ON RETROVERSION OF THE WOMB. NOTES OF A CASE IN PRIVATE PRACTICE.

By E. P. HURD, M.D., Newburyport.

THE following case of retroversion of the womb came under my observation in October, 1867, while engaged in practice in Canada East.

Oct. 17th, evening, I was summoned to go eight miles into the country to see a woman who had been, since the morning of the preceding day—so the messenger said—“suffering from a distressing complaint.” All at once, while about her house-work, she had felt something “give way,” and had since then suffered severe pain in her back and loins, with inability to void urine. I found my patient (a middle-aged woman) in bed, groaning with pain, which was principally in the lower part of the abdomen, and referred to the region of the urinary bladder. She had not passed urine since the period of attack, though so urgent was the desire that much of the time was passed in ineffectual attempts to micturate. I ascertained the following facts. Mrs. T. was pregnant, four months. Had been very much constipated, and had suffered from leucorrhœa. The day previous, she had felt the present trouble come on while lifting a wash-tub. Believes that her womb “came down.” On making an examination, I found the entire abdomen distended. There was fluctuation, and percussion gave a flat sound. This swelling quite disappeared, when, on introducing a male catheter (I had ineffectually tried the straight tube), I drew off a chamber-pot full of decomposing urine.

Between the labia, filling the vagina, was a large, hard, globular tumor. It was slightly movable, and could be pushed up a couple of inches. I could pass the finger around it, its whole length posteriorly and laterally, but could nowhere find the os uteri. Through the walls of the intra-vaginal tumor I could distinctly feel the outlines of a fœtus. I diagnosed retroversion. The globular tumor was evidently the *bas fond* of the uterus.

I vainly endeavored to replace it. The tumor could be raised a couple of inches or more in the axis of the vagina, no more. The body seemed to be thoroughly impacted in the pelvis. With an enema I cleared out the rectum, and endeavored, the woman being on her left side and her knees drawn up very high, to replace the retroverted fundus by my two fingers in the rectum. Again I failed. The patient implored me to desist, and I returned to my home.

The next day I saw Mrs. T. in company with Dr. W. L. Page. The urine was drawn off with the curved catheter, and attempts were again made to return the uterine fundus, but in vain. The mystery seemed to be how it ever came down, it so filled the pelvic cavity, and the brim was so narrow. Dr. P., who was many years my senior, gave it as his opinion that nothing could be done but leave the patient to the “course of nature.” He believed the progress of pregnancy would raise the organ above the pelvis, and all would be right.

The next day I was sent for early. Mrs. T. was said to be in a dying condition. I made all possible haste, and found my patient *in labor*. The fundus uteri, with every labor-throe, protruded some inches through the labial orifice. Pulse 130, but strong. No signs of collapse.

I caused the bladder and rectum to be emptied, gave chloroform to anæsthesia, then grasping the fundus, I pressed upward with all the force I dared to use. There was little difficulty, as the parts were completely relaxed. By steadily pushing toward the plane of the superior strait, I felt the uterus escape above the promontory, and the os tinæ came with a bound against my hand. The relief, both to myself and the patient, was indescribable. A dose of laudanum was given. The labor pains, for a while arrested, returned in the evening, and a miscarriage was the result. The fœtus was judged to be of about four months' growth. There was no farther trouble about voiding the urine. Mrs. T. completely recovered, after a somewhat lingering convalescence.

Selected Papers.

ANATOMY AND PATHOLOGY OF THE FALLOPIAN TUBES.

Translated from *Der Katarrh der Inneren Weiblichen Geschlechtstheile*, von Prof. Carl Hennig, Leipzig.
By J. C. JAY, JR., M.D., and B. F. DAWSON, M.D.

ON Müller's filament, in the female fœtus, a tube is developed on both the right and left side, which individually connect with the upper and outer angles (*horns*) of the uterus, and the outer or free extremities of which eventuate in an opening surrounded with a fringe (*fimbriae*). In the human fœtus these tubes are narrower at the portions nearest the horns of the uterus. Those exceptions in which the horns are large and

wide apart, correspond more nearly to the development in the lower animals.

