

Account of the history and dissection of a case of malformation of the urinary bladder, with remarks / [Andrew Melville McWhinnie].

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ACCOUNT OF THE
HISTORY AND DISSECTION OF A CASE OF
MALFORMATION OF THE URINARY
BLADDER,

WITH REMARKS.

BY A. MELVILLE M'WHINNIE, F.R.C.S. &c.

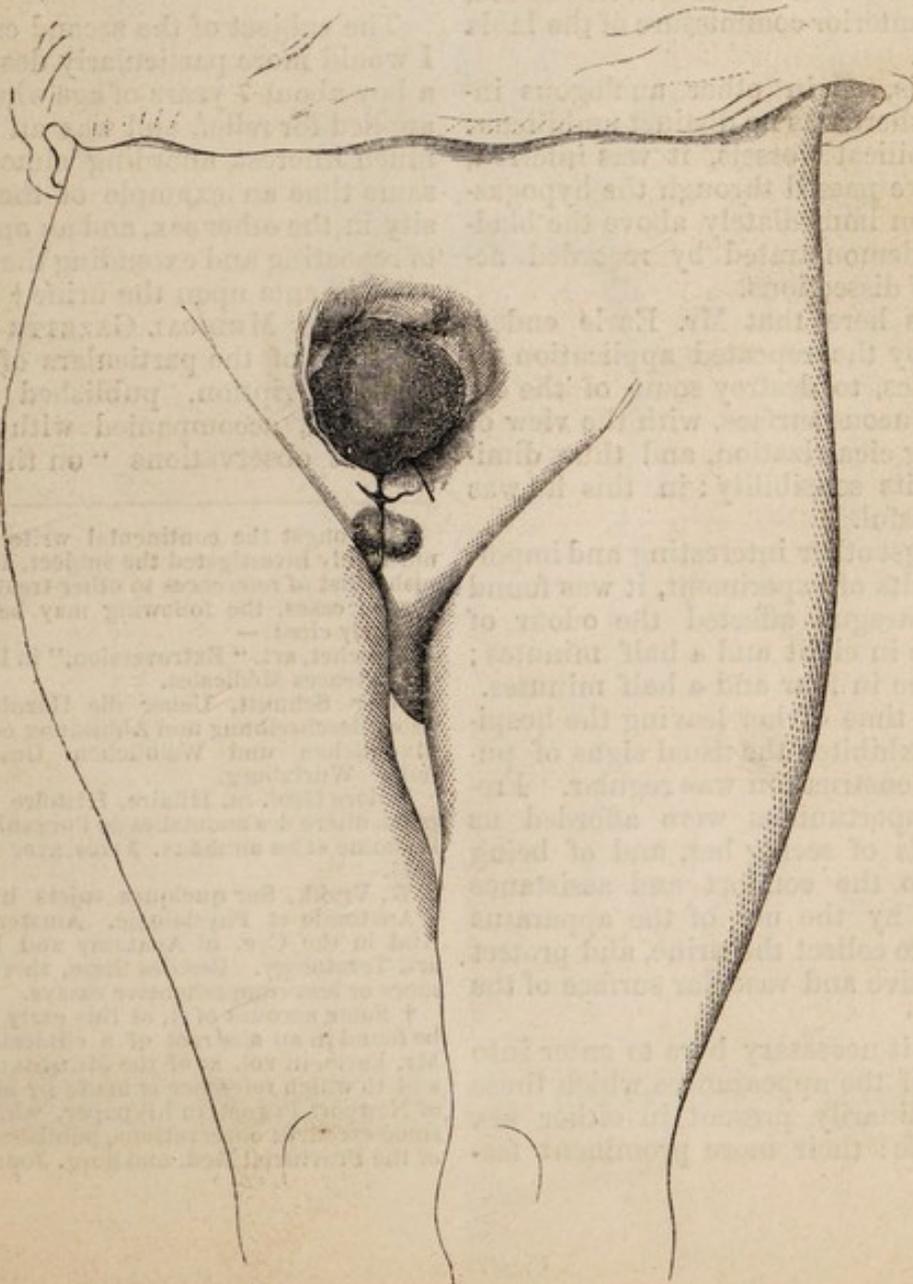
OF all instances in which an arrest of development of parts has taken place during human foetal life, none surpasses in interest or importance that which affects the genito-urinary organs; for, inasmuch as the malformation is in great measure confined to the bladder and urethra, the sufferer from such structural defect may attain mature age—in the great majority of instances sexually incapacitated—a burden to himself, and repulsive to those around.

