

was deranged, and the patients anæmic; the third, though married eighteen months, had had no children, and, after passing pus in her stools, she recovered.

Now, it seems to me that the cases I have previously related are explanatory of those of peritonitis. Again, there is a form of peritonitis to which women are more subject than men, in which bridles of lymph are so attached as to bind the intestine, and produce fatal incarceration. Why should such bridles be more frequent in the vicinity of the ovaria? I will answer this question, as I found it in one of the last impressions of the *London Medical Gazette*. An eminent pathologist, Dr. Renaud, of Manchester, relates the death of a girl, twenty-one years of age, from two bridles of lymph, which produced an impenetrable stricture of the ileum, and adds the following reflections:—

"My own experience in pathological anatomy, and a perusal of the cases recorded by others, justifies the conclusion that peritonitis in females arises in many instances out of a chronic form of congestive irritation, to which the generative apparatus within the abdomen is liable. That this long-continued irritation, as manifested directly by pain and throbbing in the region of the ovaries and uterus, and indirectly by lumbar irritation, dysmenorrhœa, crural pains, &c., does frequently advance to local inflammatory action, is sufficiently evident from the bands of lymph that are so frequently seen matting the ovaries, broad ligaments, and oviducts together. If, therefore, folds of bowel or portions of omentum are in contiguous relationship with parts influenced by these morbid actions, it is not contrary to rational pathology to infer that they will partake in a limited degree of the same actions; and a bond of union being thus morbidly constituted, it only requires time and the peristaltic action of the bowels to elongate the lymph into a band, which, under accidental circumstances, may prove an incarcerating medium."

Rokitansky is likewise of opinion that internal constrictions of the intestines are much more frequent in females than in males; a result which, indeed, might have been anticipated, on account of the great changes in function, structure, and position, to which the abdominal viscera are subject, by menstruation, pregnancy, and from uterine and ovarian tumours; and this esteemed author also reports that—

"In two instances with which I am familiar, the pressure of the prolapsed ovary, loaded with purulent fluid, produced in each case a fatal form of *ileus*. In one of these the tumour filled the rectum; neither bougie nor injection could be conveyed beyond it, and such was its apparent solidity, that I did not for a moment contemplate puncturing. But the deception was fatal to the patient. The second case, very similar in all respects to the first, occurred in the practice of a surgeon in the country, who sent me its history, and the morbid parts for examination."

The pith of the present communication can be summed up in a few words:

I. It seems urgent on us carefully to bear in mind the frequency of inflammatory products in or about the ovaries, the frequency of intense suffering in the ovarian regions at the menstrual periods, and the great probability of both facts standing one to the other in the relation of cause to effect.

II. It seems incumbent on us to bear in mind the greater liability of young women to idiopathic peritonitis, and incarceration from bridles of inflammatory lymph, at the very age when I have shown that even the sub-acute inflammation of the ovaries is most frequent, and therefore the imperative necessity of watching over the first stages of a complaint, which, being too often left to nature, is as frequently productive of serious mischief.

III. Lastly, that sub-acute ovaritis can be distinguished from uterine affections as well as from lumbo-abdominal neuralgia, but that at all events no harm can ensue from the treatment recommended.

York-street, Portman-square, 1852.

ON THE TRIPLE OR AMMONIO-MAGNESIAN PHOSPHATE OCCURRING IN THE URINE AND OTHER ANIMAL LIQUIDS.

By J. W. GRIFFITH, M.D., M.R.C.P.

Two forms of the so-called triple or ammonio-magnesian phosphate have long been considered to exist. One of these is composed of minute microscopic stellæ, mostly with six foliaceous rays, and is readily obtained by adding excess of solution of ammonia to urine; this is known as the "bibasic" phosphate; the other exists in the form of prisms, mostly

trilateral, frequently with one of the angles truncated, and with single oblique terminal facets. This is well known as being almost constantly found in putrid urine; and not infrequently, in a somewhat modified form, in neutral or slightly acid urine; and is designated the neutral phosphate of ammonia and magnesia. Both these forms, with their most common modifications, are figured in my "Practical Manual &c.," 1843, and in most other works on the subject; but their relative compositions, as far as I am aware, have never been accurately determined, nor the connexion of their composition with their form been ascertained. A knowledge of this deficiency induced me, in 1845, to prepare artificially, and analyze, the tribasic or stellate form, which can be readily obtained, and in a tolerable state of purity, from healthy urine. The analysis was published in the second part of my "Manual," 1846, p. 58, and shows that this phosphate agrees with that prepared artificially and analyzed by Professor Graham.* The composition of the salt, as artificially prepared from a mixture of phosphate of soda, muriate of ammonia, sulphate of magnesia, and solution of ammonia, and as precipitated from urine by the addition of ammonia, after the separation of the lime, is given below.