In the adult woman the right fallopian tube is about $9\frac{1}{2}$ centimetres long, and the left $8\frac{1}{2}$ cm. The abdominal (or external) extremities of both are about 1.9 centimetre broad, and are surrounded with five large fringes about 1.2 cm. long, and ten smaller ones about 0.3 cm. long; the largest are on the extreme end. The fimbriae farthest from the ends are so near the ovaries, that formerly they were supposed to be connected with those organs. The fact is, however, that even during childhood these fimbriae are more than 8 millimetres from the ovaries, and never nearer than 3 millimetres, this distance being generally the same on both tubes, or if there be any difference, it is less on the left than on the right.

While the fallopian tube of each side rises from below and behind in a direction forward and upward, and so over the corresponding ovary, it usually follows the direction of the transverse diameter of the brim of the pelvis, in the first part of its course being a little nearer the posterior than the anterior wall, and then passes downward and backward to the body of the uterus, and so to its cavity. In this course, each tube from its fimbriated extremity to more than its middle, and often for two-thirds of its length, but most distinctly at its central portion, is slightly tortuous, and gradually lessens in size towards the uterus, so that the right tube, directly behind the fimbriae, may measure 1.4, the left, 1.1 centimetres broad, and yet both at their point of entrance to the uterus may only measure 0.35 cm. in breadth. In their course through the uterine tissue, the tubes are homogeneous with the latter.

In the normal state the human oviduct is quite soft, and, from the fact of its lying in the free border of the broad ligament, is quite movable; near its insertion into the uterus, however, it becomes somewhat firmer, and its mobility at this portion is chiefly dependent upon the position of the uterus. Besides this passive mobility, it has also, as a hollow muscular organ, a peculiar though slight contractile power.

Its external appearance is of a pale gray color, with a slight rosy hue, its middle portion being slightly yellowish.

The wall of either fallopian tube measures at the free extremity from 0.33 to 0.15 of a centimetre in thickness, at the central portion from 0.2 to 0.16 cm., and at the point of attachment to the uterus about 0.1 cm. The cavity of either tube measures in di-

ameter at the fore extremity 1.5 cm., and at the ulterior end, 0.05 cm. Hence only the very finest probe can be made to enter either internal orifice.

The structure of the fallopian tubes, besides the fold of peritoneum which covers them anteriorly, posteriorly, and superiorly, consists of a comparatively wide-meshed connective tissue, in which are interspersed flat muscular fibres singly or in bundles, which are continuations of the muscular tissue of the uterus and broad ligaments. The muscular wall of the tubes consists of external long fibres, beneath which are transverse fibres. Both of these layers become more fully developed towards the uterus, and the external circular layer, which just before the entrance of the tubes into the uterine tissue measures from 0.095 to 1.3 millimetres in diameter, at the point of insertion measures 0.38 mm. At this point, also, we find the external circular and longitudinal fibres interwoven with each other.

Hence we prove the existence of the *sphincter tubæ*, which had been asserted to exist by Aran. The tubes also possess elastic fibres, which are most distinctly demonstrable before puberty.

Internal to the middle or muscular coat above described, we have a mucous membrane of from 0.07 to 0.06 cm. in thickness. It lines the entire course of the tubes, and here and there is marked by numerous creases and folds.

I have counted from 3 to 5 such large folds, and from 34 to 40 interfolds, making from 8 to 10 smaller folds between two larger ones. The nearer we approach the uterus the fewer and finer these folds in the mucous membrane become, as also more equable in size; in the interstitial portion of the tubes (that portion within the horns of the uterus) these folds are no longer recognizable to the naked eye.

The mucous membrane is quite firmly attached to the subjacent tissue, and in the narrow portion of the canal is of a pale yellow or yellowish gray color; near the free extremities of the tubes, however, it is of a reddish color, with grayish white spots and lines; but during menstruation, throughout its entire surface, it assumes a dark red color.