In my case-book I find notes of two instances, in particular, of the devia-

tion from the natural condition of the urinary bladder, to which the names of Ectopia, Ectrophia, Prolapsus, Inversio and Extroversio Vesicæ, have been given, and which, from their having been for many years under observation, may perhaps be deemed the more deserving of being placed on record: they were both in St. Bartholomew's Hospital, under the care of my friend, the late Mr. Earle, and were, as far as I am informed, not only the first that occurred in that institution, in which any attempt was made to ameliorate permanently their condition, but also those in which some of the earliest experiments were performed to determine the period required for substances introduced into the stomach to be detected in the urine.

Of these cases, the first is that of a girl who, when brought under our notice, was about 13 years of age, and attended as an out-door patient. The annexed Fig. 1 is from a drawing made at the time.

FIG. 1.



Two years afterwards she was admitted into the hospital, "with the view," says Mr. Earle, "of ascertaining if, by the aid of any mechanical contrivance, I could afford her relief from the peculiar inconvenience which she suffered, on account of a congenital malformation of the bladder. After some trials, I was able to provide an instrument by the use of which the patient was placed in a comparatively comfortable condition."

To this case, interesting on account of its comparatively rare occurrence in the female, it is necessary here only to allude: the circumstantial details are minutely and faithfully recorded by Mr. Earle, in a Clinical Lecture, published in Vol. I. of the London Medical and Surgical Journal, and a model of it in wax is preserved in the museum of the hospital.

The drawing exhibits the appearance of the deformity: the protruded mucous surface of the bladder resembled a piece of crimson velvet. The clitoris is bifid, and the anterior commissure of the labia deficient.

In this, as in other analogous instances, there was no distinct umbilicus: the umbilical vessels, it was inferred, must have passed through the hypogastric region immediately above the bladder, as demonstrated by recorded accounts of dissections.

It was here that Mr. Earle endeavoured, by the repeated application of escharotics, to destroy some of the exposed mucous surface, with the view of obtaining cicatrization, and thus diminishing its sensibility: in this he was unsuccessful.

Amongst other interesting and important results of experiment, it was found that asparagus affected the odour of the urine in eight and a half minutes; turpentine in four and a half minutes.

At the time of her leaving the hospital she exhibited the usual signs of puberty; menstruation was regular. Frequent opportunities were afforded us afterwards of seeing her, and of being witness to the comfort and assistance rendered by the use of the apparatus adapted to collect the urine, and protect the sensitive and vascular surface of the tumor.

Nor is it necessary here to enter into a detail of the appearances which these cases ordinarily present in either sex during life: their more prominent fea-

tures are familiar to perhaps most members of the profession, and are described by many pathological writers both at home and abroad.

Dr. Duncan, in his systematic account of these malformations, contained in Vol. I. of the Edinburgh Medical and Surgical Journal, has contributed many particulars respecting them, together with copious references to authorities. Dr. Baillie has given perhaps the most full and accurate account of a dissection, in Vol. I. of the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, with good illustrative plates. Since that time numerous observations have been made and reported: the chief points of difference, however, appertaining not to the condition of the bladder and pelvis, but to that of the external organs of generation, which in both sexes present many varieties in their conformation, and which it is not my object here to enumerate.*

The subject of the second case, which I would more particularly describe, was a boy about 7 years of age when he first applied for relief, and was an object of much interest, affording almost at the same time an example of the monstrosity in the other sex, and an opportunity of repeating and extending the foregoing experiments upon the urine.†

In the MEDICAL GAZETTE for 1845, are some of the particulars of a case of this description, published by Mr. Erichsen, accompanied with some important observations "on the rapidity

* Amongst the continental writers who have most fully investigated the subject, and who furnish a list of references to other treatises and recorded cases, the following may be more particularly cited:—

Breschet, art. "Extroversion," in Dictionnaire des Sciences Médicales.

Peter Schmitt, Ueber die Harnblasenspalte nebst Beschreibung und Abbildung einiger beim Mannlichen und Weiblichen Geschlecheten falle. Wurtzburg.

Isidore Geof. St. Hilaire, Histoire générale et particulière des anomalies de l'organisation chez l'homme et les animaux. 3 vols. avec Atlas. Paris 1825.

W. Vrolik, Sur quelques sujets interessants d'Anatomie et Physiologie. Amsterdam, 1832. And in the Cyc. of Anatomy and Physiology, art. Teratology. Besides these, there are many more or less comprehensive essays.

