suggest the inquiry whether ungratified lust may not have produced a certain mental obliquity.

It will not be out of place in this connection to call attention to the fact that very similar cases to this are described in the exhaustive treatise on Hermaphroditism contributed by Professor Simpson to the Cyclopædia of Anatomy and Physiology, and I doubt not that it will be of interest to reproduce here his "classification of hermaphroditic malformations."

Hermaphroditism.	Spurious.	In the female.	{ From excessive development of the clitoris, etc. From prolapsus of the uterus.
		In the male.	{ From extroversion of the urinary bladder. From adhesion of the penis to the scrotum. From hypospadiac fissure of the urethra, etc.
	True.	Lateral.	{ Testis on the right and ovary on the left side. Testis on the left and ovary on the right side.
		Transverse.	{ External sexual organs female, internal male. External sexual organs male, internal female.
		Vertical or double.	{ Ovaries and an imperfect uterus, with male vesiculæ seminales and rudiments of vasa deferentia. Testicles, vasa deferentia, and vesiculæ seminales, with an imperfect female uterus and its appendages. Ovaries and testicles coexisting on one or both sides, etc.

Unquestionably, then, this is a case of "spurious hermaphroditism in the male, from hypospadiac fissure of the urethra," and I think that I am justified also in regarding the blind passage between the urethra and rectum as a rudimentary vagina, indicating an arrest of development of the male *external* genitals and a commencement of the formation of those of the female.

A CASE OF VAGINAL LITHOTOMY.¹

BY ALFRED HOSMER, M. D. HARV., WATERTOWN.

THERE is nothing in the nature of the disease of the patient whose case is herewith presented which entitles my communication to the attention of this society. For calculus of the urinary bladder is not an affection peculiar to women; on the contrary, according to the figures given by Dr. Alfred McClintock, in an article to which reference may be made hereafter, there is on the part of the male sex a liability to be affected with stone, the relative excess of which may be represented by the ratio of eighteen to one. But my paper may claim a consideration at this time for the simple reason that the treatment of the affection in question by the operation of vaginal lithotomy is applicable only to the female.

The specimen² which I now exhibit was removed from an octogenarian in August last, and may be described as follows: In shape it is a flattened ellipsoid; in color, dirty white or gray. Its surface is coarsely

¹ Read at the meeting of the Obstetrical Society of Boston, December 9, 1876.

² No. 4821 in the Warren Museum.

crystalline, with varying degrees of roughness and some marked depressions. Its three diameters are, in inches, respectively, 1.9, 1.3, and 1.14; in millimetres, 48, 33, and 29.

Its weight immediately after removal was 520 grains, or 33.696 grammes. Five days later it weighed but 396.84 grains, or 25.715 grammes, losing in that period of time 123.16 grains, or 7.98 grammes, that is, 23.6 per cent. of its original weight.

Upon its external surface it is decidedly friable in its texture. Its appearance upon section presents a reddish-brown, compact nucleus, not small; a middle layer something more than an eighth of an inch in thickness, of a light yellowish-brown hue, with some mottling, and a dense, firm look; and an external layer showing the same color as the exterior of the stone, and with a certain open, loose structure which, under a low magnifying power, acquires a look that is well described by the word coralline. The report of Professor E. S. Wood is as follows:—

“The calculus which you sent me consists of three quite well-defined layers: the nucleus consists of uric acid and urates; the central layer contains chiefly the carbonate and phosphate of calcium; the outer layer consists chiefly of the urate of ammonium and carbonate of calcium, with a little phosphate and oxalate of calcium.”

Thus there is nothing very unusual in the composition of the stone, and in the nature of its nucleus it follows the rule of the majority of calculi.

Hoping to give a better interest to the subjoined clinical report, I have inverted the common order of statement, and given precedence to a description of that which was the essential fact in the case, although the last, chronologically, to become the subject of direct observation.

Mrs. —, a widow, aged eighty. Mother of five children. Now leading a quiet life without particular occupation, and with nothing of especial importance connected with her habits, excepting, perhaps, the inordinate use of condiments. She was born in Charlestown, and has never been long absent from the neighborhood of Boston. She took up her residence in an adjoining town in May, 1874. For several years she has been subject to diarrhoea, especially in the summer months, and during a much longer period an habitual irritability of the bladder, compelling frequent evacuation, has constantly attracted the attention of the female portion of the household. Rheumatic pain is also an old acquaintance. In earlier life she had several illnesses; “different forms of fever,” as she states the case. About three years since she began to suffer from prolapsus uteri, the displacement of the organ eventually attaining an extreme degree. This trouble continued for two years, with occasional rather profuse hæmorrhages during the first twelve

months. For a considerable time there has been much relief in respect of the uterine symptoms, but for two years pruritus of the vulva has been a constant source of excessive annoyance.