Imbedded in the substance of the mucous membrane are numerous glands, which are perpendicular to the free surface of the mucous membrane, and are most abundant and well developed in the widest portions of the canal of the tubes; at the latter point especially they are found be-

tween the longitudinal folds mentioned, and into which they empty at right angles. The distance between these glands does not quite amount to the breadth of a single one. These glands are generally single, but often forked, so that two blind sacs coalesce into a common one. Some of them subdivide at their base into four or five branches, forming a grape-like mass; and in a few instances they form several intestine-like coils having a common investing membrane, similar to the sweat follicles, and likewise a common emunctory.

The length of these glands is from 0.133 to 1.2375 of a millimetre; the breadth, at the orifice, from 0.0418 to 0.067 of a millimetre; the breadth, at the base, from 0.057 to 0.1425 of a millimetre. Their walls consist of a delicate, transparent membrane lined with non-ciliated cylindrical epithelium. These epithelial scales are long and ellipsoidal, with generally single elongated nuclei. The length of these epithelial scales is from 0.0076 to 0.0114 of a millimetre, and their breadth from 0.0028 to 0.005 of a millimetre.

Sometimes the epithelium lining one gland is continuous into one or more adjoining ones, so that several glands in a fold of the tubal mucous membrane may have a common *Endoadenion—sit venia verbo!*

METHOD OF DEMONSTRATION.—As these tubal glands are not demonstrable in the human subject by a simple preparation (a section made by a double-bladed knife), it is best, according to my experience, to macerate the tubes for several days in liq. ferri sesquichlorati, and then to dry them in the air for three or four days; their sections are then made with a razor, and soaked for 24 or 70 hours in glycerine. By this process I have obtained most beautiful specimens for demonstration.

As we approach the uterus, these tubal glands diminish in size and number. In the interstitial tissue of the tubes I have only been able to find short, single glands, similar to those of the vagina; they could with difficulty be distinguished from minute indentations of the mucous membrane.

The glands of the wider portions of the tubes are from 0.01 to 0.02 millimetres long and 0.001 broad, and are surrounded by from one to three layers of broad, smooth muscular fibres; these fibres undoubtedly aid in the expulsion of the contents of the epithelial cells and the free mucus. Very often, especially in catarrh of the tubes, glandular epithelium is found on the free surface of the mucous membrane. After

the above facts had been corroborated by my professional associates, I searched in the appropriate text-books for a similar description. Only in Bowman's work upon mucous membrane, however, did I find an intimation that he had probably seen these glands in the human female. But their description, which I here insert, is so incomplete and somewhat incorrect, that I am inclined to believe he has striven to demonstrate what the microscope failed to demonstrate to him:—

"The lining membrane of the fallopian tubes, as also that of the uterus, is of a complex nature, especially during gestation, consisting of tubules arranged vertically to the free surface. It is observable that the cilia only cover the free surface, and that the epithelium lining the tubules is spheroidal, or intermediate between that and the prismatic variety. It is a form of the glandular variety, and bears no cilia."* To this Kölliker replies: "The tubal glands, spoken of by Bowman, I have never seen."†

While my researches have confirmed the existence of the glands discovered by Bowman, I must, however, remark that their description by the English investigator is not suitable to the tubal glands of the human subject. Nor can they properly bear comparison with those of the uterus, for they are much shorter, and more open and purse-shaped, resembling, therefore, compound glands, whether seen as many-pouched tubules, or as glands possessing a continuous cell-lining with adjoining ones. Moreover, the epithelium of the normal tubal glands is by no means "spherical," or "intermediate in form between that and the prismatic."

In regard to the presence of similar glands in the fallopian tubes of animals, Leydig does not mention whether the tubal mucus of the mammalia contains glands. In a male he saw short glandular follicles, "which were always grouped together in numbers, having a common lining"‡—hence quite analogous to the human tubal glands. The comparison of the human fallopian tubes with those of the lower animals is hardly proper, as in the latter these organs perform other functions. One peculiarity is, however, worthy of remark; in frogs, after the ova have passed through the tubes, the latter become of a yellowish-white ap-

* R. Todd. *Cyclopædia of Anatomy and Physiology*, London, 1839–1847, vol. iii., p. 497, article on "Mucous Membranes."