† Some account of it, at this early period, will be found in an abstract of a clinical lecture, by Mr. Earle, in vol. x. of the MEDICAL GAZETTE, and to which reference is made by Mr. Daniell, of Newport Pagnel, in his paper, which contains some excellent observations, published in vol. ix. of the Provincial Med. and Surg. Journal, p. 451.

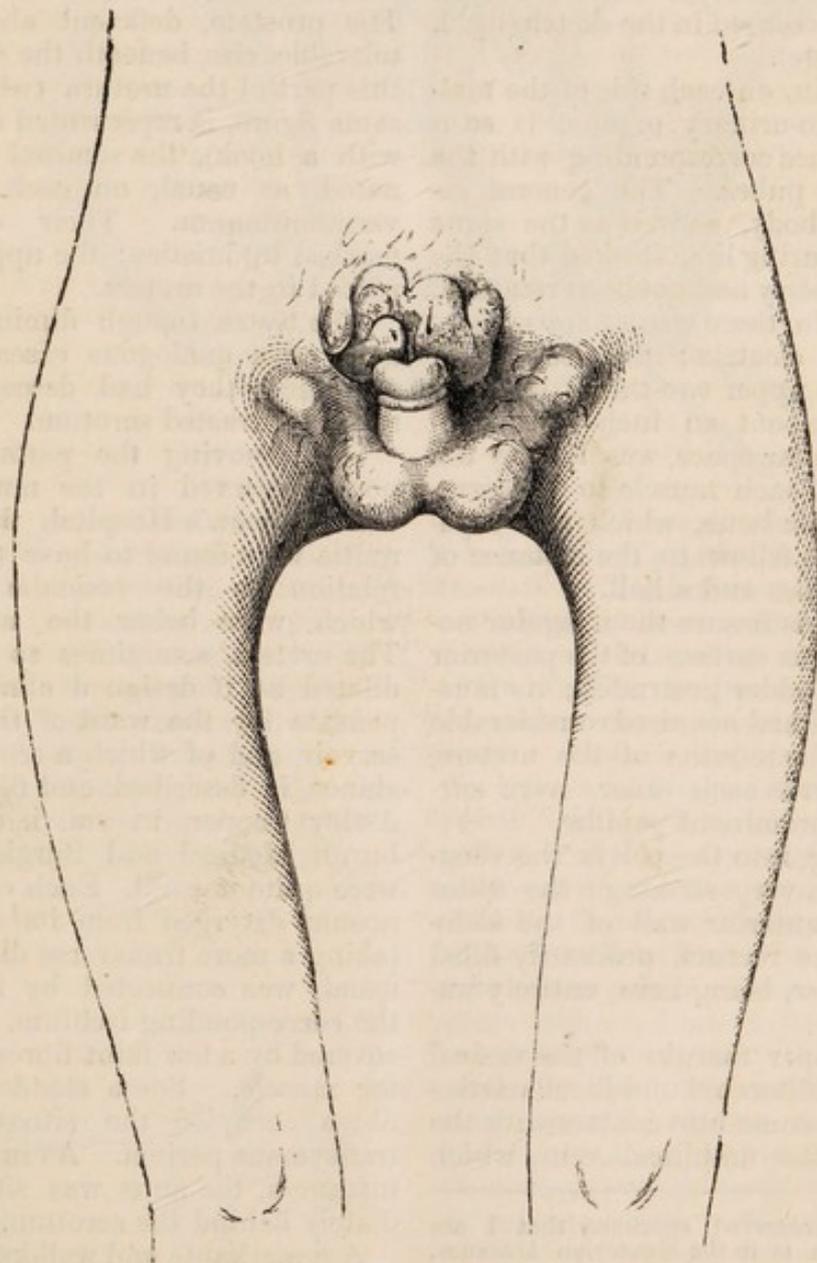
of the passage of some foreign substance through the kidneys, and on some points connected with the excretion of the urine." The satisfactory result of these observations, there recorded, is well known, and renders unnecessary the further recital of those which were made in the present cases.*

At the lower part of the abdomen was the same soft, pulpy, florid and vascular swelling, as is represented in the drawing of the case of the female, formed by the protruded mucous surface of the posterior wall of the bladder, its protrusion varying with the degree of pressure from behind, and affected both by the respiratory movement of the surrounding

parts, and by the posture of the body. The penis was rudimentary, with complete epispadias; the urine, constantly distilled from the open mouths of the ureters at the lower part of the swelling, fell, during the erect posture, in part, upon the open groove of the urethra, which served imperfectly as a spout.