	Theory.	Graham.	Griffith.
P O ₅ .	71.4 . 29.09	45.85	28.82
2 Mg O .	40.0 . 16.30		16.26
N H ₃ .	17.0 . 6.93	6.98	6.58
H O .	117.0 . 47.68	47.17	48.34
	245.4	100.00	100.00

Hence there can be no doubt regarding the composition of the "basic" salt.

The difficulty in ascertaining the constitution of the "neutral" salt has existed in the constancy with which it is met with in admixture with either the basic salt or other foreign substances. I lately, however, discovered how it might be prepared, in an unmixed state, either from an artificial saline mixture or healthy urine. If healthy urine be diluted with water, and some dilute solution of ammonia be stirred into it in small quantities at a time, taking care to apply test-paper before each further addition, so as to prevent its acid reaction from being completely destroyed, the "neutral" triple phosphate will be formed. The same occurs when dilute solution of ammonia is added to a dilute mixture of phosphate of ammonia and sulphate of magnesia, with the same precautions. The precipitates in both cases consist of prisms, exhibiting all the forms of the "neutral" phosphate, sometimes grouped, at others isolated, and the forms are identical in both cases. After washing the crystals with cold water, they were dried in the air, and analyzed in the usual way. I then found that the composition of this "neutral" salt was identical with that of the bibasic. Thus:—

	Theory.	Experiment.		
		I.	II.	III.
P O ₅ .	71.4 . 29.09	45.76	45.73	29.26
2 Mg O .	40.0 . 16.30			16.46
N H ₃ .	17.0 . 6.93	54.24	54.26	7.32
H O .	117.0 . 47.68			
	245.4	100.00	100.00	100.00

It will naturally be asked, how it is that the form of the crystals is so different, when the composition is the same. This is readily explained, when we recollect that the ammonio-phosphate of magnesia is more insoluble in solution of ammonia than in water; and we never find that the stellate, feathery crystals are formed, except the solution be decidedly ammoniacal. The stellate, feathery crystals therefore result from a more hurried formation, the influence of which in altering the forms of crystals is too well known to require comment. During the spontaneous decomposition of urine, the ammonia is formed gradually, so that we have here the phenomena of the precipitation of the phosphate before sufficient ammonia is formed to render the urine ammoniacal.

The "penniform" crystals of the ammonio-phosphate of magnesia are merely a modified form of the stellate; I have frequently obtained them artificially by adding excess of ammonia to a dilute solution of phosphate of ammonia and sulphate of magnesia; and they are formed in fluids where the quantity of phosphate of magnesia is small, and the amount of ammonia relatively considerable, the solution being dilute. Where the above precautions are not attended to in preparing the respective forms, the two will be found

* Transactions of the Royal Society of London, 1837, p. 68.

mixed. It may be well to remark here, that the stellate, feathery crystals are not soluble in an acid solution from which the prismatic form has subsided, although they only originate in an ammoniacal solution, for the reason above stated.

St. John's-square, 1852.

A Mirror OF THE PRACTICE OF MEDICINE AND SURGERY IN THE HOSPITALS OF LONDON.

Nulla est alia pro certo noscendi via, nisi quam plurimas et morborum, et dissectionum historias, tum aliorum proprias, collectas habere et inter se comparare.—MORGAGNI. *De Sed. et Caus. Morb.*, lib. 14. Proœmium.

CASES OF UNUNITED FRACTURE,

TREATED BY THE INTRODUCTION OF IVORY PEGS INTO THE
FRAGMENTS.

GUY'S HOSPITAL	{ Ununited Fracture of the Tibia. } MR. HILTON.
	{ Treatment with the Ivory Pegs . . }
KING'S COLLEGE	{ Ununited Fracture of the Tibia and } MR. BOWMAN.
HOSPITAL.	{ Fibula. Use of the Ivory Pegs . . }
KING'S COLLEGE	{ Ununited Fracture of the Ulna. Use } MR. FERGUSSON.
HOSPITAL	{ of the Ivory Pegs . . }
CITY OF DUBLIN	{ Ununited Fracture of both Bones of } DR. GEOGHEGAN.
HOSPITAL	{ the Fore-arm. Use of the Ivory Pegs. }

GUY'S HOSPITAL.

Ununited Fracture of the Tibia in an Old Subject; Union promoted by the introduction of Ivory Pegs, according to Dieffenbach's Method.

(Under the care of Mr. HILTON.)

In the second volume of *THE LANCET* for 1851, p. 344, we recorded a case of ununited fracture, treated at St. Bartholomew's Hospital, by Mr. Stanley, in which union was obtained after the introduction of ivory pegs into the extremities of the fragments. We are glad to say that the same happy results have lately been obtained at Guy's Hospital with a patient similarly affected, and whose fracture is now consolidated. From the notes of Mr. Charles Harris, Mr. Hilton's dresser, we gather the following particulars:—

George P—, aged sixty-five years, residing at Brixton, and by occupation a stonecutter, was admitted into Philip ward, Sept. 25, 1850, under the care of Mr. Hilton. The patient is a short, healthy-looking, cheerful man, and has generally been sound and well. On the day of his admission he missed his footing whilst going up stairs, fell down, and was incapacitated from walking. When he was brought to the hospital, it was found that the tibia and fibula on the left side were fractured about midway between their extremities. The upper end of the fractured tibia was much displaced forwards, overlaying the lower fragment, and projecting so as to endanger the skin. Every possible attempt was made to replace the broken portions of bone in their proper relation, but only partially was success herein obtained. The extremity of the upper fragment was still riding, and remained so; this want of adjustment appearing to depend, not on muscular action, but on some peculiarity in the outline of the fracture, which interfered with close adaptation.