† A. Kölliker. *Mikroskopische Anat.*, Leipsic, 1854, ii. Bel., 2 Hälft.

‡ Fr. Leydig. *Lehrbuch der Histologie des Menschen u. der Thiere*, Frankf. a. M., 1857, S. 542.

pearance, which color is due to the fact that the albumen remaining in the cells of the tubal glands changes into fat corpuscles. I shall, further on, not only speak of the change of the entire contents of the glands of the human fallopian tubes into fat globules, but also of a similar fatty degeneration of the tissue of the tubes themselves—only, however, as will be shown under abnormal conditions.

Even among the invertebrates, compound or single cells have been found secreting the mucus of the tubes. The function of these accessory glands is to give a viscid covering to the ova in their passage through the tubes.

The epithelium of the free surface of the tubal mucous membrane is ciliated, and is also continuous with that of the cavity of the uterus. This ciliated epithelium lines the entire canal of the fallopian tubes, and extends even beyond the fimbriated extremities or to a portion of the serous covering of the tubes.

The length of this epithelium is from 0.0247 to 0.285 millimetres.

The breadth of this epithelium is from 0.0095 to 0.133 millimetres.

Under peculiar circumstances, the ciliated epithelium of the mucous membranes of the tubes, as well as that of other portions of the genital organs, are marked with fine parallel longitudinal lines, which in rare instances are crossed by equally fine transverse ones. I doubt whether these lines

betoken a healthy condition of the cells (see U. Freidreich, *On the Structure of the Cylindrical and Ciliary Epithelium*; Virchow's Archiv., XV., Band. S. 535).

The epithelial lining of the human fallopian tubes being formed in layers, it is only those cells that are uppermost and occupy the free surface of the mucous membrane, that have cilia and a cylindrical form of the length above mentioned; the deeper layers are composed of short, almost round cells.

The cilia during life, and even sometimes after death, have a motion from without inwards: that is, from the abdominal surface of the tubes towards the uterine cavity. They can be seen still moving if the contents of the tube is very alkaline, even thirty-six hours after death.

The mucus of the tubes is generally composed of a thin grayish film, of single, and occasionally, grouped ciliated cells, and glandular epithelium, which are mixed with some mucous secretion, and an albuminoid mucus which I shall hereafter describe by the name hyaline. This is probably absent in a perfectly healthy condition; we cannot with as much certainty, however, assert that free fat is absent in the normal mucus, for ciliated epithelial cells undergoing fatty degeneration are almost invariably found, even in young subjects. Such cells, just beneath the cilia and immediately above the nucleus, have from two to four fat granules.

I will now represent in tabular form the growth of the right and left fallopian tubes:

	AGE.						
	7th fetal month.	1st year.	2d-5th year.	6th-10th year.	11th-20th year.	21st-24th year.	46th-81st year.
Length of right tube in centimetres.	1.7	3 to 4	5 to 7	7 to 8	6.5 to 11	11.3 to 16	12 to 9
Length of left tube in centimetres.	1.7	3.3 to 4.4	4.6 to 7	6.5 to 8	7.5 to 12.5	11.2 to 15	12.5 to 8.7

Up to the seventh month of foetal life both tubes are of equal length; from that time, however, the growth of the left is a little less than that of the right. The average result of 10 examinations of girls who died before puberty was as follows: The right tube measured 5.98 cm. in length, the left 5.7. The average of 9 examinations of virgin women who died between the ages of 16 and 81, was 9.5 cm. for the right, and 8.5 cm. for the left tube. After the menopause the oviducts may grow from 2.5 to 4.5 cm.

During the active period of the sexual organs, the difference in length between the two tubes is less marked; the average

of 22 examinations in married women under 45 years of age, gave for the right 11 cm., and for the left 10.9 cm. After menopause, however, the difference is striking, being in 12 women examined between 46 and 80 years, 9.75 cm. for the right, and 9.1 for the left.