In each groin was a projection which became more marked as the growth of the body advanced, corresponding with the widely separated pubic bones: from the want of symphysis and consequent support in the front of the pelvis, resulted considerable weakness in the part, and awkwardness in the movements:

FIG. 2.



* See M. Tenon's account of three cases, with illustrative plates; to which are added, Expériences et observations physiologiques faites dans

le but de jeter quelque jour sur les phénomènes de la sécrétion et de l'excrétion urinaire, in Mém. de l'Acad. des Sc. 1763, p. 115.

these inconveniences, as well as the general deformity, were further increased by the distance to which the thighs were thrown apart from each other.

Being furnished with the instrument adapted to his case, he left the hospital and returned to his home at Balham, where he became a patient of Mr. Bainbridge; he died of phthisis, having passed the age of 21: through the kindness of that gentleman I had an opportunity of assisting at the post-mortem examination.*

The body, rather short in stature, was much emaciated from the tubercular disease of the lungs; otherwise, nothing particularly striking was observed in its outline, excepting in the extent to which the thighs were separated from each other, as represented in the sketch (fig. 2, preceding page).

In the groin, on each side of the malformed genito-urinary organs, is seen the prominence corresponding with the body of the pubes. The general aspect of the body, as well as the signs manifested during life, showed that the period of puberty had not been retarded.

Here, again, there was no appearance of umbilical cicatrix; the recti abdominis, in the upper two-thirds of their extent, were about an inch apart; below, a triangular space was left by the divergence of each muscle to the corresponding pubic bone, which was separated from its fellow to the distance of about two inches and a half.

Through this fissure the irregular nodulated mucous surface of the posterior wall of the bladder protruded; its muscular fasciculi had acquired considerable strength. The mouths of the ureters, directed towards each other, were surrounded by prominent papillæ.

On looking into the pelvis, the vacuity there was very striking: the space between the anterior wall of the abdomen and the rectum, ordinarily filled by the bladder, being here entirely unoccupied.

At the upper margin of the vesical tumor, the obliterated umbilical arteries converged to come into contact with the remains of the umbilical vein, which

took a longer course than usual to reach the liver. No trace of urachus could be discovered.

The pubic bones (see fig. 3, next page), often connected by strong ligaments in cases where they are disjoined, and in some measure counterbalancing the want of osseous union, had merely a few thin fibrous bands passing between them, quite inadequate to give fixity to the parts or support to the viscera.

The rudimentary penis measured about one and a half inch in length; the glans, cleft at the upper part, had appended to it below an imperfect preputial covering. The epispadias was complete; the urethra presenting a simple open groove or furrow, upon the surface of which several lacunæ opened. The prostate, deficient above, was of tolerable size beneath the canal. Into this part of the urethra (which, in the same figure, is represented drawn down with a hook), the seminal ducts terminated, as usual, on each side of the verumontanum. Their orifices are marked by bristles: the upper ones are placed in the ureters.