In her family history there is nothing that throws any light of explanation upon her present condition, which in its origin we can only trace back to the immeasurable region of the unknown, out of which are constantly emanating morbid processes so great in number and variety.

In the autumn of 1875 the old irritability of the bladder began to increase, and the organ became more intolerant than ever. The urination, in its greater frequency, was also attended and followed by pain, the severity and sharpness of which were steadily augmented. The urine, at first slightly changed to the eye, by degrees acquired the character soon to be described. The general condition, yielding to the depressing and exhausting influence of serious disease, soon became the seat of a slow process of deterioration. Matters had not advanced very far in this direction when aid and comfort were sought at the hands of medical women. Their attendance, failing to give any satisfaction, was not of long duration. What diagnostic idea determined the plan and purpose of their treatment I know not. Their methods caused extreme pain, and, what was worse, excited in the mind of the patient a state of apprehension and terror, and a dread of any instrumental interference that rendered it absolutely impossible to make a proper and thorough examination of the case when it first came under my observation, on June 12, 1876. I then found a woman, somewhat bent and a little below the medium stature; formerly stout, but now considerably emaciated; with a pale, cachectic look, and an expression of countenance significant of long suffering. In brief, she presented all the symptoms and discomforts of an intense chronic cystitis. The urine, horribly foetid, was converted into a semi-solid mass by the large proportion of mucus, pus, and blood which it contained. The bladder was the seat of constant pain, and the frequency of irresistible urination destroyed all chance of rest both by night and day. A violent pruritus, which affected the vulva and vagina, was the source of unceasing torment. The mental condition was one of marked depression.

The suggestion, made at once, that a calculus might be at the bottom of all the trouble was met by the declaration of the former attendants, who asserted most positively that there was no stone in the bladder. This statement produced a conviction the force of which was not at once to be impaired by any suspicions or opinions of mine; and the acquired timidity of the patient forced me for the time being to leave the question an open one. The indication for tonics and astringents was faithfully followed, but, for a very substantial reason, without benefit. Although the patient was at last frequently compelled to lie in the prone position in order to pass urine, yet the flow once com-

menced was never suddenly arrested. Incontinence was noticed in a very slight degree only, and that mostly when the call to pass urine came in bed; then the excretion sometimes escaped in small quantities before intended arrangements could be completed. There often ran from the vagina a copious, watery discharge, without urinous odor, and sometimes fresh blood, independent of any other evacuation.

I repeatedly urged the necessity of injecting and washing out the bladder as the only probable means of arresting the morbid process and giving a chance of recovery. More than once did the patient consent to have this done, only, through the failure of her courage at the critical moment, to postpone the operation until she should feel a little better. August 9th I managed to save her from another breach of promise. A double catheter was introduced just within the cavity of the bladder as gently and carefully as possible, and an injection made of a weak solution of carbolic acid. The result was some improvement in the quality of the urine and permission to repeat the use of the apparatus, which was done August 15th. I then, with the idea of thorough exploration, pushed the instrument as far as possible into the bladder and discovered the calculus, which was supposed to be a large one, because its contact with the beak of the catheter produced such a sense of solid resistance.

Vaginal lithotomy, to be done immediately, was advised, and the advice was accepted. But there were two unfortunate elements in the case: an extreme sensibility of the mucous membrane of the genito-urinary passages, most marked at the orifice of the urethra, which was swollen and red; and a state of mind which produced the greatest aversion to confinement in bed, and an obstinate reluctance to submit to professional discipline. For up to this time the patient, although steadily failing, had every day worn her usual clothing and occupied her accustomed places in the house.

August 23, 1876, the operation was done with the assistance of Drs. Huckins, Nichols, and Driver, the latter taking exclusive charge of the etherization. With the patient in the ordinary position, and the diagnosis verified, a uterine sound, with its concavity towards the vagina, was passed through the urethra into the bladder, and its extremity was used as a guide by which, with a knife, to make an opening into the cavity of that viscus just behind its neck. Starting from this puncture, an incision one inch long was made with the scissors backwards on the median line of the vesico-vaginal septum, the fleshy thickness and vascularity of which were very striking. The free hæmorrhage suggested the division of a vessel of considerable size, but the blood was found not to come from any single point.

