

purpose of crushing an oxalate of lime calculus, the character of which is generally recognised by its sharp ringing sound. The fragments are always sharp and irritating to the bladder, and it not uncommonly happens that the lithotrite fails to act on the great mass of the stone.

Most calculi are composed of uric acid. We have a collection of above 200, and of these there are of uric acid alone, 30; of urate of ammonia, 13; of calculi composed of two layers, uric acid nucleus, 16; urate of ammonia nucleus, 25; of calculi composed of three layers, uric acid nucleus, 7; urate of ammonia, 18: total, 111. But this number would be much higher were it not that very many uric acid and urate of ammonia calculi have been thrown away as too small and too common for preservation. Next in frequency comes the oxalate of lime calculus, amounting to 40; of the fusible calculus, 19; phosphate of lime, 11; cystic oxide, 2. The other specimens are composed of carbonate of lime, or are concretions formed upon foreign bodies.

ON THE

ACTION OF TINCTURE OF PERCHLORIDE OF IRON IN THE CURE OF RENAL AND URINARY AFFECTIONS.

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THERE are few remedies more frequently prescribed in the treatment of renal and urinary affections than is the tincture of perchloride of iron, formerly called muriated tincture of iron. The value of that remedy in a variety of such cases is undoubted, as in the albuminuria of Bright's disease, in hæmorrhage from the kidney, bladder, or urethra, in spasmodic stricture, &c.

The tincture of the perchloride of iron consists of two atoms of iron in combination with three of chlorine, dissolved in water to which rectified spirit has been added; and it possesses the properties of an astringent, tonic, and styptic, coagulating blood or albumen with which it is brought into contact, and constringing the vessels and tissues to which it is applied.

Now, this astringent property is just that which a remedy ought to possess to be useful in the cases above referred to, and by it, it is usually supposed, it exerts its beneficial action; and certainly nothing would appear to be more plausible and more natural than this explanation.

Having, after the administration of this remedy, repeatedly tested the urine for the purpose of detecting in it the presence of iron, and having failed to discover the faintest trace of the metal, I was led to doubt the correctness of this view, and was induced to institute some experiments, in order to put the matter to the proof.

To a patient, T. L—, labouring under an habitual urinary discharge, I administered for the period of more than a week a drachm of the tincture thrice daily; but, although I tested the urine on several occasions, in no instance could I detect the smallest trace of iron, notwithstanding that a pint of the urine was evaporated to a small bulk before being examined.

To a patient now in the Royal Free Hospital, Charles S—, who is suffering from an extravasation of blood, three drachms of the tincture were administered on two consecutive days. The whole of the urine passed in the twenty-four hours of each day was collected, a pint of each sample evaporated to a small bulk, and tested as before, but with a similar negative result.

Lastly, I myself took in the course of a day three drachms of the tincture; the urine passed in the twenty-four hours being collected and analyzed, not only on the day on which the medicine was taken, but on the preceding and succeeding days. Still no iron was found.

I could enumerate several other instances in which iron had been taken and the urine analyzed without even traces of the metal being subsequently discovered. The examples, however, I have quoted are sufficient to show that the tincture of perchloride of iron does not produce its beneficial effects, as generally supposed, in restraining the amount of albumen or of blood discharged from the kidney or other portion of the genito-urinary mucous track by coming in contact with the seat of the lesion and by its action as an astringent.

How, then, does this remedy act? That much of the iron

contained in the sesquichloride does not find its way into the circulation at all, but escapes from the system with the undigested portions of the food, is certain; the black discoloration of the fæces under the use of this tincture, and indeed, I believe, under all the preparations of iron, is well known, the colour being due to a combination of the iron with a portion of the sulphur of the food—sulphuret of iron being thus formed. It might therefore be very plausibly presumed that while the greater part of the iron is thus thrown off by the bowels without having been absorbed at all, the hydrochloric acid, being set free, enters the circulation, is eliminated by the kidneys, and so comes in contact with the seat of lesion; and that it is to the acid, and not to the iron, that the benefit is to be attributed. But if this view be correct, it is capable of being substantiated by experiment; and with this object I administered to two persons drachm doses, repeated thrice daily, of the perchloride; the urine of the twenty-four hours being collected and analyzed before, during, and after the administration of the ferruginous preparation. The results will be seen in the following tables:—

C. S—.

	Nov. 26th. Before.	27th. Before.	28th. During.	29th. During.
Quantity ...	62½ oz.	70½ oz.	49 oz.	46 oz.
Acidity...	30.35	30.18	33 gr.	30.14
Chlorine ...	115.0	137.0	90.0	140.0

A. H—.

	Nov. 17th. Before.	18th. During.	19th. After.	20th. After.
Quantity ...	56 oz.	57 oz.	33 oz.	53 oz.
Reaction {	Faintly alkaline.	Faintly alkaline.	Faintly alkaline.	Faintly alkaline.
Chlorine ...	95.0	84.57	76.0	44.98

The above figures show, 1st, that there was no increase in the acidity of the urine consequent upon taking the remedy; 2nd, that there was no increase of chlorine, and that therefore the hydrochloric acid of the perchloride was not eliminated by the kidneys either in the free or combined state: thus proving that the second view mentioned of the action of the remedy is also entirely unfounded.

These results are not a little remarkable; and we have, therefore, still to inquire, in what way does this medicine act in the cure of disease? Its effects are too rapid to allow it to be supposed that its operation is due to its influence in improving the condition of the blood by its action on the red corpuscles. We appear, therefore, driven to the conclusion that the perchloride of iron acts by its stimulating influence on the nervous system.

These observations are interesting, not alone as concerns this one preparation of iron; they also probably apply more or less to most of the other medicinal preparations of that metal, since it is at least certain that by far the greater part of the iron contained in them is not absorbed but escapes from the system by the bowels like that of the perchloride.

The particulars herein recorded are suggestive of further experiments calculated to throw additional light upon the subject, and which hereafter I may have the opportunity of instituting.

Wimpole-street, Dec. 1864.

REMARKABLE CASE OF PISTOL-WOUND OF HAND.

By JAMES SAVAGE, M.R.C.S., Undergrad. Lond.

E. G—, aged twelve years, was brought to my surgery on the morning of the 6th of August, about seven o'clock, by his mother, who told me that he had been frightening birds from the corn, and that with a pistol which he used for that purpose he had blown off part of his hand. The charge consisted of powder and paper. Upon examination I found the index finger and head of the metacarpal bone of the left hand completely smashed, with the muscles and skin a good deal torn, but no further injury to surrounding parts. He had had his breakfast, and soon after entering my house he vomited it up. I inquired if he had good health, and was told "yes," but that occasionally he was troubled with worms. I examined his heart, and finding its action regular and tolerably strong, at once gave him chloroform, and, having pared off the jagged parts, I cut across the metacarpal bone with the forceps about its centre. There was no bleeding, and so no ligature was used.