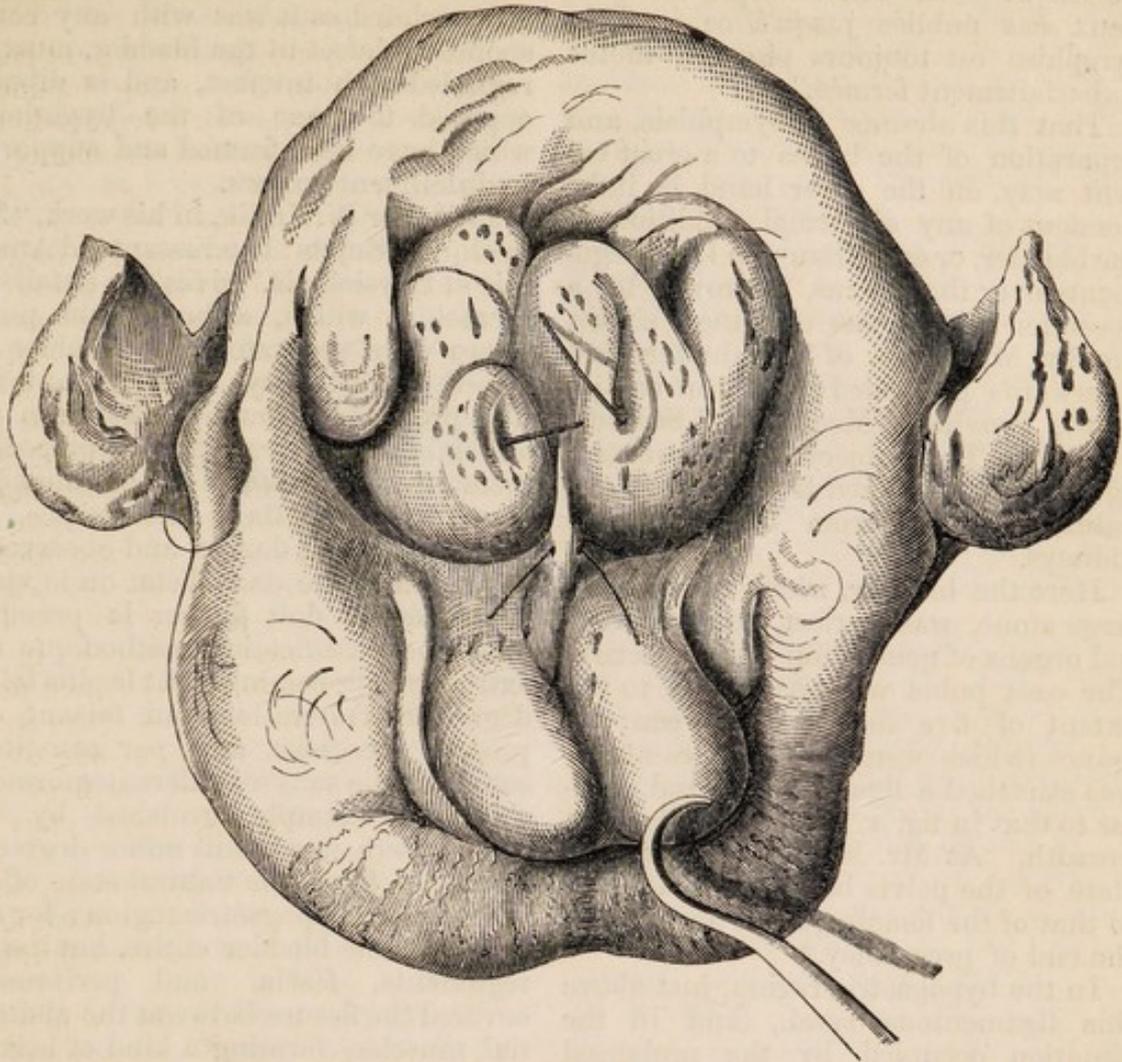
The testes, though diminutive, were, as in most analogous cases, natural in structure: they had descended into a small contracted scrotum.

On removing the parts, which are now preserved in the museum of St. Bartholomew's Hospital, the vasa deferentia were found to have their proper relation to the vesiculæ seminales, which were below the natural size. The ureters, sometimes so enormously dilated as if designed almost to compensate for the want of the proper reservoir, and of which a remarkable instance is described and figured by Sir Astley Cooper, in vol. i. of the *Edinburgh Medical and Surgical Journal*, were quite natural. Each corpus cavernosum diverged from its fellow; and, taking a more transverse direction than usual, was connected by its crus with the corresponding ischium, where it was covered by a few faint fibres of an erector muscle. Some slender elongated fibres occupied the situation of the transversus perinei. As in many other instances, the anus was situate immediately behind the scrotum.

A remarkable and well-known feature is the want of union of the pubic bones by synchondrosis, there being an interval between them corresponding more or less in breadth with the abdominal

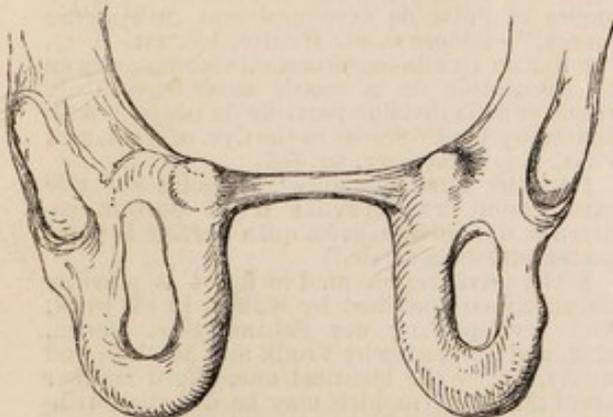
* The best preserved specimen that I am acquainted with is in the Hunterian Museum, presented by Mr. Beale. Monsters and malformed parts, No. 136, in Sub-series 5, from a full-grown male foetus, and resembles very closely the present case. The parts were dissected by Professor Owen. The exposed mucous surface is beautifully displayed by injection.

