and rectum, he had so far rallied on the following morning that at 10 A.M. amputation by antero posterior skin-flaps was performed at mid-thigh. Careful stimulation by champagne, &c., was required for some time. There was great depression, and repair was slow. The end of the bone became uncovered, and on Dec. 10th about an inch was sawn off it. From that time improvement was rapid, and on Jan. 4th the patient was discharged well. The case was treated antiseptically, and though primary union failed from the low state of the patient, the discharge was not great, and never in the least offensive.

CASE 3.—T. J—, aged twenty-four, admitted Nov. 4th, at 10 P.M., with strangulated left inguinal hernia. On visiting him the same night, I found that the house-surgeons, Messrs. Williamson and Dixon, had partially reduced it, with some relief to the symptoms, which were not then urgent. An ice-bag was applied, and he was ordered simple enemata, which were repeated four times in the night with still further relief; but at noon on Nov. 5th, as vomiting was present, and was becoming stercoraceous, an immediate operation was recommended, but only after considerable persuasion submitted to. From the fact that the patient said he had had the hernia all his life, and that the right testis was not fairly out of the canal, congenital hernia was diagnosed, and the operation proved the diagnosis to be correct.

Chloroform having been administered, an attempt to reduce the hernia was made, but failed, and the operation was then performed in the ordinary manner. It was necessary to open the sac, an attempt to return the contents without doing so having failed. A knuckle of congested gut, and a portion of omentum which occupied the scrotum, were then readily returned, the testis being exposed. The wound was closed by sutures. On Nov. 8th the pulse and temperature were normal, on the 9th the last sutures were removed, the wound having healed, and on the 11th he was discharged with a truss.

CASE 4.—On Nov. 6th, J. B—, aged twenty-nine, was admitted with a large venous nœvus, occupying the left side of the forehead and the left cheek and eyelids, closing the eye, and giving the patient rather a frightful aspect. In 1863 the nœvus, then just beginning, was removed by Professor Pirrie, of Aberdeen, with the *écraseur*. In 1870 he was under the care of Professor Spence in Edinburgh, and by the application of galvanism its growth was arrested. For nearly five years it remained stationary, causing little inconvenience; and then again began to enlarge, in consequence, he believes, of a blow. By firm pressure the nœvus could be nearly emptied, and when the pressure was removed it slowly rose like a sponge.

On Nov. 15th the current of a twenty-cell battery was passed through the part on the forehead, by needles introduced at different points, and the following day that part was found firmly coagulated. The needles were applied three times afterwards, at intervals of about a week, to the cheek and eyelids, and considerable coagula formed. On Dec. 16th the forehead part of the nœvus was much reduced in size; but as some of the punctures in the cheek were suppurating, he wished to go home for a time until they healed.

On Nov. 7th I had the following operations:—

Lithotomy in a boy of three years, who had had symptoms of stone for eighteen months. His growth seemed to have been arrested, his appearance being that of a child of eighteen months. A uric-acid stone, the size of a large filbert, was extracted. The boy went home on Dec. 2nd.

Necrosis of tibia in a girl of thirteen. A large superficial sequestrum, consisting of fully half of the subcutaneous surface, was removed. The patient rapidly recovered, and was discharged with the wound nearly healed on Dec. 2nd.

Sinuses round shoulder-joint in a man of thirty. About a year ago the left humerus was fractured at the surgical neck by a large piece of iron falling upon it, and he was an inmate of the Ingham Infirmary, South Shields, for about three months. The sinuses had openings behind and in front of the deltoid insertion. The openings were enlarged sufficiently to admit the finger, and the sinuses were found to pass quite round under the origin of the deltoid. No exposed bone was detected there, but the sinus in front was found to diverge, and under the pectoral muscles a fragment of bone, smaller than a pea, was found and extracted. Under treatment by rest, the arm being bandaged to the side and motion of the joint prevented, the progress to recovery was almost uninterrupted, and on Nov. 30th the patient left the hospital with the sinuses healed and free movements of the joint.

In conclusion, I wish to express my great obligations to my house-surgeon and dresser, Messrs. J. D. Dixon and R. Knox Tait, for their unremitting attention to the cases, and the careful and complete notes from which I have drawn up the report.

A SKETCH OF THE RECENT EPIDEMIC OF TYPHOID FEVER IN PARIS.

BY DR. BOURDON,

MÉDECIN DE L'HÔPITAL DE LA CHARITÉ, MEMBRE DE L'ACADÉMIE DE MÉDECINE.

I DESIRE to place before the readers of THE LANCET a brief account of the epidemic of typhoid fever with which Paris is at the present time affected. This disease, as is well known, is endemic in our capital, and an exacerbation takes place every year during the summer and autumn. This year, however, the disease has spread considerably, and has attained the dimensions of an epidemic; for, in the second quarter of the year, the total number of typhoid patients in the hospitals of Paris amounted only to 169, with a mortality of 20 per cent., whilst in the third quarter the number of those affected rose to 714—that is to say, was more than quadrupled, and the mortality reached the enormous proportion of 39 per cent.

If we investigate the atmospheric conditions, which might be regarded as constituting the causes of this epidemic, it will be found that in the months antecedent to the outbreak the rainfall was below the average proper to this period of the year—that there had been, in fact, a great drought. The temperature rose as usual, and remained moderate for some time. On the 9th of June, however, it suddenly increased, and continued excessively high till the 17th August. On the 18th of August it fell considerably, and the rains began. In September the drought had passed away; 69 millimetres (2.76 inches) of rain fell.

The exacerbation of the disease distinctly coincided with the dryness and heat, and we may notice that the paroxysm is marked much more by the excess of the mortality than by the number of patients. It diminished with the cessation of the heat and dryness. The most severe cases occurred in August. The number of cases continued to augment subsequently to this period, but the relative mortality underwent a sudden reduction.

Etiology—The first question, then, is—Are we to regard these exceptional atmospheric conditions as the cause of the epidemic. No doubt can be entertained that the lowering of the level of water in the subsoil exposed a whole series of putrid foci, and that the excessively high temperature was well adapted to induce fermentation, and at the same