An examination of the stone, now made with finger, showing the insufficiency of the opening already described, the incision was prolonged

until it was by estimate one inch and a half long, and thus gave a circumference of three inches. The calculus was seized with the utmost ease by a pair of lithotomy forceps with broad blades, and was thus removed very slowly from the bladder. The process of extraction subjected the whole edge of the artificial aperture to a good deal of visible tension and stretching. A measurement taken afterwards showed the circumference of the forceps blades, with the calculus included, to be four and one quarter inches. The instrument covered the mass so well that it was scarcely possible for the rough surface of the stone to do any injury to the lips of the wound by bruising or laceration. Nine carbolized catgut sutures distributed equally along the length of the wound and firmly tied rendered the bladder water-tight.¹ One curious fact is worth noting, namely, a decided acceleration of the pulse, which in its duration was simultaneous with the extraction of the stone. The stretching of the tissues connected with that step in the operation produced a slight shock or made some kind of an impression to which the system responded in this unmistakable manner.

A soft-rubber catheter was introduced, and the patient was placed in a natural position in bed, in a very satisfactory condition.

The amount of constitutional disturbance that ensued may be inferred from the following figures. On the evenings of the first, third, and seventh days the temperature was respectively 100.4°, 99.8°, and 100°. With these exceptions the thermometer never rose above 99°. The pulse attained its maximum of frequency, 96, on the evening of the second day. On the evening of the fifth day it had fallen to 72, where it remained permanently, with the exception of a rise to 84 on the evening of the seventh day. For some unknown reason the respiration was accelerated to 30, and sometimes more, per minute for several days. It is not worth while to enumerate all the details of a favorable convalescence, but I will allude chiefly to those facts which have an interest from their connection with the operation which had been performed. The slight nausea and vomiting that followed the ether had disappeared in forty-eight hours, and from that time the appetite, always quickened and improved by the use of the muriated tincture of iron, was well maintained. The muscular strength was not essentially impaired. On the evening of the third day the patient moved across the bed without assistance, and expressed a very strong wish to get up into a chair, which she was able and was allowed to do two days afterwards. On the fifty-seventh day, after having been dressed for several mornings, she went downstairs for the first time, and with no inconvenience. A temporary relief from long-standing pain and discomfort immediately followed the operation. On the third day the pain in the bladder and the pruritus vulvæ were entirely gone, although the former returned in a slight degree on

¹ The sutures were never again seen.

the fourth day. The sixth day followed the best night for three years. But the first week terminated with pretty frequent, sharp, short twinges of pain in the bladder. During the second week there was occasionally severe pain in the bladder, with, on one day, decided throbbing and a good deal of soreness. The pruritus returned with all its old fierceness, and again destroyed every chance of rest by day or sleep by night. It continued until about the beginning of the sixth week, when it began to abate, at first very gradually and then quite rapidly, and disappeared not to return up to the present time.

My plan of treatment intended to remove the soft catheter every twelve hours, and to replace it with another one known to be clean and pervious. But the fifth day brought loud complaints of the annoyance produced by the instrument, so that its constant use was suffered to be dispensed with, and the nurse, a handy and intelligent woman, was directed to introduce it at intervals not exceeding two hours in length. This new arrangement, not proving to be any more agreeable and comfortable than the previous one, at the evening visit the patient was directed to urinate in the ordinary manner once in from one to two hours, which she continued to do for two days, when it was evident that more or less urine was escaping into the vagina through the artificial opening.

The extreme sensibility of the parts rendered frequent examinations difficult and unwise, and the unavoidable resistance which it induced on the part of the patient prevented them from being as careful and complete as could be desired. On the fourth day the redness and swelling had entirely disappeared from the orifice of the urethra. On the eighth day the vagina was slightly red. The site of the wound was occupied and covered by a mass of yellowish-white material, one fourth of an inch wide, presenting ragged, irregular edges, and looking as though it could be easily detached. Urine was seen to collect quite rapidly in the vagina. On the thirteenth day this canal was more natural in color. The deposit on the wound had increased somewhat in extent, seemed to be more firmly attached, and was closely surrounded by a bright red elevated edge of swollen mucous membrane.

From this time I did not see the patient again until the forty-eighth day. During my absence she had two severe ill turns, both of short duration,—one of them marked by catarrhal symptoms, and the other by stupor.

Upon my return I found the patient in condition to walk about the room, and able, when sitting up, to retain urine and keep dry for two hours, but certain to suffer from incontinence when lying down. The site of the wound presented a firm, healthy-looking cicatrix, without any fistulous opening that could be discovered, although it was believed that one existed high up in the vagina.