FIG. 3.



fissure. The same condition of these bones has been observed in animals co-existing with an imperfect state of the bladder. In the anatomical museum of the University of Berlin is the pelvis of a man, aged 30, in which the pubic bones are separated from each other to the extent of twenty French lines, and connected by a strong roundish ligament, passing across from one spine to the other, as represented in fig. 4.

FIG. 4.



Concerning the individual from whom

the preparation was taken I did not obtain any very precise or satisfactory information; but he was supposed to have suffered from one or other of these defects in the soft parts.

Dr. Baillie, in his work on Morbid Anatomy, observes:—"When there is such a formation of the bladder, I believe there is always a deficiency in the pelvis, of the bone of the symphysis pubis, and also a monstrous formation of some of the organs of generation." And Dr. Duncan remarks:—"Although this aberration from the natural structure of the pelvis is not mentioned by some authors, I am inclined to think it actually existed. Mr. Coates' case appears singular; but, as the separation may exist in various degrees, and as the examination here was only external, even this cannot be confidently stated as an exception." Meckel,* I think,

* Manuel d'Anatomie Générale, Descriptive et Pathologique, par J. F. Meckel, translated by Jourdan and Breschet, tom. iii. p. 58. Since the above was written I have been informed by Mr. Hodgson that he has met with an instance in which the pubic symphysis was perfect.

includes this well-known instance when he says:—"Si l'on excepte au plus deux cas publiés jusqu'à ce jour, la symphise est toujours plus ou moins imparfaitement fermée."

That this absence of symphysis, and separation of the bones to a great extent, may, on the other hand, be independent of any abnormal condition of the bladder, or even fissure in the integuments over that viscus, is proved by a specimen which was obligingly shown me by Mr. Mayo, of Winchester, and afterwards published by him in vol. ix. of the Provincial Medical and Surgical Journal. The subject was a woman, aged 29, who suffered from urinary calculus, and died from disease of the kidneys.

Here the bladder, which contained a large stone, was perfect, but the external organs of generation were defective. The ossa pubis were separated to the extent of five inches. Between the spines (which were seven inches apart) was stretched a ligamentous band, similar to that in fig. 4, but half an inch in breadth. As Mr. Mayo observes, this state of the pelvis bears a resemblance to that of the female guinea-pig towards the end of pregnancy.*

In the hypogastric region, just above this ligamentous band, (and in the situation occupied by the prolapsed malformed bladder, when it exists), "an oblong pouch presented itself, and which appeared to be the result of the divergence of the recti muscles, whose tendons were inserted into the separated angles of the symphysis, and thus left the anterior part of the abdomen without any other protection than the skin and fascia, and the peritoneum which lined the pouch." The model of the parts before dissection, together with the pelvis itself, are preserved in the Hunterian Museum.

In speculating upon the nature and origin of the various deviations from their natural structure to which these parts are liable, and how far they may severally be considered in their relation

* In birds destitute throughout the class of a urinary bladder, the open condition of the pelvis is almost universal. The pubic bones in the two-toed sloth are permanently separated, and connected by a strong ligament, the bladder being perfect. In the mole, whose pelvis will scarcely admit a small probe, the ossa pubis unite to enclose the caudal vessels only, forming a simple hæmal arch.

to each other, as cause and effect,* the condition of the pelvis here described, unassociated as it was with any corresponding defect in the bladder, must be regarded with interest, and is directly opposed to some of the hypotheses which have been framed and supported by intelligent writers.

Professor W. Vrolik, in his work, "Sur quelques Sujets Intéressants d'Anatomie et Physiologie," gives the details of a case† in which, although the pubic bones were separated, the bladder retained its integrity; but its anterior wall projected through a fissure in the abdominal parietes. In a preceding memoir‡ the author had attempted a classification of these deformities, according to their degree, and observes—"Que l'infirmité dans l'état où je viens de la décrire doit figurer la première dans une classification méthodique des extroversions, comme étant le plus faible degré de l'altération, qui faisant des progrès successifs, finit par constituer cette maladie sous ses différentes formes."

In the example furnished by Mr. Mayo there was a still minor degree of deviation from the natural state of the parts in the hypogastric region; for not only was the bladder entire, but the integuments, fascia, and peritoneum covered the fissure between the abdominal muscles, forming a kind of hernial sac in this situation.§

As regards the frequency in the occurrence of these malformations of the bladder, it is sufficiently great to excite the interest of the profession generally. Nine cases, of which two were female, have fallen under my own observation. Of known and recorded examples, Isidore G. St. Hilaire says that a fourth

* Cette accordance remarquable qu'expliquent parfaitement les organes sexuels avec les pubes, est une première preuve de la constance du rapport général que je démontrerai plus tard exister entre les vices de conformations des parties molles et l'état de développement du système osseux."—Isidore G. St. Hilaire, loc. cit.