In young children the ciliated epithelial cells are very small, and in every respect to those of the Wolffian bodies. I have been able to demonstrate their presence in a girl of 12 years of age.

In only a few women—17 out of 74 who furnished material upon which the above descriptions are based—the enlarged extremity of Müller's filament remained as a

type of the embryonic condition of the fallopian tubes, and in a few was transformed into a vesicle.—*American Journal of Obstetrics*.

THE RELATIONS OF THE MEDICAL PROFESSION TO MODERN EDUCATION.

FROM an Address delivered at the Commencement of the Medical Department of the University of Vermont, June 16th, 1869, by Edward S. Dunster, M.D., Professor of Obstetrics and Diseases of Women and Children, we make the following extracts. The address originally appeared in the *New York Medical Journal*, December, 1870.

* * * How stands the case now with the profession of medicine? It is the only one of the learned professions which does not plant itself on the dogmas of either authority, precedent, or tradition. Its doctrines are based upon the eternal and immutable laws of Nature, and are estimated by high scientific standards. Precedent and authority carry no weight here, except in so far as they accord with the principles which science has proven, and has established as reliable guides. There is none of that blind devotion to old ideas and methods which has so hindered progress in other callings, and which has rendered our educational systems so inadequate and unsatisfactory. The *old* is valued only as it squares with the *new*. The *past* is estimated solely by the standard of the *present*.

Not only does medicine thus discard authority, precedent, and tradition, but, first, its methods of study are purely scientific; and, second, its studies comprise the whole range of the physical sciences. The knowledge of these sciences, which has so often and ignorantly been condemned as unnecessary to the practising physician, has of late years far outstripped all other branches of human learning. It is the application of these sciences in biology which has given the physician that truer insight into the nature of the living body with which he has to deal, upon which depends the proud eminence of the profession to-day. "The essence of science," says Prof. Acland, "lies in observation, comparison, and classification; in precision of data and precision of argument." This is precisely what is required in the study of medicine. Indeed, it may safely be affirmed that there is scarcely anything true or valuable in medicine, beyond some of its therapeutical applications, which has not been wrought

out and approved by scientific research. Observation, of course, is the basis of all knowledge; but, unless we do something more than observe—no matter how large may be the accumulation of facts—we can lay no claim to scientific method. There is not a single one of the physical sciences which is not contributory to medicine. On them the physician relies, and an understanding of, at least, the principles of them is absolutely essential in his study and his practice. Chemistry and mechanics, acoustics and optics, electricity and galvanism, the production and action of heat, the indestructibility of matter, the correlation and conservation of forces—these and all the other physical sciences are required to explain the many and varied healthy phenomena, or to correct the unhealthy phenomena, which are brought under the notice of the physician.

Covering thus, as it does, the whole range of physical sciences, and doing its work in strict accordance with scientific methods, medicine is entitled to rank as a science. It is constantly objected to this claim, that it is not an *exact* science. There is a very general, though vague, impression abroad that, while medicine is somewhat indefinitely scientific in its bearings, it is neither one thing nor another—a sort of a hybrid, entitled to no consideration whatever. Now, this objection can lie, to use a legal phrase, only against the *methods* of study and investigation which are employed, or against the *results* attained. It does not apply to the methods, for the methods are the same, as has been seen, that are employed in all other sciences, and as much nicety and precision are requisite and manifested here as elsewhere. As to the results, the objection at the present time is true to a certain extent. It arises from the great diversity of the study—including all the sciences—and the enormous number of interfering conditions met with in so complex a structure as man, the principal object of the physician's study. But, as we advance in our study and perfect our methods of investigation, we are able to appreciate more accurately the value and significance of these disturbing conditions, and make allowance for them, just as the astronomer allows for the aberration in the movements of planets or for the effects of the refraction of light. Thus we are, one by one, eliminating these sources of error, and gradually our results will approximate the accuracy of the fixed sciences. In its *essence*, therefore, both so far as concerns the methods of study and the results attained