The quality of the urine was in strong contrast with its former appearance. It was slightly turbid, with the least degree of fœtor, and showed a small deposit of uric acid. No pus, blood, or mucus could be recognized by the eye. At the end of the fourth week from the operation it had acquired an acid reaction.

October 28th, on the sixty-seventh day, I satisfied myself that the wound in the vesico-vaginal septum was completely closed.

November 24, 1876, finds the patient in very good general condition, somewhat prone to imprudence, and taking the freedom of the house. She sometimes passes three hours in the day without relieving the bladder. By night urination occurs at shorter intervals, and interrupts the continued sleep that she would otherwise have. At this date the urine has an acid reaction, a density of 1013; shows a trace of albumen, and some pus corpuscles under the microscope. Quite an abundant deposit of uric acid occasionally appears.

To the operation of vaginal lithotomy Dr. J. Collins Warren, in his recent paper, has given an impulse and an interest for which I gladly acknowledge my individual obligations. His contribution attracted me with unusual force, and furnished fresh and definite information upon a subject to which no occasion had ever before directed my serious thought. As he says, the operation presents no intrinsic difficulties. To be sure, the facility with which its successive steps are accomplished must depend upon the dexterity of the surgeon, but no one with the least self-reliance or the slightest appreciation of the simplest surgical procedure need hesitate to attempt it. As to the method, while it seems to me that I should never practice anything but the longitudinal incision, Dr. McClintock suggests some advantages that might accrue from a transverse cut. "In the first place such a wound is more easily sutured; secondly, it is more likely to unite, in consequence of its being parallel with the muscular fibres of the vagina; and thirdly, it is less likely to burst or give way under distention of the vaginal canal."

For the management of the wound after the extraction of the stone two plans are proposed: the one, adopting the practice which is followed in the analogous operation on the male, leaves the wound to take care of itself, — either to unite by adhesion through some fortunate apposition of its free edges, or to be closed partially or completely by the slower process of granulation; the other plan directs the use of sutures, metallic by preference, to be applied at once with the idea of obtaining union by first intention. I adopted the latter for the reason that the only objection urged against this operation is the possibility of establishing a vesico-vaginal fistula.¹ It seems to me that the use of sutures is

¹ Compare this with the difficulty which is so often found in maintaining a free outlet for the contents of the bladder in those cases in which chronic cystitis is treated by incision through the vesico-vaginal septum.

the only means — and a tolerably sure one, too — of averting that misfortune, the existence of which, substituting a most repulsive infirmity for the previous disease, makes a fearful discount from the immediate and complete success of the operation. The only advantage of leaving the wound open is the application of the principle of drainage to the treatment of what may be called, without much violence to the proper use of terms, a suppurating cavity. But the cystitis in the case under consideration is consecutive and not idiopathic; and the extent and degree of it depend partly upon the duration of the disease, and largely upon the proportion in which are united the two elements of irritation, the weight of the calculus and the quality of its external surface, assuming, of course, the perfect mobility of the stone in the bladder. Hence it is not unfair to suppose that the inflammatory process which has been excited and maintained by a foreign body will begin to abate and its products to disappear as soon as the cause is removed. The course of events in my own case certainly justifies that expectation. It is the common result of the removal of foreign matters from other portions of the system. The safety of vaginal lithotomy is so nearly absolute as, when combined with the consideration of its simplicity, to exclude it from the rank of capital operations. The danger it involves is not to life, but, in view of the possibility of leaving a fistula, to the integrity of structure and function in the bladder. Yet so good are the chances of repairing and relieving this condition that the risks of this operation may be put down as nothing when compared with the hopeless, irremediable incontinence which may result from the dilatation of the urethra sufficient to allow the extraction of even a calculus of moderate size through that canal.

In conclusion, when I consider the extreme age and deteriorated condition of my patient, the state of the parts in which the operation was done, well described by one gentleman, who declared that I had nothing to deal with but “a rotten old bladder,” the perhaps unwise stretching to which the tissues were subjected in the process of extracting the stone, and, finally, the complete though somewhat tardy closure of the wound, I think I can safely say that no surgical treatment, so simple in its nature and applicable to disease so important and so serious, carries in itself the promise of more satisfactory results than vaginal lithotomy.

Fifteen months after the operation the patient finds herself in excellent general condition. On account, as is supposed, of its persistent thickening and contraction, the bladder has never been restored to a normal state. Urination becomes a necessity once in two hours or less, and its frequency is quite as annoying and urgent by night as by day.