† Sur un vice de conformation accompagnée de la dénudation de la moitié antérieure de la vessie et de la division partielle du pénis." Also figured by the Professor in the Cyc. of Anat. and Phys. art. Teratology, fig. 605.

‡ In the same volume—"Mémoire sur une extroversion accompagnée d'une portion retournée de l'intestin grêle qui a perforé la paroi postérieure de la vessie."

§ The pelvis represented in fig. 4 is possibly the specimen described by Walter, in his work, Von der Spaltung der Schaambeine, Berlin, 1782, and referred to by Vrolik and Meckel; and would, if it be the identical one, afford another proof that the symphysis may be defective without the existence of extroversio vesicæ.

only were females. Mr. Earle, at the date of the clinical lecture alluded to, found, on searching the records of instances of this congenital defect, that eight had been observed in the female, and sixty in the male. Subsequent to that period a large number have been added to the list of published cases; and at this time I am acquainted with several in and about the metropolis.

Besides the urinous smell which aggravates so much their wretched condition, there is frequently that peculiarity in the movements of the individual, most striking in early life, by which the nature of the infirmity may be detected, resulting from the soreness of the parts, and the consciousness that the tumor will bleed from the slightest friction, as well as from the imperfect structure of the pelvis, and the distance to which the acetabula and lower limbs are thrown asunder. Mr. Earle alludes to this feature in the early stage of the girl's case, when she had a "rolling, waddling, insecure gait, and which is less remarkable now."

Mr. Giles, of Stourbridge, describes the effects produced in his patient by the constant efforts to protect the parts in walking, "the inferior extremities having become bent outwards at the knee, making his gait extremely awkward."

The chafing and excoriation I have observed to be greater in the female, whose skin is more delicate and susceptible, and the urine reaches the thighs and parts between them more readily than in the male. In the latter, too, the more or less open mucous surface of the imperfect urethra, upon which the urine is in part constantly dribbling, may, during the erect posture, serve occasionally, in some degree, to conduct it away.

Mr. Startin has obligingly informed me of the advantage to be derived from varnishing the surrounding parts with the collodion, rendered elastic by the addition to it of some fatty oil, thus preventing excoriation.*

In regard to the generative functions, it may be noticed that there is, for the most part, entire abrogation of all procreative power in the male, although, in connection with the integrity of the internal organs, the ordinary sexual ap-

petite may exist,—the necessary consequence of the condition of the urethra. In this respect that sex has been pronounced less fortunate than the female, the varied imperfections of whose external organs offer no material impediment to conception, and even safe delivery in some instances.

In vol. xxxii. of the Philosophical Transactions is a letter from Oliver to Dr. Mead, describing this congenital defect in a female: he says:—"Hunc in modum conformata, valetudine satis bonâ fruebatur virgo, et æternâ virginitate ex necessitate laboraturam concluderant omnes quibus res innotuerat. Advenit tandem nauta quidem, cui æs triplex circa pectus erat: illam vidit, amavit, duxit, et non multò post impregnavit."

In both these cases the apparatus had fulfilled its object. The young man died just as it was about to be renewed by some charitable persons. It was a modification of the concave shield worn by Matthew Ussem, the German traveller, described and figured by Dr. Duncan in the paper above referred to, and consisted of a silver bowl, covering and protecting the tumor and external organs, supported and maintained in its situation by bandages around the loins. The urine here collected flowed through a funnel at its lower part into an India rubber bottle placed between the widely-separated thighs (fig. 5). The efficiency and comfort are now further increased by fixing the cup with a double truss. The urine passes down a vulcanised India rubber pipe into a metallic reservoir, adjusted to the inner side of the calf of the leg, and which can be evacuated at pleasure by means of a stop-cock.* For the female the bowl will accomplish its purpose more completely by being so constructed that it may enclose the posterior commissure of the labia. (See Vrolik's fig. 604, in Cyc. of Anat. and Phys. loc. cit.)

It is gratifying to find that Mr. Earle's views have been confirmed, experience having shown that the contrivance has afforded the substantial and permanent relief he contemplated. Whatever improvements it may have received since his suggestions, the essential plan of its construction origi-

* The preparation he employed is that of Mr. Thomas Taylor, of Vere Street, "The Collodion Tinctum Præparatum."

