"Qualitative Analysis of a Renal Calculus Extracted from the Living Subject by Mr. Keetley.—The weight of the calculus was 3.27 grammes; its shape was irregular; its surface tuberculated. The substance was very hard. On section it was found to contain many small cavities, with crystalline trabeculae. The saw-meal only was examined. When heated it blackened, and the residue effervesced in acids, indicating the presence of oxalate of lime. Excess of ammonia precipitated masses of phosphate of calcium. In the filtrate of this oxalate restored the natural oxalate by precipitating the calcium again. It contained neither uric acid nor urate. It contained an albuminous substance insoluble in strong nitric acid, becoming orange with ammonia (casts?) The phosphoric acid was isolated by ammonium molybdate. The calcium was isolated as molybdate, and by fusion of this with soda, as carbonate. Magnesia was present, but its proportion was not determined. Oxalic acid was further proved by permanganic acid. The calculus is therefore mainly a crystalline phosphate of calcium calculus, with some oxalate of calcium, some magnesium phosphate, and albuminous matter. There is also a small amount of soluble matter in it, but it gives no urinous smell on heat being applied. This calculus is deposited from subacid, not from alkaline, urine, and is the result of a digestive trouble, in consequence of which crystals of phosphate and oxalate of calcium are deposited in kidney tubules, pelvis, or bladder. It is rare in man; occurs sometimes in pigs, as I have found myself.

"January 12th, 1890.

"J. L. W. THUDICHUM."

REMARKS.—The calculi removed from Mr. R. W. N. are, so far as I know, the largest number recorded as having been removed from one kidney during life. In all probability, the large rough stone had acted as a ball valve to prevent the other calculi forming behind it from passing into the ureter. The resistance the patient's constitution showed to a lifetime of suffering and kidney irritation is remarkable.

The large stone in question weighs 159 grains. Three others weigh together 91 grains, three more 64 grains, four more 59 grains, and so on; the remainder diminish in weight steadily until the number of sixty are counted. Beyond that the remaining calculi, though as distinctly formed as the others, weigh less than a grain each. Only fifty-five of these were preserved, but thirty-five more were originally counted by the nurse. The total weigh 1 ounce and 18 grains, exclusive of the very small calculi, *débris*, and "sand" not preserved.

In the other two cases the surfaces, at least of the calculi, were phosphatic, and they were associated with more or less pyonephrosis. Why was the pus so intensely offensive in one and not in the other? Why was the kidney dilated in one and thickened in the other?

Stones rolling loose in the kidney, even if smooth, seem to cause more pain than rough impacted stones. The excessive secretion of urine (90 to 100 ounces daily) in Case II was perhaps caused by the calculi acting as a mechanical diuretic.

The oxygen inhaled by Mr. R. W. N. may or may not have done good, but its administration was very easy. An iron-tube bottle of the concentrated gas was fitted with a rather long india-rubber tube of large calibre, and the tap partially turned until sufficient gas began to come through. The patient simply put his mouth to the rubber tube while inhaling, and compressed the tube to prevent waste. After a few minutes' inhalation, the tap was turned off until the next *séance*. Both the patient and myself believe it did good, and I recommend its trial in cases in which a patient, after operation, seems to have been depressed by either shock, hæmorrhage, or anæsthetic. In renal cases it may also help the lungs to assist the kidneys.

Iodoform gauze packing seems to be as harmless as reliable in the kidney as elsewhere. It need not be left more than a few hours in most cases. It is not thoroughly antiseptic or even aseptic unless moistened in a germicide solution. It should be dipped in sublimate lotion, for Mosetig-Moorhof says that carbolic and iodoform together are dangerous in any kind of operation.

All my patients were kept between blankets, and great pains taken to preserve external warmth by hot-water bottles, etc., during as well as after operation.

I am satisfied that a kidney can be palpated and searched with a needle very well under cocaine, and if I could have been certain of the diagnosis, I could have removed the calculus in Case IV under cocaine. It would then have been necessary to have injected a little into the kidney itself; but one does not know how

far one may have to go in kidney operations, and a nephrectomy under cocaine would be trying.

Was the cutaneous pigmentation present in Case IV due to pressure on or irritation of the suprarenal capsule? The patient was unfortunately not sufficiently convalescent to be shown. The other patients attended.

The crushed kidney partially removed occurred, it will have been noticed, in a case of (possibly) recurrent hæmorrhage. Many cases of crushed kidney recover without interference. I was therefore in no hurry to meddle in the case here related. But a large proportion die; half the cases collected by Edler, of Metz,² were fatal. There was danger of hydronephrosis as well as of death, and there were also severe chest injuries (three broken ribs and dulness at left base) in my case.

I found a difficulty in scooping out the blood clot with my fingers; it ought to be done rapidly for obvious reasons, and I wished I had provided myself with a dessert spoon.

Lastly, I am sincerely thankful that in none of the calculus cases, not even in Case I, whose convalescence was very tedious, was I tempted to perform nephrectomy instead of nephrotomy. The crushed kidney case may, of course, be regarded as one of partial nephrectomy.

NOTE ON POISONING BY MUSSELS.

By SIR CHARLES A. CAMERON, M.D.

ON June 30th Mrs. O'Connor, her five young children, and her maidservant, residing at Seapoint, County of Dublin, partook of a meal of stewed mussels. In about twenty minutes after the ingestion of the mussels some of the children stated that they felt a prickly ("pins and needles") pain in their hands. Graver symptoms rapidly supervened, and in less than an hour one of the children died, the mother and three other children succumbing two hours after eating the mussels. The chief symptoms were: Vomiting, dyspnoea, swelling of the face, want of co-ordination in movement, spasms, principally in the arms. The patients appear to have died asphyxiated, their faces being intensely livid. One of the children and the maid—the latter had eaten but few of the mussels—recovered. Medical assistance came rather late and was not of much use.

The mussels had been procured from a small sheet of water to which the sea had access, but which received fresh water and some sewage. Examinations of the water at low and high tides showed that its saltness was twice as great when the tide was in. This land drainage would necessarily, from local conditions, be impure. It was deemed necessary for judicial purposes that the cooked mussels and the matters vomited by the patients should be examined for ordinary poisons. This was done with negative results. The uncooked mussels compared with mussels of the same size from the open sea appeared to have much larger livers, and their shells were very brittle. An attempt to extract an alkaloid was made. The generic tests applied clearly proved the existence of a leucomaine, which, indeed, was obtained in crystals, visible under the microscope, and corresponding to those described by Brieger as existing in the poisonous mussels which he examined. The quantity of material available did not, however, yield a sufficient quantity of the leucomaine for a thorough examination. I am procuring a supply of mussels from the pond in which the mussels were found, and hope to be able to extract from them a substantial quantity of the leucomaine, which will probably be found identical with Brieger's mytilotoxine ($C_6H_5NO_2$). The Seapoint case is another instance of poisonous mussels being procured from foul or stagnant water. In this case the opinion of M. Dutertre, that the liver of poisonous mussels is the seat of disease and the generator of the poisonous leucomaine, seems confirmed, but I cannot agree with the French observer that the disease is never the result of the poisonous nature of the food of the mussel. I have read all, or nearly all, the cases of mussel poisoning on record, and I gather from such details as are given with respect to the places in which the mussels were found that they were in contact with sewage or stagnant water.

² *Arch. für klin. Chirurg.*, 1887, Bd. 84, Heft iv; and *Annals of Surgery*, vol. vi, p. 440.

THE amount available under the will of the late Mr. Handel Cossham, M.P., for the building of the Kingswood Hospital will be nearly £50,000.