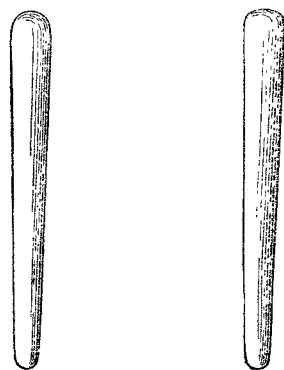
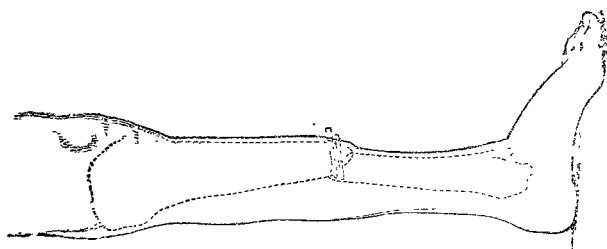
The limb was placed in splints and swung in the usual way; but when it was examined, nine weeks afterwards, no bony union had taken place. The leg was, therefore, carefully put up again, and examined after the lapse of seven more weeks, when no improvement was found to have occurred. Mr. Hilton now ordered the patient to go into the country for the improvement of his health, with his leg well secured by splints.

The man stayed in the country for four months, and when he returned to Guy's Hospital, the fracture was found in the same condition as when he left the institution. The recumbent position was now tried again, the retentive apparatus being applied with great nicety to the leg. The patient now remained fourteen weeks in bed; he was allowed during that period highly nutritious food, and stimulants in the form of wine and porter, with an abundance of vegetables. But no improvement took place, and the man left the hospital without the fractured bones having consolidated.

On the 11th of December, 1851, Mr. Hilton again admitted

him, and finding the bones still ununited, resolved upon trying the various means which have been recommended for promoting union. Mr. Hilton began by introducing two steel needles between the fractured extremities of the bones to excite an inflammatory action. The needles were kept in their position for several days, and gave rise to very painful swelling and inflammation, from the wound down to the ankle. This procedure did not, however, lead to any consolidation.

On the 1st of February, 1852, seven weeks after the patient's third admission, Mr. Hilton determined on giving a trial to Dieffenbach's plan of exciting union in fractured bones; which, as is well known, consists in driving polished ivory pegs through the extremities of the fragments. This was accomplished in the following manner:—Mr. Hilton made two apertures with a lancet in the skin, over the upper or projecting portion of the fracture, side by side, and about three-quarters of an inch apart. A small gouge was then passed somewhat obliquely through both ends of the fractured bone and the intermediate soft structure; its passage through the outer shell and cancellated structure of the bone being distinctly recognised by their relative density. The two pegs, each an inch and a half long, were then passed into the holes made by the gouge and lancet, and driven home by the sharp blow of a hammer, so that the top or head of each peg, was rather below the level of the surrounding skin.



A good deal of swelling and inflammation soon supervened about the seat of the operation. About four weeks from the introduction of the pegs, the patient, after, as he states, making some little exertion to move himself in bed, lost about three or four ounces of venous blood by the side of one of the pegs. This peg Mr. Hilton endeavoured to remove with the forceps, but only succeeded in lifting it to about half an inch. The whole limb was now raised in bed, and cold lotions applied over the fracture. No more bleeding occurred, and in about a fortnight the peg came out spontaneously, or was pushed out by granulations growing in its track. Three weeks afterwards Mr. Hilton pulled out the second peg.

On examining the leg there was no doubt that bony union was proceeding, but there was still some little yielding at the fracture, which was rendered evident on trying with some force to bend the bone at the seat of the fracture. The limb was then laid on a splint, and supported in position by side-splints, and a bandage so arranged as to leave the holes previously occupied by the pegs exposed. These apertures were covered by a bread poultice.

On June 7, four months after the introduction of the pegs, the splints were taken off, and consolidation found nearly complete. The patient left the hospital on the following day, with a bandage and pasteboard upon the leg, and was desired to continue to move about with his crutches for a week or two, and then to use his leg gradually, and with care.

July 8, 1852, five months after the operation, and one after leaving the hospital.—The patient can now walk with the aid of a stick; the bones are united, but the leg is weak, the muscles being much wasted from a protracted inaction of twenty-two months.

This is certainly a very favourable result; and this case,