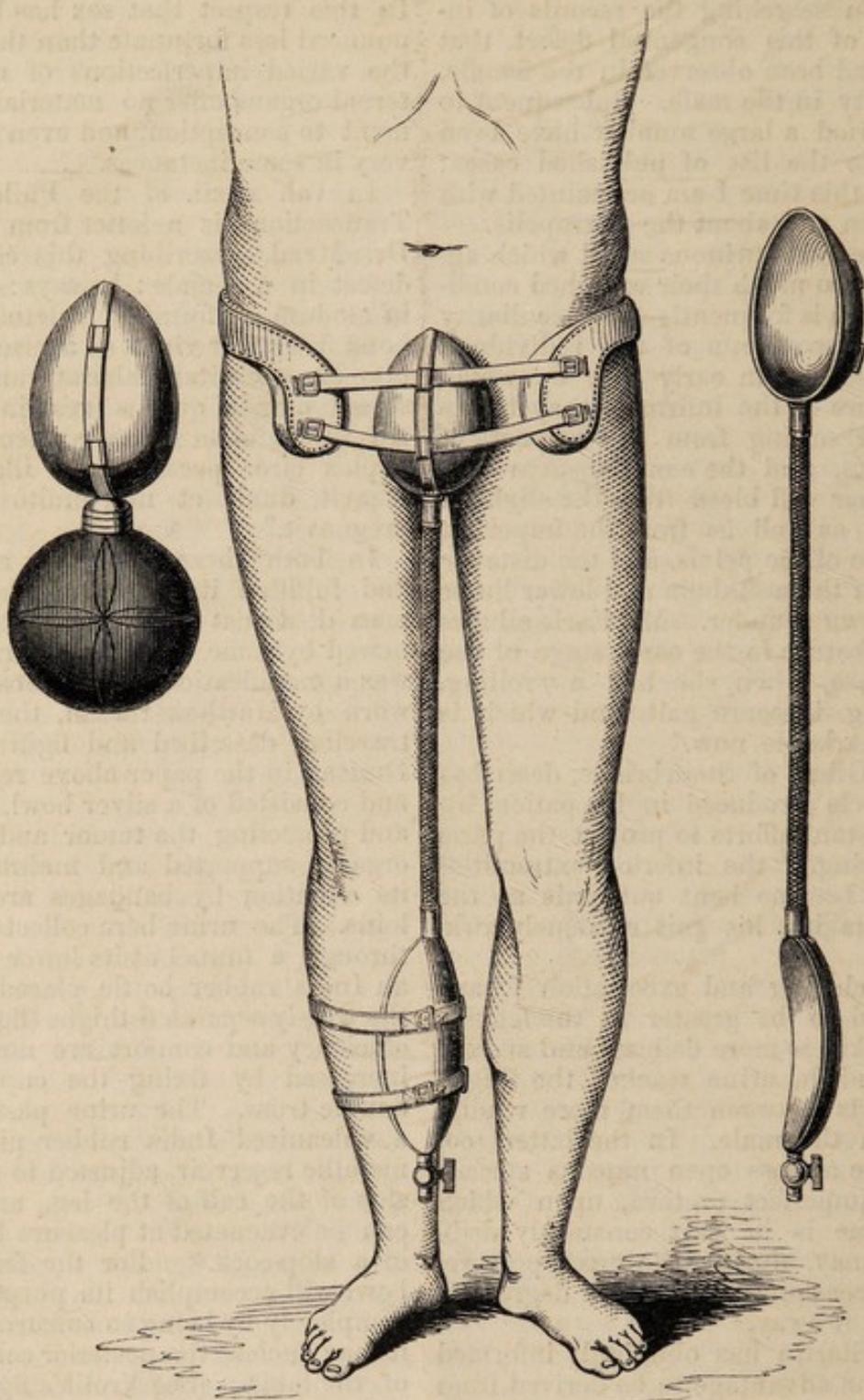
* Fig. 6 represents the apparatus adjusted, as now manufactured by Messrs. Ferguson, Giltspur Street, London.

Fig. 7, side view of the instrument.

FIG. 5.

FIG. 6.

FIG. 7.



nated with him, and it is due to his memory to bear testimony to the value of this, one of the many contributions for the relief of human suffering which

emanated from his active and philanthropic mind.

5, Crescent, New Bridge Street,
Feb. 1850.